PLANNING BOARD

Tuesday, October 24, 2023 at 4:30 PM
Room 24 (Basement Level of City Hall)
and Zoom

MEMBERS
Brandon Mazer, Chair
Justin Barker, Vice Chair
Marpheen Chann
Sean Murphy
David Silk
Austin Smith
Maggie Stanley

The Planning Board will hold a hybrid meeting in Room 24, Basement Level City Hall. The public may attend the meeting in person or Zoom pursuant to the Remote Meeting Policy adopted by the Planning Board. Prior to the meeting, please check the Agenda Center (https://portlandme.portal.civicclerk.com) to view memos and reports which will be posted by the end of the day on the Friday before the Planning Board meeting as well as start times for each item as placement on the agenda can change. To submit written public comment on an agenda item, email planningboard@portlandmaine.gov. Submissions must be received by 12:00 pm the day before the Planning Board meeting to guarantee their inclusion in the agenda packet. All submissions must include the commenter's name and legal address. To help ensure your comment is submitted for the correct item, please include the name of the agenda item (see below).

REMOTE PARTICIPATION

Allow your computer to install the free Zoom app to get the best meeting experience. If you are not able to attend either in person or via Zoom, a recording will be available in the Agenda Center following the meeting.

You are invited to a Zoom webinar.
When: Oct 24, 2023 04:30 PM Eastern Time (US and Canada)
Topic: Planning Board Public Hearing 10/24/2023

Please click the link below to join the webinar:
https://portlandmaine-gov.zoom.us/j/82570587883
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Dial(for higher quality, dial a number based on your current location):
+1 929 205 6099 US (New York)
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Webinar ID: 825 7058 7883
International numbers available: https://portlandmaine-gov.zoom.us/u/kdBlQz6dIs

AGENDA:

PUBLIC HEARING - 4:30 PM

1. **ROLL CALL AND DECLARATION OF QUORUM**
2. **COMMUNICATION AND REPORTS**
3. **REPORT OF ATTENDANCE AT THE MEETING HELD ON OCTOBER 10, 2023**

   Attendance will be added as soon as it is finalized.
4. **REPORTS OF DECISIONS AT THE MEETING HELD ON OCTOBER 10, 2023**

   i. Decisions will be added as soon as they are finalized.
5. **NEW BUSINESS**

   i. Zoning Text Amendments; LD-2003 (Edits to Article 3, Article 6, Article 7, Article 18, and Article 19); City of Portland, Applicant. The Planning Board will hold a hybrid public hearing to consider a series of zoning text amendments intended to implement State Bill LD 2003, an act signed into law on April 27, 2022, with the purpose of reducing regulatory and zoning barriers to new housing creation statewide. The City is proposing amendments to Article 3 (Definitions), Article 6 (Use Standards), Article 7 (Dimensional Standards), Article 18 (Housing), and Article 19 (Off-Street Parking and Loading), related to affordable housing densities and parking requirements, permitted residential uses, and accessory dwelling units.

   ii. Major Site Plan and Conditional Use; 89 Elm Street; 89 Elm Street, LLC, Applicant. The Planning Board will hold a hybrid public hearing to consider Phase 1 of the Bayside Master Development Plan (MDP); a proposal to develop an eight-story mixed-use development with ground-level retail and 201 affordable dwelling units. The subject property totals 38,007 square feet, is zoned B-3 Downtown Business and R-6 Residential, and is located within the Downtown Entertainment Overlay Zone (DEOZ). A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-002403-2023.

   iii. Subdivision; 533 Summit Street; John Kelly, Applicant. The Planning Board will hold a hybrid public hearing to consider a proposal to subdivide four existing lots located at 533, 539, 547 and 555 Summit Street to create three additional lots, for a total of seven buildable lots. Other improvements include the construction of a sidewalk, crosswalk and curbing along the subdivision's frontage on Riverside Street. The City is further recommending that one additional parcel (Tax Map 418A/A004) also be remapped to R-5. The subject property totals 2.83 acres and is zoned R-3 Residential. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-002453-2023.

   iv. Zoning Map Amendment; 426 Presumpscot Street; Backyard ADUs, LLC, Applicant. The Planning Board will hold a hybrid public hearing to consider a Zoning Map Amendment for a 2.8 acre area located between Ocean Avenue and Presumpscot Street on property addressed at 426 Presumpscot Street (Tax Map 418A/A005, A007, and A008). This rezoning would involve rezoning the property from R-3 Residential to R-5 Residential and B-1b Neighborhood Business. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number ZN-002427-2023.

Planning Board Memorandum
Planning and Urban Development Department

Draft Text Amendments to the Land Use Code Under LD 2003
City of Portland, Applicant

Submitted to:	Portland Planning Board	Prepared By:	Nell Donaldson
Public Hearing Date:	10/24/23	Date:	10/20/2023

I. INTRODUCTION

In April 2022, Governor Mills signed into law LD 2003, or *An Act to Implement the Recommendations of the Commission to Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions*. The law's intent is to remove local regulatory barriers to housing production in Maine by requiring that municipalities adopt standards around affordable housing, residential uses, and accessory dwelling units within their local codes of ordinances. State rule-making was published in April 2023, and the law was amended in June 2023 to provide additional clarity around certain provisions. The implementation deadline for communities in which ordinances may be enacted by municipal officers is January 1, 2024.

The Planning Board met on October 10, 2023 to review draft amendments to the land use code to comply with LD 2003. At that workshop, the discussion focused on several areas of the law where the state allows municipalities some discretion. Fundamental to the discussion was how to implement LD 2003 in these areas, particularly in the context of the larger, ongoing housing work around ReCode. This memo will provide additional background to the Planning Board and review the major points of discussion from the October 10 workshop, with the goal of supporting a final recommendation to the City Council at the conclusion of this hearing.

II. REVISITING RECODE

ReCode is a multi-phase effort to rewrite the land use code for consistency with *Portland's Plan*. Because *Portland's Plan* places a strong emphasis on overall housing production, affordable housing, and diversity of housing supply, implementing ambitious housing changes in addition to other zoning reforms is central to ReCode. The "first wave" of draft ReCode amendments was also informed by significant public input, as well as technical analysis and best practices nationwide. The first wave included changes to use and dimensional standards that translate directly into increased opportunities for housing across the entire city.

Within the context of this ongoing local work, the state legislature passed LD 2003 in 2022 and amended it in mid-2023. This state work was designed by nature to apply state-wide, across a variety of different land use contexts, and by its nature had a very different public process than local zoning and policy development would take. It was written to require communities to eliminate regulatory barriers to housing creation. In contrast to many communities across the state for which this will represent a major change and opportunity for housing creation, in Portland, much of the city already has zoning and parking policies that exceed the requirements of LD 2003, and ReCode, in the spirit of what LD 2003 strives to do, will more comprehensively advance initiatives to propose more robust housing policies city-wide. There are, however, some areas of inconsistency that need to be addressed, and consistency with the land use code and LD 2003 language has been kept in mind ken into account throughout the drafting process. Amendments to comply with LD 2003 represents one facet among many in a broad suite of changes currently in public review; the

need to implement LD 2003 amendments by January 1st means that they are being considered on their own to meet schedule requirements rather than part of the full package of ReCode amendments.

III. MAJOR POINTS OF DISCUSSION FROM THE OCTOBER 10 WORKSHOP

The October 10 workshop featured public comment and Board discussion surrounding various elements of staff's proposal under LD 2003, including the affordable housing bonuses. However, the most significant points of discussion at the workshop focused on the dwelling unit allowance requirements of LD 2003. These requirements state that, where residential uses are allowed, municipalities must permit two units on undeveloped lots outside of growth areas, and four units on undeveloped lots within growth areas. The law further requires that on lots with one existing dwelling unit, two additional dwelling units be allowed. *Figure 1* illustrates the requirements of this portion of the law.



Figure 1: Guidance on dwelling unit allowances from Maine Department of Economic and Community Development, LD 2003 Guidance

To address these requirements, staff drafted a new section within Article 6 of the land use code. Staff included language from the law that reinforce the law's focus on undeveloped lots and the law's intent that this section be treated as separate and distinct from other elements of LD 2003. These elements were by and large the focus of the October 10 workshop.

In the time since the workshop, staff has made edits to Section 6.4.2 to respond to public feedback and Board deliberation. This edit adjusts the approach to the two additional principal units that may be constructed on a lot with one existing unit to add more flexibility for additions and renovations. Instead of requiring that one of the additional units may be integrated or attached to the existing unit, one may be detached, or a lot may have one of each, language has been revised to allow the two units within or attached to the principal structure or separate from the principal structure, much like the vacant lot provisions of Section 6.4.2. Also like the vacant lot provisions, the language has been revised to exempt these units from lot area per dwelling unit requirements when all units are contained within one structure; lot area per dwelling unit requirements would apply in the case of separate structures. This creates considerably more flexibility in how this standard may be met, and thereby increases the housing potential of these lots, while still complying with LD 2003. The revised language follows, and includes a change to ADU standards discussed in C, below:

> 6.4.2. Additional residential use permissions
>
> ....
>
> Sec. 6.4.2.D
>
> 1. Up to two additional dwelling units are permitted on any lawfully conforming lot containing one existing dwelling unit.
>
> ~~1.~~2. ~~One of these units may be permitted within or attached to the existing structure, one may be permitted detached from the existing structure, or one may be permitted of each. In all cases, the minimum lot area per dwelling unit standards of Article 7 shall apply.~~
>
> 2. Such units may be located:
>
> i. In separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or
>
> ii. Within or attached to the existing structure, in which case the lot area per dwelling unit standards of Article 7 shall not apply.
>
> 3. Units created under this section shall not be considered accessory dwelling units under Section 6.6.2(A).
>
> ~~E. If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section, the lot is not eligible for any additional units under Section 6.6.2(A).~~

A. Use Permissions Under LD 2003 in the Context of ReCode

To frame the decision-making around these aspects of the draft language, it is useful to compare the housing opportunities created under the draft Section 6.4.2 with those proposed under the context of ReCode. To provide additional clarity on use provisions, staff has developed a schematic (Figure 2) which shows basic use permissions under residential zones within the existing land use code, the proposed use permissions under ReCode, and the allowances proposed under LD 2003, which supplement the base zoning.

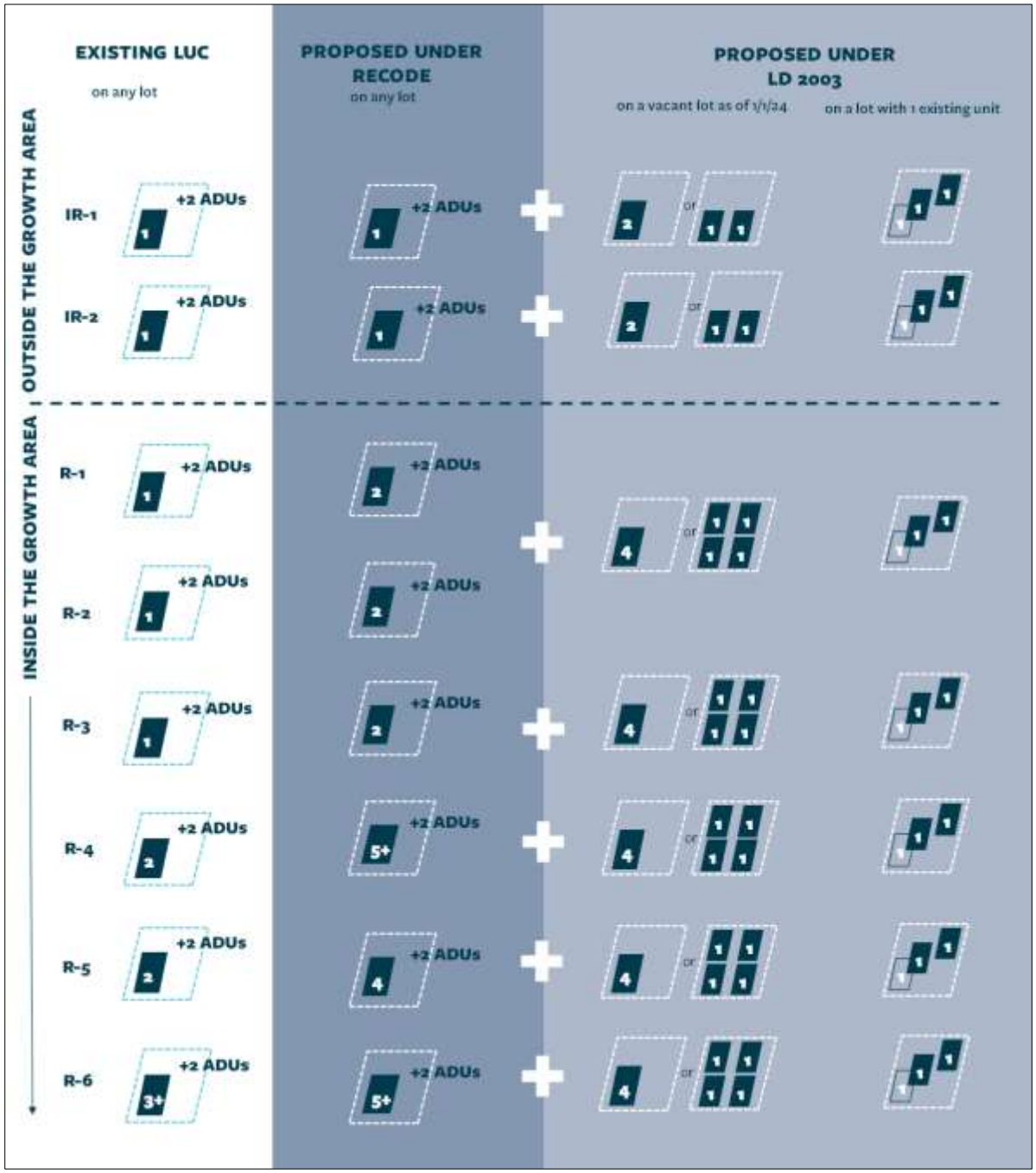


Figure 2

The working draft of Article 6 under ReCode would allow:

1. *At least a four-family dwelling, plus two ADUs (or a total of six units by right)* in the existing R-4, R-5/R-5a, R-6, R-6a, and R-7 zones.
2. *A two-family dwelling, plus two ADUs (or a total of four units by right)* in the existing R-1, R-2, and R-3 zones.

3. *A one-family dwelling, plus two ADUs (or a total of three units by right)* in the existing IR-1 and IR-2 zones.

In addition, under Section 6.4.2, LD 2003 adds that all vacant lots in the mainland residential zones would be eligible for four dwelling units, either in a single structure or in separate structures. All vacant island lots would be eligible for two dwelling units. Across the city, all lots with one existing dwelling unit would be eligible for two additional units, one within or attached to the existing structure, one separate, or one of each.

Because the ReCode drafts would allow four or more units by right on any lot in the R-4 zone and up, they meet or exceed LD 2003 density requirements and essentially render the dwelling unit allowance provisions of Section 6.4.2 obsolete. The areas where there is more potential impact from Section 6.4.2, are in the IR-1, IR-2, R-1, R-2, and R-3 zones. In these zones, use permissions under ReCode and Section 6.4.2 would compare as follows:

Comparison of Proposed Minimum Use Permissions

		Existing land use code + Sec. 6.4.2	ReCode + Sec. 6.4.2
Lots outside growth area	ANY lot	1 unit + 2 ADUs	1 unit + 2 ADUs
	With no existing dwelling units as of 1/1/23	2 units	
	With 1 existing dwelling unit	+ 2 ADU + 2 principal units	
Lots inside growth area	ANY lot	1 unit + 2 ADUs	2 units + 2 ADUs
	With no existing dwelling units as of 1/1/23	4 units	
	With 1 existing dwelling unit	+ 2 ADUs + 2 principal units	

It should be noted that there are nuances around these use permissions, which will affect the extent to which any given property owner might employ them:

1. *Form:* The LD 2003 guidance states that, with respect to the vacant lot provisions, the two or four units may be permitted in single or separate structures. Likewise, LD 2003 states that where one unit exists and two additional units are allowed, one of these units must be permitted within or attached to the existing structure, one must be permitted as a detached structure, or one must be permitted of each. Language to address the question of form in these ways has been drafted into Section 6.4.2.
2. *Lot area required:* As drafted under Section 6.4.2, density standards would not apply to the vacant lot provisions in cases where all units are proposed within a single structure; where they are proposed within separate structures, larger lots meeting lot area per dwelling unit standards would be required.
3. *ADUs v. principal units:* ADUs are treated differently from principal dwelling units within the city's land use code. ADUs carry some advantages, as they are permitted on nonconforming lots, they are exempt from density and lot coverage requirements, and they are not required to provide off-street parking. However, they also come with an owner-occupancy requirement, maximum size limits, and standards that speak to design.

B. Tear Down Provisions

During October 10 workshop, a number of commenters raised questions regarding the tear down provisions proposed in Section 6.4.2(C), and the Board spent considerable time discussing these provisions. The language as drafted prohibits tear downs for the purposes of taking advantage of the vacant lot provisions. This prohibition, which is expressly permitted under LD 2003, has the effect of limiting the number of lots that could use the vacant lot provisions to construct two or four units (depending on location inside or outside the growth area) to those that are vacant as of July 1, 2023. Without the tear down provision in Section 6.4.2, theoretically any lot in a mainland residential zone could become vacant in the future and thus be eligible for four units under Section 6.4.2, and any lot in an island residential zone could become vacant and be eligible for two.

There are multiple factors reflected in the draft to limit these changes to developed lots:

- If the tear down language was to be eliminated from Section 6.4.2, the vacant lot provisions would effectively become the use permissions for many zones in which residential is allowed, in essence overriding the base zoning. If there was a wish to increase base zoning across the board, there are drafts being reviewed right now that can accommodate any changes to the lower density R zones that the Planning Board or Council found appropriate, with a full public process to support those deliberations.
- Regarding uses more broadly, the policy direction in ReCode is to allow four-families and greater in *some but not all* residential zones. This approach is based on the *Portland's Plan* premises that diversity in housing is central to a healthy housing ecosystem, that not all neighborhoods in the City of Portland should have the same dimensional and use permissions, and that more housing density should generally be located closer to goods and services and supporting infrastructure in order to meet climate, complete neighborhoods, and transportation planning goals.
- Public engagement to date has generally supported a varied approach to housing density that does take into account the range of neighborhood types and intensities of development patterns.

Staff continues to advise that the tear down provisions be maintained within the draft language of Section 6.4.2.

C. Vacant Lot Provisions, + 2 Provisions, and ADUs

At the October 10 workshop, there was also significant discussion about Section 6.4.2(E), which essentially restricts property owners that have constructed more than one unit on their lot as a result of Section 6.4.2 from adding ADUs to that lot. Much like the tear down language, this language is permitted by the state, but not required. The law states that if more than one unit has been constructed on a lot under these allowances, it is not eligible for additional "increases in density."

Acknowledging that ADUs are distinct from principal units, they nevertheless represent two additional units on any given lot. Allowing lots to be eligible for ADUs *on top of* the vacant lot and two additional unit allowances effectively increases the number of units permitted in these scenarios to six on vacant lots in all mainland residential zones, four on all vacant lots in island zones, and five on all lots with one existing dwelling unit city-wide.

The rationale behind the approach to ADUs and 6.4.2 in the draft presented at the workshop had multiple facets. This included a recognition that the city already grants two additional units to any lot in residential use through its ADU provisions, which is more generous than that required under LD 2003 (which only

requires one, where Portland permits two), and already meets the intent of allowing + 2 additional units on a lot. The other consideration was that vacant lots in the R-1, R-2, and R-3 zones would then be an increment higher than under ReCode, where two-families plus two ADUs are proposed, rather than the six units that would be effectively permitted under the vacant lot provisions if ADUs were added in addition. However, based on deliberations at the workshop, staff prepared an alternative version that permits ADUs in addition to the 2 or 4 units granted by LD 2003.

Mainland minimum residential zone use permissions if ADUs are permitted within Section 6.4.2

		Under the existing land use code + Section 6.4.2	Under ReCode + Section 6.4.2 (to be revised to align w/ Recode)
On a lot…	ANY lot	1 unit + 2 ADUs	2 units + 2 ADUs
	With no existing dwelling units as of 1/1/23	4 units + 2 ADUs	
	With 1 existing dwelling unit	+ 2 principal units + 2 ADUs (for 5 units in total)	

CONCLUSION

Staff has presented a revised version of Sec. 6.4.2 for consideration, which is more permissive on vacant lots than that presented at the workshop. The Board may agree with these changes, or propose a modification be forwarded to the Council for adoption, and staff will be prepared to illustrate the extents of the change.

ATTACHMENTS

1. HP 1489 – LD 2003: An Act to Implement the Recommendations of the Commission to Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions
2. HP 1095 – LD 1706: An Act to Clarify Statewide Laws Regarding Affordable Housing and Accessory Dwelling Units
3. Housing Opportunity Program: Municipal Land Use and Zoning Ordinance Rule
4. Maine Department of Economic & Community Development, LD 2003 Guidance
5. Draft Amendments to Chapter 14, Article 3: Definitions
6. Draft Amendments to Chapter 14, Article 6: Use Standards
7. Draft Amendments to Chapter 14, Article 7: Dimensional Standards
8. Draft Amendments to Chapter 14, Article 18: Housing
9. Draft Amendments to Chapter 14, Article 19: Off-Street Parking & Loading

APPROVED
APRIL 27, 2022
BY GOVERNOR

CHAPTER
672
PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD

TWO THOUSAND TWENTY-TWO

H.P. 1489 - L.D. 2003

An Act To Implement the Recommendations of the Commission To Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 5 MRSA §13056, sub-§7, as amended by PL 2003, c. 159, §3, is further amended to read:

7. Contract for services. When contracting for services, to the maximum extent feasible, seek to use the State's private sector resources in conducting studies, providing services and preparing publications; ~~and~~

Sec. 2. 5 MRSA §13056, sub-§8, as enacted by PL 2003, c. 159, §4, is amended to read:

8. Lead agency for business assistance in response to certain events. Be the lead agency for the State to provide information and business assistance to employers and businesses as part of the State's response to an event that causes the Department of Labor to carry out rapid-response activities as described in 29 United States Code, Sections 2801 to 2872 (2002)~~.~~; and

Sec. 3. 5 MRSA §13056, sub-§9 is enacted to read:

9. Establish statewide housing production goals. Establish, in coordination with the Maine State Housing Authority, a statewide housing production goal that increases the availability and affordability of all types of housing in all parts of the State. The department shall establish regional housing production goals based on the statewide housing production goal. In establishing these goals, the department shall:

A. Establish measurable standards and benchmarks for success of the goals;

B. Consider information submitted to the department from municipalities about current or prospective housing developments and permits issued for the construction of housing; and

C. Consider any other information as necessary to meet the goals pursuant to this subsection.

Sec. 4. 30-A MRSA §4364 is enacted to read:

§4364. Affordable housing density

For an affordable housing development approved on or after July 1, 2023, a municipality with density requirements shall apply density requirements in accordance with this section.

1. Definition. For the purposes of this section, "affordable housing development" means:

A. For rental housing, a development in which a household whose income does not exceed 80% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford a majority of the units that the developer designates as affordable without spending more than 30% of the household's monthly income on housing costs; and

B. For owned housing, a development in which a household whose income does not exceed 120% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford a majority of the units that the developer designates as affordable without spending more than 30% of the household's monthly income on housing costs.

2. Density requirements. A municipality shall allow an affordable housing development where multifamily dwellings are allowed to have a dwelling unit density of at least 2 1/2 times the base density that is otherwise allowed in that location and may not require more than 2 off-street parking spaces for every 3 units. The development must be in a designated growth area of a municipality consistent with section 4349-A, subsection 1, paragraph A or B or the development must be served by a public, special district or other centrally managed water system and a public, special district or other comparable sewer system. The development must comply with minimum lot size requirements in accordance with Title 12, chapter 423- A, as applicable.

3. Long-term affordability. Before approving an affordable housing development, a municipality shall require that the owner of the affordable housing development have executed a restrictive covenant, recorded in the appropriate registry of deeds, for the benefit of and enforceable by a party acceptable to the municipality, to ensure that for at least 30 years after completion of construction:

A. For rental housing, occupancy of all of the units designated affordable in the development will remain limited to households at or below 80% of the local area median income at the time of initial occupancy; and

B. For owned housing, occupancy of all of the units designated affordable in the development will remain limited to households at or below 120% of the local area median income at the time of initial occupancy.

4. Shoreland zoning. An affordable housing development must comply with shoreland zoning requirements established by the Department of Environmental Protection under Title 38, chapter 3 and municipal shoreland zoning ordinances.

5. Water and wastewater. The owner of an affordable housing development shall provide written verification to the municipality that each unit of the housing development is connected to adequate water and wastewater services before the municipality may certify the development for occupancy. Written verification under this subsection must include:

A. If a housing unit is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the unit and proof of payment for the connection to the sewer system;

B. If a housing unit is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector under section 4221. Plans for subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with subsurface wastewater disposal rules adopted under Title 22, section 42;

C. If a housing unit is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the unit, proof of payment for the connection and the volume and supply of water required for the unit; and

D. If a housing unit is connected to a well, proof of access to potable water. Any tests of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

6. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements for division of a tract or parcel of land in accordance with subchapter 4.

7. Restrictive covenants. This section may not be construed to interfere with, abrogate or annul the validity or enforceability of any valid and enforceable easement, covenant, deed restriction or other agreement or instrument between private parties that imposes greater restrictions than those provided in this section, as long as the agreement does not abrogate rights under the United States Constitution or the Constitution of Maine.

8. Rules. The Department of Economic and Community Development shall adopt rules to administer and enforce this section. The department shall consult with the Department of Agriculture, Conservation and Forestry in adopting rules pursuant to this subsection. The rules must include criteria for a municipality to use in calculating housing costs. Rules adopted pursuant to this subsection are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

Sec. 5. 30-A MRSA §4364-A is enacted to read:

§4364-A. Residential areas, generally; up to 4 dwelling units allowed

1. Use allowed. Notwithstanding any provision of law to the contrary, except as provided in Title 12, chapter 423-A, for any area in which housing is allowed, a municipality shall allow structures with up to 2 dwelling units per lot if that lot does not contain an existing dwelling unit, except that a municipality shall allow up to 4 dwelling units per lot if that lot does not contain an existing dwelling unit and the lot is located in a designated growth area within a municipality consistent with section 4349-A, subsection 1, paragraph A or B or if the lot is served by a public, special district or other centrally managed water system and a public, special district or other comparable sewer system in a municipality without a comprehensive plan.

A municipality shall allow on a lot with one existing dwelling unit the addition of up to 2 dwelling units: one additional dwelling unit within or attached to an existing structure or one additional detached dwelling unit, or one of each.

A municipality may allow more units than the number required to be allowed by this subsection.

2. Zoning requirements. With respect to dwelling units allowed under this section, municipal zoning ordinances must comply with the following conditions.

A. If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section or section 4364-B, the lot is not eligible for any additional increases in density except as allowed by the municipality.

B. A municipal zoning ordinance may establish a prohibition or an allowance for lots where a dwelling unit in existence after July 1, 2023 is torn down and an empty lot results.

3. General requirements. A municipal ordinance may not establish dimensional requirements or setback requirements for dwelling units allowed under this section that are greater than dimensional requirements or setback requirements for single-family housing units, except that a municipal ordinance may establish requirements for a lot area per dwelling unit as long as the required lot area for subsequent units on a lot is not greater than the required lot area for the first unit.

4. Water and wastewater. The owner of a housing structure must provide written verification to the municipality that the structure is connected to adequate water and wastewater services before the municipality may certify the structure for occupancy. Written verification under this subsection must include:

A. If a housing structure is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the structure and proof of payment for the connection to the sewer system;

B. If a housing structure is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector under section 4221. Plans for subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with subsurface wastewater disposal rules adopted under Title 22, section 42;

C. If a housing structure is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the structure, proof of payment for the connection and the volume and supply of water required for the structure; and

D. If a housing structure is connected to a well, proof of access to potable water. Any tests of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

5. Municipal implementation. In adopting an ordinance, a municipality may:

A. Establish an application and permitting process for housing structures;

B. Impose fines for violations of building, zoning and utility requirements for housing structures; and

C. Establish alternative criteria that are less restrictive than the requirements of subsection 4 for the approval of a housing structure only in circumstances in which the municipality would be able to provide a variance under section 4353, subsection 4, 4-A, 4-B or 4-C.

6. Shoreland zoning. A housing structure must comply with shoreland zoning requirements established by the Department of Environmental Protection under Title 38, chapter 3 and municipal shoreland zoning ordinances.

7. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements for division of a tract or parcel of land in accordance with subchapter 4.

8. Restrictive covenants. This section may not be construed to interfere with, abrogate or annul the validity or enforceability of any valid and enforceable easement, covenant, deed restriction or other agreement or instrument between private parties that imposes greater restrictions than those provided in this section, as long as the agreement does not abrogate rights under the United States Constitution or the Constitution of Maine.

9. Rules. The Department of Economic and Community Development may adopt rules to administer and enforce this section. The department shall consult with the Department of Agriculture, Conservation and Forestry in adopting rules pursuant to this subsection. Rules adopted pursuant to this section are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

10. Implementation. A municipality is not required to implement the requirements of this section until July 1, 2023.

Sec. 6. 30-A MRSA §4364-B is enacted to read:

§4364-B. Accessory dwelling units

1. Use permitted. Except as provided in Title 12, chapter 423-A, a municipality shall allow an accessory dwelling unit to be located on the same lot as a single-family dwelling unit in any area in which housing is permitted.

2. Restrictions. An accessory dwelling unit may be constructed only:

A. Within an existing dwelling unit on the lot;

B. Attached to or sharing a wall with a single-family dwelling unit; or

C. As a new structure on the lot for the primary purpose of creating an accessory dwelling unit.

This subsection does not restrict the construction or permitting of accessory dwelling units constructed and certified for occupancy prior to July 1, 2023.

3. Zoning requirements. With respect to accessory dwelling units, municipal zoning ordinances must comply with the following conditions:

A. At least one accessory dwelling unit must be allowed on any lot where a single-family dwelling unit is the principal structure; and

B. If more than one accessory dwelling unit has been constructed on a lot as a result of the allowance under this section or section 4364-A, the lot is not eligible for any additional increases in density except as allowed by the municipality.

4. General requirements. With respect to accessory dwelling units, municipalities shall comply with the following conditions.

A. A municipality shall exempt an accessory dwelling unit from any density requirements or calculations related to the area in which the accessory dwelling unit is constructed.

B. For an accessory dwelling unit located within the same structure as a single-family dwelling unit or attached to or sharing a wall with a single-family dwelling unit, the setback requirements and dimensional requirements must be the same as the setback requirements and dimensional requirements of the single-family dwelling unit, except for an accessory dwelling unit permitted in an existing accessory building or secondary building or garage as of July 1, 2023, in which case the requisite setback requirements for such a structure apply. A municipality may establish more permissive dimensional and set back requirements for an accessory dwelling unit.

C. An accessory dwelling unit may not be subject to any additional parking requirements beyond the parking requirements of the single-family dwelling unit on the lot where the accessory dwelling unit is located.

5. Shoreland zoning. An accessory dwelling unit must comply with shoreland zoning requirements established by the Department of Environmental Protection under Title 38, chapter 3 and municipal shoreland zoning ordinances.

6. Size requirements. An accessory dwelling unit must meet a minimum size of 190 square feet. If the Technical Building Codes and Standards Board under Title 10, section 9722 adopts a different minimum size, that standard applies. A municipality may impose a maximum size for an accessory dwelling unit.

7. Water and wastewater. The owner of an accessory dwelling unit must provide written verification to the municipality that the accessory dwelling unit is connected to adequate water and wastewater services before the municipality may certify the accessory dwelling unit for occupancy. Written verification under this subsection must include:

A. If an accessory dwelling unit is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the accessory dwelling unit and proof of payment for the connection to the sewer system;

B. If an accessory dwelling unit is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector under section 4221. Plans for subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with subsurface wastewater disposal rules adopted under Title 22, section 42;

C. If an accessory dwelling unit is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the accessory dwelling unit, proof of payment for the connection and the volume and supply of water required for the accessory dwelling unit; and

D. If an accessory dwelling unit is connected to a well, proof of access to potable water. Any tests of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

8. Municipal implementation. In adopting an ordinance under this section, a municipality may:

A. Establish an application and permitting process for accessory dwelling units;

B. Impose fines for violations of building, zoning and utility requirements for accessory dwelling units; and

C. Establish alternative criteria that are less restrictive than the requirements of subsections 4, 5, 6 and 7 for the approval of an accessory dwelling unit only in circumstances in which the municipality would be able to provide a variance under section 4353, subsection 4, 4-A, 4-B or 4-C.

9. Rate of growth ordinance. A permit issued by a municipality for an accessory dwelling unit does not count as a permit issued toward a municipality's rate of growth ordinance as described in section 4360.

10. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements for division of a tract or parcel of land in accordance with subchapter 4.

11. Restrictive covenants. This section may not be construed to interfere with, abrogate or annul the validity or enforceability of any valid or enforceable easement, covenant, deed restriction or other agreement or instrument between private parties that imposes greater restrictions than those provided in this section, as long as the agreement does not abrogate rights under the United States Constitution or the Constitution of Maine.

12. Rules. The Department of Economic and Community Development may adopt rules to administer and enforce this section. The department shall consult with the Department of Agriculture, Conservation and Forestry in adopting rules pursuant to this subsection. Rules adopted pursuant to this subsection are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

13. Implementation. A municipality is not required to implement the requirements of this section until July 1, 2023.

Sec. 7. 30-A MRSA §4364-C is enacted to read:

§4364-C. Municipal role in statewide housing production goals

This section governs the responsibilities and roles of municipalities in achieving the statewide and regional housing production goals set by the Department of Economic and Community Development in Title 5, section 13056, subsection 9.

1. Fair housing and nondiscrimination. A municipality shall ensure that ordinances and regulations are designed to affirmatively further the purposes of the federal Fair Housing Act, 42 United States Code, Chapter 45, as amended, and the Maine Human Rights Act to achieve the statewide or regional housing production goal.

2. Municipalities may regulate short-term rentals. A municipality may establish and enforce regulations regarding short-term rental units in order to achieve the statewide or regional housing production goal. For the purposes of this subsection, "short-term rental unit" means living quarters offered for rental through a transient rental platform as defined by Title 36, section 1752, subsection 20-C.

APPROVED
JUNE 16, 2023
BY GOVERNOR

CHAPTER
192
PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD

TWO THOUSAND TWENTY-THREE

H.P. 1095 - L.D. 1706

An Act to Clarify Statewide Laws Regarding Affordable Housing and Accessory Dwelling Units

Emergency preamble. Whereas, acts and resolves of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas, current law requires, beginning July 1, 2023, all municipalities to allow a certain number of dwelling units under certain circumstances and the construction of accessory dwelling units on the same lot as a single-family dwelling unit and to comply with certain other zoning requirements; and

Whereas, it is the intent of this legislation to extend the implementation date for certain municipalities; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health and safety; now, therefore,

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 30-A MRSA §4364, first ¶, as enacted by PL 2021, c. 672, §4, is amended to read:

For an affordable housing development approved on or after ~~July 1, 2023~~ the implementation date, a municipality with density requirements shall apply density requirements in accordance with this section.

Sec. 2. 30-A MRSA §4364, sub-§1, as enacted by PL 2021, c. 672, §4, is amended to read:

1. Definition. For the purposes of this section, "affordable housing development" means:

A. For rental housing, a development in which a household whose income does not exceed 80% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford ~~a majority~~

51% or more of the units ~~that the developer designates as affordable~~ in the development without spending more than 30% of the household's monthly income on housing costs; and

B. For owned housing, a development in which a household whose income does not exceed 120% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford ~~a majority~~ 51% or more of the units ~~that the developer designates as affordable~~ in the development without spending more than 30% of the household's monthly income on housing costs.

Sec. 3. 30-A MRSA §4364, sub-§1-A is enacted to read:

1-A. Implementation date. For purposes of this section, "implementation date" means:

A. January 1, 2024 for municipalities for which ordinances may be enacted by the municipal officers without further action or approval by the voters of the municipality; and

B. July 1, 2024 for all other municipalities.

Sec. 4. 30-A MRSA §4364, sub-§3, as enacted by PL 2021, c. 672, §4, is amended to read:

3. Long-term affordability. Before ~~approving~~ granting final approval of an affordable housing development, including but not limited to issuing an occupancy permit, a municipality shall require that the owner of the affordable housing development have executed a restrictive covenant, recorded in the appropriate registry of deeds, for the benefit of and enforceable by a party acceptable to the municipality, to ensure that for at least 30 years after completion of construction:

A. For rental housing, occupancy of all of the units designated affordable in the development will remain limited to households at or below 80% of the local area median income at the time of initial occupancy; and

B. For owned housing, occupancy of all of the units designated affordable in the development will remain limited to households at or below 120% of the local area median income at the time of initial occupancy.

Sec. 5. 30-A MRSA §4364, sub-§6, as enacted by PL 2021, c. 672, §4, is amended to read:

6. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements ~~for division of a tract or parcel~~ of ~~land in accordance with~~ subchapter 4.

Sec. 6. 30-A MRSA §4364-A, sub-§1, as enacted by PL 2021, c. 672, §5, is amended to read:

1. Use allowed. Notwithstanding any provision of law to the contrary, except as provided in Title 12, chapter 423-A, for any area in which ~~housing is~~ residential uses are allowed, including as a conditional use, a municipality shall allow structures with up to 2 dwelling units per lot if that lot does not contain an existing dwelling unit, except that a municipality shall allow up to 4 dwelling units per lot if that lot does not contain an existing

dwelling unit and the lot is located in a designated growth area within a municipality consistent with section 4349-A, subsection 1, paragraph A or B or if the lot is served by a public, special district or other centrally managed water system and a public, special district or other comparable sewer system in a municipality without a comprehensive plan.

A municipality shall allow on a lot with one existing dwelling unit the addition of up to 2 dwelling units: one additional dwelling unit within or attached to an existing structure or one additional detached dwelling unit, or one of each.

A municipality may allow more units than the number required to be allowed by this subsection.

Sec. 7. 30-A MRSA §4364-A, sub-§1-A is enacted to read:

1-A. Implementation date. For purposes of this section, "implementation date" has the same meaning as in section 4364, subsection 1-A.

Sec. 8. 30-A MRSA §4364-A, sub-§2, ¶B, as enacted by PL 2021, c. 672, §5, is amended to read:

B. A municipal zoning ordinance may establish a prohibition or an allowance for lots where a dwelling unit in existence after ~~July 1, 2023~~ the implementation date is torn down and an empty lot results.

Sec. 9. 30-A MRSA §4364-A, sub-§3, as enacted by PL 2021, c. 672, §5, is amended to read:

3. General requirements. A municipal ordinance may not establish dimensional requirements ~~or~~, including but not limited to setback requirements, for dwelling units allowed under this section that are greater than dimensional requirements ~~or~~, including but not limited to setback requirements, for single-family housing units, except that a municipal ordinance may establish requirements for a lot area per dwelling unit as long as the required lot area for subsequent units on a lot is not greater than the required lot area for the first unit.

Sec. 10. 30-A MRSA §4364-A, sub-§7, as enacted by PL 2021, c. 672, §5, is amended to read:

7. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements ~~for division of a tract or parcel~~ of ~~land in accordance with~~ subchapter 4.

Sec. 11. 30-A MRSA §4364-A, sub-§10, as enacted by PL 2021, c. 672, §5, is amended to read:

10. Implementation. A municipality is not required to implement the requirements of this section until ~~July 1, 2023~~ the implementation date.

Sec. 12. 30-A MRSA §4364-B, sub-§1, as enacted by PL 2021, c. 672, §6, is amended to read:

1. Use permitted. Except as provided in Title 12, chapter 423-A, a municipality shall allow an accessory dwelling unit to be located on the same lot as a single-family dwelling unit in any area in which ~~housing is~~ residential uses are permitted, including as a conditional use.

Sec. 13. 30-A MRSA §4364-B, sub-§1-A is enacted to read:

1-A. Implementation date. For purposes of this section, "implementation date" has the same meaning as in section 4364, subsection 1-A.

Sec. 14. 30-A MRSA §4364-B, sub-§2, as enacted by PL 2021, c. 672, §6, is amended by amending the first blocked paragraph to read:

This subsection does not restrict the construction or permitting of accessory dwelling units constructed and certified for occupancy prior to ~~July 1, 2023~~ the implementation date.

Sec. 15. 30-A MRSA §4364-B, sub-§3, as enacted by PL 2021, c. 672, §6, is amended to read:

3. Zoning requirements. With respect to accessory dwelling units, municipal zoning ordinances must comply with the following conditions:

A. At least one accessory dwelling unit must be allowed on any lot where a single-family dwelling unit is the principal structure; ~~and~~

B. If more than one accessory dwelling unit has been constructed on a lot as a result of the allowance under this section ~~or section 4364-A~~, the lot is not eligible for any additional increases in density except as allowed by the municipality~~.~~; and

C. An accessory dwelling unit is allowed on a lot that does not conform to the municipal zoning ordinance if the accessory dwelling unit does not further increase the nonconformity.

Sec. 16. 30-A MRSA §4364-B, sub-§4, ¶B, as corrected by RR 2021, c. 2, Pt. A, §110, is amended to read:

B. For an accessory dwelling unit located within the same structure as a single-family dwelling unit or attached to or sharing a wall with a single-family dwelling unit, the setback requirements and dimensional requirements must be the same as the setback requirements and dimensional requirements of the single-family dwelling unit, except for an accessory dwelling unit permitted in an existing accessory building or secondary building or garage as of ~~July 1, 2023~~ the implementation date, in which case the requisite setback requirements for such a structure apply. A municipality may establish more permissive dimensional and setback requirements for an accessory dwelling unit.

Sec. 17. 30-A MRSA §4364-B, sub-§4, ¶D is enacted to read:

D. An accessory dwelling unit that was not built with municipal approval must be allowed if the accessory dwelling unit otherwise meets the requirements for accessory dwelling units of the municipality and under this section.

Sec. 18. 30-A MRSA §4364-B, sub-§5, as enacted by PL 2021, c. 672, §6, is amended to read:

5. Shoreland zoning. An accessory dwelling unit must comply with shoreland zoning requirements established by the Department of Environmental Protection under Title 38, chapter 3 and municipal shoreland zoning ordinances, except that a municipality may not categorically prohibit accessory dwelling units in the shoreland zone that would otherwise meet requirements established by the Department of Environmental Protection under Title 38, chapter 3 and municipal shoreland zoning ordinances.

Sec. 19. 30-A MRSA §4364-B, sub-§8, ¶A, as enacted by PL 2021, c. 672, §6, is amended to read:

A. Establish an application and permitting process for accessory dwelling units that does not require planning board approval;

Sec. 20. 30-A MRSA §4364-B, sub-§10, as enacted by PL 2021, c. 672, §6, is amended to read:

10. Subdivision requirements. This section may not be construed to exempt a subdivider from the requirements ~~for division of a tract or parcel~~ of ~~land in accordance with~~ subchapter 4.

Sec. 21. 30-A MRSA §4364-B, sub-§13, as enacted by PL 2021, c. 672, §6, is amended to read:

13. Implementation. A municipality is not required to implement the requirements of this section until ~~July 1, 2023~~ the implementation date.

Emergency clause. In view of the emergency cited in the preamble, this legislation takes effect when approved.

19-100 DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

Chapter 5: HOUSING OPPORTUNITY PROGRAM: MUNICIPAL LAND USE AND ZONING ORDINANCE RULE

Summary: This chapter sets forth the provisions which require municipalities to create or amend local ordinances to allow for (1) additional density for affordable housing developments in certain areas; (2) multiple dwelling units on lots designated for housing; and (3) one accessory dwelling unit located on the same lot as a single-family dwelling unit in any area where housing is permitted.

Note: This chapter incorporates by reference certain material. The Appendix lists the material that is incorporated by reference, the date for each reference, and the organization where copies of the material are available.

SECTION 1. PURPOSE AND DEFINITIONS

A. PURPOSE

1. This chapter sets forth the provisions which require municipalities to create or amend local ordinances to allow for (1) additional density for affordable housing developments in certain areas; (2) multiple dwelling units on lots designated for housing; and (3) one accessory dwelling unit located on the same lot as a single-family dwelling unit in any area where housing is permitted.

2. Municipalities need not adopt this rule language or the statutory language in P.L. 2021 Ch. 672 word for word. The Department encourages municipalities to consider local planning documents and other special local considerations, and to modify language into one that meets the needs of a particular community and the minimum requirements of this legislation. Municipalities may wish to adopt ordinances that are more permissive, provided that such ordinances are equally or more effective in achieving the goal of increasing housing opportunities. If a municipality does not adopt ordinances to comply with P.L. 2021 Ch. 672, this legislation will preempt municipal home rule authority.

3. These rules do not:

   a) Abrogate or annul the validity or enforceability of any valid and enforceable easement, covenant, deed restriction or other agreement or instrument between private parties that imposes greater restrictions than those provided in this rule, as long as the agreement does not abrogate rights pursuant to the United States Constitution or the Constitution of Maine;

   b) Exempt a subdivider from the requirements in Title 30-A Chapter 187 subchapter 4;

c) Exempt an affordable housing development, a dwelling unit, or accessory dwelling unit from the shoreland zoning requirements established by the Department of Environmental Protection pursuant to Title 38 Chapter 3 and municipal shoreland zoning ordinances; or

d) Abrogate or annul minimum lot size requirements under Title 12 Chapter 423-A.

B. DEFINITIONS

All terms used but not defined in this chapter shall have the meanings ascribed to those terms in Chapter 187 of Title 30-A of the *Maine Revised Statutes*, as amended. Municipalities need not adopt the terms and definitions outlined below word for word. The Department encourages municipalities to consider local planning documents and other special local considerations, and to modify language into one that meets the needs of a particular community. Municipalities may wish to adopt terms and definitions that are more permissive, provided that such terms and definitions are equally or more effective in achieving the goal of increasing housing opportunities.

Accessory dwelling unit. "Accessory dwelling unit" means a self-contained dwelling unit located within, attached to or detached from a single-family dwelling unit located on the same parcel of land. An accessory dwelling unit must be a minimum of 190 square feet and municipalities may impose a maximum size.

Affordable housing development. “Affordable housing development” means

1. For rental housing, a development in which a household whose income does not exceed 80% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford a majority of the units that the developer designates as affordable without spending more than 30% of the household's monthly income on housing costs; and

2. For owned housing, a development in which a household whose income does not exceed 120% of the median income for the area as defined by the United States Department of Housing and Urban Development under the *United States Housing Act of 1937*, Public Law 75-412, 50 Stat. 888, Section 8, as amended, can afford a majority of the units that the developer designates as affordable without spending more than 30% of the household's monthly income on housing costs.

3. For purposes of this definition, “majority” means more than half of proposed and existing units on the same lot.

4. For purposes of this definition, “housing costs” include, but are not limited to:

    a) For a rental unit, the cost of rent and any utilities (electric, heat, water, sewer, and/or trash) that the household pays separately from the rent; and

b) For an ownership unit, the cost of mortgage principal and interest, real estate taxes (including assessments), private mortgage insurance, homeowner's insurance, condominium fees, and homeowners' association fees.

Area median income. "Area median income" means the midpoint of a region's income distribution calculated on an annual basis by the U.S. Department of Housing & Urban Development.

Attached. "Attached" means connected by a shared wall to the principal structure or having physically connected finished spaces.

Base density. "Base density" means the maximum number of units allowed on a lot not used for affordable housing based on dimensional requirements in a local land use or zoning ordinance. This does not include local density bonuses, transferable development rights, or other similar means that could increase the density of lots not used for affordable housing.

Centrally managed water system. "Centrally managed water system" means a water system that provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year as regulated by 10-144 C.M.R. Ch. 231, *Rules Relating to Drinking Water*. This water system may be privately owned.

Certificate of occupancy. "Certificate of occupancy" means the municipal approval for occupancy granted pursuant to 25 M.R.S. §2357-A or the *Maine Uniform Building and Energy Code* adopted pursuant to Title 10 Chapter 1103. Certificate of occupancy may also be referred to as issuance of certificate of occupancy or other terms with a similar intent.

Comparable sewer system. "Comparable sewer system" means any subsurface wastewater disposal system that discharges over 2,000 gallons of wastewater per day as regulated by 10-144 C.M.R. Ch. 241, *Subsurface Wastewater Disposal Rules*.

Comprehensive plan. "Comprehensive plan" means a document or interrelated documents consistent with 30-A M.R.S. §4326(1)-(4), including the strategies for an implementation program which are consistent with the goals and guidelines established pursuant to Title 30-A Chapter 187 Subchapter II.

Density requirements. "Density requirements" mean the maximum number of dwelling units allowed on a lot, subject to dimensional requirements.

Designated growth area. "Designated growth area" means an area that is designated in a municipality's or multi-municipal region's comprehensive plan as suitable for orderly residential, commercial, or industrial development, or any combination of those types of development, and into which most development projected over ten (10) years is directed. Designated growth areas may also be referred to as priority development zones or other terms with a similar intent. If a municipality does not have a comprehensive plan, "designated growth area" means an area served by a public sewer system that has the capacity for the growth-related project, an area identified in the latest Federal Decennial

Census as a census-designated place or a compact area of an urban compact municipality as defined by 23 M.R.S. §754.

Dimensional requirements. “Dimensional requirements” mean requirements which govern the size and placement of structures including, but limited not to, the following requirements: building height, lot area, minimum frontage and lot depth.

Dwelling unit. “Dwelling unit” means any part of a structure which, through sale or lease, is intended for human habitation, including single-family and multifamily housing, condominiums, time-share units, and apartments.

Existing dwelling unit. “Existing dwelling unit” means a residential unit in existence on a lot at the time of submission of a permit application to build additional units on that lot. If a municipality does not have a permitting process, the dwelling unit on a lot must be in existence at the time construction begins for additional units on a lot.

Housing. “Housing” means any part of a structure which, through sale or lease, is intended for human habitation, including single-family and multifamily housing, condominiums, time-share units, and apartments. For purposes of this rule, this does not include dormitories, boarding houses or other similar types of housing units. This also does not include transient housing or short-term rentals, unless these uses are otherwise allowed in local ordinance.

Land use ordinance. "Land use ordinance" means an ordinance or regulation of general application adopted by the municipal legislative body which controls, directs, or delineates allowable uses of land and the standards for those uses.

Lot. “Lot” means a single parcel of developed or undeveloped land.

Multifamily dwelling. “Multifamily dwelling” means a structure containing three (3) or more dwelling units.

Potable. “Potable” means safe for drinking as defined by the U.S. Environmental Protection Agency’s (EPA) Drinking Water Standards and Health Advisories Table and Maine’s interim drinking water standards for six different perfluoroalkyl and polyfluoroalkyl substances (PFAS), Resolve 2021 Chapter 82, *Resolve, To Protect Consumers of Public Drinking Water by Establishing Maximum Contaminant Level for Certain Substances and Contaminants*.

Principal structure. "Principal structure" means a structure in which the main or primary use of the structure is conducted. For purposes of this rule, principal structure does not include commercial buildings.

Restrictive covenant. “Restrictive covenant” means a provision in a deed, or other covenant conveying real property, restricting the use of the land.

Setback requirements. “Setback requirements” mean the minimum horizontal distance from a lot line, shoreline, or road to the nearest part of a structure, or other regulated object or area as defined in local ordinance.

Single-family dwelling unit. “Single-family dwelling unit” means a structure containing one (1) dwelling unit.

Structure. “Structure” means anything temporarily or permanently located, built, constructed or erected for the support, shelter or enclosure of persons as defined in 38 M.R.S. §436-A(12).

Zoning ordinance. "Zoning ordinance" means a type of land use ordinance that divides a municipality into districts and that prescribes and reasonably applies different regulations in each district.

SECTION 2. AFFORDABLE HOUSING DENSITY

A. GENERAL

This Section requires municipalities to allow an automatic density bonus for certain affordable housing developments approved on or after July 1, 2023, as outlined below. This section only applies to lots in zoning districts that have adopted density requirements.

B. ELIGIBILITY FOR DENSITY BONUS

1. For purposes of this section, a municipality shall verify that the development:

   a) Is an affordable housing development as defined in this chapter, which includes the requirement that a majority of the total units on the lot are affordable;

   b) Is in a designated growth area pursuant to 30-A M.R.S. §4349-A(1)(A) or (B) or served by a public, special district or other centrally managed water system and a public, special district or other comparable sewer system;

   c) Is located in an area in which multifamily dwellings are allowed per municipal ordinance;

   d) Complies with minimum lot size requirements in accordance with Title 12 Chapter 423-A; and

   e) Owner provides written verification that each unit of the housing development is proposed to be connected to adequate water and wastewater services prior to certification of the development for occupancy or similar type of approval process. Written verification must include the following:

      i. If a housing unit is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the unit and proof of payment for the connection to the sewer system;

ii. If a housing unit is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector pursuant to 30-A M.R.S. §4221. Plans for a subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with 10-144 C.M.R. Ch. 241, *Subsurface Wastewater Disposal Rules*.

iii. If a housing unit is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the unit, proof of payment for the connection and the volume and supply of water required for the unit; and

iv. If a housing unit is connected to a well, proof of access to potable water, including the standards outlined in 01-672 C.M.R. Ch. 10 section 10.25(J), *Land Use Districts and Standards*. Any test of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

2. Long-Term Affordability

Prior to granting a certificate of occupancy or other final approval of an affordable housing development, a municipality must require that the owner of the affordable housing development (1) execute a restrictive covenant that is enforceable by a party acceptable to the municipality; and (2) record the restrictive covenant in the appropriate registry of deeds to ensure that for at least thirty (30) years after completion of construction:

a) For rental housing, occupancy of all the units designated affordable in the development will remain limited to households at or below 80% of the local area median income at the time of initial occupancy; and

b) For owned housing, occupancy of all the units designated affordable in the development will remain limited to households at or below 120% of the local area median income at the time of initial occupancy.

C. DENSITY BONUS

If the requirements in Section 2(B)(1) and (2) are met, a municipality must:

1. Allow an affordable housing development to have a dwelling unit density of at least 2.5 times the base density that is otherwise allowed in that location; and

2. Require no more than two (2) off-street parking motor vehicle spaces for every three (3) dwelling units of an affordable housing development.

If fractional results occur when calculating the density bonus in this subsection, the number of units is rounded down to the nearest whole number. Local regulation that chooses to round up shall be considered consistent with and not more restrictive than this

law. The number of motor vehicle parking spaces may be rounded up or down to the nearest whole number.

SECTION 3. DWELLING UNIT ALLOWANCE

A. GENERAL

This section requires municipalities to allow multiple dwelling units on lots where housing is allowed beginning on July 1, 2023, subject to the requirements below. The requirements listed in Section 3 apply to municipalities with and without zoning. Private, state or local standards such as homeowners' association regulation, deed restrictions, lot size, set back, density, septic requirements, minimum lot size, additional parking requirements, growth ordinance permits, shoreland zoning and subdivision law, may also apply to lots.

B. REQUIREMENTS

1. Dwelling Unit Allowance

a) If a lot does not contain an existing dwelling unit, municipalities must allow up to four (4) dwelling units per lot if the lot is located in an area in which housing is allowed, meets the requirements in 12 M.R.S. Ch. 423-A, and is:

i. Located within a designated growth area consistent with 30-A M.R.S. §4349 A(1)(A)-(B); or

ii. Served by both a public, special district or other centrally managed water system and a public, special district or other comparable sewer system in a municipality without a comprehensive plan.

b) If a lot does not contain an existing dwelling unit and does not meet i. or ii. above, a municipality must allow up to two (2) dwelling units per lot located in an area in which housing is allowed, provided that the requirements in 12 M.R.S. Ch. 423-A are met. The two (2) dwelling units may be (1) within one structure; or (2) separate structures.

c) If a lot contains one existing dwelling unit, a municipality must allow the addition of up to two (2) additional dwelling units:

i. One within the existing structure or attached to the existing structure;
ii. One detached from the existing structure; or
iii. One of each.

d) If a lot contains two existing dwelling units, no additional dwelling units may be built on the lot unless allowed under local municipal ordinance.

e) A municipality may allow more units than the minimum number of units required to be allowed on all lots that allow housing.

2. Zoning

With respect to dwelling units allowed under this Section, municipalities with and without zoning ordinances must comply with the following:

a) If more than one dwelling unit has been constructed on a lot as a result of the allowance pursuant to this Section, the lot is not eligible for any additional units or increases in density except as allowed by the municipality. Municipalities have the discretion to determine if a dwelling unit or accessory dwelling unit has been constructed on a lot for purposes of this provision.

b) Municipalities may establish a prohibition or an allowance for lots where a dwelling unit in existence after July 1, 2023, is torn down and an empty lot results.

3. Dimensional and Setback Requirements

a) A municipal ordinance may not establish dimensional requirements or setback requirements for dwelling units allowed pursuant to this Section that are more restrictive than the dimensional requirements or setback requirements for single-family housing units.

4. A municipality may establish requirements for a lot area per dwelling unit as long as the additional dwelling units required for each additional dwelling unit is proportional to the lot area per dwelling unit of the first unit.

Water and Wastewater

a) The municipality must require an owner of a proposed housing structure to provide written verification that each proposed structure is to be connected to adequate water and wastewater services prior to certification of the development for occupancy or similar type of approval process. Written verification must include the following:

i. If a housing structure is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the unit and proof of payment for the connection to the sewer system;

ii. If a housing structure is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector pursuant to 30-A M.R.S. §4221. Plans for a subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with 10-144 C.M.R. Ch. 241, *Subsurface Wastewater Disposal Rules*.

iii. If a housing structure is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the unit, proof of payment for the connection and the volume and supply of water required for the unit; and

iv. If a housing structure is connected to a well, proof of access to potable water, including the standards outlined in 01-672 C.M.R. Ch. 10 section 10.25(J), *Land Use Districts and Standards*. Any test of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

C. MUNICIPAL IMPLEMENTATION

In adopting an ordinance, a municipality may:

1. Establish an application and permitting process for dwelling units;

2. Impose fines for violations of building, site plan, zoning, and utility requirements for dwelling units; and

3. Establish alternative criteria that are less restrictive than the requirements of Section 3(B)(4) for the approval of a dwelling units only in circumstances in which the municipality would be able to provide a variance pursuant to 30-A M.R.S. §4353(4)(A), (B), or (C).

SECTION 4. ACCESSORY DWELLING UNITS

A. GENERAL

1. A municipality must allow, effective July 1, 2023, one accessory dwelling unit to be located on the same lot as a single-family dwelling unit in any area in which housing is allowed, subject to the requirements outlined below. The requirements listed in Section 4 apply to municipalities with and without zoning. Private, state or local standards such as homeowners' association regulation, deed restrictions, set back, density, septic requirements, shoreland zoning and subdivision law may also apply to lots.

2. A municipal ordinance that allows more than one accessory dwelling unit or that allows accessory dwelling units to be established in relation to duplex, triplex and other multi-unit buildings shall be considered consistent with the goals of P.L. 2021 Ch. 672.

B. REQUIREMENTS

1. Accessory Dwelling Unit Allowance

An accessory dwelling unit may be constructed only:

a) Within an existing dwelling unit on the lot;

b) Attached to a single-family dwelling unit; or

c) As a new structure on the lot for the primary purpose of creating an accessory dwelling unit.

A municipality may allow an accessory dwelling unit to be constructed or established within an existing accessory structure, except the setback requirements of Section 4(B)(3)(b)(i) shall apply.

2. Zoning

With respect to accessory dwelling units, municipalities with zoning ordinances and municipalities without zoning must comply with the following conditions:

(a) At least one accessory dwelling unit must be allowed on any lot where a single-family dwelling unit is the principal structure; and

(b) If more than one accessory dwelling unit has been constructed on a lot as a result of the allowance pursuant to this Section, the lot is not eligible for any additional units or increases in density, except as allowed by the municipality. Municipalities have the discretion to determine if a dwelling unit or accessory dwelling unit has been constructed on a lot for purposes of this provision.

3. Other

With respect to accessory dwelling units, municipalities must comply with the following conditions:

a) A municipality must exempt an accessory dwelling unit from any density requirements or lot area requirements related to the area in which the accessory dwelling unit is constructed;

b) For an accessory dwelling unit located within the same structure as a single-family dwelling unit or attached to a single-family dwelling unit, the dimensional requirements and setback requirements must be the same as the dimensional requirements and setback requirements of the single-family dwelling unit;

i. For an accessory dwelling unit permitted in an existing accessory building or secondary building or garage as of July 1, 2023, the required setback requirements in local ordinance of the existing accessory or secondary building apply.

c) A municipality may establish more permissive dimensional requirements and setback requirements for an accessory dwelling unit.

d) An accessory dwelling unit may not be subject to any additional motor vehicle parking requirements beyond the parking requirements of the

single-family dwelling unit on the lot where the accessory dwelling unit is located.

4. Size

a) An accessory dwelling unit must be at least 190 square feet in size, unless the Technical Building Code and Standards Board, pursuant to 10 M.R.S. §9722, adopts a different minimum standard; if so, that standard applies.

b) Municipalities may set a maximum size for accessory dwelling units in local ordinances, as long as accessory dwelling units are not less than 190 square feet.

5. Water and Wastewater

A municipality must require an owner of an accessory dwelling unit to provide written verification that the proposed accessory dwelling unit is to be connected to adequate water and wastewater services prior to certification of the accessory dwelling unit for occupancy or similar type of approval process. Written verification must include the following:

a) If an accessory dwelling unit is connected to a public, special district or other comparable sewer system, proof of adequate service to support any additional flow created by the unit and proof of payment for the connection to the sewer system;

b) If an accessory dwelling unit is connected to a septic system, proof of adequate sewage disposal for subsurface wastewater. The septic system must be verified as adequate by a local plumbing inspector pursuant to 30-A M.R.S. §4221. Plans for a subsurface wastewater disposal must be prepared by a licensed site evaluator in accordance with 10-144 C.M.R. Ch. 241, *Subsurface Wastewater Disposal Rules*;

c) If an accessory dwelling unit is connected to a public, special district or other centrally managed water system, proof of adequate service to support any additional flow created by the unit, proof of payment for the connection and the volume and supply of water required for the unit; and

d) If an accessory dwelling unit is connected to a well, proof of access to potable water, including the standards outlined in 01-672 C.M.R. Ch. 10 section 10.25(J), *Land Use Districts and Standards*. Any test of an existing well or proposed well must indicate that the water supply is potable and acceptable for domestic use.

C. MUNICIPAL IMPLEMENTATION

In adopting an ordinance under this Section, a municipality may:

1. Establish an application and permitting process for accessory dwelling units;

2. Impose fines for violations of building, zoning and utility requirements for accessory dwelling units; and

3. Establish alternative criteria that are less restrictive than the above criteria in Section 4 for the approval of an accessory dwelling unit only in circumstances in which the municipality would be able to provide a variance pursuant to 30-A M.R.S. §4353(4)(A), (B), or (C).

D. RATE OF GROWTH ORDINANCE

A permit issued by a municipality for an accessory dwelling unit does not count as a permit issued toward a municipality's rate of growth ordinance pursuant to 30-A M.R.S. §4360.

STATUTORY AUTHORITY:
PL 2021 Ch. 672 codified at 30-A M.R.S. §§ 4364, 4364-A, 4364-B.

EFFECTIVE DATE:
April 18, 2023 – filing 2023-056

APPENDIX

List of Reference Material

Reference Material	Location to Obtain Document
U.S. Environmental Protection Agency's (EPA) Drinking Water Standards and Health Advisories Table, March 2018.	U.S. Environmental Protection Agency Office of Water Drinking Water Hotline 1-800-426-4791
10-144 C.M.R. Ch. 231, Rules Relating to Drinking Water, May 9, 2016	Maine Department of Health & Human Services Maine Center for Disease Control & Prevention 11 State House Station Augusta, Maine 04333 207-287-8016
Resolve 2021, Ch. 82, Resolve, To Protect Consumers of Public Drinking Water by Establishing Maximum Contaminant Levels for Certain Substances and Contaminants	Maine State Legislature Legislative Information Office- Document Room 100 State House Station Augusta, ME 04333 207-287-1408 webmaster_house@legislature.maine.gov
01-672 C.M.R. Ch. 10, Land Use Districts and Standards, December 30, 2022	Maine Department of Agriculture, Conservation & Forestry Bureau of Resource Information and Land Use Planning Land Use Planning Commission 22 State House Station Augusta, Maine 04333 207-287-2631
10-144 C.M.R. Ch. 241, Subsurface Wastewater Disposal Rules, August 3, 2015	Maine Department of Health & Human Services Maine Center for Disease Control & Prevention 11 State House Station Augusta, Maine 04333 207-287-8016

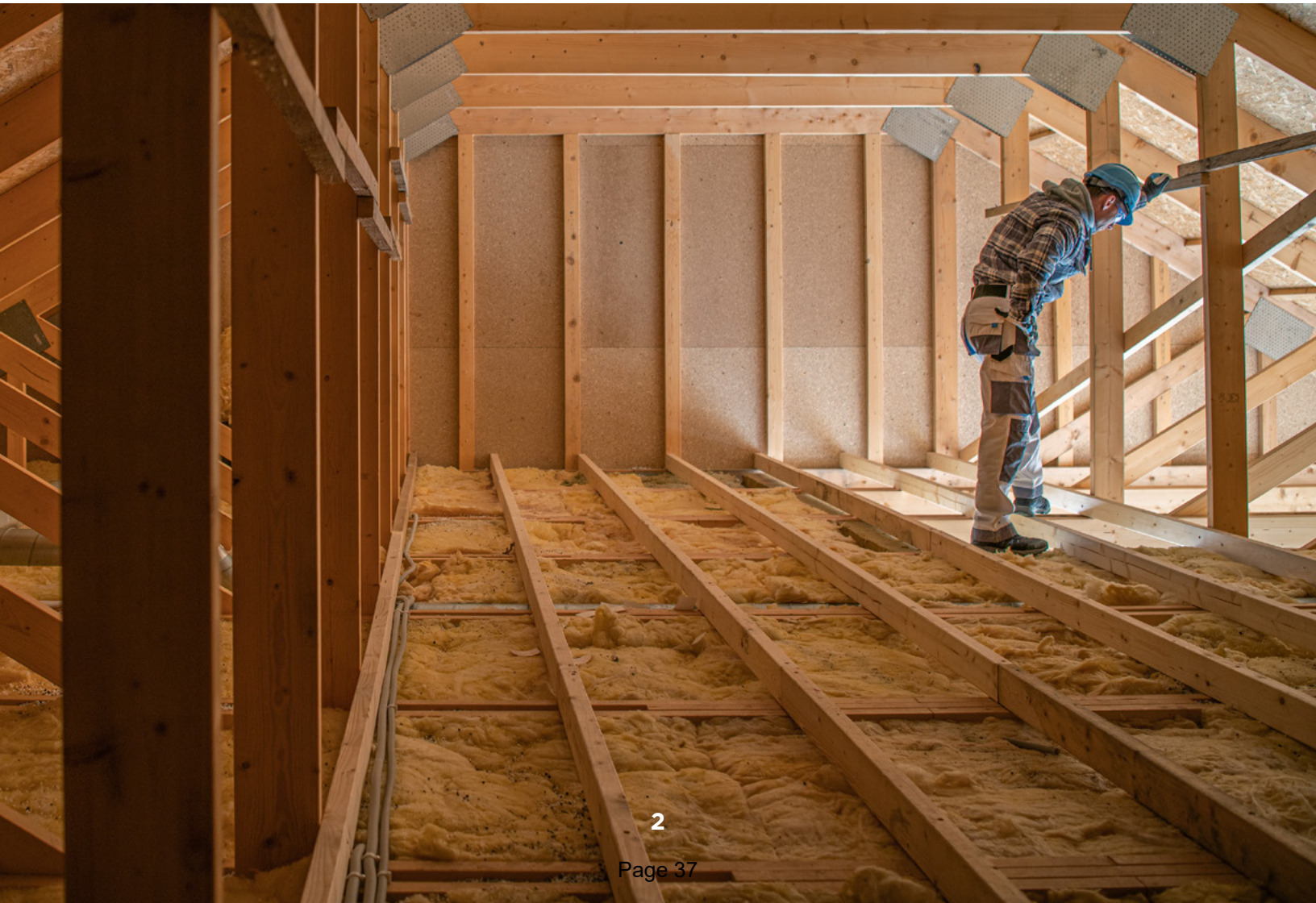
LD 2003 Guidance

MAINE DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

LD 2003 Guidance

"An Act To Implement the Recommendations of the Commission To Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions," generally referred to by its legislative tracking name of LD 2003, was signed into law by Governor Mills on April 27, 2022. This law is designed to remove unnecessary regulatory barriers to housing production in Maine, while preserving local ability to create land use plans and protect sensitive environmental resources. LD 2003 is based on the recommendations of the legislative commission named in the title, though not all those recommendations are included in the enacted legislation.

This guidance is the result of a collaborative effort by the Department of Economic and Community Development, the Governor's Office of Policy Innovation and the Future, the Department of Agriculture, Conservation and Forestry; legislative staff, and several municipal lawyers and community planners. It is intended to provide information for local authorities to use in determining how LD 2003 affects their local zoning and land use codes, as well as what steps they can take if they wish to tailor their ordinances to avoid conflicts with state laws. This guidance is not legally binding or intended to serve as a substitute for the language of LD 2003 or the rule that will be adopted. It represents the interpretation of LD 2003 and the proposed rule, as well as its requirements by the state agencies that are responsible for its implementation. This guidance may be updated once the rule is adopted.





LD 2003 has the following sections that are relevant to municipal government. The amended sections of state law are shown in the chart below. Among other things:

1. Section 4 allows for additional density for "affordable housing developments" in certain areas.
2. Section 5 generally requires that municipalities allow between two and four housing units per lot where housing is permitted.
3. Section 6 requires that municipalities allow accessory dwelling units to be located on the same lot as a single-family home, under certain conditions.
4. Sections 3 and 7 require that the state establish statewide and regional housing production goals and set forth ways in which local governments can coordinate with that goal.

WHILE LD 2003 WENT INTO EFFECT ON AUGUST 8, 2022, SOME ELEMENTS OF THE LAW ARE NOT REQUIRED TO BE APPLIED UNTIL JULY 1, 2023

LD 2003 in Brief

Effective Aug. 8, 2022
Statewide Housing Production Goals
(5 MRSA §13056, sub-§9)

Effective Aug. 8, 2022
Municipal Role in Fair Housing/ Short Term Rentals
(7 30-A MRSA §4364-C)

Effective July 1, 2023
Accessory Dwelling Units
(6 30 A MRSA §4364-B)

Effective July 1, 2023
Affordable Housing Density in Growth Areas Bonus
(4 30-A MRSA §4364)

Effective July 1, 2023
Two to Four Units
(5 30-A MRSA §4364-A)

IN GENERAL, AS LONG AS THESE ACTIONS ARE CONSISTENT WITH LD 2003, MUNICIPALITIES MAY:

CONTINUE to develop Growth Management programs, including comprehensive plans and zoning consistent with those plans

ENFORCE local shoreland zoning ordinances consistent with state shoreland zoning law

REGULATE how many square feet of land are needed for each dwelling unit (other than accessory dwelling units)

CONDUCT site plan review, if authorized by local ordinances, of any residential development

REGULATE the maximum size of accessory dwelling units

REGULATE short-term rentals in their community

CREATE rate of growth ordinances so long as they do not limit the number of accessory dwelling units outlined in Section 6

CREATE local ordinances that are more permissive for residential housing development than the requirements of LD 2003

REGULATE housing development based on documented water and wastewater capacity constraints

IN GENERAL, UNDER THIS LAW, LOCAL GOVERNMENTS MAY NOT:

ENACT local ordinances that allow housing but limit it to one unit per lot

PROHIBIT one accessory dwelling unit per lot or count those units towards a rate of growth ordinance

LIMIT the affordable housing density bonuses allowed in LD 2003 in growth areas as defined in state law

Affordable Housing DensityBonus

30-A MRSA §4364

This section creates an automatic density bonus for certain affordable housing developments. To qualify for this bonus, the development must:

1. Be approved after June 30, 2023
2. Include a certain number of rent or sales price restricted affordable housing units
3. Be in a growth area under section 4349-A, subsection 1, paragraph A or B, or served by water and sewer
4. Be in an area in which multifamily dwellings are allowed
5. Meet shoreland zoning requirements, meet minimum lot sizes if using subsurface waste disposal, and verify that water and sewer capacity is adequate for the development

BONUSES FOR AN AFFORDABLE HOUSING DEVELOPMENT

To take advantage of this density bonus, a development must qualify as "affordable" (as defined below). If eligible, the affordable housing development qualifies for the following exceptions to the zoning requirements in the community:

1. The number of units allowed will be 2.5 times the number allowed for a development not designated affordable.
2. The off-street parking requirements may not exceed two spaces for every three units

So, for example, if a developer can build up to six units on a site under local rules, and designates the development as affordable, the developer would be eligible to build 15 units (6 x 2.5). The local off-street parking requirement for this development could not exceed ten spaces (15 x 2/3). In cases of fractional results, the number of units would generally be rounded down, but the municipality has discretion to round the number of parking spaces either up or down to the nearest whole number.



WHAT REQUIREMENTS DO AFFORDABLE HOUSING DEVELOPMENTS HAVE TO MEET TO RECEIVE THE DENSITY BONUS?

For rentals, a household with an income at no more than 80% of the area median income for the community, as defined by the U.S. Department of Housing & Urban Development, must be able to afford more than half of the units in the development. That means that rent and certain other housing expenses will not require more than 30% of the household's income.

For homeownership projects, a household with an income at no more than 120% of the area median income for the community, as defined by the U.S. Department of Housing & Urban Development, must be able to afford more than half of the units in the development. That means that mortgage payments (including mortgage insurance) and certain other housing expenses will not require more than 30% of the household's income.

The units that will be affordable at these levels must be restricted through a restrictive covenant that is enforceable by a party acceptable to the municipality (which could be the municipality) for at least 30 years, and that states that the units must be restricted in rent or sales prices accordingly. Often these developments will be getting funding through MaineHousing, which typically requires a comparable covenant.

Information on Area Median Incomes is updated annually by the U.S. Department of Housing & Urban Development. For reference, MaineHousing maintains updated 80% of area median income and 120% of area median income data on their website.

View AMI data on MaineHousing.org



QUESTIONS AND ANSWERS ON AFFORDABLE HOUSING DENSITY BONUS

This guidance represents the interpretation of LD 2003 and the proposed rule language. This guidance may be updated once the rule is adopted.

What is meant by "multifamily dwellings?"

"Multifamily dwellings" is defined in rule.

What is a "base density that is otherwise allowed?"

Under a local zoning code, the "base density that is otherwise allowed" is the maximum number of units allowed based on dimensional requirements, such as lot area per dwelling unit. This is defined in rule.

If lot area per dwelling unit can be used as a measure of number of units permitted, do the limits on lot area per dwelling unit requirements in Section 5 apply?

No, Section 5's provision about "lot area per dwelling unit," 30-A M.R.S. § 4364-A(3), does not apply to Section 4. Therefore, municipalities have the discretion to designate lot area per dwelling unit when approving "affordable housing developments." Municipalities, however, must comply with the minimum lot size requirements stated in Title 12, chapter 423- A, as applicable.

Does LD 2003 apply to municipalities that do not use the term "designated growth area," but instead use a different term for growth districts in comprehensive plans.

Yes. LD 2003 applies to a municipality that has adopted a different term to mean a "designated growth area" in its comprehensive plan.

What if a household exceeds the maximum income after living in the unit?

LD 2003 specifies that the income eligibility is based on household income "at the time of initial occupancy," meaning that a household could be allowed to remain in an "affordable" unit if their income goes up after they occupy the unit. MaineHousing has experience with this issue, as do communities that manage their own affordable housing programs, so there may be best practices that can be adopted locally. The restrictive covenants should outline how this would work.

What happens when a restricted affordable home ownership unit is sold?

The restrictive covenants should outline how this would work. MaineHousing has experience with this issue, as do communities that manage their own affordable housing programs, so there may be best practices that can be adopted locally.

How does this density bonus interact with any local density bonus that might exist?

A municipality may apply its local density bonus to "affordable housing developments" instead of the density bonus stated in 30-A M.R.S § 4364, as long as the municipality's local density bonus is equally or more permissive. More permissive, for purposes of this comparison, means that a local density bonus must be more generous and permissive in regard to each of the requirements described in the LD 2003 density bonus. The density bonus also applies to "affordable housing developments" in municipalities that have not adopted density requirements, as long as the development meets the requirements of 30-A M.R.S. § 4364.





Residential Areas, Generally; Up to 4 Dwelling Units

30-A MRSA §4364-A

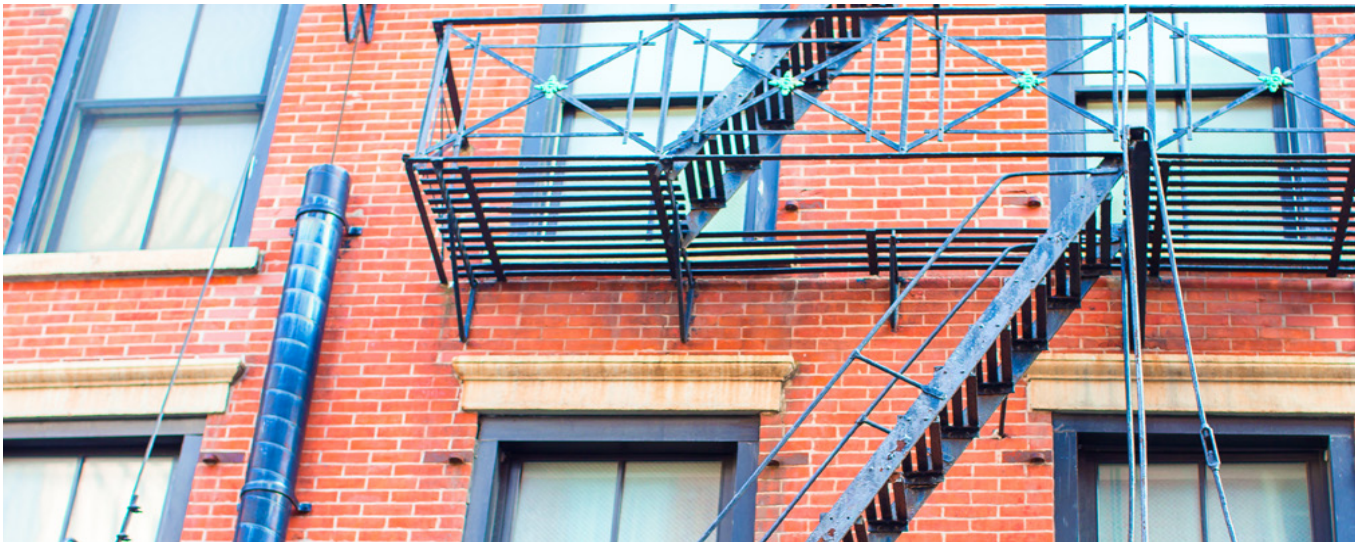
This section requires municipalities to allow multiple dwelling units on parcels where housing is allowed, provided evidence of sufficient water and wastewater capacity exists, beginning on July 1, 2023. Municipaliies may not apply different dimensional requirements to lots with more than one housing unit on them than they would to a lot with one housing unit, with the exception that they may require a minimum lot area per dwelling unit. However, if the municipality chooses to require a minimum lot area per dwelling unit, the lot area required may not be less for the first unit than for subsequent units.

The number of units allowed under this section depends on a few factors:

- A lot without a dwelling unit already on it can have two units if it is not within a designated growth area under section 4349-A, subsection 1, paragraph A or B, served by water system and sewer in a municipality without a comprehensive plan.
- A lot with an existing dwelling unit may have up to two additional dwelling units, either one additional attached dwelling unit, one additional detached dwelling unit, or one of each.
- A lot without a dwelling unit already on it can have four units if it is either:
  - Within a designated growth area under section 4349-A, subsection 1, paragraph A or B, or
  - Served by water system and sewer in a municipality without a comprehensive plan.

Municipalities may allow more than the minimum number required to be allowed on all lots that allow housing, if they wish. In addition, private parties are permitted to restrict the number of housing units on a lot in a private easement, covenant, deed restriction or other agreement provided the agreement does not violate State or Federal rights such as equal protection.

Finally, a municipality may determine in local ordinance that if a property owner tears down an existing dwelling unit, the lot may be treated under this section as if the dwelling unit were still in existence.



Lot Area per Dwelling Unit

Additional units may not require more land area per unit than the first unit

NOT PERMITTED



One Unit Requires
10,000 sq ft

Two Units Require
30,000 sq ft

Three Units Require
50,000 sq ft

PERMITTED



One Unit
Requires
10,000 sq ft

Two Units
May Require Up
To 20,000 sq ft

Three Units
May Require Up
To 30,000 sq ft

QUESTIONS AND ANSWERS ON RESIDENTIAL AREAS, GENERALLY UP TO 4 DWELLING UNITS

This guidance represents the interpretation of LD 2003 and the proposed rule language. This guidance may be updated once the rule is adopted.

Subsection 2 ("Zoning Requirements") says that municipal zoning ordinances "must" comply with certain conditions, but subsection B. says that they "may" regulate how this section applies to a lot where a dwelling unit is torn down. Is this a "must" or a "may"?

Municipalities have the option of taking the actions in subsection B but do not have to do so, in which case a lot where a dwelling unit was torn down would be viewed as a vacant lot.

Subsection 4 says that verification must be provided to "the municipality" of water and wastewater services. Who should that verification be provided to?

These capacity issues should be reviewed by the municipal staff or board that would normally review these issues as part of any housing development.

What if a municipality does not use Certificates of Occupancy?

Subsection 4 says that the municipality will "certify [a] structure for occupancy." This requirement should be met for new housing developments under this section the same way they would be for any other housing.

Does LD 2003 establish minimum dimensional requirements for dwelling units under this section?

Yes, a municipality cannot establish dimensional requirements for additional dwelling units on a lot that are more restrictive than dimensional requirements for a single-family unit, except that a municipal ordinance may establish requirements for a lot area per dwelling unit as long as the required lot area for subsequent units on a lot is not greater than the required lot area for the first unit.

Section 5 requires a municipality to allow up to two dwelling units per lot if that lot contains an "existing dwelling unit." What does "existing dwelling unit" mean?

"Existing dwelling unit" means a dwelling unit in existence on a lot at the time of submission of a permit application to build additional units on that lot. If a municipality does not have a permitting process, the dwelling unit on a lot must be in existence at the time construction begins for additional units on a lot.

What is meant by "potable" water?

This is addressed in rule.

What if housing is allowed in an area but only as a conditional use?

Housing would be considered allowed in that area for the purposes of subsection 1. A conditional use shall be viewed as a permitted use.

What does "attached to an existing structure" mean?

The rule defines the word "attached." Municipalities are not required to adopt this definition in local ordinance, but must adopt a definition that is consistent with, and no more restrictive, than the definition in rule.

Does the language in subsection 1 mean that if a lot is served by water and sewer in a municipality without a comprehensive plan that it does not need to be vacant to allow up to 4 units?

No, that language still requires the lot not "contain an existing dwelling unit."

What does "any area which housing is allowed" mean?

This phrase requires municipalities to allow multiple dwelling units on a lot located in any area allowing residential uses, regardless of zoning district designation. This does not include congregate living settings, lodging homes, residence halls, or other similar types of buildings.

Does LD 2003 apply to municipalities with comprehensive plans that have expired findings?

Yes. An expired finding does not invalidate a locally adopted comprehensive plan or invalidate ordinances, but it could provide an opening for a party to challenge the ordinance in court. Consultation with legal counsel is recommended.

Do the provisions of LD 2003 that mention "designated growth areas" apply to a municipality that does not use the term "designated growth area," but instead uses a related term for growth districts in its comprehensive plan?

Yes. LD 2003's provisions apply to a municipality that does not use the term "designated growth area" but instead uses a related term to mean growth districts in its comprehensive plan.

Residential Areas

Empty Lot Where Housing Is Already Allowed



Empty Lot | **One Dwelling Unit** | **Two Dwelling Units** | **Three Dwelling Units** | **Four Dwelling Units**

NOTE: The three and four units can be within one structure or multiple structures.

THREE AND FOUR UNITS ALLOWED IF:

- Located in "growth area" consistent with section 4349-A, subsection 1, paragraph A or B.
- Located in area with existing water/ sewer capabilities in towns without comprehensive plans.

Existing Home



Adding 1 Unit to Lot with Existing Home

Additional unit within the existing structure (e.g., basement or attic)

Additional unit attached to the existing structure

Additional unit detached from the existing structure



Adding 2 Units to Lot with Existing Home

Additional units attached to the existing structure and detached from existing structure

Additional units within the existing structure and detached from the existing structure

What Can Be Built On This Lot?

ON LAND WITH ZERO EXISTING UNITS

- In a growth area consistent with section 4349-A, subsection 1, paragraph A or B, with public water and sewer in municipality without a comprehensive plan
  - Up to 4 dwelling units, detached or attached
- Outside growth area
  - Up to 2 dwelling units, if attached

ON LAND WITH ONE EXISTING UNIT

- Up to 2 additional dwelling units
  - Choose:
    - **a.** One unit within or attached
    - **b.** One unit detached
    - **c.** One of each
- 1 accessory dwelling unit
  - Exempt from:
    - **a.** Rate of growth ordinances
    - **b.** Additional density area/standards
    - **c.** Additional parking requirements

ON LAND WITH TWO EXISTING UNITS

- No new structure may be built unless allowed under local ordinance

PRIVATE, STATE OR LOCAL STANDARDS SUCH AS THESE MAY APPLY:

- Home Owners Association regulations
- Deed restrictions
- Lot size, set back, density (not greater than single family)
- Septic requirements
- Minimum Lot Size
- Additional Parking requirement
- Growth ordinance permits
- Shoreland Zoning
- Subdivision Law

PRIVATE, STATE OR LOCAL STANDARDS SUCH AS THESE MAY APPLY:

- Home Owners Association regulations
- Deed restrictions
- Lot size or set back requirements (not greater than single family/existing accessory structure)
- Septic requirements
- Shoreland Zoning
- Other locally determined ADU standards (e.g. maximum size, rules regarding short term rental, etc.)

Accessory Dwelling Units

30-A MRSA §4364-B

This section essentially allows any lot with a single-family dwelling in an area where housing is permitted to have one accessory dwelling unit (ADU) as well, effective July 1, 2023. That ADU can be within the existing home, attached to it, or in a new structure. Municipalities may also allow existing accessory structures to be converted into an ADU

An ADU allowed under this law is exempt from zoning density requirements. In reviewing an ADU, the setback and dimensional requirements for a single-family home continue to apply unless the municipality makes them more permissive for an ADU. For ADUs in an accessory structure, the setback and dimensional requirements for such a structure apply.

ACCESSORY DWELLING UNIT PARKING

Additional parking requirements for the ADU beyond those required for the single-family dwelling are not permitted.

ACCESSORY DWELLING UNIT SIZE

ADUs must be at least 190 square feet in size. Municipali-ties may set a maximum size for ADUs in local ordinance.

OTHER MUNICIPAL POWERS

Municipalities may establish an application and permit-ting process for ADUs provided it is consistent with in this section. Municipalities may also define ADUs, as long as the definition is consistent with state law in Title 30-A, §4301. 1-C. In addition, municipalities may establish requirements for ADUs that are less restrictive than those in this section, such as allowing more than one ADU on a lot or allowing an ADU for two-family or multifamily dwellings.

SIMILARITIES AND DIFFERENCES FROM OTHER SECTIONS

LIKE SECTIONS 4 AND 5, shoreland zoning still applies, as do requirements to verify adequate water and wastewater capacity.

LIKE SECTION 5, private parties are permitted to restrict the number of housing units on a lot, including ADUs, in a private easement, covenant, deed restriction or other agreement provided the agreement does not violate State or Federal rights such as equal protection.

UNLIKE SECTION 5, one ADU for each single-family dwelling does not count towards any rate of growth ordinance as described in §4360.

UNLIKE SECTIONS 4 & 5, additional parking cannot be required for an ADU.

UNLIKE SECTION 5, a municipality may not establish requirements for minimum lot area for the addition of an ADU on a lot with an existing single-family home.

QUESTIONS AND ANSWERS ON ACCESSORY DWELLING UNITS

This guidance represents the interpretation of LD 2003 and the proposed rule language. This guidance may be updated once the rule is adopted.

How is an ADU defined?

LD 2003 does not define ADU. There is a definition in 30-A MRSA §4301 and many communities define them in local ordinances. This is addressed in rule.

Can an ADU be larger than a primary structure?

Yes, unless the municipality limits the maximum size of an ADU.

Can a previously illegal ADU be legalized under this section?

Yes, as long as an ADU owner follows the permitting procedures and life safety requirements outlined by their municipality (if applicable).

If a pre-existing single-family dwelling is on a non-conforming lot (with respect to size, frontage, or similar characteristics) can an ADU be built on that lot?

An accessory dwelling unit may be allowed on a lot regardless of whether the lot conforms to existing dimensional requirements of the municipality. Any new structure constructed on the lot as an accessory dwelling unit must meet the existing dimensional requirements as required by the municipality for an accessory structure.

Subsection 7 says that verification must be provided to "the municipality" of water and wastewater services. Who should that verification be provided to?

These capacity issues should be reviewed by the municipal staff or board that would normally review these issues as part of any housing development.

What does "in any area in which housing is permitted" mean?

This phrase requires municipalities to allow one accessory dwelling unit on any lot with a single-family dwelling unit located in an area allowing residential uses, regardless of zoning district designation. This does not include congregate living settings, lodging homes, residence halls, or other similar types of buildings.

If a parcel has an existing two-unit structure, does subsection 1 allow an ADU to be built?

No, though a municipality would have the ability to allow that.

What if a community does not use Certificates of Occupancy?

Subsection 4 says that the municipality will "certify [a] structure for occupancy." This requirement should be met for new housing developments under this section the same way they would be for any other housing, whether through a formal Certificate of Occupancy or otherwise.

What is meant by "potable" water?

This is addressed in rule.

What if housing is allowed in an area but only as a conditional use?

Housing would be considered allowed in that area for the purposes of subsection 1. A conditional use shall be viewed as a permitted use.

What does "attached to an existing structure" mean?

The rule defines the word "attached." Municipalities are not required to adopt this definition in local ordinance, but must adopt a definition that is consistent with, and no more restrictive, than the definition in rule.

LD 2003 allows an ADU to be built that is "a new structure on the lot for the primary purpose of creating an accessory dwelling unit." What does this mean?

This provision allows a new structure to be built on a lot with an existing single-family dwelling unit, as long as the main reason for building the structure is to support human habitation. Local ordinance can define primary purpose further.

Can a municipality require lot area requirements for the addition of an ADU on a lot with an existing single-family home?

No. A municipality must exempt an ADU from density and lot area requirements. The setback and other dimensional requirements, however, continue to apply unless the municipality makes this more permissive for an ADU.

Section 6 allows for the construction of an ADU within an "existing dwelling unit." What does "existing dwelling unit" mean?

"Existing dwelling unit" means a dwelling unit in existence on a lot at the time of submission of a permit application to build an additional unit on that lot. If a municipality does not have a permitting process, the dwelling unit on a lot must be in existence at the time construction begins for an additional unit on a lot.

Parking for ADUs

Example Parking Requirement

NOT PERMITTED



Single Family Home
2 spaces minimum

Single Family Home + ADU
3 spaces minimum

PERMITTED



Single Family Home
2 spaces minimum

Single Family Home + ADU
2 spaces minimum

This example applies to towns with minimum parking requirements.
For towns without parking restrictions, no additional restrictions would be imposed.

Housing Goals & Fair Housing

MRSA §13056, sub-§9 AND 30-A MRSA §4364-C

Section 3 directs the Department of Economic & Community Development, in coordination with Maine-Housing, to develop a statewide housing production goal and regional production goals based on that statewide goal. In doing so, the section instructs the Department to set benchmarks for meeting those goals, as well as to consider information provided by municipalities on current and potential housing development and permits.

Section 7 outlines ways municipalities can play a role in achieving those state and regional goals. It states that municipalities must ensure that local ordinances and regulations are designed to affirmatively further the purposes of the Federal Fair Housing Act, as well as the Maine Human Rights Act, as part of meeting the housing goals. It also explicitly authorizes municipalities to establish and enforce regulations related to short-term rentals to help meet those goals.

QUESTIONS AND ANSWERS ON SECTIONS 3 & 7

This guidance represents the interpretation of LD 2003 and the proposed rule language. This guidance may be updated once the rule is adopted.

What obligations do the affirmatively furthering fair housing provisions put on municipalities that didn't already exist before LD 2003 passed?

Until recently, the link between land use regu-lation and fair housing was often not recog-nized. Section 7 clarifies that municipalities must ensure that zoning and land use ordinances and regulations are designed to affirmatively further the purposes of these state and federal laws.

What happens if local, regional or statewide housing goals are not met?

These sections do not set forth any specific penalties for not meeting these goals.

How does this relate to local Growth Management programs and comprehensive plans?

Local comprehensive plans, while not regulatory documents, should not conflict with these sections. The regulations for comprehensive plans under Chapter 208 state that communities should "[s]eek to achieve a level of at least 10% of new residential development built or placed during the next decade be affordable."

Do municipalities have to regulate short term rentals?

No.





GENERAL QUESTIONS

This guidance represents the interpretation of LD 2003 and the proposed rule language. This guidance may be updated once the rule is adopted.

What happens if a municipality does not act to update local ordinances, or tries to act and the updates are not approved by the local legislative body?

LD 2003 is an express preemption on municipal home rule authority. Therefore, any ordinance or regulation that is not consistent with the law may be challenged as invalid. Municipalities are encouraged to contact legal counsel to discuss how the law will affect the enforcement of existing ordinances and regulations.

If a town does not have growth areas as defined by section 4349-A, subsection 1, paragraph A or B, and does not have any areas served by water or sewer, does it need to comply with LD 2003?

These communities would not be subject to the affordable housing density provisions in Section 4, and would not have areas that are required to allow up to four units on a residential lot as per Section 5. Other sections of LD 2003 would apply.

How will LD 2003's requirements be related to municipal comprehensive plans?

Comprehensive plans seeking a finding of consistency under the regulations in Chapter 208 should meet those requirements. Since a comprehensive plan is not a regulatory document, LD 2003 would not create any additional requirements. However, zoning ordinances adopted in a municipality would have to be consistent with both a local comprehensive plan and LD 2003.

Is LD 2003 a model ordinance for use in local zoning?

LD 2003 is not a model ordinance. Communities will be able to seek funding from the Housing Opportunity Program to develop new ordinances.

Can developers "double count" bonuses from various sections?

This issue is outlined in §4364-A Section 2.A. and §4364-B Section 3.B. Developers may only "double count" bonuses from various sections on a lot if this is permitted by the municipality in which the lot is located.

Sections 4, 5, and 6 require written verification of "adequate water and wastewater services." What about a municipal concern that while a specific housing development may not immediately threaten water quality, the cumulative impact of new development may do so in a way that it did not prior to LD 2003?

As was true prior to the passage of LD 2003, communities are free to take regulatory actions as appropriate for protection of natural resources or existing water systems. These can include changes to zoning districts to limit where housing is permitted; changes to lot size requirements; or the creation of an impact fee system consistent with state law to fund environmental or water quality protection.

What does section 4349-A, subsection 1, paragraph A or B say?

It directs the State to make growth-related capital investments only in:

A. *A locally designated growth area, as identified in a comprehensive plan adopted pursuant to and consistent with the procedures, goals and guidelines of this sub-chapter or as identified in a growth management program certified under section 4347A;*

B. *In the absence of a consistent comprehensive plan, an area served by a public sewer system that has the capacity for the growth-related project, an area identified in the latest Federal Decennial Census as a census-designated place or a compact area of an urban compact municipality as defined by Title 23, section 754; or [PL 1999, c. 776, §10 (NEW).]*

Growth areas are defined in section 4301, subsection 6-C as:

An area that is designated in a municipality's or multi-municipal region's comprehensive plan as suitable for orderly residential, commercial or industrial development, or any combinations of those types of development, and into which most development projected over 10 years is directed.



RULEMAKING PROCESSES

Sections 4, 5 and 6 authorize rulemaking to be led by the Department of Economic & Community Develop-ment, in consultation with the Department of Agriculture, Conservation & Forestry. These rules are considered "routine technical" – meaning they "establish standards of practice or procedure for the conduct of business with or before an agency" and can be approved administratively.

FUNDING FOR TECHNICAL ASSISTANCE

While not part of LD 2003, the supplemental budget for Fiscal Years 2022 and 2023 included Section U-1. 5 MRSA §13056-J, providing funding for a new "Housing Opportunity Program." That program will "encourage and support the development of additional housing units in Maine, including housing units that are affordable for low and moderate income people and housing units targeted to community workforce housing needs" by supporting "regional approaches, municipal model ordinance development, and … policy that supports increased housing density where feasible to protect working and natural lands."

The Housing Opportunity Program will consist of grants to service providers to encourage and support the development of additional housing units in Maine, including housing units that are affordable for low-income and moderate-income individuals and housing targeted to community workforce housing needs. These "Service Provider grants" will be awarded to experienced service providers to support municipal ordinance development, the creation of housing development plans, and public process and community engagement support, and may encourage regional coordination. Additional information regarding the Housing Opportunity Grant Program will be available in Spring of 2023.

Finally, the Housing Opportunity Program will be launching a municipal reimbursement program in the Spring of 2023 to assist municipalities with financial costs incurred from implementing ordinance amendments related to LD 2003. Limited funding is available for qualified expenses. For more information on this program reach out to the Housing Opportunity Program staff.

Still have questions? Need more information?

VISIT: MAINE.GOV/DECD/HOUSINGOPPORTUNITYPROGRAM

MAINE DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

Planning Board Memorandum
Planning and Urban Development Department

To: Chair Mazer & Members of the Planning Board
From: Nell Donaldson, Director of Special Projects
Date: October 6, 2023
Re: Draft Text Amendments to the Land Use Code Under LD 2003
Meeting Date: October 10, 2023

I. INTRODUCTION

In April 2022, Governor Mills signed into law LD 2003, or *An Act to Implement the Recommendations of the Commission to Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions*. The law's intent is to remove local regulatory barriers to housing production in Maine by requiring that municipalities adopt language around affordable housing densities, residential uses, and accessory dwelling units within their local codes of ordinances. State rule-making was published in April 2023, and the law was amended in June 2023 to provide additional clarity around certain provisions. The implementation deadline for communities in which ordinances may be enacted by municipal officers is January 1, 2024.

In March of this year, the Planning & Urban Development Department provided the City Council with a report on the consistency of the city's existing land use code with LD 2003. The analysis found that in nearly all respects, the city's current policies already comply. In fact, the City of Portland, whose comprehensive plan foregrounds the importance of housing affordability and diverse housing types, benefits from a land use code that *far exceeds* the requirements of LD 2003 in many ways. The city's code already:

- Offers density bonuses (and dimensional relief) for affordable housing projects,
- Allows up to two ADUs for any lot in residential use, and
- Supports significantly more density than required or even contemplated by LD 2003 in many areas of the city.

However, there are instances where the city's code approaches these issues in slightly different ways than contemplated by LD 2003, and guidance published since the spring and summer of this year has provided helpful information about expectations for implementation. Amendments to reconcile inconsistencies between LD 2003 and the city's land use code, where they exist, are the subject of this workshop.

II. RELATIONSHIP TO RECODE

As these amendments are reviewed, the Planning & Urban Development Department continues to advance ReCode, a multi-phase project to rewrite Portland's land use code and implement policies to promote housing creation, foster complete neighborhoods, and ensure climate resilience, among other goals. In many ways, however, these LD 2003-related amendments and ReCode substantively overlap. In order to differentiate the two efforts, it is helpful to view them with two distinct purposes. The amendments discussed here represent short-term changes meant to bring the city into compliance with LD 2003 prior to the state's implementation deadline. However, they are not meant to reflect the sum total of the city's housing policy efforts. This, instead, is the work of ReCode, which is based on a foundation in the city's comprehensive plan, has and will involve significant public engagement, and will go farther than LD 2003 to

address housing creation in a coordinated manner that responds to the city's varied residential contexts. This longer-term work will extend past the LD 2003 implementation deadline and into next year.

III. LD 2003's LAND USE FRAMEWORK & *PORTLAND'S PLAN*

LD 2003's approach to housing creation is informed by state land use policy that encourages municipal identification of "designated growth areas" within local comprehensive plans. LD 2003's requirements vary depending on location within or outside this growth area. For purposes of LD 2003, all of the city's mainland is considered "growth area," suitable for varying levels of growth.

The Future Land Use section of *Portland's Plan 2030* acknowledges not only the capacity of many areas of the city to support development, but also the ways that planned growth in strategic areas can be shaped proactively to meet the city's long-range economic development, environmental, transportation, and housing goals. To this end, the plan defines urban areas prioritized for significant growth, urban areas suitable for more incremental growth, and areas suitable for conservation and less intensive development. The plan includes a priority nodes and corridors map that highlights key areas for planning focus and change, "areas that would be appropriate for new development to provide needed housing, business, and services proximate to transit…" (82). The plan also notes that "development may still occur elsewhere in the city, including incremental change and infill in residential neighborhoods, redevelopment of obsolete commercial areas, thoughtful expansion or investment in institutional and industrial sites, and modernization of existing affordable housing" (82). With respect to the islands, the plan acknowledges significant physical, environmental, and transportation constraints, and promotes a more conservative approach to development that emphasizes the islands' unique built context and sensitive natural resources.

IV. LD 2003 ELEMENTS AND DRAFT AMENDMENTS TO THE LAND USE CODE

LD 2003 addresses housing production through three basic mechanisms: affordable housing bonuses, residential use permissions on vacant and single-family lots, and accessory dwelling units (ADUs). A description of each of these components of LD 2003, an analysis of compliance, and a series of draft land use code amendments, shown in redline, follows. Amendments were developed based on state guidance, in collaboration with staff from Corporation Counsel and Zoning, and were informed by a review of peer communities' approaches to the law.

The full text of LD 2003, the June 2023 amendment, and state guidance is included in *Attachments 1-4*. Draft land use code amendments are also included in *Attachments 5-9*.

A. Affordable housing density (30-A M.R.S § 4364)

The affordable housing provisions of the law require municipalities to extend density bonuses to qualifying affordable housing projects when those projects are located in areas in which multi-family dwellings are allowed and within a designated growth area. The City of Portland already has a structure for density bonuses for affordable housing in many zones, and the code includes other provisions as contemplated by the state. However, some amendments to Articles 18 and 19 of the land use code are necessary to bring the city into full compliance with these provisions of the law.

1. *Definition of affordable housing*

   Article 3 of the city's existing land use code defines "affordable housing" and establishes income thresholds for both "low-income" households (at 80% - 100% of area median income, or AMI) and "workforce" households (at 80% of AMI) in both the rental and homeownership context.

The income limits for both types of households in both contexts meet or exceed the requirements of LD 2003 (at 80% and 120% for rental and homeownership housing, respectively). However, the city's definition of "affordable housing" does not contemplate some of the housing costs anticipated in state rule-making, including rental costs associated with utilities. For this reason, staff recommends amending the definition of "affordable housing" in Article 3.

> **Affordable housing.** Housing for which the percentage of income a household is charged in rent and other housing expenses (including utilities such as electric, heat, water, sewer, and/or trash that the household pays separately from rent) or must pay in ownership cost (including but not limited to ~~monthly~~ mortgage payments, ~~(including~~ condominium/HOA fees, mortgage insurance, other insurance, and real estate taxes), does not exceed 30% of a household's income, or other amount established in City regulations that does not vary significantly from this amount.

2. *Density bonus & parking requirements*

LD 2003 requires that municipalities extend bonuses of 2.5 times base density to any project in which a majority of units are affordable. The law further states that municipalities may not require more than two off-street parking spaces for every three dwelling units in an affordable housing project.

Article 18 of the city's existing land use code offers affordable housing density bonuses, as well as height bonuses and setback reductions, in many zones. However, these bonuses are structured differently than LD 2003, starting at 10% and scaling upward depending on the share of affordable units included. The city's existing bonuses are not available in every zone that currently permits multi-family housing. And though Portland's code includes broad exceptions from parking requirements for affordable housing, multi-family housing, and uses proximate to fixed-route transit, the code does not explicitly set a standard of two off-street spaces for every three units for an affordable housing project or less. Thus three amendments are proposed to address this portion of the law:

- *Density bonus language*. Amendments to Table 18-C have been drafted such that a 2.5x density bonus is triggered when over 50% of units within a project quality as affordable. Note that Table 18-C has also been edited to consolidate the bonus structure for "low-income" and "workforce" housing, as the income restrictions for the two are similar under the current ordinance, and this change significantly simplifies implementation. 18.2.4(A) has also been edited to distinguish dimensional bonuses related to height and setbacks from density bonuses, as these types of dimensional relief are not considered in LD 2003.
- *Geographic eligibility for density bonus*. Subsection 18.2.4(A) has been updated to extend density bonuses to areas "where multi-family is allowed as a permitted or conditional use, with the exception of the I-B zone." The I-B zone has been excluded since it falls outside Portland's growth area. Note that in conjunction with this change, 18.2.4(B) has been edited to extend the 2.5x bonus to PRUDs, as a housing typology that can meet the definition for multi-family under the state's law, in zones where they are permitted within the designated growth area.

TABLE 18-C: BONUSES FOR ELIGIBLE PROJECTS

% Low-income or Workforce Units	~~% Workforce Units~~	Density Permitted[1]	Additional Height Permitted [2]	Setback Reductions [3]
10-19%	~~20%~~	1.1 x base	N/A	N/A
20-29%	~~40%~~	1.2 x base	10 ft.	N/A
30-29%	~~60%~~	1.3 x base	10 ft.	5 ft.
50-74%	~~100%~~	2.~~5~~0 x base	15 ft.	5 ft.
> 75%	~~N/A~~	2.5 x base	25 ft.	10 ft.

[1] "Base" is the number of units allowed under the zoning without this bonus but with any other bonuses applied. In R-P zones, multifamily is permitted with a "base" no less than 1 unit per 1,500 SF of land area. ~~If an eligible project is providing both workforce and affordable housing units, the applicant shall have the option of utilizing applicable incentives, but not cumulatively.~~

[2] The maximum additional height permitted in the B-1/B-1b zones and the R-P zone shall be 15 feet. In addition, the maximum structure height is 50 feet within 750 feet of the Portland Observatory.

[3] Setback reductions are absolute reductions in front, side, and/or rear setback requirements. The maximum setback reductions in the B-1/B-1b and R-P zones shall be 5 ft.

18.2.4 Density and dimensional bonuses and reductions

Notwithstanding any other provision of this Land Use Code to the contrary, in order to encourage low-income and workforce units in designated growth areas, eligible projects as defined under Subsection 18.2.2 may avail themselves of the following options:

A. **Density and dimensional bonuses.** The maximum number of units that would otherwise be allowed under this Land Use Code shall be increased for an eligible project in the manner described in Table 18-C, applicable where multi-family is allowed as a permitted or conditional use, with the exception of the I-B zone. Other dimensional bonuses related to height and setbacks shall only be applicable in in the B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-5, R-7, and R-P zones.

B. **Planned Residential Unit Developments (PRUDs).** ~~In order to promote orderly development of low- and moderate-income development as PRUDs, a~~In the R-5, R-5, and R-5a zones, any ~~project~~ PRUD in which more than 50% of the units are low-income or workforce units for rent or for sale may utilize the following dimensional bonuses and changes:

1. ~~Minimum lot area per dwelling unit is reduced by 50%.~~The maximum number of units that would otherwise be allowed under this Land Use Code shall be increased by 2.5.

- *Parking requirements.* Staff has also made updates to Table 19-B to require two off-street parking spaces/three units in affordable housing projects, yet maintain the broad existing exception that the Planning Board may establish a lesser parking requirement.

TABLE 19-B: CATEGORICAL EXCEPTIONS TO OFF-STREET PARKING MINIMUMS	
Categorical Vehicular Exceptions	
...	...
Affordable housing	2 spaces are required for every 3 units, except that ~~T~~the Planning Board may establish a lesser parking requirement ~~that is less than 1 space per workforce or low-income housing unit~~, regardless of the size of the structure.
...	...

3. *Long-term affordability*

LD 2003 mandates a municipal mechanism to preserve the affordability of units created under the law. Existing density bonus language from Article 18 requires affordability for "the longest term permitted under federal, state, and local laws," but does not technically require 30 years or refer to deed restrictions, as LD 2003 specifies. Staff recommends amending this language for greater consistency with the law.

> **18.2.4 Density and dimensional bonuses and reductions**
>
> ...
>
> C. Unit size ~~and term of affordability~~. In order to be eligible for this subsection, the low-income and workforce housing units must meet Subsections 18.2.3(C)(3), (4), and (5).
>
> ~~C.~~D. Term of affordability. Affordable units under this section shall be deed-restricted to remain ~~and be~~ affordable for 30 years or the longest term permitted under federal, state, and local laws, whichever is longer. Such deed restrictions shall be recorded in the Cumberland County Registry of Deeds.



Figure 1: Guidance on dwelling unit allowances from Maine Department of Economic and Community Development, LD 2003 Guidance

B. Dwelling unit allowances (30-A M.R.S § 4364-A)

Where residential uses are allowed, LD 2003 requires that municipalities permit two units on undeveloped lots outside of growth areas, and four units on undeveloped lots within growth areas. The law further requires that on lots with one existing dwelling unit, two additional dwelling units be allowed. *Figure 1* illustrates the requirements of this portion of the law.

As with affordable housing bonuses, the city's existing land use code already far exceeds these requirements in many of its zones. The city's code allows significant (and in some instances, even unlimited) housing density on undeveloped or redeveloped lots in many of the mixed-use zones, and even within the residential zone structure, there are zones that permit significantly more density than required under LD 2003. In

the R-6, for instance, where multi-family is a permitted use, the median parcel size is approximately 4,400 SF, on which six units could be constructed based on current densities. It should be noted that the City of Portland also permits up to two ADUs on any lot in residential use and exempts ADUs from density restrictions, effectively permitting a two-unit bonus for residential uses city-wide. Though ADU provisions of the city's ordinance translate to use permissions of at least three units on any lot in residential use on the islands, and at least three or four units on any lot in residential use on the mainland, LD 2003 treats ADU permissions and dwelling unit allowances under these provisions of the law as separate.

To address the dwelling unit allowances of LD 2003, amendments have been drafted into a new section within Article 6. These amendments are shown here, with a discussion following.

6.4.2 Additional residential use permissions

A. *In island zones:* Up to two units are permitted on any lawfully conforming lot that does not contain an existing dwelling unit. Such units may be located:
   1. In two separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or
   2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.

B. *In mainland zones where residential is a permitted or conditional use:* Up to four units are permitted on any lawfully conforming lot that does not contain an existing dwelling unit. Such units may be located:
   1. In separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or
   2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.

C. Sections 6.4.2(A) and (B) shall not apply to lots on which a dwelling unit in existence on July 1, 2023 is demolished and a vacant lot results.

D. *Lots with one existing dwelling unit in any zone where residential is a permitted or conditional use:*
   1. Up to two additional dwelling units are permitted on any lot containing one existing dwelling unit.
   2. One of these units may be permitted within or attached to the existing structure, one may be permitted detached from the existing structure, or one may be permitted of each. In all cases, the minimum lot area per dwelling unit standards of Article 7 shall apply.
   3. Units created under this section shall not be considered accessory dwelling units under Section 6.6.2(A).

E. If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section, the lot is not eligible for any additional units Section 6.6.2(A).

1. *Permitted uses in residential zones*

   The new language in Section 6.4.2:

   - *Adds residential use permissions for existing vacant lots.* The draft text permits up to two units on lawfully conforming lots that do not contain an existing dwelling unit in the island zones, or outside of the designated growth area. The new language also permits up to four units on lawfully conforming lots that do not contain an existing dwelling unit in mainland zones where residential is a permitted or conditional use, or outside the growth area.

Following state guidance for the two-unit provision, in both cases the draft language states that such units may be located within a single structure or in multiple structures.

- *Adds residential use permissions for lots with one existing dwelling unit.* The draft Section 6.4.2 allows up to two additional units on lots with one existing unit in any zone where residential is a permitted or conditional use. Per the state's language, 6.4.2 has been drafted to allow one of these units within or attached to the existing structure, one of these units detached from the existing structure, or one of each.

2. *Other zoning requirements*
LD 2003 allows a municipality to speak to the potential for tear downs under these provisions, and also states that if more than one unit has been constructed on a lot under these allowances, it is not eligible for additional "increases in density." Based on this section of the law, 6.4.2(C) has been drafted to prohibit demolitions for the purposes of creating a vacant lot under this section, and Section 6.4.2(E) has been drafted to address the relationship between these provisions and those for ADUs in 6.6.2(A).

3. *Relationship to dimensional standards*
LD 2003 states that local ordinances may not establish greater dimensional standards, such as setbacks, for the units allowed under these provisions of the law than those for single family homes. The law is also explicit, however, that lot area per dwelling unit standards may be applied to these units, and state guidance speaks to this matter as well (*Figure 2*). Generally, the city's existing code does not distinguish between dimensional standards for single-family dwellings and multi-family dwellings, with the exception that additional lot area is required for additional units in some zones based on a minimum lot area per dwelling unit, or density, standard. Because these density standards relate directly to the number of units permitted on a lot, they have been addressed in Section 6.4.2.

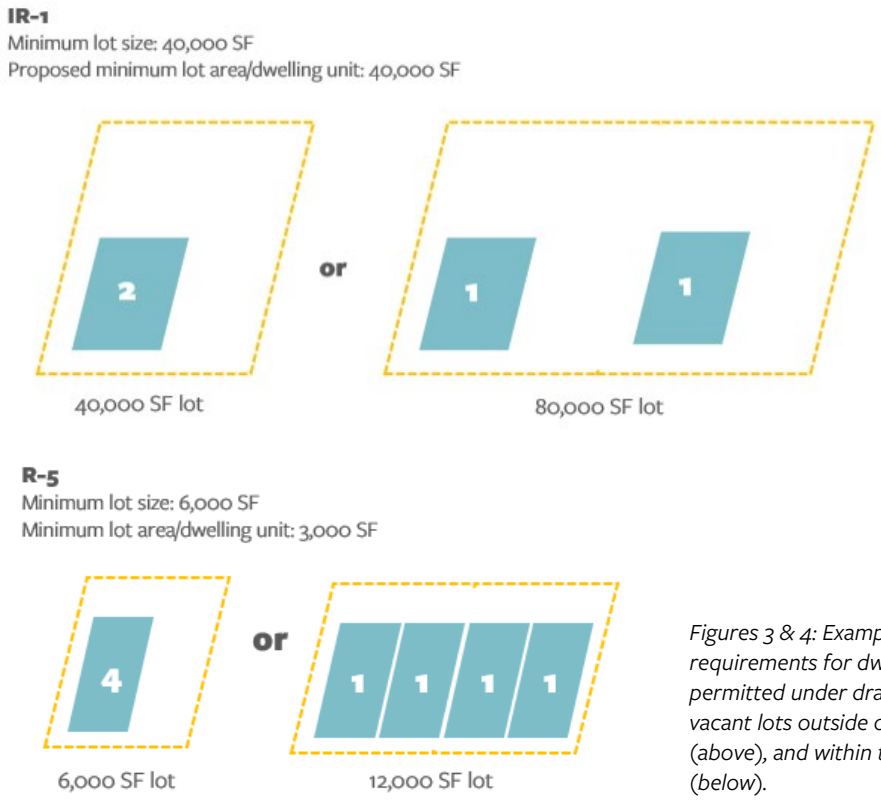


Figure 2: Guidance on lot size provisions from Maine Department of Economic and Community Development, LD 2003 Guidance

In keeping with state guidance, the draft changes speak to density as follows:

- *For dwelling units permitted on vacant lots:* Section 6.4.2 has been drafted such that the density standards of the base zone *would apply* in cases where units are constructed in separate structures, but *would not apply* in cases where units are located within a single structure (*Figures 3 and 4*). This approach is meant to reinforce the existing built context

within the city's residential zones, and is generally consistent with the city's existing use and dimensional structure, which encourages multiple units within a single building by increasing density standards as use permissions scale up. It should be noted that lot area per dwelling unit standards for the IR-1 and IR-2 zones have been drafted into Table 7-D, as none previously existed. These standards are based on the existing pattern for other low-density residential zones, where lot area per dwelling unit standards are derived from minimum lot sizes for single-family uses.



Figures 3 & 4: Example lot size requirements for dwelling units permitted under draft Section 6.4.2 on vacant lots outside of the growth area (above), and within the growth area (below).

- *For additional dwelling units permitted on a lot with one existing unit:* To distinguish the units considered under these provisions from ADUs allowed under Section 6.6.2, the draft language in Section 6.4.2 requires that lot area per dwelling unit standards be met for the additional units allowed under this provision, whether units are located within an existing structure or in a separate one. For clarity, language has also been added to indicate that these units are not considered ADUs.

It should also be noted that, in association with multiple requirements of LD 2003, multiplex, a multi-family-like use currently permitted in the R-4 and R-5 zones, has also been struck from the code. This use, which requires greater minimum lot sizes, densities, and lot widths than otherwise required for residential uses in these zones, and in some cases is subject to unit maximums which bear little relationship to lot size or density, has not been widely constructed in the city. In order to make dimensional provisions consistent with state law and to simplify implementation, references to multiplex have been eliminated from Articles 3, 6, and 7.

C. Accessory Dwelling Units (ADUs) (30-A M.R.S § 4364-B)

The third component of LD 2003 relates to accessory dwelling units, or ADUs. Generally, the law requires that one ADU be permitted on any lot occupied by a single-family home, dictates how that ADU may be constructed, and sets parameters around dimensional and parking requirements. The city's existing ADU ordinance generally meets or exceeds the requirements of LD 2003, as the current land use code allows up to two ADUs on any lot in residential use (including single-family, two-family, or multi-family), exempts ADUs from parking requirements, and exempts ADUs from residential density standards.

The one aspect of LD 2003's ADU provisions that necessitates an amendment to the city's land use code relates to the requirement that dimensional standards for attached or integrated ADUs must be the same as the dimensional standards for single-family homes. This requirement extends to dimensional standards like minimum lot size, which in the city's case varies between single family homes and homes with ADUs in several zones. Amendments have been drafted to Section 6.6.2(A)7 to remove existing minimum lot size provisions for ADUs within the IR-1 and IR-2 zones. Simultaneously, existing short-term rental provisions for Peaks Island in Section 6.6.2(A)4 were also eliminated, based on state guidance regarding the regulation of short-term rentals through LD 2003.

6.6.2 Standards for specific accessory uses

A. Accessory Dwelling Units (ADUs)

1. Accessory Dwelling Units (ADUs) shall be permitted on all lawfully conforming and nonconforming lots with legal residential uses. ADUs shall comply with all dimensional standards of the underlying zone unless otherwise provided below.
2. Up to two ADUs shall be permitted per qualifying property.
3. At the time of an ADU's initial construction or legal creation, the owner(s) of the property on which the accessory dwelling unit is created must occupy at least one of the dwelling units, with the exception of legally nonconforming lots on Peaks Island.

~~4. On Peaks Island, neither the accessory unit or principal unit shall be used for short-term rentals as defined under Chapter 6, Section 150.1 of the City of Portland Code of Ordinances.~~

~~5.~~4. When an ADU is significantly visible from public ways, the building design shall:

a. Be clearly subordinate to the principal structure(s) in scale and position in relationship with the street and principal structure(s).
b. Not include outside stairways or fire escapes above the ground floor.

~~6.~~5. Under circumstances where an existing nonconforming structure is converted to an ADU, the design of the ADU shall take into consideration to the extent practicable the privacy of adjacent properties.

~~7.~~6. The developer of an ADU shall record a deed restriction requiring that the ADU and at least one other non-accessory unit on-site remain under common ownership.

7. ADUs shall comply with all dimensional requirements of the underlying zone except:

~~L~~ot coverage and lot area per dwelling unit requirements.

~~a. Within the IR-1 zone, the minimum lot area shall be 70,000 square feet, except on Peaks Island where this standard shall not apply.~~

~~b. Within the IR-2 zone, the minimum lot area shall be 30,000 square feet, except on Peaks Island where this standard shall not apply.~~

V. NEXT STEPS

Following the Planning Board workshop, staff will make additional edits as necessary and proceed to public hearing.

ATTACHMENTS

1. HP 1489 – LD 2003: An Act to Implement the Recommendations of the Commission to Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions
2. HP 1095 – LD 1706: An Act to Clarify Statewide Laws Regarding Affordable Housing and Accessory Dwelling Units
3. Housing Opportunity Program: Municipal Land Use and Zoning Ordinance Rule
4. Maine Department of Economic & Community Development, LD 2003 Guidance
5. Draft Amendments to Chapter 14, Article 3: Definitions
6. Draft Amendments to Chapter 14, Article 6: Use Standards
7. Draft Amendments to Chapter 14, Article 7: Dimensional Standards
8. Draft Amendments to Chapter 14, Article 18: Housing
9. Draft Amendments to Chapter 14, Article 19: Off-Street Parking & Loading

3 DEFINITIONS

Accessory dwelling unit. A dwelling unit subordinate in size to the principal residential structure(s) on a lot and located either within the principal residential structure(s) or in an accessory structure.

Adult business establishment. Any business, including but not limited to any bookstore, newsstand, novelty store, nightclub, bar, cabaret, amusement arcade, or theater, which:

A. Keeps for public patronage or permits or allows the operation of any adult amusement device as defined in Chapter 4 of the City of Portland Code of Ordinances; or
B. Customarily, meaning more often than an average of one calendar week during any calendar month of operation, exhibits motion pictures or displays any other visual representation described or advertised as being "X rated" or "for adults only," or which customarily excludes persons from any portion of the premises by reason of immaturity of age by the use of such, or similar, phrases; or
C. Is adjudged to be in violation of 17 M.R.S. §§ 2911, 2912.

Affordable housing. Housing for which the percentage of income a household is charged in rent and other housing expenses (including utilities such as electric, heat, water, sewer, and/or trash that the household pays separately from rent) or must pay in ownership cost (including but not limited to ~~monthly~~ mortgage payments, ~~(including~~ condominium/HOA fees, mortgage insurance, other insurance, and real estate taxes), does not exceed 30% of a household's income, or other amount established in City regulations that does not vary significantly from this amount.

After-hours entertainment license. Any of the music, dancing, and special entertainment licenses required or authorized by Chapter 4, Article III of the City of Portland Code of Ordinances.

Agriculture. The practice of farming, including the cultivation of the soil for the growing of crops and rearing of animals to provide food and other products. Agriculture may include nurseries, greenhouses, and truck gardens, provided that there is no sale of products not produced on the premises.

Airport restricted access areas. Runways, taxiways, and other areas of the Jetport accessible to aircraft, whether access is restricted by the Federal Aviation Administration or not.

Alley. Any way designed primarily for vehicular and pedestrian or utility access to the back or side of premises otherwise abutting on a street, except driveways unless officially designated otherwise.

Animal-related services. Establishments principally for the training or boarding of animals. Such uses shall not include veterinary services.

Approval. An affirmative decision on an application, including an approval with conditions.

Appurtenance. A device or structure not designed for human occupancy and attached to the exterior of a building.

Auto service station. A business selling gasoline, diesel, or propane fuel, providing services specific to electric vehicles, or providing motor vehicle repairs including, but not limited to, tune-ups, engine repair, brake work, muffler replacement, tire repair, or similar activities. Such businesses may also include car-washes and/or vacuums.

Back office use. An office-related use with minimal public visitation and minimal direct service to the general public, primarily to provide support services to larger organizations such as educational institutions, social service agencies, or business headquarters.

Bar. Any establishment required to be licensed to sell alcoholic beverages for on-premises consumption, which is not regularly used for the purpose of providing full-course meals, as defined in Title 28-A of the Maine Revised Statutes, on the premises.

Bed and breakfast. A building that contains between two and nine guest rooms; is used to provide or offer overnight accommodations for transient guests; has an owner, manager, or operator living in the building as a permanent resident; does not provide cooking facilities in any of the guest rooms; and does not provide meals other than breakfast, which shall be offered only to overnight guests.

Blasting operations. The use of explosives for purposes of breaking up and removing soil, rock, and ledge, related to construction and development of real estate within the city.

Building. A roofed and walled structure built for permanent use.

Building, accessory. A detached roofed and walled structure that is incidental and subordinate in area and extent, and/or use to the principal building(s) on the property. A lot may have more than one accessory building.

Building addition. Any increase to footprint, floor area, or volume of an existing building.

Building alteration. A change or rearrangement in the structural supports, exterior appearance, or removing from or otherwise affecting the exterior appearance of a building.

Buildings, attached. Two or more independent buildings that share at least one common party wall but have full building separation and independent principal entries; not free-standing. Attached buildings may or may not have common ownership.

Building, principal. The main roofed and walled structure on a lot having the predominant area, extent, and/or use. A lot may have more than one principal building. When a garage is attached to the principal building in a substantial manner as by an enclosed area with roof or common wall, it shall be considered as a part of the principal building.

Clinics. Any establishment where patients are examined and treated by one or more health care providers, such as, but not limited to, physicians, dentists, psychologists, or social workers. Clinics may include laboratory services and facilities for ambulatory or outpatient surgical procedures.

Coastal wetland. All tidal and subtidal lands; all lands with vegetation present that is tolerant of salt water and that occurs primarily in a salt water or estuarine habitat; and/or any swamp, marsh, bog, beach, flat, or other contiguous low land that is subject to tidal action during the highest tide level for the year in which an activity is proposed as identified in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes.

Commercial vessel. Any watercraft used principally in a business or trade, including common carriers of passenger or freight, whether for governmental, nonprofit, or emergency purposes, but not including pleasure craft used principally for recreational purposes.

Common areas. Portions of a lodging house which are available for use by all residents of the lodging house. Common areas shall include, but are not limited to, one or more of the following: kitchens, living rooms, recreation rooms, improved basements, and finished porches. Bathrooms, stairways, hallways, and storage areas shall not be counted as common areas.

Communication studio. A commercial or public communication facility, including radio and television broadcasting and receiving stations and studios.

Community hall. A building or portion of a building used for social, recreational, artistic, civic, or educational community functions. Such a facility would be open to the public for such functions, which, for example, could include but not be limited to performances, dance, exhibitions, cultural exchange, training programs and workshops, neighborhood meetings, or gatherings. As part of these functions and activities, it shall be permissible to serve food, subject to other applicable codes and ordinances.

Condominium. Any interest in real estate created pursuant to the Unit Ownership Act, 33 M.R.S. § 560 et seq., or its equivalent, as it may from time to time be amended.

Congregate care facility. A residential development intended to facilitate aging in place that includes individual dwelling units with support services which provide assistance to residents. The population of a congregate care facility shall consist of persons 55 years of age or older and their spouses. A congregate care facility may also accommodate the needs of persons with disabilities and their spouses that are younger than 55 years of age, provided the majority of the residents are 55 years of age or older. Services to be provided shall include the following:

A. Transportation for essential support activities.
B. Provision of at least one meal per day.
C. Programmed social activities which are facilitated by staff.
D. Provision of personal care services including, but not limited to, housekeeping, laundry, and minimal health monitoring.
E. Installation of emergency call buttons or systems in each unit.

Correctional pre-release facility. A facility housing up to 12 persons, plus staff, serving a primary clientele of persons in correctional pre-release programs.

Drive-through. A facility which provides a service directly to a motor vehicle occupant and where the customer drives a motor vehicle onto the premises and to a window or mechanical device through or by which the customer is served with or without exiting the vehicle. Drive-throughs do not include major or minor auto service stations.

Drive-through features. Features associated with drive-throughs including but not limited to designated travel or stacking lanes, intercom systems, menu boards, service windows, kiosks, mechanical devices, etc.

Dwelling unit. One or more rooms forming a single unit for habitation by one family, including food preparation, living, sanitary, and sleeping facilities.

Dwelling, multi-family. A building or portion thereof containing three or more dwelling units.

Dwelling, single-family. A single building containing one dwelling unit.

Dwelling, two-family. A single building containing two dwelling units.

Earth-moving activity. Any removal or placement, excavation, filling, stockpiling, or grading of soil, earth, loam, sand, gravel, rock, and other mineral deposits.

Easement. A right, privilege, or liberty which one has in land owned by another for some special and definite purpose.

Emergency operations. Operations conducted for the public health, safety, or general welfare, such as protection of resources from immediate destruction or loss, law enforcement, and operations to rescue human beings and livestock from the threat of destruction or injury.

Emergency shelter. A facility providing temporary overnight shelter to homeless individuals in a dormitory-style or per-bed arrangement.

Entrance, principal. The main point of access for pedestrians into a building. A building may have more than one principal entrance.

Esplanade. That portion of a street which is located between the curbline and the edge of the sidewalk closest to the street.

Essential services. The construction, alteration, or maintenance of gas, electrical, or communication facilities; steam, fuel, electric power, or water transmission or distribution lines, towers and related equipment; telephone cables or lines, poles, and related equipment; gas, oil, water, slurry, or other similar pipelines; municipal sewage lines, collection, or supply systems; and associated storage tanks. Such systems may include towers, poles, wires, mains, drains, pipes, conduits, cables, fire alarms and police call boxes, traffic signals, hydrants, and similar accessories, but shall not include service drops or buildings which are necessary for the furnishing of such services.

Explosives. Any material or container containing a chemical compound or mixture that is commonly used or intended for the purpose of producing an explosion and that contains any oxidizing and combustible materials or other ingredients in such proportions, quantities, or packaging that an ignition by fire, by friction, by compound or mixture

may cause such a sudden generation of highly heated gasses that the resultant gaseous pressures are capable of producing destructive effects on contiguous objects, but shall not mean the components for handloading rifle, pistol and shotgun ammunition, or fireworks.

Family. One or more individuals related by blood, marriage, civil union, adoption, or guardianship and/or up to eight unrelated individuals living together in a dwelling unit as a single nonprofit housekeeping unit.

Fill. Soil, earth, loam, sand, gravel, rock and other mineral deposits.

Filling. The placement of soil, earth, loam, sand, gravel, rock and other mineral deposits. Filling shall include stockpiling.

Fixture, fully shielded. A light fixture or luminous tube constructed and mounted such that all light emitted by the fixture or tube, either directly from the lamp, tube, or a diffusing element, or indirectly by reflection or refraction from any part of the light fixture, is projected below the horizontal. If the lamp or tube, any reflective surface, or lens cover (clear or prismatic) is visible when viewed from above or directly from the side, from any angle around the fixture or tube, the fixture or tube is not fully shielded.

Flag. A fabric sheet of square, rectangular, or triangular shape having no enclosing or supporting framework that is typically mounted on a pole.

Foundation. The supporting substructure of a building or other structure, excluding wooden sills and post supports, but including basements, slabs, frost walls, or other base consisting of concrete, block, brick, or similar material.

Freshwater wetland. Freshwater swamps, marshes, bogs, and/or similar areas which are both:

A. Of ten or more contiguous acres or of less than ten contiguous acres and adjacent to a surface water body except for any river, stream or brook such that, in a natural state, the combined surface area is in excess of ten acres or of less than ten acres that is depicted on the Shoreland Zoning map.
B. Inundated or saturated by surface or ground water at a frequency and for a duration sufficient to support, and which under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soils.

Freshwater wetlands may contain small stream channels or inclusions of land that do not conform to the criteria of this definition.

General office. An office for the conducting or managing of a business or the practice of a profession, including that of a licensed health care provider, so long as such office does not include laboratory services and facilities for ambulatory surgical procedures.

General services. Establishment primarily engaged in rendering services to persons or business on a fee basis, including but not limited to banks, health clubs, laundries, employment services, management services, personnel services, or maintenance services.

Handicapped family unit. A dwelling unit which provides living facilities for handicapped persons. A handicapped family unit may also provide counseling and support services. Staff members may also be included in the population.

Helistop. An area used for the landing of helicopters at any location other than an airport. Such area shall include a landing area or pad, and may include parking required for access to the landing area or pad, a loading and unloading area for emergency vehicles, and other related facilities other than maintenance and repair facilities.

Hospital. An institution providing health services, primarily on an inpatient basis, and medical or surgical care of the sick or injured, including as an integral part of the institution such related facilities as laboratories, outpatient departments, training facilities, central service facilities, and staff offices.

Hostel. An overnight lodging facility for transient guests that provides sleeping rooms and common spaces for cooking. A hostel shall not be used as an emergency shelter.

Hotel. A building used for more or less temporary occupancy of individuals who are lodged with or without meals.

Impervious surface. Area covered with low-permeability material that is highly resistant to infiltration by water, such as asphalt, concrete, or rooftop, and areas such as gravel roads and unpaved parking areas that will be compacted through design or use to reduce their permeability.

Industrial, high-impact. Industrial activity involving the manufacturing, packaging, assembly, or distribution of finished products from either raw materials or previously prepared material which are generally incompatible with residential, commercial, and lower-impact industrial uses and sensitive natural areas due to their high generation of traffic, noise levels, emissions, lighting, and odors.

Industrial, low-impact. Industrial activity involving the manufacturing, packaging, assembly, or distribution of finished products from previously prepared material, including but not limited to the following: artist studios, bakeries; breweries; distilleries; bottling; coffee roasters; commercial kitchens; pharmaceuticals; machine shops; watchmakers; makers of precision instruments, musical instruments, toys and sporting goods, pottery and ceramics using only previously pulverized clay, wood products, jewelry; assembly of electrical components; canteen services; tool and die shops; plant and tree nurseries; and the packaging of foods. Low-impact industrial uses do not include the processing of raw materials or salvaging operations. Low-impact industrial uses are generally compatible, due to their size and nature of impact, with residential, commercial and other low impact industrial uses.

Intermediate care facility. A facility which provides, on a regular basis, health-related care and services for more than 13 individuals who do not require the degree of care and treatment which a hospital or extended care facility is designed to provide but who, because of their mental or physical condition, require such care and services above the level of room and board. Said facility must be licensed as a board care, residential care facility or equivalent pursuant to the regulations

promulgated by the State of Maine Department of Health and Human Services.

Kitchen facilities. Facilities used for the preparation of meals, including refrigerators and devices used for the cooking and preparation of food.

Lodging house. A house, building or portion thereof containing two or more rooming units, as well as common areas, and providing such units to individuals on not less than a monthly basis for compensation.

Long-term or extended care facility. An institution or a distinct part of an institution that is licensed or approved to provide full-time convalescent or chronic care, or health care under medical supervision for 24 or more consecutive hours, to nine or more individuals who, by reason of advanced age, illness, or infirmity are unable to care for themselves, and who are not related to the governing authority by marriage, blood, or adoption.

Lot. A parcel or area of land that is designated as an individual unit for use, development, or ownership that is either: a) a parcel or area of land that is separately described in a deed or on a plan recorded in the Cumberland County Registry of Deeds; b) a contiguous combination of such lots under common ownership and designated as one unit for development; or c) a newly established parcel meeting all the dimensional requirements of the zone in which it is located.

Lot of record. A nonconforming parcel or area of land that: a) is separately described in a deed or on a plan recorded in the Cumberland County Registry of Deeds as of the date designated in the relevant provision of this chapter and b) conformed to the requirements of this chapter as of the date designated in the relevant provision of this chapter.

Low-income household. A household having an income not exceeding 80% of median income for area of residence as set forth in regulations promulgated from time to time by the United States Department of Housing and Urban Development pursuant to 42 U.S.C. sections 1437 et seq.

Low-income housing unit for rent. A dwelling unit for which:

A. The rent is affordable to a household earning 80% or less of Area Median Income (AMI) as defined by the United States Department of Housing and Urban Development (HUD).
B. The unit is rented to a household earning 80% or less of AMI.
C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

Low-income housing unit for sale. A dwelling unit for which:

A. The sale price is affordable to a household earning 100% or less of Area Median Income (AMI).
B. The unit is sold to a household earning 100% or less of AMI.
C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for future sales for the applicable length of time in this ordinance.

Manufactured housing. A structural unit or units designed for residential occupancy and constructed in a manufacturing facility and then transported by

the use of its own chassis or placement on an independent chassis to a building site. The term includes any type of building which is constructed at a manufacturing facility and then transported to a building site where it is utilized for housing and may be purchased or sold by a dealer in the interim. For purposes of this article, two types of manufactured housing are included. They are:

A. Those units constructed after June 15, 1976, which the manufacturer certifies are constructed in compliance with the standards required by the United States Government Department of Housing and Urban Development, as such standards are from time to time revised or amended, meaning structures, transportable in one or more sections, which in the traveling mode are 14 body feet or more in width and are 750 or more square feet, and which are built on a permanent chassis and designed to be used as dwellings, with or without permanent foundations, when connected to the required utilities, including the plumbing, heating, air conditioning, and electrical systems contained therein. This term also includes any structure which meets all the requirements of this subparagraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the Secretary of the United States Department of Housing and Urban Development and complies with the standards established under the National Manufactured Housing Construction and Safety Standards Act of 1974, United States Code, Title 42, Section 5401 et seq.; and

B. Those units constructed after June 15, 1976, which the manufacturer certifies are constructed in compliance with the state's Manufactured Housing Act and regulations, meaning structures, transportable in one or more sections, which are not constructed on a permanent chassis and are designed to be used as dwellings on foundations when connected to required utilities, including the plumbing, heating, air conditioning, or electrical systems contained therein.

Any unit which does not fall within the definitions of this section and which is legally sited within the city on December 18, 1989, may be relocated to any location in the city in which manufactured housing is allowed.

Manufactured housing park. A parcel of land under unified ownership approved by the Planning Board under 30-A M.R.S. § 4358 for the placement of single-component manufactured housing.

Marijuana cultivation facility. A cultivation facility required to be licensed pursuant to 28-B M.R.S. § 201 or any other facility engaged primarily in the business of planting, propagation, growing, harvesting, drying, curing, grading, trimming, or other processing of marijuana, including mature marijuana plants, immature marijuana plants, seedlings, and marijuana seeds, for use or sale.

Marijuana manufacturing facility. A manufacturing facility required to be licensed pursuant to 22 M.R.S. § 2423-F or 28-B M.R.S. § 201.

Marijuana product. As defined by 22 M.R.S. § 2422 or 28-B M.R.S. § 102.

Marijuana retail store. A retail establishment licensed to sell marijuana, marijuana products, immature marijuana plants, and seedlings to adult

use or medical marijuana customers. A marijuana retail store is only authorized as a principal use, and is not permitted as an accessory use. A marijuana retail store may not exceed a maximum gross floor area of 2,000 square feet. A marijuana retail store shall not include a registered dispensary.

Marijuana testing facility. A facility licensed to develop, research and test marijuana, marijuana products and other substances as defined by 22 M.R.S. § 2422 or 28-B M.R.S. § 102.

Marina. A commercial operation providing floats, slips, and piers intended primarily for berthing of noncommercial vessels and the provision of related services such as supplies, fuel, equipment and repairs, which may be provided both to tenants and non-tenants.

Military personnel berthing. A building, or portion thereof, which is primarily used as, and intended for, temporary living quarters for military personnel.

Moderate-income household. A household having an income not exceeding 120% of median income for area of residence as set forth in regulations promulgated from time to time by the United Sates Department of Housing and Urban Development pursuant to 42 U.S.C. sections 1437 et seq.

Multi-family development. The construction or creation of three or more dwelling units on any parcel of land or the addition of two or more dwelling units cumulatively within a three-year period.

~~**Multiplex.** A residential development consisting of three or more horizontally or vertically attached dwelling units, or a series of such attached dwelling units, and the construction of at least one building.~~

Neighborhood center. A building or portion of a building used for recreational, artistic, social, educational, health, culture, or similar activities and services, usually owned and operated by a public or nonprofit group or agency. As part of these functions and activities, it shall be permissible to serve food, subject to other applicable codes and ordinances.

Non-commercial vessel berthing. The use of berthing space for berthing of watercraft other than commercial vessels. Berthing space used in the following manner shall not be included in the calculation of the number of linear feet under this use category:

A. Space used principally for sale or repair of vessels.
B. Commercial vessel tenant space used by a noncommercial vessel for a period not exceeding ten consecutive days while the primary commercial vessel tenant is conducting its business or trade.

Normal high-water line (non-tidal waters). That line which is apparent from visible markings, changes in the character of soils due to prolonged action of the water or changes in vegetation, and which distinguishes between predominantly aquatic and predominantly terrestrial land. Areas contiguous with rivers that support non-forested wetland vegetation and hydric soils and that are at the same or lower elevation as the water level of the river during the period of normal high-water are considered part of the river.

Office park. Separate office buildings planned, constructed, or managed on an integrated coordinated basis.

Off-peninsula. All land located north of I-295.

On-peninsula. All land located south of I-295.

Open space. Any park and any other area outside of a building open to the public.

Owner. Any person that has any interest, legal or beneficial, in any parcel or lot.

Piers, docks, wharves, bridges and other structures and uses extending over or beyond the normal high-water line or within a wetland, temporary. Structures which remain in or over the water for less than seven months in any period of 12 consecutive months.

Piers, docks, wharves, bridges and other structures and uses extending over or beyond the normal high-water line or within a wetland, permanent. Structures which remain in or over the water for seven months or more in any period of 12 consecutive months.

Place of assembly. A building or portion of a building used as a community hall, neighborhood center, private club, or fraternal organization, or place of religious assembly. This definition shall not include buildings or portions of buildings used as a community hall, neighborhood center, private and fraternal organization, or place of religious assembly where 15 or fewer people, not including the permanent residents of a single-family dwelling, assemble.

Place of religious assembly. A building or portion of a building used for religious worship or instruction including, but not limited to, churches, synagogues, masjids, mosques, and other places of worship.

Planned residential unit development (PRUD). A residential subdivision consisting of attached or detached dwellings intended for separate ownership and land to be owned and used in common, with open spaces, recreational areas, access ways, and buildings which are designed, built, and managed in accordance with a unified development plan.

Planned unit development (PUD). A development consisting of either detached or attached single-family dwelling units and commercial or other uses, on substantially-sized properties of greater than 20 acres and designed to be compatible with the surrounding built and natural environment.

Plant canopy. As defined by 28-B M.R.S. § 102.

Preschool facility. Facility which provides a regular program of care and protection for children generally younger than those attending elementary school, which may also encompass daycare facilities.

Private club or non-profit social and recreational facility. A private club or nonprofit social and recreational facility is open exclusively to members and to their bona fide guests accompanying them, in order to promote fellowship, social living, proper recreation, civic responsibility, neighborhood responsibility, community welfare, or other endeavors. It shall be permissible to serve food and meals on such premises provided adequate dining

room space and kitchen facility are available and are provided within all regulations of this Land Use Code and other applicable codes and ordinances.

Recent flood plain soils. Recent flood plain soils include the following soil series as described and identified by the National Cooperative Soil Survey: Alluvial. Charles, Cornish, Fryeburg, Hadley, Limerick, Lovewell, Medomak, Ondawa, Podunk, Rumney, Saco, Suncook, and Winooski.

Recreation and amusement centers. Facilities equipped for the conduct of sports or indoor leisure time recreation activities, including games of skill or games of chance licensed either by the City of Portland or by the State of Maine. Such facilities may limit admission either to members or to persons paying an entrance fee.

Registered dispensary. A registered medical marijuana dispensary as defined by 22 M.R.S. § 2422.

Registered patient. As defined by 22 M.R.S. § 2422.

Repair services. Establishments primarily engaged in rendering services related to the maintenance or repair of goods. In industrial zones only, repair services shall include motor vehicle repair services.

Restaurant. Any food service establishment with indoor seating capacity for ten or more patrons.

Retail. Any shop or store offering goods or merchandise to the general public for direct consumption and not for resale, or food service establishment with indoor seating capacity for nine or fewer patrons. Retail shall not include gasoline, diesel, or propane fuel sales.

Roadway. That portion of a street between the regularly established curblines, or that part of a street or alley devoted to vehicular traffic.

Rooming unit. One or more rooms forming a single unit used, or intended to be used, for living and sleeping purposes by an individual or a family, but not designed for food preparation. In a suite of rooms, each room that provides sleeping accommodations shall be counted as one rooming unit for the purpose of this chapter.

Self-storage facility. A fully enclosed building with individual, secured units (accessed with or without supervision) used for the exclusive purpose of storage of non-hazardous business or personal materials.

Sexually explicit. The display or depiction of sex organs during actual or simulated sexual intercourse or sexual acts as defined in 17 A M.R.S. § 251.

Sheltered care group home. A facility which, in addition to providing food and shelter to a defined population of up to 12 individuals, provides guidance or counseling services as a primary function of the facility.

Shore frontage. The length of a lot bordering on a water body or wetland measured in a straight line between the intersections of the lot lines with the shoreline.

Sidewalk. That portion of a street not included in the roadway, and devoted in whole or part to pedestrian traffic.

Site. All contiguous land under the same ownership or control, whether proposed for development or

not, except where development is limited to a lot or lots within a subdivision.

Small-scale marijuana caregiver. A registered caregiver who sells or dispenses marijuana to no more than five individual registered patients in any one calendar month; does not process or manufacture marijuana using chemicals or solvents; and cultivates no more than: 1) 250 square feet of plant canopy where located in a single-family dwelling or commercial space; or 2) 125 square feet of plant canopy where located in a dwelling unit within a two-family or multi-family building.

Solar access. Space open to the sun and clear of overhangs or shade, including orientation of buildings and lots to the sun, so as to permit the use of active and/or passive solar energy systems on individual properties.

Solar energy system. A complete assembly consisting of one or more solar collectors and associated mounting hardware or equipment, intended to provide for the collection, storage, and distribution of solar energy for heating or cooling, electricity generation, or solar/thermal hot water systems. Solar energy systems shall include the following:

A. Accessory solar energy system. A system as defined above where power generation is incidental to a principal use, which may take the form of either a building integrated or roof-mounted solar array of any size, or a ground-mounted array occupying less than 1,000 square feet of air-space over ground area.
B. Minor solar energy system. A system as defined above where power generation is considered a principal use, which may take the form of either a building- or roof-mounted solar array of any size, or a ground-mounted system occupying between 1,000 and 9,999 square feet of ground area.
C. Major solar energy system. A system as defined above where power generation is considered a principal use, which may take the form of either a building or roof-mounted solar array of any size, or a ground-mounted system occupying greater than 10,000 square feet of ground area.

Solar energy system, building-integrated. A solar energy system that is an integral part of a principal or accessory building and include, but are not limited to, photovoltaic or hot water systems that are contained within roofing materials, windows, walls, skylights and awnings.

Solar energy system, ground-mounted. Also known as free-standing solar energy systems, a solar energy system that is structurally mounted to the ground. The panels may be stationary or revolving and of any size.

Solar energy system, roof-mounted. A solar energy system in which solar panels are mounted on top of the structure of a roof either as a flush-mounted system or as modules fixed to frames which can be tilted toward the south at an optimal angle.

Sounds, impulse. Sound events characterized by brief excursions of sound pressure, each with a duration of less than 1 second.

Sounds, tonal. Sound waves usually perceived as a hum or whine because their instantaneous sound

pressure varies essentially as a simple sinusoidal function of time.

Special needs independent dwelling unit. A dwelling unit developed and managed by a nonprofit organization for habitation by persons with special social, physical or mental needs beyond strictly economic needs. Such persons shall be provided required levels of supervision, care and/or counseling services appropriate to their special needs, and the services shall be provided by either the sponsoring nonprofit agency or through another entity with which the agency has entered into a contractual arrangement.

Sports complex. One or more facilities located on the same parcel of land where athletic events are held and with a combined seating capacity of at least 6,000 seats.

Stockpiling. Any placement or creation of piles or loads of soil, loam, sand, gravel, rock, or other mineral deposits upon a site for the purpose of storage, warehousing, or reserving for future use.

Stormwater retention area. A pond or basin used for the permanent storage of stormwater runoff.

Stormwater detention area. A storage area for the temporary storage of stormwater runoff which does not contain water during non-storm conditions.

Stream. A free-flowing body of water from the outlet of the confluence of two perennial streams as depicted on the most recent edition of a United States Geological Survey 7.5-minute series topographic map, or if not available, a 15-minute series topographic map, to the point where the body of water becomes a river or flows to another water body or wetland within a shoreland area, or any stream designated within a Stream Protection Zone.

Street. A public way established by or maintained under public authority, or a way dedicated to the use of the public and appearing on the official map of the city.

Street line. The line of demarcation between private property and a street.

Street, cul-de-sac or dead end. A street with only one outlet.

Structure. Anything constructed or erected of more than one member having a permanent or semi-permanent location on another structure or in or on the ground, including without limitation buildings, fences, gazebos, signs, antennas, satellite sending or receiving dishes, and swimming pools. Stockpiles shall be considered structures for the purposes of dimensional requirements.

Studios for artists and craftspeople. A facility for the production of arts and crafts products such as paintings, sculpture, or other arts, or the practice of arts such as music or dance, or the production of custom, hand-crafted, or limited production of products such as furniture, wood, clay, and metal products, publications, and similar low-impact arts and crafts activities.

Subdivider. Any individual, firm, association, syndicate, partnership, corporation, trust, or any other legal entity commencing proceedings under

these regulations to effect a subdivision of land hereunder for himself, herself, or for another.

Subdivision. As defined in 30 A M.R.S. § 4401 and 4402.

Tasting room. A facility for the sampling of beer, wine, spirits, other alcoholic or non-alcoholic beverages, or food.

Telecommunication tower. Radio masts or tower structures built primarily to hold telecommunication antennas.

Tenant. Any occupant in lawful possession of a rental unit, whether by lease, sublease, or otherwise.

Theater or performance hall. Any establishment devoted to showing motion pictures, or for dramatic, musical, or live performances.

Transient guest. A person who occupies a facility offering accommodations on an overnight basis for compensation and whose actual occupancy is limited to no more than 15 days out of any 60-day period.

Tributary stream. A channel between defined banks created by the action of surface water, which is characterized by the lack of terrestrial vegetation or by the presence of a bed, devoid of topsoil, containing waterborne deposits or exposed soil, parent material or bedrock; and which is connected hydrologically with other water bodies. Tributary stream does not include rills or gullies forming because of accelerated erosion in disturbed soils where the natural vegetation cover has been removed by human activity.

Upland edge of a wetland. The boundary between upland and wetland. For purposes of a coastal wetland, this boundary is the line formed by the landward limits of the salt tolerant vegetation and/or the highest annual tide level, including all areas affected by tidal action. For purposes of a freshwater wetland, the upland edge is formed where the soils are not saturated for a duration sufficient to support wetland vegetation, or where the soils support the growth of wetland vegetation but such vegetation is dominated by woody stems that are six meters or taller.

Use. The purpose for which land or structures thereon is designed, arranged, or intended to be occupied, or for which it is occupied, maintained, rented, or leased.

Utility substation. Any sewage or water pumping station, electric power substation, transformer station, telephone equipment enclosures, or other similar structures owned or operated by a utility.

Vegetation. All live trees, shrubs, ground cover, and other plants including, without limitation, trees both over and under four inches in diameter, measured at four and one-half feet above ground level.

Very low-income household. A household having an income not exceeding 50% of median income for area of residence as set forth in regulations promulgated from time to time by the United States Department of Housing and Urban Development pursuant to 42 U.S.C. section 1437 et seq.

Warehousing, storage, and distribution. The storage of goods, wares, and merchandise in a warehouse from which distribution occurs. May

include wholesale use, but not retail or direct sales to consumers.

Watercourse. Any natural or artificial stream, river, creek, ditch, channel, swale, canal, conduit, culvert, drain, waterway, gully, ravine, or wash in which water flows in a definite direction or course, either continuously or intermittently, or which has a definite channel, bed, and banks, and includes any area adjacent thereto subject to inundation by reason of overflow or floodwater.

Water-dependent uses. Those uses that require, for their primary purpose, location on submerged lands or that require direct access to, or location in, coastal or inland waters and which cannot be located away from these waters.

Wetlands (outside of shoreland zones). Those areas which have two or more of the following:

A. A water table at or near the surface during the growing season;
B. Very poorly drained soils, including Sebago mucky peat; or
C. Obligate wetland vegetation.

Very poorly drained soils and obligate wetland vegetation shall be as defined and illustrated in the United States Department of Interior, Fish and Wildlife Service publication of Wetland Plants of the State of Maine (1986).

Wind energy system. A wind energy generator and all associated facilities.

Wind energy system, useful life. The period for which the system has been designed by the manufacturer to operate in a safe manner, including the period during which new parts and refurbishment allow it to continue operating safely.

Wholesale. Sale for resale, not for direct consumption.

Workforce housing unit for rent. A dwelling unit for which:

A. The rent is affordable to a household earning 80% or less than of AMI.
B. The unit is rented to a household earning 80% or less of AMI.
C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

Workforce housing unit for sale. A dwelling unit for which:

A. The purchase price is affordable to a household earning 80% or less of AMI.
B. The unit is sold to a household earning 80% or less of AMI.
C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

6 USE STANDARDS

6.1 APPLICABILITY

The use of buildings, structures, and land are governed by this article, except when superseded by other applicable laws or ordinances. It is the intent that, when in doubt, this article should be interpreted to accommodate the goals of the City's Comprehensive Plan and other plans.

6.2 DETERMINATION OF USE

6.2.1 Use tables

Tables 6-A to 6-F shall determine if a use is permitted (●), conditional (◐), or not permitted ( ), as a principal use within a zone. Unless otherwise noted, where a use is listed in terms of square footage, square footage figures shall correspond to the total floor area of the use.

6.2.2 Unlisted uses

A. Uses not expressly listed as permitted or conditional in Tables 6-A to 6-F are prohibited as principal uses except that a use may be permitted subject to meeting the following performance-based standards:
   1. The proposed use is consistent with the purposes of the zone.
   2. The proposed use is closely related to a permitted or conditional use in terms of character, scale, and external impacts.
   3. The buildings and structures associated with the proposed use are designed and operated so that it will prevent undue adverse environmental impacts, substantial diminution of the value or utility of neighboring structures, or significant hazards to the health or safety of neighboring residents by controlling noise levels, emissions, traffic, lighting, odor, and any other potential negative impacts.

B. The review authority shall determine whether the uses not listed as permitted or conditional uses meet the above standards. If it is determined that the use does not meet the above criteria, it shall not be permitted.

C. The review authority may impose reasonable conditions of approval on the proposed use to ensure that it is similar in character and impact to a permitted or conditional use.

6.2.3 Multiple uses

A site may contain more than one principal use, so long as each principal use is allowed within the zone.

6.3 CHANGE OF USE

A change of use from one use in these tables to another is governed by the requirements of the new use. The use of any part of any building, structure, or property shall not be changed to any other use, whether principal or accessory and whether alterations in the building, structure, or property are involved or not, until a permit and certificate of occupancy authorizing such change of use has first been secured from the Building Authority in accordance with Chapter 6 of the City of Portland Code of Ordinances.

TABLE 6-A: PERMITTED AND CONDITIONAL USES IN RESIDENTIAL ZONES

		R-1	R-2	R-3	R-4	R-5/R-5a	R-6/R-6a	Use Standards
Residential	Single-family dwellings	●	●	●	●	●	●	
	Two-family dwellings				●	●	●	6.4.2
	Multi-family dwellings			◐		◐[1]/●[2]	●	6.4.2, 6.5.6(G)
	~~Multiplex~~				~~◐~~	~~●[3]~~		~~6.4.12~~
	Congregate care facilities					●[2]		
	Handicapped family units	●	●	●	●	●	●	
	Planned Residential Unit Developments			●[4]		●[4]		
	Special needs independent dwelling units				●	●[1]	●	
	Lodging houses					◐[1,3]	●	6.4.10~~9~~
	Sheltered care group homes	◐	◐	◐	◐	◐	◐	6.5.6(K)
Institutional	Elementary, middle, and secondary schools	◐	◐	◐	◐	◐[1]	◐	6.5.6(F)
	Governmental uses	●	●	●	●	●	●	
	Hospitals			◐		◐[1]	◐	
	Intermediate care facilities	◐	◐	◐		◐[1]/●[2]	◐	
	Long-term and extended care facilities	◐	◐	◐		◐[1]/●[2]	◐	6.5.6(F)
	Places of assembly (<10,000 SF)	◐	◐	◐	◐	◐	◐	
	Places of assembly (>10,000 SF)	◐	◐	◐	◐	◐	◐	
	Preschool facilities	◐	◐	◐	◐	◐	◐	6.5.6(I)
	Post-secondary schools		◐			◐[1]	◐	6.5.6(F)
Comm.	Bed and breakfasts						●/◐[5]	6.4.5~~4~~
	General offices (<5,000 SF)						◐	6.5.6(C)
	Hostels						●/◐[6]	6.4.9~~8~~
Other	Agriculture	●	●					
	Cemeteries	◐	◐		●		●	
	Off-street parking			◐	◐	◐[1]	◐	6.5.6(H)
	Parks and open spaces	●	●	●	●	●	●	
	Raising of domesticated animals	◐						6.5.6(J)
	Solar energy system (minor)	●	●	●	●	●	●	6.4.16
	Utility substations	◐	◐	◐	◐	◐	◐	6.5.6(L)

[1] In the R-5 zone only.
[2] In the R-5a zone only.
[3] Conversions of existing two-family ~~or multiplex~~ structures into lodging houses are permitted as a conditional use, provided that the lodging house shall not be located within 500 ft. of another as measured along street lines.
[4] Must consist of horizontally or vertically attached dwelling units, or a series of such dwelling units, with all land owned and used in common. PRUDs shall be subject to review and approval by the Planning Board under Article 15.
[5] Permitted if a conversion of a structure existing as of 3/3/97 to up to four guest rooms and conditional if a conversion of the same to five to nine rooms.
[6] Permitted if for no more than 10 overnight transient guests and conditional if for between 11 and 20 overnight transient guests. An owner, manager, or operator shall be a permanent resident of the building.



TABLE 6-B: PERMITTED AND CONDITIONAL USES IN ISLAND ZONES

		IR-1	IR-2	IR-3[1]	I-B	Use Standards
Residential	Single-family dwellings	●	●	●[2]	●	
	Two-family dwellings				◐	6.4.2,
	Multi-family dwellings				◐	6.5.6(G)
	Handicapped family unit	●	●	●	●	
	Planned Residential Unit Developments	●	●			
	Lodging houses		◐[3]	●[3]	●[3]	
Institutional	Elementary, middle, and secondary schools	◐	◐	●	◐	
	Educational facilities (including seasonal camps)	◐	◐			
	Governmental uses	◐	◐	●	◐	6.5.6(F)[6]
	Places of assembly (<10,000 SF)	◐	◐	●	◐	
	Places of assembly (>10,000 SF)	◐	◐		◐	
	Preschool facilities	◐	◐	●	◐	6.5.6(I)
Commercial/Service	Auto service stations				◐	6.5.6(A)
	Bed and breakfasts				●[4]	
	General services (<5,000 SF)				●	
	Hotels			●[5]	◐[5]	
	Restaurants			●	●	
	Retail (<10,000 SF)			●	●	
Other	Studios for artists and craftspeople				●	
	Agriculture	●				
	Boathouses and storehouses for fishing equipment	●	●	●	●	
	Campgrounds	◐		●		6.4.65
	Cemeteries	◐	◐			
	Marinas and yacht clubs			●	●	
	Off-street parking				●	
	Parks and open spaces	●	●	●	●	
	Raising of domesticated animals	◐				6.5.6(J)
	Solar energy system (minor)	●	●	●	●	6.4.16
	Utility substations	◐	◐	●		6.5.6(L)
	Wharves, piers, docks, and landing ramps	◐	◐	●	●	

[1] All uses within the IR-3 permitted only within a PUD with a minimum total area of 20 acres of contiguous land subject to the standards of Subsection 6.4.14.
[2] Single-family attached permitted provided that new construction shall be limited to no more than six attached dwellings per building.
[3] With greater than two but no more than nine rooming units.
[4] Permitted on Peaks Island only.
[5] Maximum 50 rooms.
[6] The standards of Subsection 6.5.6(F) shall not apply to institutional uses within the I-B zone. In the IR-1 and IR-2 ones, institutional uses are subject to the standards of Subsection 6.5.6(F) only if the total land area of the use is two acres or more.

TABLE 6-C: PERMITTED AND CONDITIONAL USES IN MIXED-USE ZONES

		B-1/B-1b	B-2/B-2b/ B-2c	B-3/B-3b/ B-3c[11]	B-4	B-5/ B-5b	B-6	B-7	Use Standards
Residential	Single-family dwellings	●	●	●		●	●	●	
	Two-family dwellings	●	●	●		●	●	●	
	Multi-family dwellings	●[1]	●	●		●	●	●	
	Congregate care facilities			●					
	Handicapped family units			●		●	●	●	
	Combined living/working spaces	●	●	●		●	●	●	
	Lodging houses	●[2]	●	●	●	●		●	6.4.10~~9~~
Institutional	Clinics	●[2]	●	●		●		●	
	Cultural facilities			●		●	●	●	
	Elementary, middle, and secondary schools	●[2]	●	●		●	●	●	
	Emergency shelters			◐	◐	◐			6.5.6(B)
	Governmental uses	●[2]	●	●	●	●		●	
	Intermediate care facilities		●	●					
	Long-term and extended care facilities		●						
	Places of assembly (< 10,000 SF)	●[2]	●	●	●	●	●	●	
	Places of assembly (> 10,000 SF)		●	●	●	●	●	●	
	Preschool facilities	●[2]	●	●	●	●	●	●	
	Post-secondary schools		●	●	●	●	●	●	
Commercial /Service	Adult business establishments		●[3]	●[3]					6.4.3~~2~~
	Auto, boat, and related dealerships		◐		●				6.5.6(A)
	Auto service stations		◐[4]		●	●			6.5.6(A)
	Bars		●[5]	●[5]	●	●	●	●	6.4.4~~3~~
	Bed and breakfasts	●	●	●				●	6.4.5~~4~~
	Exhibition, meeting, and convention halls			●		●	◐	●	
	Funeral homes		●		●				
	General offices (<5,000 SF)	●[2]	●	●	●	●	●	●	6.4.7~~6~~
	General offices (>5,000 SF)		●	●	●	●	●	●	
	General services (<5,000 SF)	●[2]	●	●	●	●	●	●	6.4.7~~6~~
	General services (>5,000 SF)		●	●	●	●	●	●	
	Hostels	●		●		●		●	6.4.7~~6~~, 6.4.8~~9~~
	Hotels		●	●	●	●	●[13]	●	
	Marijuana retail store		●/◐[6]	●	●			●	6.4.11~~0~~
	Recreation and amusement centers				●	●		●	
	Registered marijuana dispensary		●/◐[6]	●	●			●	6.4.11~~0~~
	Restaurants	●[2]	●	●	●	●	●	●	6.4.4~~3~~, 6.4.7~~6~~
	Retail (< 5,000 SF)	●[2]	●	●	●	●	●	●	6.4.7~~6~~, 6.4.15
	Retail (5,000 – 25,000 SF)		●	●	●	●	●	●	6.4.15

TABLE 6-C (CONT.): PERMITTED AND CONDITIONAL USES IN MIXED USE ZONES

		B-1/B-1b	B-2/B-2b/ B-2c	B-3/B-3b/ B-3c[11]	B-4	B-5/ B-5b	B-6	B-7	Use Standards
	Retail (>25,000 SF)		●	●	●	●	●	●	6.4.15
	Small-scale marijuana caregiver		●	●	●			●	6.4.11~~0~~
	Theaters and performance halls		●	●	●	●	●	●	
	Veterinary services		●		●			●	
	Communication studios		●	●	●	●	●	●	
	Dairies		●[7]		●				
	High-tech manufacturing							◐	6.5.6(D)
	Intermodal transportation facilities					●	●	●	
	Laboratory and research facilities		◐		●		◐	●	6.5.6(E)
	Low-impact industrial (<10,000 SF)		●[8]	◐	●	●	●	●[8]	6.5.6(E)
	Low-impact industrial (>10,000 SF)		●[8]		●	◐			
	Marijuana testing facilities				●				6.4.11~~0~~
	Marijuana manufacturing facilities				●				
	Marijuana cultivation facilities (<7,000 SF plant canopy)				●				
	Printing and publishing		◐[9]	●	●	●	●	◐	
	Repair services		●	●	●	●	●	●	
Industrial	Studios for artists and craftspeople	●[2]	●	●	●	●	●	●	
	Tow lots				●				6.4.17
	Warehousing, storage, and distribution		◐[10]	◐[10]	●	●[10]	◐[10, 14]	◐[10, 14]	6.5.6(E)
	Marine uses					●	●		6.4.12~~1~~
	Correctional pre-release facilities				●				6.4.8~~7~~
	Off-street parking			●/◐[12]		●	◐	◐	6.5.6(H)
	Parks and open spaces	●	●	●	●	●	●	●	
	Solar energy system (minor)	●	●	●	●	●	●	●	6.4.16
	Solar energy system (major)				◐				
Other	Utility substations	●	●	◐	●	●	●	◐	6.5.6(L)
	Wind energy system (minor)		◐	◐	◐	◐	◐	◐	6.4.18

[1] Permitted if permitted in the adjacent or nearest residential zone. In other cases, permitted if located above first floor commercial, or on first floor where a minimum depth of 25 ft. along the principal frontage is maintained for commercial use.
[2] Permitted on the ground floor only in the B-1b zone.
[3] Permitted in the B-2 and B-3 zones only.
[4] Permitted as a conditional use in the B-2 only. Expansion of auto service stations in existence as of 11/15/99 permitted as a conditional use in the B-2b and B-2c zones.
[5] Not permitted in the B-2c and B-3c zones.
[6] Permitted in the B-2 zone. Conditional in the B-2b and B-2c.
[7] Permitted only if an expansion of an existing dairy.
[8] Permitted with a retail component only. Low-impact industrial uses greater than 10,000 SF are permitted in the B-2 only.
[9] Printing and publishing of 10,000 SF or less, or expansion of printing and publishing establishments greater than 10,000 SF in existence as of 4/4/88, shall be treated as a conditional use.
[10] Permitted in the B-2/B-2b/B-2c as a conditional use if 10,000 SF or less. Self-storage permitted in the B-4 zone. Self-storage permitted as a conditional use in the B-5 zone (on-peninsula locations only) in buildings existing as of 12/16/15. Self-storage permitted as a conditional use in the B-3 zone in buildings existing as of 1/1/1995; the area of the building dedicated to self-storage shall not exceed 30% of the total building area and may not be located directly adjacent to or facing a public right-of-way. Self-storage not permitted in the B-2/B-2b/B-2c, B-6, and B-7 zones.
[11] See PAD Overlay for additional use regulations.
[12] Structured parking shall be permitted. Surface parking shall be treated as a conditional use.
[13] Hotels shall be limited to no more than 150 rooms.
[14] Wholesale is allowed as conditional use, providing the wholesale operation is associated with an onsite retail establishment and occupies less than 15,000 SF.

TABLE 6-D: PERMITTED AND CONDITIONAL USES IN OFFICE PARK & RESIDENCE PROFESSIONAL ZONES

		OP[1]	R-P[2]	Use Standards
	Any residential use permitted in the nearest residential zone		●	
	Preschool facilities	●	◐	6.5.6(I)
	Funeral homes		●	
	General offices	●	●	
Industrial	High tech manufacturing	◐		6.5.6(D)
Industrial	Laboratory and research facilities	●		
Industrial	Printing and publishing	●		
Industrial	Studios for artists and craftspeople		●	
Other	Parks and open space	●	●	
Other	Solar energy system (minor)	●	●	6.4.16
Other	Utility substations		●	
Other	Wind energy system (minor)	◐		6.4.18

[1] All permitted and conditional uses in the O-P zone, with the exception of parks and open spaces, solar energy systems, and wind energy systems, shall be allowed only within an office park of at least three acres of contiguous land subject to the standards of Subsection 6.4.13.

[2] Any conditional use that is permitted as a conditional use in the nearest residential zone shall be permitted as a conditional use in the R-P zone. All conditional use standards of the residential zone shall apply.

TABLE 6-E: PERMITTED AND CONDITIONAL USES IN INDUSTRIAL & AIRPORT ZONES

		I-L/I-Lb	I-M/I-Mb	I-H/I-Hb	A-B[7]	Use Standards
Institutional	Airports				●[8]	
	Preschool facilities	●	●			
	Emergency shelters	◐	◐	◐		6.5.6(B)
	Intermediate care facilities		●[4]			
	Places of assembly (<10,000 SF)	●				
Commercial/Services	Bars				●	
	General offices (<5,000 SF)	●[1]	●			
	General offices (>5,000 SF)	●[1]	●			
	General services (<5,000 SF)				●	
	General services (>5,000 SF)				●	
	Hotels				●	
	Recreation and amusement centers	●	●			
	Repair services	●	●	●		
	Restaurants				●	
Industrial	Animal-related services	●[2]				
	Construction & engineering services	●	●	●		
	Dairies	●	●	●		
	Fish waste processing			●		
	Food & seafood processing, packing, and distribution		●	●		
	High-impact industrial uses			●		
	Intermodal transportation facilities	●	●	●		
	Laboratory and research facilities	●	●	●		
	Low-impact industrial	●	●	●		
	Lumber yards	●	●	●		
	Marijuana cultivation facility (<2,000 SF plant canopy)	●	●	●		6.4.~~10~~11
	Marijuana cultivation facility (2,000-7,000 SF plant canopy)		●	●		
	Marijuana cultivation facility (>7,000 SF plant canopy)			●		
	Marijuana manufacturing facility	●	●	●		
	Marijuana testing facility	●	●	●		
	Printing and publishing	●	●	●		
	Recycling and solid waste disposal facilities		●[5]	●[5]		
	Studios for artists and craftspeople	●	●			
	Telecommunication towers (ground-mounted)		●	●		
	Tow lots		●	●		6.4.17
	Warehousing, storage, and distribution facilities	●[3]	●	●		

TABLE 6-E (CONT.): PERMITTED AND CONDITIONAL USES IN INDUSTRIAL & AIRPORT ZONES

		I-L/I-Lb	I-M/I-Mb	I-H/I-Hb	A-B[7]	Use Standards
	Correctional pre-release facilities		●[6]	●[6]		6.4.~~7~~8
	Marinas	●				
Other	Off-street parking				●	
	Solar energy system (minor)	●	●	●	●	6.4.16
	Solar energy system (major)		●	●	◐	
	Utility substations	●	●	●		
	Wind energy system (minor)	◐	●	●	●	6.4.18
	Wind energy system (major)		●	●	◐	

[1] Only back office uses permitted.
[2] Not including kennel or boarding facilities.
[3] Must be less than 10,000 SF in floor area. No outdoor storage permitted. Self-storage not permitted in the I-L/I-Lb zone.
[4] Permitted in existing structures not designed for industrial, amusement, warehouse or manufacturing uses as of 9/15/14 or later. Such structures may be reused or expanded to establish a facility of no more than 30 persons plus staff.
[5] Permitted within an enclosed structure only.
[6] Not permitted in the I-Ma, I-Mb, or I-Hb zones.
[7] Permitted uses on lots within airport restricted access areas shall be limited to those which do not require or encourage access or visits by the public and which provide technical administrative or other support to airport operations.
[8] Including airport administration, terminals, carrier operations, concessions, reservations and ticket sales, freight, repair and storage, fueling services, flying schools, car rental operations, and other associated uses.



TABLE 6-F: PERMITTED AND CONDITIONAL USES IN RECREATION OPEN SPACE ZONE

	R-OS[1]	Use Standards
Cemeteries	●	
Marinas	●	
Parks and open space	●[2]	
Solar energy system (minor)	◐	6.4.16, 6.5.7(A)
Solar energy system (major)	◐	
Utility substations	●/◐[3]	6.5.6.L, 6.5.7(A)
Wharves, piers, docks, and landing ramps	●	
Wind energy system (minor)	◐	6.4.18, 6.5.7(A)
Wind energy system (major)	◐	

[1] Accessory uses within structures of 2,500 SF or more shall be treated as a conditional use under Subsection 6.5.7(A).
[2] Including active recreational uses, such as playgrounds, golf courses, fields, pools, courts, community gardens, marinas, and sports complexes and passive uses, such as arboretums and picnic areas.
[3] Sewage pumping and treatment facilities shall be permitted. Water pumping stations shall be treated as a conditional use under Subsection 6.5.7.

6.4 SUPPLEMENTAL USE STANDARDS

The following standards shall apply to the following uses as indicated in Tables 6-A to 6-F, whether permitted or conditional.

6.4.1 In general

A. No building intended for use as a habitation shall be erected on a lot which has its only street frontage on a street less than 35 feet wide. No building shall be erected on a lot, except on the islands in Casco Bay, which does not abut a street meeting the minimum requirements for street improvements set forth in this subsection. For purposes of this subsection, street shall be as defined in Article 3, except that a dedicated street which may no longer be accepted due to lapse of time and an accepted street which may have been discontinued by abandonment shall also be deemed to be streets, provided that an applicant for a building permit respecting any lot abutting such street shall, without compensation or claim for damages, and at his or her own cost and expense, first submit to the Building Authority:

1. A deed from the owner of such lot conveying to the City all his or her right, title, and interest in and to such street or any portion thereof.
2. An agreement by such owner forever releasing the City from any and all claims for damages for the laying out and taking of such street and indemnifying the City against any and all other such claims, both such instruments to be executed and in recordable form acceptable to the Corporation Counsel and to encumber and run with the land.

B. For a lot abutting any portion of a street which is unimproved or improved but not permanently paved, that portion which abuts the lot, and any like portion between such

portion and the nearest permanently paved street or portion which is the principal access to such lot, shall be improved, including sewers, storm drains, pavement, curbs and, if located on a designated school walking route, sidewalks, in accordance with the City of Portland *Technical Manual*. Where the nearest permanently paved street does not have granite curbing, the Public Works Authority may waive the requirement of curbing under this subsection, if it determines that an acceptable alternative drainage plan will be provided. Prior to the issuance of a building permit for erection of a building on a lot abutting any portion of a street which is unimproved or improved but not permanently paved, the following shall occur:

1. A plan of the street improvements required by this subsection shall be submitted to the Public Works Authority.
2. Upon determination by the Public Works Authority that the plan meets the street improvement requirements established by this subsection, a performance guarantee and inspection fee for said improvements shall be submitted to the City as set forth under Articles 14 and 15. Also as set forth in Articles 14 and 15, a one-year defect bond shall be tendered to the City prior to release of the performance guarantee required hereby. The provisions of this paragraph (2) shall not apply to the erection of any single-family dwelling on any lot where the owner of the lot establishes that he or she was the owner of that same lot on November 19, 1984, and at all times thereafter, and states his or her intention under oath to make the structure his or her personal residence.

C. The requirements of this subsection shall not apply to the following city streets upon their construction by the Public Works Authority to such standards as are determined by the authority to be the most feasible:
   1. Dingley Court.
   2. Morgan Court.

6.4.2 Additional residential use permissions

A. *In island zones:* Up to two units are permitted on any lawfully conforming lot that does not contain an existing dwelling unit. Such units may be located:
   1. In two separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or
   2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.

B. *In mainland zones where residential is a permitted or conditional use:* Up to four units are permitted on any lawfully conforming lot that does not contain an existing dwelling unit. Such units may be located:
   1. In separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or
   2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.

C. Sections 6.4.2(A) and (B) shall not apply to lots on which a dwelling unit in existence on July 1, 2023 is demolished and a vacant lot results.

D. *Lots with one existing dwelling unit in any zone where residential is a permitted or conditional use:*

1. Up to two additional dwelling units are permitted on any lawfully conforming lot containing one existing dwelling unit.

~~1.~~2. ~~One of these units may be permitted within or attached to the existing structure, one may be permitted detached from the existing structure, or one may be permitted of each. In all cases, the minimum lot area per dwelling unit standards of Article 7 shall apply.~~

~~2.~~3. Such units may be located:

i. In separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or

ii. Within or attached to the existing structure, in which case the lot area per dwelling unit standards of Article 7 shall not apply.

4. Units created under this section shall not be considered accessory dwelling units under Section 6.6.2(A).

~~B.~~E. ~~If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section, the lot is not eligible for any additional units under Section 6.6.2(A).~~

~~6.4.2~~6.4.3 Adult business establishments

A. Adult business establishments shall be located at least 1,000 feet from any other adult business establishment, and at least 500 feet from any residential zone, as measured in a straight line, without regard to intervening structures or objects.

B. No sexually explicit materials, entertainment, or activity shall be visible from the exterior of the premises.

~~6.4.3~~6.4.4 Bars and restaurants in the B-6 zone

A. No bars located east of Waterville Street shall be permitted within 50 feet of Fore Street.

B. Restaurants located east of Waterville Street within 50 feet of Fore Street shall be limited in hours of operation to between 5 a.m. and 11 p.m. each day and food service and consumption shall be the primary function of the restaurant.

~~6.4.4~~6.4.5 Bed and breakfasts

A. In the R-6 and R-6a zones, the minimum gross floor area for bed and breakfasts shall be 2,000 square feet for the first three guest rooms and 500 square feet for each additional guest room.

B. In all mixed-use zones except the B-1/B-1b zones, bed and breakfasts may include a meeting facility limited to use for private parties, business meetings, weddings, receptions, seminars, or business and educational conferences, provided that:

1. *In the B-2/B-2b/B-2c zones.* The meeting facility must be less than 4,000 square feet.
2. *In the B-3/B-3b/B-3c zones.* The building in which the bed and breakfast and meeting facility will be located must have existed on March 3, 1997 and have been greater than 4,000 square feet in floor area on that date.

~~6.4.5~~6.4.6 Campgrounds

A. Campgrounds shall not include recreational vehicles.

B. Campgrounds shall be licensed by the State of Maine Department of Human Services.

C. No tent shall be located within 75 feet of the perimeter of site.

D. The land area of the campground shall not be less than the equivalent of 5,000 square feet of land area per tent site exclusive of the roadway network.

~~6.4.6~~6.4.7 Commercial uses in the B-1/B-1b zones

A. Commercial uses shall be permitted provided that such uses generate less than 100 peak hour vehicle trips per 2,000 square feet of floor area and less than 100 peak hour vehicle trips in total.

B. Retail and restaurant uses shall not operate between the hours of 11 p.m. and 6 a.m., and shall not accept deliveries or services between the hours of 10 p.m. and 7 a.m. For restaurants, food service and consumption shall be the primary function.

C. No beverage container redemption centers shall be permitted. Beverage dealers shall be permitted as a retail use provided that the maximum total floor area for redemptions as an accessory use, including the storage of spent containers, shall be no greater than 500 square feet or 10% of the total floor area of the facility, whichever is less.

~~6.4.7~~6.4.8 Correctional pre-release facilities

A. No correctional prerelease facility shall be located within 1,000 feet of another, as measured in a radius from the center of the lot.

B. If a facility requires state or federal licensing, staffing of the facility shall be as required by such license. If a facility does not require state or federal licenses, there shall be a minimum of one staff person for every 10 residents or fraction thereof. The facility shall provide 24-hour supervision of program participants.

~~6.4.8~~6.4.9 Hostels

An operations plan must be submitted demonstrating that:

A. No unaccompanied minors under the age of 18 shall be permitted in the facility.

B. The length of stay for transient guess shall not exceed 15 days within any 60-day period.

C. In the R-6 zone, for hostels greater than 10 guests, a minimum of 250 square feet of land area shall be required per hostel guest.

D. In the B-1/B-1b zones, no more than 20 overnight transient guests shall be permitted.

~~6.4.9~~6.4.10 Lodging houses

A. Lodging houses, except for lodging houses located in the IR-2, IR-3, and I-B zones, shall contain common areas for use by all residents, including a kitchen. A kitchen need not be available as a part of the common areas where all meals are provided on a daily basis.

B. Lodging houses shall provide a minimum of 200 square feet of combined rooming unit and common area per rooming unit.

C. Each individual rooming unit shall be a minimum of 70 square feet.

~~6.4.10~~6.4.11 Marijuana-related uses

A. The following standards apply to the following marijuana-related uses:

1. Marijuana cultivation facilities.
2. Marijuana manufacturing facilities.
3. Marijuana products.
4. Marijuana retail stores.
5. Marijuana testing facilities.

6. Small-scale marijuana caregivers.
7. Registered dispensaries.

B. Location criteria

1. No marijuana cultivation facility, marijuana manufacturing facility, marijuana testing facility, small-scale marijuana caregiver, marijuana store, or registered dispensary may be located within 500 feet of a pre-existing public school, private school, or a public preschool program, as defined by 20-A M.R.S. § 1. Distance shall be measured from nearest property line of the respective marijuana-related use and the property line of the lot containing the public school, private school, or public preschool program.
2. No marijuana cultivation facility, marijuana manufacturing facility, or marijuana testing facility may be located within 300 feet of the following residential zones: R-1, R-2, R-3, R-4, R-5/R-5A, R-6/R-6A, or R-7. Distance shall be measured from the nearest outer wall of the building housing the marijuana cultivation, manufacturing, or testing facility to the nearest applicable residential zone boundary. If the marijuana-related facility leases a room or suite of rooms within a building, including, without limitation, individual units within a shopping plaza or shopping mall, the nearest outer wall of the room or suite of rooms within which the facility is located shall constitute the nearest outer wall of the building housing that facility.

C. Supplemental standards

1. Marijuana-related uses may only be permitted within a fully enclosed building.
2. No outside storage of marijuana, marijuana products, or related supplies is permitted.
3. No drive-through service is permitted for marijuana-related uses.
4. No marijuana or marijuana product shall be smoked, eaten, or otherwise consumed or ingested on the premises where sold.
5. An operating plan for marijuana cultivation facilities and marijuana manufacturing facilities shall be provided that, at a minimum, addresses wastewater, disposal of waste, and security at the premises.
6. A ventilation plan shall be included for marijuana cultivation facilities, marijuana manufacturing facilities, and small-scale marijuana caregivers that provides for adequate ventilation so as to prevent pesticides, insecticides, or other chemicals used in the cultivation or processing of marijuana or marijuana-related products from being dispersed or released outside the premises. The plan shall further provide for resulting smoke, vapor, fumes, gases, and particulate matter from marijuana or its processing or cultivation to be effectively confined to the premises.
7. Marijuana-related uses shall provide odor control measures so that odor generated on site is mitigated at the property line of the lot containing the marijuana-related use. Applications must demonstrate appropriate measures, such as carbon filtration, ventilation and exhaust systems, facility plans, or other additional practices adequate to mitigate odors for the scale of operations for the uses proposed.

D. For purposes of this ordinance, any approval issued for a marijuana cultivation facility,

marijuana manufacturing facility, or marijuana testing facility operated pursuant to 22 M.R.S. § 2421 et seq. shall be deemed to constitute approval for the same corresponding marijuana cultivating, manufacturing, or testing facility use operating under 28 M.R.S. § 101 et seq. Notwithstanding the above, no marijuana cultivation facility, marijuana manufacturing facility, or marijuana testing facility may operate without the applicable state and City license.

~~6.4.11~~6.4.12 Marine uses

A. In the B-5/B-5b and B-6 zones, marine uses shall include marine products wholesaling and retailing and harbor and marine supplies and services.

B. In the B-5/B-5b zones, marine uses shall include marine repair services and machine shops; shipbuilding and facilities for the construction, maintenance, and repair of vessels; marine museums and aquariums; boat repair yards; boat storage; and seafood processing, packing, and distribution for human consumption.

C. In the B-6 zone, marine uses shall include underground marine fuel storage provided that such storage shall be used solely for the purpose of fueling vessels.

~~6.4.12 Multiplexes~~

~~A. No habitable space in a dwelling unit shall be below grade, except basements that are a part of and below aboveground units.~~U

~~B. In the R-5 zone, the maximum number of units in a multiplex building shall be six.~~

~~C.~~D. ~~No dwelling unit shall have less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic~~.

6.4.13 Office parks in the O-P zone

An office park shall be approved only if the development meets the following development standards:

A. Office parks shall have a minimum gross area of three acres of contiguous land, consisting of either an Office Park Planned Unit Development (OPPUD) on one lot with one or more buildings and with driveways and open areas to be owned and maintained in common, or an office park subdivision (OPS) on one parcel with two or more lots intended for separate ownership.

B. Development proposals shall include a master plan of the office park. The master plan shall include the following:

1. *For an OPPUD proposal.* The location of the building(s) on the site; infrastructure of the site; identification of common areas; traffic circulation, architectural character and treatment of the building(s); proposed building envelopes; phasing and timing of the development; private development restrictions; and such other information necessary and sufficient to ensure compliance with the standards in this subsection.
2. *For an OPS proposal.* Delineation of the subdivision of land; infrastructure of the site; identification of common areas, if any; traffic circulation; desired architectural character, including private development restrictions to ensure compatibility of architectural character of future buildings with each other; phasing and timing of the development; private development restrictions; and such other information as necessary and sufficient to ensure

compliance with the standards in this subsection.

C. Development proposals shall demonstrate a reasonably unified design of the site, including the architecture, the layout of the buildings, pedestrian and vehicular circulation plan, open space, drainage, and the topography, soil conditions, vegetation and other natural features of the site. Integration of open spaces and natural features shall be achieved by incorporation of outdoor amenities for the benefit of users of the site, such as jogging and walking trails, gardens, and benches.

D. Development proposals shall include a landscape program. All land areas not covered by structures, parking areas, or circulation facilities shall be landscaped and maintained. In order to soften the visual impact of large expanses of pavement in parking lots, vegetation shall be planted or retained in islands or planting strips where required by the site plan or subdivision ordinance.

E. Parking may not be located in the required front setback. If parking is provided in the area between the building and minimum setback line, the parking area must be adequately screened with landscaping materials and permanently maintained.

F. Development proposals shall include internal sidewalks, illustrating the manner in which the developer will provide this amenity to take advantage of the topography and natural features of the site.

G. Development proposals shall include buffering yard areas abutting a residential zone or residential use and to screen parking lots and driveways from public view, identifying the location, composition, and maintenance of the buffer. The buffer and screening shall be of a dense and continuous nature and shall incorporate trees, shrubs, fencing, berms, and related elements deemed necessary.

H. Development proposals shall identify the extent to which the developer shall preserve natural features including, but not limited to, existing vegetation, flood plains, rock outcroppings, surface water bodies, drainage swales and courses, and wetlands; provided any such program shall consider and be sensitive to the need to preserve such natural features.

I. Development proposals shall identify all proposed traffic controls, parking areas, interior traffic circulation, and demonstrate that additional traffic generated by the project itself can be reasonably accommodated on existing public streets.

J. All buildings shall be designed or approved by a registered architect in the State of Maine and shall be in conformance with the proposed master plan. The scale, texture, color and massing of the buildings shall be coordinated. The full range of high quality, permanent, and traditional or contemporary building materials and technology may be incorporated in a manner so that the development as a whole embodies distinguishing attributes that achieve the developer's desired degree of excellence and are in conformance with the architectural guidelines provided in the private development restrictions. Particular emphasis shall be placed on the appearance of building facades from public streets, from driveway and parking areas, and from other nearby buildings. Building elevation drawings shall be submitted which indicate architectural style, exterior finishes and color, building height and scale, and location

and scale of window and door openings. Samples of exterior building materials shall also be submitted.

K. Development proposals shall identify the location and style of lighting to be used in the development. All light fixtures shall be hooded or shielded so that the light shines downward.

L. 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 through the use of appropriate materials and finishes.

6.4.14 Planned unit development in the IR-3 zone

In addition to other applicable reviews, no development shall occur nor shall any new use be established in the IR-3 zone unless the Planning Board finds that the final development plan for the site is in compliance with the following standards:

A. The development shall demonstrate a reasonably unified response to the design possibilities of the site, by virtue of such elements as the design and layout of buildings and lots, circulation plan, open space, drainage, and orientation to achieve energy conservation or solar access, to form a functionally integrated whole.

B. The design and layout of the development and buildings shall be reasonably compatible with the surrounding neighborhood by virtue of such features as architectural style, exterior finish, scale, circulation, open space, landscaping, and preservation of natural site amenities.

C. All open spaces on the site shall be functionally integrated into the development plan by virtue of such features as accessibility to residents, recreation, conservation of existing public rights of access to shoreland areas and scenic natural areas, orientation to achieve energy conservation or solar access, preservation of natural site amenities, and use as a buffer between the development and the surrounding neighborhood.

D. The development shall be designed primarily with a pedestrian orientation to minimize the use of and dependency on private motor vehicles. Appropriate areas on the site shall be designated, as necessary, for parking of common service vehicles, golf carts or bicycles to serve the transportation needs of residents and visitors. The internal circulation plan shall also be coordinated with the existing island street network to ensure adequate access for emergency and service vehicles.

E. A project construction plan shall be developed indicating the anticipated number and types of vehicles such as construction equipment, supply delivery and service vehicles needed for undertaking the construction of the project. Documentation shall be provided as to the proposed transportation route such as roads, piers, beaches, sand bars and the impact of construction related activities on the routes.

F. The development shall not have a substantial adverse impact on the capacity of existing island docking facilities. The developer shall demonstrate that an adequate water transportation system, including docking facilities, exists or will be provided.

G. Adequate provision for off island solid waste disposal shall be demonstrated such that the

impact on municipal solid waste disposal is minimized. A development shall incorporate methods such as the following to reduce the amount of solid waste generated by the project: compaction and reduction in waste volume, recycling, incineration or baler system, and private collection and transfer to an off-island location. It shall be demonstrated that there will be no significant environmental impacts from the solid waste disposal system.

H. All sanitary waste from the development shall be disposed of by a public sewer, private community sewer system providing at least secondary treatment, or subsurface sewerage system, in compliance with federal, state and local regulations. The developer shall demonstrate that the project will comply with all applicable federal, state and local water quality and groundwater standards.

I. The proposed development shall have sufficient water for the reasonably foreseeable needs of the development and shall not cause an unreasonable burden on existing water supply nor adversely affect groundwater resources. Unless the development is to be served entirely by public water and secondary treatment sewer systems, the determination of compliance with this provision shall be based upon one or more comprehensive groundwater analyses and reports prepared by qualified professionals and including assessment of current groundwater aquifer conditions, the impact of the proposed development on the groundwater aquifer, and recommendations for mitigation of potential impacts caused by the development.

J. The development shall preserve the natural features of the shoreland area by minimizing the disturbance of existing vegetation and slopes, avoiding development in areas subject to erosion and sedimentation, and conserving scenic views and vistas to and from the site.

K. The development plan shall preserve significant resources of the site by integrating open space into the development plan and by conserving such features as scenic vistas, historic man made or natural features, existing vegetation, wetland areas, shoreland areas, ground water, natural wildlife habitat, and recommended or registered State of Maine Critical Land Areas, as well as other environmentally sensitive areas.

L. All open spaces on the site shall be functionally integrated into the development plan by virtue of such features as passive and active recreational opportunities, accessibility to residents, preservation of natural site amenities and resources, orientation to achieve energy conservation or solar access, use as a buffer between housing clusters and to screen the development from surrounding areas.

M. The applicant shall demonstrate sufficient financial and technical capability for undertaking the proposed project. Financial capability shall include a cost estimate of the proposed improvements, proposed construction and permanent financing, and terms of sale or lease of dwellings and commercial space. Technical capacity shall include the experience and expertise of the developer in implementing projects of similar scope.

N. The applicant shall develop an environmental impact analysis including an inventory of existing environmental conditions at the project site and in the surrounding area with an assessment of the development's probable

impact upon the environment. The inventory shall include such resources as air, water quality, water supply, surface water and shoreline, geology, soils, topography, wildlife, botanical and aquatic, including rare and endangered species, historic, archeological and aesthetic. The analysis shall include the direct and cumulative adverse impacts of the project on these resources. The analysis shall also include what steps the applicant proposes to take to identify and minimize adverse environmental impacts during construction, management and use of the property and whether there are alternatives for the project which would decrease the impact of the development.

O. If the project is to be completed in phases, the applicant shall indicate the schedule for completing and implementing infrastructure improvements as well as other improvements, agreements or services required for compliance with the development standards of this subsection, planned unit development standards, and site plan and subdivision review requirements.

P. The development shall not place an unreasonable burden on the ability of the City to provide police, fire, and other emergency services.

6.4.15 Retail in the B-3/B-3b/B-3c and B-5/B-5b zones

Retail shall not include wholesale and bulk purchase lumber and construction supply sales.

6.4.16 Solar energy systems

A. All solar energy systems shall meet the technical, safety, and maintenance standards in the City of Portland *Technical Manual*.

B. Solar panel placement should minimize or negate any solar glare impacting nearby properties or roadways, without unduly impacting the functionality or efficiency of the solar energy system.

C. All applicants are encouraged to ensure the maximum solar energy generation from their system by obtaining solar access easements. Solar access easements may be filed consistent with Maine state law.

D. Solar energy systems shall be located away from and screened from public ways and nearby residential/institutional uses to the extent possible and shall be designed so as to minimize impacts on significant scenic views.

E. Layout and fencing shall be integrated with existing landscape and minimize removal of vegetation to the extent possible.

F. Where any part of the proposed solar energy system (including associated facilities) is within a historic district, such development shall be reviewed and approved by the Planning Authority in accordance with Article 17. Where any part of the proposed solar energy system (including support structures and associated facilities) is within 100 feet of any designated landmark, historic district, or historic landscape district, such development shall meet the standards of Article 14 regarding compatibility with the landmark or historic district.

G. Solar energy systems shall minimize impacts resulting from construction and maintenance of the solar energy system, including lighting, security measures, traffic, and grid connections.

H. Where permitted in residential zones, and in the B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-7 and waterfront zones, all solar energy systems shall be co-located with other land uses.

I. Major solar energy systems shall be located on areas already paved or built upon, or where other development is documented to be unlikely due to local conditions.

6.4.17 Tow lots

Tow lots must be at least 300 feet from any residential zone or conforming residential use.

6.4.18 Wind energy systems

A. All wind energy generation equipment shall be approved under a certification program approved by the U.S. Department of Energy such as the Underwriters Laboratories, Germanishcer Lloyd Wind Energies, or other similar certifying organizations. Experimental, homebuilt, and prototype models shall not be permitted.

B. Wind energy systems and associated facilities, including foundations and support structures, electrical connections and control equipment, associated site improvements, and construction techniques, shall be designed, engineered, and installed to comply with all applicable local, state, and federal construction and electrical regulations and Federal Aviation Administration regulations. Applicable state and local approvals shall be obtained prior to installation of any wind energy system.

C. The support structure (e.g. tower, pole) for freestanding wind generating systems shall not be climbable for a minimum height of 12 feet above the surrounding ground level or accessible surface. All ground-mounted electrical and control equipment shall be labeled and secured to prevent unauthorized access.

D. All moving components of a wind energy system shall be a minimum of 12 feet from ground level or accessible surface.

E. All on-site electrical wiring associated with the proposed wind energy system shall be located within the tower/pole/supporting structure and underground. Above ground on-site connections near substations or to the electric grid shall be allowed.

F. The use of guy wires is discouraged. If required, they shall be located away from pedestrian routes/access points and marked with visible, reflective, colored objects, such as flags, reflectors, or tape, which shall be placed on the anchor points of guy wires and along the guy wires up to a height of ten feet from the ground.

G. No wind energy system shall be located within 250 feet of any significant wildlife habitat, as defined by Maine Department of Environmental Protection/Maine Department of Inland Fisheries and Wildlife under provisions of the Natural Resources Protection Act (38 M.R.S. § 480 et seq.) including wildlife habitat for species appearing on the official state and federal list of endangered or threatened animal species.

H. For all wind energy systems over 45 feet in height above the ground or over 100kW, evidence shall be provided that the Environmental Coordinator of the Maine Department of Inland Fisheries and Wildlife and the Maine Natural Area Program have been notified of the location, height, and design of the proposed wind energy system at least three

weeks prior to any final determination under this subsection. Any comments received therefrom shall be addressed to the satisfaction of these state authorities prior to any final determination under this provision.

I. Wind energy systems shall be designed to avoid electromagnetic interference with the transmission or reception of radio, telephone, television, microwave, navigational, or similar signals to neighboring areas.

J. Wind energy systems and associated facilities shall use non-reflective materials and neutral colors and textures that blend in with the surrounding environment. Ground-mounted systems and associated facilities shall be landscaped to integrate the proposed wind energy system into the existing landscape/streetscape.

K. No part of the system may be illuminated, except as required by the Federal Aviation Administration (FAA) or other authorities for safety and security purposes. Where lighting is required, it shall be at the lowest intensity allowable with fixtures shielded and directed to minimize glare and visibility from the ground.

L. There shall be no signs, advertisements, flags, or decorative items on a wind energy system or any associated facilities, except for the manufacturer's/installer's/owner's identification (not exceeding one square feet in size), appropriate warning signs, or lights if required by the FAA.

M. Wind energy systems shall be prohibited within any historic landscape district, any historic cemetery, any historic district, except the Congress Street Historic District where it coincides with the B-3 zone, or within 1,000 feet of any designated historic landmark, which shall include Portland Observatory, Cathedral of Immaculate Conception, St. Dominic's Cathedral, St. Luke's Cathedral, State Street Church, and City Hall.

N. Wind energy systems within R-OS zones are allowed only where they are co-located within public industrial or utility facilities.

O. Systems shall be screened with a vegetated buffer from public areas and residential buildings.

6.5 CONDITIONAL USES

6.5.1 Conditional use review procedure

A. **Review authority.** The Zoning Board of Appeals shall review all conditional use applications, with the exception that the Planning Board shall review:

1. All conditional use applications in the B-3/B-3b/B-3c, B-5/B-5b, B-6, and B-7 zones.
2. All conditional use applications associated with projects that are otherwise before the Planning Board.
3. Conditional use applications for specific uses for which the Planning Board is identified as the review authority under Subsection 6.5.6.

B. **Application.** Applications for conditional use review shall be submitted to the Building Authority for all Zoning Board of Appeals reviews and the Planning Authority for all Planning Board reviews. A nonrefundable application fee, as established from time to time by the City Council to cover administrative costs and costs of a hearing, shall accompany each application. The application shall be in such form and shall contain such information and documentation as shall be prescribed from time to time by the review authority.

C. **Public hearing.** A public hearing shall be set, advertised, and conducted by the review authority in accordance with Article 2 of this Land Use Code.

D. **Action**. Within 30 days following the close of the public hearing, the review authority shall render its decision, in a manner and form specified by Article 2 of this chapter, approving the conditional use, approving the conditional use subject to conditions as specified in Subsection 6.5.3, or denying it. The failure of the review authority to act within 30 days shall be deemed an approval of the conditional use, unless such time period is mutually extended in writing by the applicant and the review authority. Within five days of such decision or the expiration of such period, the Building Authority or Planning Authority shall mail notice of such decision or failure to act to the applicant and, if a conditional use is authorized, list therein any and all conditions imposed by the review authority.

6.5.2 General conditional use standards

The review authority shall, after review of the application, approve a conditional use upon a finding that the proposed conditional use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zone. The review authority shall find that this standard is satisfied if it finds that:

A. The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone.

B. The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.

C. 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.

D. The proposed use will meet any additional zone or use-specific standards identified in Tables 6-A to 6-F and Subsections 6.5.6 and 6.5.7.

6.5.3 Conditions on conditional use approvals

The review authority may impose such reasonable conditions upon the premises benefited by a conditional use as may be necessary to prevent or minimize adverse effects therefrom upon other property in the neighborhood. Such conditions shall be expressly set forth in the resolution authorizing the conditional use. Violation of such conditions shall be a violation of this article.

6.5.4 Effect of issuance of a conditional use approval

The approval of a conditional use shall not authorize the establishment or extension of any use nor the development, construction, reconstruction, alteration, or moving of any building or structure, but shall merely authorize the preparation, filing. and processing of applications for any permits or approvals which may be required by the City of Portland Code of Ordinances, including but not limited to a building permit, a certificate of

occupancy, subdivision approval, and site plan approval.

6.5.5 Limitations on conditional use approvals

No conditional use approval shall be valid for a period longer than six months from the date of approval, or such other time, not to exceed two years, as may be fixed at the time granted, unless the conditional use has been commenced or a building permit is issued and construction has begun within that period and is thereafter diligently pursued to completion, provided, however, that one or more extensions of said time may be granted if the facts constituting the basis of the decision have not materially changed and the two year period is not exceeded thereby. A conditional use approval shall be deemed to authorize only the particular use for which it was issued and such approval shall automatically expire and cease to be of any force or effect if such use shall for any reason be discontinued for a period of 12 consecutive months or more.

6.5.6 Supplemental use-specific conditional use standards

In addition to the general conditional use standards, the following standards shall apply to specific conditional uses:

A. Automobile, boat, and related dealerships and auto service stations

1. The Planning Board shall be the review authority.
2. Signs shall not adversely affect visibility at intersections or access drives. Such signs shall be constructed, installed, and maintained so as to ensure the safety of the public. Such signs shall advertise only services or goods available on the premises.
3. No ingress and egress driveways shall be located within 30 feet from an intersection. No entrance or exit for vehicles shall be in such proximity to a playground, school, church, other places of public assembly, or any residential zone that the nearness poses a threat or potential danger to the safety of the public.
4. A landscaped buffer, no less than five feet wide, shall be located along street frontages (excluding driveways). The, buffer shall consist of a variety of plantings in accordance with the City of Portland *Technical Manual*.
5. Car washes shall be designed to avoid the tracking of residual waters into the street.

B. Emergency shelters

1. The facility shall provide adequate space for conducting security searches and other assessments.
2. The facility shall be designed with a centralized shelter operations office on each level providing sight lines to sleeping areas.
3. A management plan adequately outlining the following areas shall be provided: management responsibilities; process for resolving neighborhood concerns; staffing; access restrictions; on-site surveillance; safety measures; controls for resident behavior and noise levels; and monitoring reports.

4. Adequate access to and from METRO service shall be provided. The facility shall be within a ¼ mile of a METRO line, or shall be within ½ mile of a METRO line and provide adequate indoor space to permit all shelter guests day shelter, as well as implement strategies to help residents utilize transit.
5. The facility shall provide on-site services to support residents, such as case management, life skills training, counseling, employment and educational services, housing assistance, or other programs.
6. Suitable laundry, kitchen, pantry, bicycle storage, and secure storage facilities for shelter stayers shall be provided on-site.
7. An outdoor area for guest use shall be provided on-site with adequate screening to protect privacy of guests.

C. General office in the R-6 & R-6a zones

1. Offices shall serve a member of a recognized profession and be maintained for the conduct of that profession. Professional office uses do not include veterinary offices.
2. For the use of any building designed or constructed for residential use, which was in use as a residence on April 18, 1984, or thereafter:
   a. A professional office shall not be located within 500 feet of another as measured along the street line to the respective property lines.
   b. A building with one or more professional offices shall have at least 50% of the total floor area of the building devoted to residential uses.
   c. The total number of individuals working in a building of professional offices shall not exceed the equivalent of four full time employees.
   d. Any additions or exterior alterations shall be compatible with the architecture of the building and maintain the residential appearance of the building. Construction of a new building shall be compatible with the architectural character of the surrounding area.
3. The scale and surface area of parking, driveways, and paved areas shall be arranged and landscaped to be compatible in size and scale with neighboring properties in the area and to properly screen vehicles from adjacent properties and streets.

D. High-tech manufacturing

1. A minimum of 1/3 of the total square footage devoted to manufacturing shall be conducted in a laboratory environment, in a controlled environment with specialized air handling systems that exceed levels for pressurization and filtration found in office environments and traditional manufacturing facilities.
2. Rooftop equipment shall be integrated into the overall building design and shall be screened as necessary.
3. In the B-7 zone, accessory warehousing is permitted. Where warehousing cannot be located on the same lot because the land area is too small to accommodate the

warehousing on the same lot, one remote warehouse may be located within 600 feet of the principal use referenced above.

4. In the O-P zone, truck traffic serving a single manufacturing business or institution shall not exceed, on a regular basis, more than two tractor-trailer truck deliveries per week. No deliveries shall be accepted between 7:00 p.m. and 7:00 a.m.

E. Industrial uses

1. *In the B-2/B-2b/B-2c zones*
   a. The Planning Board shall be the review authority.
   b. The site shall have an adequate traffic circulation pattern designed to avoid hazards to vehicular circulation on adjoining streets. All stacking of motor vehicles shall be on site, and loading facilities shall be located to the rear of the building and shall not be visible from the street.
   c. The exterior design of the structures, including architectural style, facade materials, roof pitch, building form, established setbacks, and height shall be of a commercial rather than industrial character. The site shall contain screening and landscaping which shall meet the requirements of Article 14 for screening between land uses and the City of Portland *Technical Manual*.
2. *In the B-3/B-3b/B-3c zones*
   a. The floor area devoted to industrial use shall not exceed 10,000 square feet. For a building in existence on March 11, 1991, the floor area shall not exceed 10,000 square feet or 50 percent of the total floor area, whichever is greater.
   b. The associated vehicular loading, unloading, parking, circulation, and traffic volumes on the site and on adjacent public streets shall not have a more intensive impact than any use on the site within the last five years.
   c. Any buildings located in a PAD Overlay Zone shall be subject to the requirements of Section 8.7 in addition to the requirements of this subsection.
   d. For buildings that either were not in existence on March 11, 1991, or were in existence on that date but were either in use for any permitted use in the B-3 zone or were designed or constructed for any such use:
      i. No tractor trailer trucks or longer vehicles shall be associated with the proposal.
      ii. The proposal shall exclude warehousing and storage as a principal use.
      iii. The use shall not generate more than six delivery or service trips per day between 7:00 a.m. and 7:00 p.m.
3. *In the B-5/B-5b zones*
   a. Truck loading and access and vehicle parking shall be located in the rear or side yard of the site where possible.
   b. Street frontage shall be designed for pedestrian scale or interest.
   c. Shared infrastructure to the extent practicable, including, but not limited to, service alleys, parking areas,

stormwater treatment, public transportation facilities, and driveways, shall be utilized.

4. *In the B-6 zone.* No brew pubs or microbreweries east of Waterville Street shall be permitted within 50 feet of Fore Street.

F. Institutional uses (excluding preschools)

1. The Planning Board shall be the review authority.
2. In the case of expansion of existing institutional uses onto land other than the lot on which the principal use is located, it shall be demonstrated that the proposed use cannot reasonably be accommodated on the existing site through more efficient utilization of land or buildings, and will not cause significant physical encroachment into established residential areas.
3. The proposed use shall not cause significant displacement or conversion of residential uses existing as of June 1, 1983, or July 15, 1985 in the IR-1 and IR-2 zones, or thereafter.
4. In the case of a use or use expansion which constitutes a combination of the conditional institutional uses with capacity for concurrent operations, the applicable minimum lot sizes shall be cumulative.
5. In the case of community halls:
   a. The structure shall have been in existence as of January 4, 2010.
   b. The structure shall have been built for institutional or other non-residential uses.
   c. The structure shall be operated by, or operated subject to the control of, a not-for-profit entity in accordance with its not-for-profit purposes.
   d. A parking management plan shall be submitted for review and approval by the Planning Board.
6. In the case of private club or fraternal organizations, any such establishment serving alcoholic beverages or in possession of a license for serving alcoholic beverages shall meet the minimum lot size requirement for places of assembly greater than 10,000 square feet.
7. Post-secondary schools in the R-2 zone shall only be permitted on a collector or arterial road.
8. In the case of a post-secondary school within the R-5 zone and not including the USM Overlay Zone, such school may build principal structures to a height of 55 feet if the following standards can be met:
   a. Minimum lot size: 10 acres which may include adjacent land owned by the institution on both sides of a public street.
   b. Minimum setback between buildings on-site: 20 feet.
   c. Minimum setback from external property boundary: 30 feet, except that parking garages over 35 feet in height must be located 50 feet from external property boundaries when adjacent to an adjoining residential use.
   d. The area between the structure and adjoining residential uses must be adequately screened with appropriate landscaping or other features to buffer the building and effects thereof

(i.e. noise, light, etc.) from abutting properties.

G. Multi-family

1. *In the R-3 and R-5 zones.* Alteration of a structure existing and not in residential use as of January 1, 1984 to three or more dwelling units shall be permitted as a conditional use provided that:
   a. No open outside stairways or fire escapes above the ground floor shall be constructed or have been constructed in the immediately preceding five years.
   b. 3,000 square feet of land area per dwelling unit shall be required.
   c. A lower level dwelling unit shall have a minimum of one-half of its floor-to-ceiling height above the average adjoining ground level.
   d. Any addition or exterior alteration, such as change in façade materials, building form, or roof pitch, shall be designed to be compatible with the architectural style of the structure.
   e. In the R-3 zone, any addition or exterior alteration shall be limited to a gross floor area equal to or less than 25% of the total existing floor area as of June 13, 2018.
   f. Paved areas shall be designed to be compatible in size and scale with neighboring properties in the area and properly screened from adjacent streets.
2. *In the I-B zone*
   a. Multi-family buildings shall have a maximum of four units.
   b. No open outside stairways or fire escapes above ground floor shall be constructed or have been constructed in the immediately preceding five years.
   c. A below grade dwelling unit shall be permitted only if access is provided directly to the outside of the building.
   d. Density shall be determined by the most restrictive abutting residential zone, except for those lots which are served by public water and sewer, where density shall be determined by the least restrictive abutting residential zone. If no residential zone is abutting, density shall be determined by the nearest residential zone. Residential uses shall meet the requirements of such abutting or nearest residential zone.
   e. Any additions or exterior alterations shall be compatible with the original architecture of the building. The exterior design of new construction, including the architectural style, facade materials, roof pitch, building form, and height shall be compatible with neighboring properties.
   f. No existing dwelling unit shall be decreased to less than 1,000 square feet of floor area.
   g. No additional dwelling unit shall have less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic.
   h. All sanitary waste shall be disposed of by a public sewer, subsurface sewerage system, or other method in

compliance with all applicable federal, state and local regulations.

i. There shall be sufficient water for the needs of the dwellings such that the use does not cause an unreasonable burden on an existing water supply nor adversely affect groundwater resources.

H. Off-street parking

1. *In the R-3, R-4, and R-5 zones*
   a. Off-street parking must be designed to satisfy the parking requirement of a use located in and conforming with the provisions of a nearby mixed-use or industrial zone.
   b. The lot on which the parking is proposed must be located wholly within 300 feet, measured along lines of public access, from the use which requires the off-street parking.
   c. The lot where the off-street parking is proposed shall be under the control of the owner of the use which requires the off-street parking. Evidence of such control by deed or lease shall be required before the certificate of occupancy is issued. If such control should be abrogated, the parking use thus allowed shall automatically revert to a nonconforming use in violation of this article and shall be terminated forthwith.
   d. Conditions may be imposed to insure development compatible with that of the immediate neighborhood notwithstanding the provisions of any other section of this Land Use Code. Such conditions may include limits on the period of such use.
2. *In the R-6 zone*. Off-street parking shall be for passenger cars for uses permitted in the R-6 zone.
3. *Structured parking in the B-6 and B-7 zones*
   a. Parking garages shall incorporate first floor retail space or other non-parking and active use along all street frontages.
   b. The Planning Board may waive the requirement for first floor mixed-use upon demonstration that the project meets one or more of the following criteria:
      i. The applicant demonstrates that steepness of grade or the character of the adjacent street will not support retail or first-floor mixed use in the foreseeable future.
      ii. 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. Such space (between the garage and the street) shall, in the interim, not be used for surface parking.
      iii. The applicant can demonstrate to the satisfaction of the Planning Board that a market for first floor mixed uses currently does not exist, provided that the structure of the garage is designed to

accommodate retail and or mixed-uses in the future. In these cases, the Planning Board will need to find that, on the street-level deck of a proposed parking garage, a minimum of 20 feet horizontal distance of depth from the street and nine feet finished floor-to-finished ceiling clearance could house future retail and or mixed use. The applicant will further need to demonstrate that the garage design anticipates the future development of utilities and circulation necessary for non-parking uses. Where a parking garage fronts on more than one public street and where there is an existing change in grade elevation of over 5% across the footprint of the garage, the nine-foot floor-to-ceiling requirement only applies to the street with higher traffic volumes.

c. 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. Use of traditional storefront design concepts and traditional building materials is encouraged.

4. *Surface parking in the B-3, B-6, and B-7 zones*

a. Surface lots shall be laid out in a manner conducive to development of future buildings, and/or structured parking.

b. Surface parking, including parking aisles, shall be located at least 35 feet from a street. The 35-foot setback shall not apply to driveways perpendicular to the street providing access to the site.

c. In the B-7 zone, surface parking that does not meet the 35-foot parking setback may be permitted as a conditional use, provided that:

i. All or a portion of the 35-foot setback area had a gravel surface on September 29, 2015.

ii. The total gravel surface area on the lot and any contiguous lots did not exceed 15,000 square feet on September 29, 2015.

iii. The parking spaces provide parking to a principal building on a contiguous lot.

iv. One of the buildings described in (iii) above meets the minimum height requirements of the Bayside Height Overlay Map and/or a building on the site has a floor area of 25,000 square feet or greater.

v. The total number of spaces within 35-foot setback in combination with other spaces on the lot does not exceed the minimum parking spaces required.

vi. The proposed parking spaces meet the landscape and buffer requirements of Subsection 6.8.8.

vii. Parking spaces within the 35-foot setback shall provide stormwater

quality treatment if required by the City of Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Standards. If not required, an alternative low impact development treatment system approved by the Planning Board shall be provided.

I. Preschool facilities

1. *In all zones*
   a. Outdoor play areas shall be screened and buffered from surrounding residences with landscaping and/or fencing to minimize visual and noise impacts.
   b. Solid waste shall be stored in covered containers. Such containers shall be screened on all sides.
2. *In the R-P zone*. Facilities for more than 12 children shall meet the following additional standards:
   a. The facility shall provide a minimum of 75 square feet of outdoor play area per child.
   b. The play area shall be located in the side and rear yards only and shall not be located in front yards.
   c. Outside play areas shall be separated from abutting properties by a fence at least 48 inches in height.
   d. A 10-foot-wide landscaped buffer shall be required outside of the fenced play area, and shall be established in accordance with the landscaping standards of the City's *Technical Manual*.
3. *In residential and island zones*
   a. The facility shall be located in a structure in which there is one or more occupied residential units or in an existing accessory structure, unless the facility is located in a principal structure that has not been used as a residence in whole or in part within the five years immediately preceding the application for a preschool use, or in a nonresidential structure accessory to the principal nonresidential use.
   b. There shall be no maximum limit on the number of children in a facility located in a principal structure that has not been used as a residence in whole or in part within the five years immediately preceding the application for a preschool use, or in a nonresidential structure accessory thereto.
   c. The maximum capacity shall be 12 children for facilities located in residential or existing structures accessory thereto, unless the additional standards in paragraph (d) below are met.
   d. Preschool facilities located either in structures that have been in residential use within the past five years or in existing accessory structures and that serve between 13 and 24 children shall meet the following additional standards:
      i. The facility shall provide a minimum of 75 square feet of outdoor play area per child.

ii. The play area shall be located in the side and rear yards only and shall not be located in front yards.
iii. Outside play areas shall be separated from abutting properties by a fence at least 48 inches in height.
iv. A 10-foot-wide landscaped buffer shall be required outside of the fenced play area, and shall be established in accordance with the landscaping standards of the City's *Technical Manual*.
v. The minimum lot size for a preschool located in a residential or existing accessory structure and serving more than 12 children shall be 20,000 square feet.
vi. The maximum number of children in a preschool facility located in a residential or existing accessory structure shall be 24.
vii. Any additions or exterior alterations such as facade materials, building form, roof pitch, and exterior doors shall be designed to be compatible with the architectural style of the building and preserve the residential appearance of the building.

J. Raising of domesticated animals for non-commercial purposes

1. No animals shall be kept on any lot less than three acres or closer than 100 feet to any street or lot line, except domesticated chickens as regulated in Chapter 5 of the City of Portland Code of Ordinances.
2. This use shall not create any odor, noise, health, or safety hazards, or other nuisance to neighboring properties.
3. Raising of pigs or reptiles is not permitted.

K. Sheltered care group homes

1. A sheltered care group home shall not be located within 500 feet of another, as measured along street lines to the respective property lines.
2. The facility shall make provision for adequate on-site staffing and supervision in accordance with applicable state licensing requirements. If a facility is not licensed by the state, there shall be a minimum of one staff person for every 10 residents or fraction thereof.
3. The Board of Appeals or Planning Board may impose conditions upon a conditional use permit concerning the creation or operation of a sheltered care group home including but not limited to the following: site and building maintenance; lighting, fencing, and other appropriate security measures; screening and buffering of parking areas; compatibility of any additions or alterations with the existing residential structure; compatibility of new structures with the architectural character of the surrounding area; and limitation on the duration of a sheltered care group home permit.

L. Utility substations

1. Utility substations shall be as small in size as practicable.
2. Substations shall be suitably screened and landscaped so as to ensure compatibility with the surrounding neighborhood. The remainder of the lot not consumed by the

utility substation and its related access shall be designed and designated for future development.

3. If greater than 100 square feet in the B-7 zone, the structure shall be set back at least 35 feet from the street right-of-way except in the case of a lot having frontage on Marginal Way and I-295, provided the minimum 35-foot setback is met along Marginal Way.
4. In the B-7 zone, the substation equipment shall be fully enclosed within a structure.

6.5.7 Supplemental zone-specific conditional use standards

In addition to the general conditional use standards and supplemental use-specific conditional use standards, the following standards shall apply to conditional uses within certain zones:

A. R-OS Zone

1. The use shall be in conformity with or satisfy a deficiency identified in a federal, state, regional, or city recreation and open space plan, including but not limited to the state *Comprehensive Outdoor Recreation Plan*, as such plans may from time to time be created or revised.
2. Buildings and structures shall not obstruct significant scenic views presently enjoyed by nearby residents, passersby, or users of the site.
3. Indoor recreation or nonrecreational uses shall serve a significant public purpose that cannot reasonably be accommodated outside of the recreation and open space zone.

6.6 ACCESSORY USES

6.6.1 In general

A. Accessory uses shall be permitted in conjunction with permitted or conditional principal uses. Accessory uses must be:

1. Customarily found in association with the principal uses.
2. Generally consistent with the impacts of the primary use.
3. Secondary in nature, clearly incidental and subordinate to the principal uses in terms of area and function.
4. Located on the same lot as the principal use unless otherwise permitted.
5. Consistent with the intent of the zone.

B. No accessory use or uses within a building shall occupy more than a combined total of 25% of the floor area of the principal building, with the exception of required off-street parking, unless otherwise provided in Subsection 6.6.2 below.

C. No accessory use or uses not within a building shall occupy more than a combined total of 25% of the unbuilt lot area, or of the required rear yard area, with the exception of off-street parking or as otherwise provided in Subsection 6.6.2.

6.6.2 Standards for specific accessory uses

A. Accessory Dwelling Units (ADUs)

1. Accessory Dwelling Units (ADUs) shall be permitted on all lawfully conforming and nonconforming lots with legal residential uses. ADUs shall comply with all dimensional standards of the underlying zone unless otherwise provided below.
2. Up to two ADUs shall be permitted per qualifying property.

3. At the time of an ADU's initial construction or legal creation, the owner(s) of the property on which the accessory dwelling unit is created must occupy at least one of the dwelling units, with the exception of legally nonconforming lots on Peaks Island.

~~4. On Peaks Island, neither the accessory unit or principal unit shall be used for short-term rentals as defined under Chapter 6, Section 150.1 of the City of Portland Code of Ordinances.~~

~~5.~~4. When an ADU is significantly visible from public ways, the building design shall:

a. Be clearly subordinate to the principal structure(s) in scale and position in relationship with the street and principal structure(s).

b. Not include outside stairways or fire escapes above the ground floor.

~~6.~~5. Under circumstances where an existing nonconforming structure is converted to an ADU, the design of the ADU shall take into consideration to the extent practicable the privacy of adjacent properties.

~~7.~~6. The developer of an ADU shall record a deed restriction requiring that the ADU and at least one other non-accessory unit on-site remain under common ownership.

~~8.~~7. ADUs shall comply with all dimensional requirements of the underlying zone except~~:~~

~~9.~~8. ~~L~~lot coverage and lot area per dwelling unit requirements.

~~c. Within the IR-1 zone, the minimum lot area shall be 70,000 square feet, except on Peaks Island where this standard shall not apply.~~

~~d. Within the IR-2 zone, the minimum lot area shall be 30,000 square feet, except on Peaks Island where this standard shall not apply.~~

~~10.~~9. An ADU shall be limited to a gross floor area of 2/3 of the gross floor area of the principal unit(s). In no circumstance shall the height of detached ADUs on a lot exceed the height of the primary structure. Additionally, the aggregate square footage of detached ADUs on a lot shall not exceed the gross floor area of the primary structure.

B. **Amusement devices.** Except where the principal use consists of the sale of alcoholic beverages for consumption on premises or where the principal structure is an airline terminal, pinball machines or amusement devices shall not be considered to be accessory uses whenever there are more than a total of two such machines or devices on the premises.

C. **Antennas, discs, transmitting and receiving equipment.** Building-mounted antennas, discs, and other transmitting and receiving equipment shall be:

1. No taller than 15 feet above the highest structural steel of the building roof.
2. Setback no less than 15 feet from the building perimeter.
3. Integrated into the architecture of the building in placement, form, color, and material so as to screen or camouflage such equipment from public view.

D. **Drive-throughs.** Drive-throughs shall be permitted as an accessory use in the B-4 zone. Drive-throughs shall be reviewed as conditional accessory uses in the B-2/B-2b/B-2c zones, B-3/B-3b/B-3c zones, B-6 zone, and B-7 zone. In all

other zones, drive-throughs shall be prohibited. Where a conditional use, drive-throughs shall be subject to the provisions of Section 6.5 and the following additional review standards:

1. *In general*
    a. The Planning Board shall be the review authority.
    b. Features such as windows, vacuum cleaners, menu/order boards, and stacking lanes must be placed, where practicable, to the side and rear of the principal building except where such placement will be detrimental to an adjacent residential zone or use, and shall be located no nearer than 40 feet from any adjoining property located in a residential zone. This distance shall be measured from the outermost edge of the outside drive-through feature to such property line. In addition, drive-through features shall not extend nearer than 25 feet from the right-of-way.
    c. The site must have adequate stacking capacity for vehicles waiting to use these service features without impeding vehicular circulation or creating hazards to vehicular circulation on adjoining streets.
    d. Any speakers, intercom systems, or other audible means of communication shall not play pre-recorded messages. Any speakers, intercom systems, audible signals, computer prompts, or other noises generated by the drive-through services or fixtures shall not exceed 55 dB or shall be undetectable above the ambient noise level as measured by a noise meter at the property line, whichever is greater.
    e. Site and vehicular light sources shall not unreasonably spill over or be directed onto adjacent residential properties and shall otherwise conform to the lighting standards set forth in the City of Portland *Technical Manual*.
    f. Where automobiles may queue, waiting for drive-through services, their impacts must be substantially mitigated to protect adjacent residential properties from headlight glare, exhaust fumes, and noise. As deemed necessary by the review authority, mitigation measures shall consist of installation of solid fencing with landscaping along any residential property line which is exposed to the drive-through or the enclosure of the drive-through fixtures and lanes so as to buffer abutting residential properties and to further contain all associated impacts.
    g. Drive-through lanes shall be designed and placed to minimize crossing principal pedestrian access-ways or otherwise impeding pedestrian access.
    h. The board, as part of its review, may take into consideration the impact hours of operation may have on adjoining uses.
2. *In the B-2/B-2b/B-2c zones.* Drive-throughs shall only be permitted when accessory to a pharmacy or banking facility use. Drive-throughs shall not be permitted for

restaurant, bakery, or other food or beverage service uses. Drive-throughs are only permitted in buildings of three or more stories where a majority of the upper stories is devoted to three or more dwelling units. The drive-through shall be screened as much as practical from the front of the building and shall be no closer than 40 feet from abutting residential zones and 25 feet from the street line.

3. *In the B-3/B-3b/B-3c zones.* Drive-throughs shall only be permitted when accessory to a bank. Drive-throughs shall be subject to the Downtown Urban Design Guidelines.
4. *In the B-6 zone.* Drive-throughs shall only be permitted when accessory to a bank and located in the interior of parking structures. Drive-through vehicle circulation shall not create an impediment for retail or mixed-use development for the first floor of the subject garages along any adjacent public streets.
5. *In the B-7 zone*
    a. The drive-through must be accessory to a bank occupying a minimum floor area of 4,000 square feet.
    b. The drive-through must be attached to or included within a building with a minimum floor area of 20,000 square feet, except that for lots of less than 20,000 square feet and in existence as of March 9, 2005, a drive-through may be included in a building of less than 20,000 square feet.
    c. The drive-through facility must be attached or included within a building and/or addition meeting the minimum height of four stores in the Bayside Height District A and three stories in the Bayside Height Districts B and C. For the purposes of this conditional use, the minimum height exceptions for the B-7 zone shall not apply.
    d. The first floor of the building must include banking or other retail storefront uses with storefront windows, entries, and interior public space oriented to and visible from the street, with front entry access facing the street and directly accessible from the public sidewalk.
    e. Drive-through vehicle circulation shall not be located between the building and any adjacent public streets.
    f. The drive-through shall be limited to two vehicle drive-through lanes.
    g. The location of any drive-through shall be limited to the geographic area between Somerset/Kennebec Streets/I-295/Franklin Street/Forest Avenue.

E. Heliports. Heliports shall meet the following minimum specifications:

1. *Roof heliport*
    a. Take-off area (min.): 200 feet x 250 feet
    b. Parking area (min.): 30 feet x 90 feet
2. *Ground heliport*
    a. Take-off area (min.): 300 feet x 700 feet
    b. Parking area and station building shall be located out of flight area.
3. *Elevation of operational area above street (max.):* 100 feet
4. *Clearance from lateral obstruction (min.):* 100 feet

5. *Width of approach and departure path (min.)*: 500 feet at landing area, tapering outward 15 degrees on each side to a width of 1,000 feet
6. *Slope with emergency landing areas:* 1:8
7. *Slope without emergency landing areas:* 1:20
8. *Curved approach:* Minimum radius to turn, 650 feet
9. *Approach zone transition area slope:* 1:2

F. Home occupations

1. The purpose of home occupations is to allow the secondary and incidental use of a residence for the conduct of appropriate occupations whose external activity levels and impacts are so limited as to be compatible with the residential character of the neighborhood.
2. Home occupations must be conducted entirely within the dwelling unit by one or more persons residing within the dwelling unit.
3. In connection with the operation of a home occupation, the following requirements shall be met:
   a. A home occupation shall not occupy more than 500 square feet of floor area or more than 25% of the total floor area of such a dwelling unit, whichever is less, or in the case of licensed family day care homes or home babysitting services, to accommodate not more than six children plus two children after school and having no nonresidential employees.
   b. There shall be no outside storage of goods and materials nor shall there be exterior displays, or display of goods visible from the outside.
   c. Storage of materials related to the home occupation shall count as a part of the occupancy limitations above, but shall not constitute a dominant part of such occupancy, provided, however, storage of such materials or products in garages or other accessory structures is prohibited.
   d. Exterior signs shall be limited to one non-illuminated sign not exceeding a total area of two square feet, affixed to the building and not projecting more than one foot beyond the building.
   e. Any exterior alterations to the residence shall be compatible with the architecture of the building and maintain the residential appearance by virtue of exterior materials, lighting, and signs.
   f. The home occupation shall not produce offensive noise, vibration, smoke, dust, or other particulate matter, odorous matter, heat, humidity, glare, or other objectionable effects.
   g. There shall be no more than one nonresident employed in the home occupation, provided, however, family day care or home babysitting services shall have no nonresident employees.
   h. No traffic shall be generated by the home occupation in greater volumes than would normally be expected in a residential neighborhood.

i. No motor vehicle exceeding a gross vehicle weight of 6,000 pounds shall be stored on the property in connection with the home occupation.

4. No residence shall be occupied, altered or used for any home occupation except the following:
   a. Accountants and auditors.
   b. Answering services (telephone).
   c. Architects.
   d. Artists and sculptors.
   e. Authors and composers.
   f. Computer programming.
   g. Custodial services.
   h. Custom furniture repair and upholstering.
   i. Dentists, doctors, therapists, and health care practitioners.
   j. Direct mail services.
   k. Dressmakers, seamstresses and tailors.
   l. Engineers.
   m. Family planning services.
   n. Hairstylists (limited to no more than two hair dryers).
   o. Home crafts, such as model making, rug weaving, lapidary work, cabinet making, weaving, ceramics.
   p. Interior designers.
   q. Lawyers, justices of the peace, and notary publics.
   r. Licensed family day care home or babysitting services.
   s. Musicians or music teachers, including group instruction not to exceed six students at any time but not including performances or band rehearsals, which shall meet the following additional requirements:
      i. Electronic amplification is prohibited.
      ii. The applicant shall demonstrate that noise attenuation is provided which minimizes perception of sound at property lines at all times during the use. Noise attenuation measures may include, but are not limited to, insulation, double-pane windows, air conditioners, or any combination of these or similar noise attenuation measures.
      iii. Hours of operation shall be limited to 8:30 a.m. to 9:30 p.m.
   t. Office facility of a minister, rabbi, or priest.
   u. Photographic studios.
   v. Professional counseling and consulting services.
   w. Professional research services.
   x. Sales persons provided that no retail or wholesale transactions are made on the premises.
   y. Small appliance repair.
   z. Snow plowing provided that only one snow plow vehicle is stored on or generated from the site.
   aa. Special tutoring or instruction (not to exceed three pupils at any given time).
   bb. Clerical services.
   cc. Small-scale marijuana caregiver, except that no more than one small-scale caregiver may operate out of any one dwelling unit.

5. A home occupation that is not listed in (4) above but is similar to and no more objectionable than those home occupations listed, shall be permitted as a conditional use subject to the requirements of Section 6.5 of this article. This provision shall not include veterinarians, kennels, animal raising, funeral homes, retail uses including antique shops, restaurants, dancing studios, towing services, repair and painting of automobiles as home occupations.

G. **Letting of rooms.** The letting of rooms within an existing dwelling unit in any residential zone shall be permitted as an accessory use provided that:

1. There shall be no more than two persons occupying such room or rooms.
2. There shall be not more than two rooms per dwelling unit occupied for such use.
3. There shall be no increase in the bathroom and/or kitchen facilities in the dwelling, and no such facility shall have been constructed in the immediately preceding two years.

H. **Makers' markets in the IL-b zone.** Makers' markets, including periodic or seasonal sale of handcrafted and limited production products for final consumption, which may include prepared or raw foods, shall be permitted as an accessory use in the IL-b zone, provided that:

1. Such sales are located within a lawfully conforming principal permitted use.
2. Such sales occupy an area no larger than 45% of the floor area devoted to the principal use.
3. Such sales by any single vendor or group of vendors shall occur for no more than a total of 28 hours a week collectively.
4. Such products are produced or permitted to be produced in the IL/IL-b zone.
5. Such products are sold by the producer of the product or their designee.

I. **Tasting rooms in industrial zones.** Tasting rooms shall be permitted as accessory uses on the premises of facilities where beer, wine, spirits, other alcoholic or non-alcoholic beverages, or food are produced, provided that:

1. Service of food in the facility is limited to that which does not constitute a full course meal.
2. No more than 10% of the beverage menu in tasting rooms accessory to beverage production or 10% of the food menu in tasting rooms accessory to food production is produced or manufactured off-site.

Tasting rooms shall not be subject to the limitations on the use of unbuilt lot or yard area in Subsection 6.6.1(C).

J. **Solar energy generation**. Roof-mounted, building-integrated, or small-scale ground-mounted solar energy systems shall be permitted as accessory uses within all zones except the Stream Protection Zone and within cemeteries. Accessory solar energy systems are only permitted within the Recreation and Open Space Zone where co-located with public industrial or utility infrastructure and are subject to historic preservation review when such systems are either located within or less than 100 feet from an identified historic district or historic landscape district. All accessory

solar energy systems are subject to the following conditions:

1. Accessory solar energy systems shall comply with all general use standards for solar energy systems as stated under Subsection 6.4.16 of this article and with the dimensional requirements as stated under Article 7.
2. Small-scale ground-mounted solar arrays shall occupy less than 1,000 square feet of ground area.

K. **Wind energy generation.** Freestanding and roof-mounted wind energy systems shall be permitted as accessory uses within all zones except the Stream Protection Zone, within historic districts except where the Congress Street Historic District coincides with the B-3 zone, within historic cemeteries or historic landscape districts, or within 1,000 feet of any designated historic landmark (Portland Observatory, Cathedral of Immaculate Conception, St. Dominic's Cathedral, St. Luke's Cathedral, State Street Church, and City Hall), subject to the following conditions:

1. Accessory wind energy systems shall comply with all general use standards for wind energy systems as stated under Subsection 6.4.18 of this article.
2. Properties shall be limited to one free-standing wind energy system and/or three roof or building mounted wind energy systems.
3. Accessory wind energy systems shall either be located on the rear half of a building or structure, or within the rear yard and shall be sited to maximize existing vegetative or other screening from nearby residential buildings and public ways. The location shall minimize changes to existing topography and natural vegetation which would result from construction or maintenance of the system.

6.7 TEMPORARY USES

6.7.1 In general

Temporary uses may be permitted from time to time as determined by the Planning Authority. In addition to regulations pertaining to temporary uses contained elsewhere in the City of Portland Code of Ordinances, the following standards shall apply for specific temporary uses.

6.7.2 Standards for specific temporary uses

A. **Temporary parking.** Parking of vehicles may be permitted by a temporary certificate of occupancy for a limited period of time not to exceed one year in anticipation of future development.

B. **Temporary private tenting.** Temporary private tenting with one tent accessory to a principal residential use is permitted in the IR-1 and IR-2 zones provided that adequate water supplies and sanitation facilities are available in connection with the principal residential use.

C. **Temporary sales.** No "garage sale," "lawn sale," "attic sale," "rummage sale," or other similar casual sale of tangible personal property which is advertised by any means whatsoever whereby the public at large is or can be made aware of such sale, shall be deemed to be accessory or temporary if such sale occurs after sales have been conducted on the same premises for six or more days previously during the calendar year.

D. **Temporary stands**

1. No premises shall be used for business purposes consisting of temporary stands, booths, platforms, or vehicles intended for the sale of merchandise or other mercantile purposes if any part of such stand, booth, platform, or vehicle is proposed to be located nearer than 125 feet to any residential zone, except that a single stand with no more than 200 square feet of floor area for the sale of agricultural products produced on the premises shall be permitted as accessory to a permitted agricultural use.
2. A single produce stand shall be permitted on the premises of a community garden for the sale of flowers, vegetables, herbs, or fruit produced on the premises, provided that the stand is no more than 100 square feet in floor area or open table area and is located a minimum of five feet from any property line; that sales are limited to two days per week between the hours of 9:00 a.m. and 6:30 p.m. during the growing season from May 25 through October 31; and that the stand has received all necessary permits. The use of produce stands shall be seasonal and temporary. Any properly permitted structure may remain on the premises year-round. If the community garden is owned or operated by a non-profit organization, sales of flowers, vegetables, herbs, or fruit produced in other gardens or farms in Maine owned or operated by said organization shall be permitted within the same limitations listed above. For purposes of this subsection, community garden means a parcel of open land used for the cultivation of flowers, vegetables, herbs, or fruit by a group of city residents either jointly as a single plot or through individual garden plots or beds.
3. A single produce stand shall be permitted on the premises of a non-profit organization incorporated pursuant to the laws of the State of Maine with the permission of the owner and on the premise of public schools with the permission of the school department; provided that the stand is for the sale of local fruit, vegetables, flowers, seedlings, and plants produced by the seller; that the stand is no more than 100 square feet in floor area or open table area and is located a minimum of five feet from any property line; that sales on the premises are limited to two days per week between the hours of 9:00 a.m. and 6:30 p.m. during the growing season from May 25 through October 31; and that the stand has received all necessary permits. The use of produce stands shall be seasonal and temporary. Any properly permitted structure may remain on the premises year-round.
4. In the IR-1 and IR-2 zones, a single stand with no more than 200 square feet of floor area for the sale of agricultural products produced on the premises or the sale of fish or shellfish caught by the occupant of the premises shall be permitted as a temporary use.

E. **Truck load sales.** Truck load sales shall not extend beyond three consecutive days nor occur more frequently than three times a calendar year.

6.8 PERFORMANCE STANDARDS

6.8.1 Design

A. In the B-3 zone, all development, all building and site alterations, and all provision of landscaping or other pedestrian amenities shall be consistent with the Downtown Urban Design Guidelines.

B. In the B-7 zone, all buildings shall have a minimum of one operable public pedestrian entrance facing the street frontage of the lot. Such building entrances shall comply with the B-7 design standards.

6.8.2 Development in the R-OS zone

All development in the Recreation and Open Space Zone shall comply with the following development standards:

A. All ground areas not used for parking, loading, vehicular, or pedestrian areas and not left in their natural state shall be suitably landscaped and designed with quality materials that are consistent with adopted City policy or master plans, and which provide a comfortable, durable, accessible, readily maintainable, and aesthetically pleasing environment.

B. Natural features, such as mature trees and natural surface drainageways, shall be preserved to the greatest possible extent consistent with the uses of the property.

C. Loading areas shall be screened and parking areas shall be screened and landscaped so as to avoid a large continuous expanse of paved area.

D. Buildings and structures shall be sited to avoid obstructing significant scenic views presently enjoyed by nearby residents, passersby, and users of the site.

E. Storage of commodities and equipment shall be completely enclosed within buildings or provided with screening by a fence, wall, or landscaping.

F. The outer perimeter of playfields, play lots, and other active recreational areas shall be screened, or shall be located a reasonable distance from any residential use.

6.8.3 Discharges

No discharge shall be permitted at any point into any private sewage disposal system, or stream, or into the ground, of any materials in such a way or of such nature or temperature as to contaminate any water supply, or otherwise cause the emission of dangerous or objectionable elements, except in accordance with standards approved by the Public Health Authority or by the Public Works Authority. No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the Department of Public Works in accordance with Chapter 24 of the City of Portland Code of Ordinances. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of Chapter 24.

6.8.4 Electromagnetic interference

In any industrial zone, there shall be no electromagnetic interference that adversely affects the operation of any equipment other than that belonging to the creator of such interference.

6.8.5 Exterior lighting

All exterior lighting shall be designed and installed with full cut-off fixtures to direct illumination onto

the site and to prevent illumination from such fixtures on neighboring properties.

6.8.6 Heat, glare, radiation

Heat, glare, or radiation shall be imperceptible without instruments at lot boundaries and shall not present a safety hazard.

6.8.7 Historic resources

The exterior design of proposed or renovated structures located within historic districts shall be subject to the historic preservation provisions of Article 17. The exterior design of proposed or renovated structures located adjacent to historic districts or historic resources shall be subject to historic preservation requirements of Article 14.

6.8.8 Landscaping and screening

A. In all mixed-use zones, the O-P zone, the R-P zone, and the A-B zone outside of restricted access areas, sites shall be landscaped to screen parking and accessory site elements, including storage and solid waste receptacles, from the right-of-way, public open space, or abutting residential zones.

B. In the I-H and I-Hb zones, where a front yard abuts an arterial or a major collector street, it shall be landscaped. Rear yards, side yards, and the perimeter of any parking area for greater than 15 vehicles shall be landscaped if visible from a right-of-way, public open space, or residential zone.

6.8.9 Noise

A. The maximum permissible sound level of any continuous, regular, or frequent source of sound produced by an activity shall be as shown in Table 6-G.

B. For any noise generated by a use in the B-5/B-5b, B-6, B-7, I-L/I-Lb, I-M/I-Mb, and I-H zones, sound shall be measured at or within the boundaries of any residential zone. For any noise generated by a use in the B-1/B-1b, B-2/B-2b/B-2c, I-B, R-P, O-P, A-B, and IS-FBC zones, sound shall be measured at lot boundaries. For any noise generated by a use in the B-3/B-3b/B-3c, sound shall be measured at lot boundaries or within publicly accessible pedestrian open space. For any noise generated by a use in the B-4 zone, sound shall be measured off premises at the source of complaint.

C. In addition to the sound level standards established in Table 6-G, all uses shall employ best practicable sound abatement techniques to prevent tonal sounds, or sound waves usually perceived as a hum or whine because

TABLE 6-G: NOISE STANDARDS

Zone	Daytime/Evening (7 a.m.-9 p.m.)	Night (9 p.m.-7 a.m.)
I-B	60 dBA	55 dBA
R-P	55 dBA	55 dBA
O-P	60 dBA	60 dBA
B-1/B-1b	55 dBA	55 dBA
B-2/B-2b/B-2c	60 dBA	55 dBA
B-3/B-3b/B-3c	60 dBA	55 dBA
B-4	65 dBA	60 dBA
B-5/B-5b, B-6, B-7[1]	60 dBA	50 dBA
I-L/I-Lb[1]	60 dBA	50 dBA
I-M/I-Mb[1]	70 dBA	55 dBA
I-H/I-Hb[1]	75 dBA	55 dBA
A-B	60 dBA	60 dBA
IS-FBC	60 dBA	55 dBA

[1] Daytime/evening noise regulations shall extend until 10 pm, after which time nighttime noise regulations shall apply.

their instantaneous sound pressure varies essentially as a simple sinusoidal function of time, and impulse sounds, or sound events characterized by brief excursions of sound pressure, each with a duration of less than one second. If such tonal and impulse sounds cannot be prevented, uses shall employ best practicable sound abatement techniques to minimize the impact of such sounds in residential zones.

D. Sound levels shall be measured with a sound level meter with a frequency weighting network manufactured according to standards prescribed by the American National Standards Institute (ANSI) or its successor body. Measurements shall be made at all major lot lines of the site, at a height of at least four feet above the ground surface. In measuring sound levels under this subsection, sounds with a continuous duration of less than 60 seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ1).

E. Wind energy systems

1. Where the underlying zone is residential and does not specify sound requirements, or where the system will be within 100 feet of a residential building, the audible sound levels generated by the wind energy system shall not exceed 45 decibels on the A scale between the hours of 9:00 p.m. and 7:00 a.m., and 50 decibels on the A scale between 7:00 a.m. and 9:00 p.m., as measured at the nearest property line in accordance with this provision and technical standards set out in the City of Portland *Technical Manual*.
2. For any system over 45 feet in total height not in the Recreation and Open Space, Resource Protection, or Island Transfer Station Overlay Zones, the maximum sound levels allowed by this ordinance shall not be exceeded at the nearest property boundary and at the nearest point vertically above the property line that coincides with the maximum building height allowed in the abutting zone.
3. Any system located within the Recreation and Open Space, Resource Protection, or Island Transfer Station Overlay Zones and more than 100 feet from a residential building shall not exceed 55 decibels on the A scale as measured 50 feet from the base of the tower.
4. Audible sound levels of wind energy systems shall include sounds generated in all conditions including low and high winds (furling, yawing, and flutter) and power outages (freewheeling). If after installation, the system is determined to be operating at levels above these limits (as measured at the property lines in accordance with this provision and applicable technical standards, the owner shall take (at the owner's cost) remedial action to ensure compliance with these limits. Required action may include relocation or removal of the system.

F. Exemptions

1. Noises created by construction and maintenance activities between 7:00 a.m. and 10:00 p.m. are exempt from the

maximum permissible sound levels set forth above. Construction activities on a site abutting any residential use between the hours of 10:00 p.m. and 7:00 a.m. shall not exceed 50 dBA.

2. The following uses and activities shall also be exempt from the requirements of Table 6-G:
    a. The noises of safety signals, warning devices, emergency pressure relief valves, and any other emergency devices.
    b. Traffic noise on public roads or noise created by aircraft and railroads.
    c. Noise created by refuse and solid waste collection, provided that the activity is conducted between 6:00 a.m. and 7:00 p.m.
    d. Emergency construction or repair work by public utilities, at any hour.
    e. Noise created by any recreational activities which are permitted by law and for which a license or permit has been granted by the City, including but not limited to concerts, parades, sporting events, and fireworks displays.

6.8.10 Odor

A. It shall be a violation of this article to create an odor nuisance.

1. An odor nuisance shall be considered to exist when 10 confirmed complaints occur in an area within two separate 24-hour periods. The 10 confirmed complaints must originate from 10 different households in an area zoned residential or from 10 different individuals in a commercial or industrial facility. The Building Authority shall only respond to a complainant who confirms that the odor is detectable at the time of the actual complaint. In order to confirm a complaint, the Building Authority or its designee shall first determine that an odor is detectable in the area of the complaint. The Building Authority or its designee shall interview the complainant to verify that the detectable odor is in fact the odor that resulted in the complaint. If the complainant verifies the odor as the source of the complaint, then the Building Authority shall notify the owner or operator of the alleged odor source either in person or by telephone within one working day, with a written confirmation within seven working days of the complaint. In the event that the Building Authority is unable to contact the owner or operator of the alleged odor source in person or by telephone within one working day, then the Building Authority shall send written notice to the operator within seven working days of the complaint.
2. In the event that 10 complaints are confirmed as set forth in paragraph (1) above in two separate 24-hour periods within a 90-day period, the Building Authority shall cause a certified odor inspector to investigate any odor complaints received in the next 30 days following the receipt of the tenth confirmed complaint from the second 24 hour period. If the odors remain under the ambient intensity standard as established in this subsection for the next 30 days,

then a new odor nuisance must be established after that time in accordance with the requirements of this subsection. The certified odor inspector shall do the following in response to a complaint under this subsection:

a. Verify that an odor is detectable in the area of the complaint and confirm that it is the odor that resulted in the complaint.
b. Quantify the intensity of the odor on the eight point in butanol intensity scale as defined in regulations promulgated by the Planning & Urban Development Director to establish training and technical standards to support this subsection.
c. Track the odor to its source.

B. When the certified odor inspector determines that a violation has occurred because an odor has exceeded the maximum ambient odor levels set forth in this subsection, the Building Authority shall notify the owner or operator either by telephone or in person of the violation within one working day of the violation. The Building Authority shall confirm this notification in writing within seven working days of this initial notice. In the event that the Building Authority is unable to contact the owner or operator by telephone or in person within the required time period, then it will send written notification within seven working days of the violation.

C. Upon receipt of the written notice of violation, the owner or operator of the odor source shall do the following:

1. Implement odor reduction procedures immediately upon notification by the Building Authority that the facility has violated this subsection wherever odor reduction can be achieved by operational or procedural changes at the facility.
2. Submit to the Building Authority, within 30 days of the written notice of violation, an odor reduction plan which is designed to reduce ambient odors attributable to emissions from that source to the maximum allowable intensity for that zone. The plan shall include a detailed summary of the measures that the owner or operator will take to mitigate the community annoyance and estimated dates for completion of those measures. In the event that it will take longer than 30 days to develop the odor reduction plan, the owner or operator of the facility shall submit within the 30-day time period a schedule for the development of the odor reduction plan. The Building Authority shall review this plan to determine whether it will be adequate to resolve the odor nuisance in a reasonable time period.
3. Implement the plan in accordance with the schedule approved by the Building Authority.

D. The maximum ambient intensity standard for odors generated by uses located in the industrial zones shall not exceed the following levels when the odor is measured in the zone indicated:

1. 4.0 in any industrial or mixed-use zone for odors resulting from uses in industrial or mixed-use zones.
2. 3.0 in any residential zone for odors resulting from uses in industrial or mixed-use zones.

6.8.11 Outdoor effects

A. In all mixed-use, office, and industrial zones and the IS-FBC zone, uses shall be operated within a completely enclosed structure, except for those customarily operated in open air.

B. In the mixed-use and IS-FBC zones, open air activities shall be those licensed by the city.

C. There shall be no outdoor kennels.

D. No open exterior stairways or fire escapes shall be constructed above the ground floor, except that the Building Authority may permit the installation of an exterior egress stair or an upgrade of an existing exterior fire escape for a conforming or lawfully nonconforming dwelling unit existing as of January 5, 1998, if such egress is required to meet current fire or other life safety codes, provided that the owner demonstrates to the Building Authority that:

1. There is no practical and economically reasonable way to provide such egress within the interior of the building, as demonstrated by the submission of detailed floor plans showing the projected cost of and the impact on the existing dwelling from an interior stair.

2. The stairway and associated landings and other building fixtures are designed and will be constructed to have a minimal visual impact upon the building, especially as viewed from any public way or public open space, as demonstrated by photographs of the front and any other affected facades of the building and plans or drawings of the proposed egress stairs.

6.8.12 Outdoor storage

Outdoor storage shall comply with the requirements of Table 6-H.

6.8.13 Relocation of displaced residents

In the B-3, B-3b, and B-3c zones, any development which results in the displacement of residents of dwelling units currently located on the development site shall meet the requirements of Section 18.5.

6.8.14 Smoke

Smoke shall not be emitted at a density in excess of the opacity level designated in Table 6-I, as classified in Method 9 (Visible Emissions) of the Opacity Evaluation System of the U.S. Environmental Protection Agency.

TABLE 6-H: OUTDOOR STORAGE STANDARDS

B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, O-P, R-P, A-B[1], and IS-FBC	There shall be no exterior storage with the exception of fully enclosed receptacles for solid waste disposal.
B-4, B-5/B-5b, B-6, B-7, and Industrial	Outdoor storage of materials shall be done in such a manner as to prevent the breeding and harboring of insects or vermin, to prevent the transfer of such materials from the site by natural causes or forces and to contain fumes, dust, or other materials which constitute a

TABLE 6-H: OUTDOOR STORAGE STANDARDS

	fire hazard. This storage shall be accomplished within enclosed containers or by raising materials above ground, separating materials, preventing stagnant water, or by some other means. In the B-4, B-5/B-5b, B-6, and B-7 zones, no outdoor storage shall be permitted in the front setback, except for storage for plant and tree nurseries or lumber yards if listed as a permitted use. In the B-4, B-5/B-5b, B-6, and B-7 zones, any storage of new materials, finished products, or related equipment must be suitably screened from the public way and abutting properties by a landscaped buffer or solid fence at least five feet in height.
B-1/B-1b and B-2/B-2b/B-2c	Vehicles or truck trailers with or without wheels shall not be used for on-site storage. In the B-2/B-2b/B-2c zone, there shall be an exception where such storage is located in a designated loading zone identified on an approved site plan or such storage is not visible from the street or adjacent residences during winter.
B-5	Outdoor storage of rental and moving equipment shall be located on the site and not within a public right-of-way or sidewalk. A curb, guard rail or other barrier shall be provided to contain such equipment and storage on the site as well as out of landscape buffer areas. A landscape buffer shall be provided. Outdoor storage of rental and moving equipment must be accessory to a building in existence as of the date of this ordinance. Exterior lighting shall not exceed that which is necessary for security purposes.

[1] Does not apply to airports.

TABLE 6-I: SMOKE STANDARDS

Zone	Opacity Level
R-P	20%
O-P	
B-1/B-1b	
B-2/B-2b/B-2c	
B-3/B-3b/B-3c	
B-4	30%
B-5/B-5b	40%
B-6	
B-7	
Industrial and A-B zones	
IS-FBC	20%

6.8.15 Storage and repair of vehicles

A. In all residential zones, all island zones, the R-P zone, and the B-3 zone, only one unregistered motor vehicle may be stored outside for a period not exceeding 30 days.

B. In other mixed-use zones, storage of unregistered motor vehicles for more than 10 days and outdoor storage of used automobile tires shall be prohibited.

C. No building in any zone shall be erected, altered or used as a garage for the storage of more than three motor vehicles or for the business of repairing motor vehicles if any part of either old or new building when completed would be closer than five feet to any part of any church, public or private hospital, or school or if any part of either old or new building when completed would be less than 15 feet from the boundary line of any lot upon which any part of any church, public or private hospital, or school is located. No existing garage used for the storage of more than three motor vehicles or for the business of repairing motor vehicles shall be deemed to become a nonconforming use through the subsequent erection of such church, hospital, or school closer than the aforesaid distance to such a garage.

6.8.16 Traffic

Development in the I-M, I-Ma and I-Mb zones shall utilize streets classified as arterials by the Maine Department of Transportation to the greatest extent possible.

6.8.17 Waste disposal

A. All solid waste disposal, including materials which might cause fumes or dust, or constitute a fire hazard if stored out-of-doors, shall be only in fully enclosed, covered containers or receptacles. In all nonresidential zones with the exception of the industrial zones, such containers or receptacles shall be within designated, screened areas. In industrial zones and the B-4 zone, outdoor storage of refuse, debris, or previously used materials awaiting reuse shall either be in an appropriate container or located within a designated, screened area.

B. Containers or receptacles shall not leak or otherwise permit liquids or solids to escape from the container or be transferred beyond lot boundaries by natural causes or forces. Areas attracting large numbers of insects or vermin are prohibited.

C. Where food processing is permitted, all food processing waste shall be stored within a completely enclosed structure and if not refrigerated shall be removed from the site in an enclosed container within 48 hours of its generation. All enclosed and exterior food processing waste storage areas shall be cleaned and sanitized on a regular basis.

6.8.18 Vibration

A. In any mixed-use zone, the O-P, and the R-P zones, vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile-supported pier.

B. In all industrial zones, any use creating earthshaking vibrations, with the exception of airports, shall be controlled in such a manner as to prevent transmission beyond lot lines of vibrations causing a displacement of .003 or greater on one inch, as measured by a vibrograph or similar instrument at the property boundaries.

7 DIMENSIONAL STANDARDS

7.1 APPLICABILITY

Construction, alterations, and additions to structures and buildings are governed by this article, except when superseded by other applicable laws or ordinances. It is the intent that, when in doubt, this article should be interpreted to accommodate the goals of the City's Comprehensive Plan and other plans.

7.2 RULES OF MEASUREMENT

Building footprint. The lot area contained within the outermost perimeter of the building envelope including cantilevered portions of the building, projections, and porches, decks, and similar attached structures integral to the building and contributing to its mass, but excluding roof overhangs.

Floor area. The total floor space enclosed by exterior or standard fire walls of a building, exclusive of vent shafts and courts.

Grade, pre-development. Average grade, existing on October 1, 2000, at the corners of the foundation of the proposed structure.

Height. The vertical measurement from grade, or the pre-development grade on the islands, to the highest point of a structure. For buildings, height shall be measured to the roof beams in flat roofs, to the highest point of the roof beams or the highest point on the deck of mansard roofs, to a level midway between the level of the eaves and highest point of pitched roofs or hip roofs, or to a level two-thirds of the distance from the level of the eaves to the highest point of gambrel roofs. For this purpose, the level of the eaves shall be taken to mean the highest level where the plane of the roof intersects the plane of the outside wall on a side containing the eaves.

Impervious surface ratio. The proportion of a site covered by impervious surfaces, calculated by dividing the total impervious surface area by the lot area. For the purposes of this measurement, impervious surface shall be as defined by the Maine Department of Environmental Protection.

Landscaped open space ratio. The proportion of lot area covered by landscaped open space, calculated by dividing the total landscaped open space area by the lot area. For the purposes of this measurement, landscaped open space shall not include rooftop gardens or structured or engineered surfaces.

Lot area. The area of a lot enclosed within the boundary lines of a lot.

Lot coverage. The proportion of lot area covered by building footprint and the footprint of accessory detached structures.

Lot width. The distance measured between side lot lines through that part of the principal building where the lot is narrowest.

Net land area. The land area arrived at by subtracting from lot area the square footage of the following: a) areas of special flood hazard; b) existing watercourses measured by the area between the top of the banks at the normal high-water mark; c) wetlands; and d) slopes of 25% or greater. Where a slope of 25% or greater was altered to less than 25%

within the two years immediately preceding a development proposal, such slope shall also be subtracted from the lot area.

Setback. A space on a lot which is required by this article to be maintained open, unoccupied, and unobstructed between lot lines and any structure, except as otherwise permitted in this code of ordinances. A setback shall be measured from a line parallel to the lot line drawn through the point of a structure nearest to such lot line. This measurement shall be taken at right angles from such parallel line. When measuring setbacks, setbacks shall be interpreted to include setbacks of structures from property lines and setbacks of principal structures from one another. No principal structure shall occupy the minimum setback of another principal structure. Setbacks shall not apply to fences, flagpoles, raised garden beds, and other similar structures. When setbacks are established in relationship to height, the height in stories or feet of that part of the principal structure adjoining a yard shall be used in determining the required setback.

Setback, front. A setback along the front lot line, extending between side lot lines, the depth of which shall be the shortest horizontal distance between the front lot line and any structure. In the case of lots with frontages on two or more streets, the orientation of the principal entry to the principal building shall prevail. In the case of lots without frontage on a street, the property line that parallels the nearest developed street shall be considered the front.

Setback, rear. A setback along the rear lot line, extending between side lot lines, the depth of which shall be the shortest horizontal distance between the rear lot line and any structure.

Setback, side. A setback along a side lot line extending from the front lot line to the rear lot line, the width of which shall be the shortest horizontal distance between the side lot line and any structure.

Stepback. A space on a lot which is required by this article to be maintained open, unoccupied, and unobstructed between lot lines and any structure that occurs at a prescribed height above the ground. Stepbacks shall apply to all attached accessory structures, including the minimum necessary housing of elevators, stairways, tanks fans, or other building operating equipment not intended for human occupancy.

Story. That portion of a building included between the surface of any floor and the surface of the floor, or the roof, next above. A half story is a story situated under a sloping roof, the area which at a height four feet above the floor does not exceed two-thirds of the floor area of the story immediately below it. A story which exceeds 18 feet in height shall be counted as two stories. A basement shall be counted as a story for the purpose of height measurement where more than one-half of its height is above the average level of the adjoining ground.

Street frontage. The distance for which a lot line adjoins a public street, from one lot line intersecting said street to the furthest distant lot line intersecting the same street.

7.3 DIMENSIONAL STANDARDS

Tables 7-A to 7-H shall establish the dimensional standards for each zone.

TABLE 7-A: RESIDENTIAL ZONE DIMENSIONAL STANDARDS

		R-1	R-2	R-3[2]	R-4	R-5[2,3]	R-5a[4]	R-6[6,7]	R-6a[13]
Lot area (min.)	**Governmental**	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF			
	Hospital			10 ac.		5 ac.		2 ac.	
	Intermediate or long-term, extended care facility	3 ac.	3 ac.	2 ac.		2 ac.	1.5 ac.	1 ac.[8]	
	Lodging house					9,000 SF		2,000 SF	
	~~**Multiplex**~~				~~9,000 SF~~	~~9,000 SF~~			
	Place of assembly **<10,000 SF**	1 ac.	1 ac.	1 ac.	15,000 SF	.5 ac.	.5 ac.	10,000 SF	
	Place of assembly **>10,000 SF**	2 ac.	2 ac.	2 ac.	30,000 SF	1 ac.	1 ac.	15,000 SF	
	Post-secondary school		2 ac.			2 ac.		2,000 SF	
	Elementary, middle, and secondary school	2 ac.	2 ac.	2 ac.	30,000 SF	30,000 SF		30,000 SF	
	Raising of animals	3 ac.							
	Residential	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF[3]	6,000 SF /2 ac. max[5]	2,000 SF	4 ac.
	All other uses	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF		2,000 SF	
Lot area per dwelling unit (min.)		15,000 SF	10,000 SF	6,500 SF	3,000 SF	3,000 SF	1,600 SF	725 SF	
Lot area per rooming unit (min.)						1,000 SF		250 SF[9]	
~~**Lot area per multiplex unit** (min.)~~					~~3,000 SF for first 3, 6,000 SF thereafter~~	~~4,500 SF~~			
Lot area per SNIDU[1] (min.)					2,400 SF	3,600 SF			
Street frontage (min.)		75 ft.	50 ft.	50 ft.	50 ft.	50 ft.	50 ft.	20 ft.	
Lot width (min.)		100 ft.	80 ft.	65 ft.	60 ft.	60 ft. ~~90 ft. for multiplex~~	60 ft.	20 ft.	
Front setback (min.)		25 ft.	25 ft.	25 ft.	25 ft.	20 ft.	25 ft.	5 ft.	
		Or average depth of adjacent front yards							
Rear setback (min.)		25 ft.	25 ft.	25 ft.	25 ft.	20 ft.	25 ft.	10 ft.	
	Detached accessory (< 250 SF footprint)	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	
Side setback (min.)	**<1.5 stories to 1.5 stories**	12 ft.	12 ft.	8 ft.	10 ft.	8 ft.	10 ft.	5 ft.[10]	<45 ft. in height: 10 ft.
	2 stories	14 ft.	14 ft.	14 ft.	14 ft.	12 ft.	14 ft.		
	2.5 stories	16 ft.	16 ft.	16 ft.	16 ft.	14 ft.	16 ft.		>45 ft. in height: 15 ft.
	Detached accessory (< 250 SF footprint)	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.		
	On side street (min.)	20 ft.	20 ft.	20 ft.	20 ft.	15 ft.	20 ft.	None	
		Or depth of front yard directly abutting the lot.							

TABLE 7-A (CONT.): RESIDENTIAL ZONE DIMENSIONAL STANDARDS

		R-1	R-2	R-3[2]	R-4	R-5[2, 3]	R-5a[4]	R-6[6, 7]	R-6a[13]
Stepbacks (above 35 ft. when property line abuts a residential zone)(min.)								10 ft. from side property line and 15 ft. from rear property line[11]	
Structure height (max.)		35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	45 ft.[12]	65 ft.
	Detached accessory	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	
Lot coverage (max.)		20%	20%	35%	30%	40%	30%	60%	
Landscaped open space ratio (min.)								20%	
Width of garage opening on front façade (max.)								9 ft. or 40% of the front facade, whichever is greater, and in no case more than 20 ft.	

[1] Special needs independent dwelling unit.
[2] See Table 7-B for PRUD standards.
[3] Single-family homes may be built on small lots in the R-5 under small residential lot dimensional requirements under certain conditions. See Table 7-C for R-5 Small Residential Lot dimensional requirements.
[4] For R-5a, PRUD standards shall apply to PRUDs, multi-family development of 4 or more units, congregate care, and intermediate, extended, or long-term care facilities, unless noted otherwise in the table above. See Table 7-B for additional standards that apply to these uses.
[5] Applies to 1-, 2-, and 3-family dwellings only.
[6] Alterations to single-family, two-family, and multi-family dwellings in existence as of 6/15/15 shall not result in the creation of any additional dwelling unit of less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic; and shall not result in any existing dwelling unit being reduced in size to less than 1,000 square feet of floor area, exclusive of common areas and storage in basement and attic.
[7] Subdivisions consisting of horizontally attached dwellings on individual lots are not required to have side yards between such dwellings where a party wall condition will exist. Horizontally attached dwellings located within a single lot shall be required to meet the applicable side setback requirements at the external lot boundaries of the subdivision and internal lot boundaries between such dwellings that are not attached to each other. No minimum lot size or width shall be required for individual lots underlying townhouse (horizontally attached) dwelling types. The applicable minimum lot area per dwelling shall apply to each lot.
[8] Except for long-term and extended care facilities: 10,000 SF for the first 9 residents plus 750 SF for each additional resident, up to a total of 2 ac.
[9] A minimum lot area per intermediate care resident of 250 SF also applies.
[10] Except that a side setback in the R-6 zone may be reduced to zero, provided that the cumulative side yards are not less than 10 ft. A permanent maintenance easement a minimum of 5 ft. in width shall be provided on the parcel adjacent to the lot line with the reduced side setback.
[11] Does not apply on side streets.
[12] Except as provided under the Fort Sumner Park Height Overlay and the Bayside Height Overlay.
[13] All R-6 dimensional standards apply in the R-6a unless otherwise indicated.

TABLE 7-B: PRUD DIMENSIONAL STANDARDS

	R-3	R-5	R-5a[3]
Lot area[1] (min.)	3 ac.	2 ac.	2 ac.[4]
Net land area per dwelling unit (min.)	6,500 SF	3,000 SF	1,600 SF[4, 5]
Units per building (max.)	PRUD < 5 ac.: 2 PRUD > 5 ac.: 6	12	
Average number of units per building (max.)	PRUD > 5 ac.: 5		
Structure height (max.)	35 ft.	35 ft.	55 ft.
Building length (max.)	Without garages: 100 ft. With integral garages: 140 ft.	140 ft.	
Length of accessory garage structure (max.)		60 ft.	
Building setback from external subdivision property lines (min.)	3 or fewer D.U. in building: 25 ft.	Bldg. Length 100 ft. or less: 25 ft.	Bldg. Length 100 ft. or less: 25 ft.
	4 or more D.U. in building: 35 ft.	Bldg. Length >100 ft.: 35 ft.	Bldg. Length >100 ft.: 35 ft.
Distance between detached PRUD dwelling units (min.)	16 ft.		
Common recreation open space area[2] (min.)	300 SF/D.U.	300 SF/D.U	200 SF/D.U.[4]
Habitable space elevation	No habitable space in a PRUD shall be below grade, except basements that are a part of and below above-ground units.		

[1] Areas of special flood hazard as defined in Article 12 shall be excluded from lot area calculations.
[2] Common open space shall be designated on the site. The primary purposes of such open space areas shall be for passive or active recreation. Such spaces may include natural, landscaped or hardscaped elements. At a minimum, a contiguous area of 6,000 SF shall be provided.
[3] In the R-5a zone, PRUD standards shall apply to PRUDs, multi-family development of 4 or more units, congregate care, and intermediate, extended, or long-term care facilities unless otherwise noted.
[4] Does not apply to intermediate, extended, or long-term care facilities but does apply to PRUDs, congregate care, and multi-family development of 4 or more units.
[5] Minimum land area per intermediate care facility resident: 8,000 SF lot area for first 35 residents, plus 350 SF for each additional resident.
[6] For PRUD standards in island zones, see Table 7-D.

TABLE 7-C: R-5 SMALL RESIDENTIAL LOT DEVELOPMENT DIMENSIONAL STANDARDS[1]

Lot area (min.)		5,000 SF
Side setback (min.)		7 ft.[2]
	Detached accessory (< 250 SF footprint)	5 ft.
	Side yard on side street	10 ft.
Lot width (min.)		40 ft.
Street frontage (min.)		40 ft.
Lot coverage (max.)		50%

[1] Single-family homes may be built on small lots in the R-5 under small residential lot development dimensional requirements if the lot is: vacant; or used exclusively for parking; or contains structure(s) not used for residential purposes; or is created from a single lot division of a developed lot and results in a lot meeting the small residential lot dimensional requirements with the remaining developed portion meeting the standard dimensional requirements of the R-5 zone.
[2] The width of one side setback may be reduced 1 ft. for every foot that the other side yard is correspondingly increased, but no side yard shall be less than 4 ft. in width.

TABLE 7-D: ISLAND ZONE DIMENSIONAL STANDARDS

			IR-1	IR-2	IR-3	I-B[10]	
						Served by Public Water & Sewer	*Not Served by Public Water & Sewer*
Lot area (min.)[11]	Bed and breakfast					5,000 SF for 3 guest rooms plus 5,000 SF/ additional room	10,000 SF/ guest room
	Campground		10 ac.		5,000 SF/ campsite, but not less than 10 ac.		
	Hotel				10,000 SF/ guest room	5,000 SF for 3 guest rooms plus 5,000 SF/ additional room	10,000 SF/ guest room
	Lodging house			10,000 SF/ rooming unit	10,000 SF/ rooming unit	5,000 SF for 3 rooming units, plus 5,000 SF/ additional rooming unit	10,000 SF/ rooming unit
	Place of assembly	>10,000 SF	30,000 SF	30,000 SF	35,000 SF	20,000 SF	
		<10,000 SF	15,000 SF	15,000 SF			
	PRUD/PUD		5 ac.[1]	5 ac.[1]	20 ac.		
	Raising of animals		3 ac.				
	Residential		40,000 SF[2,3]	20,000 SF[3]	42,500 SF[6]	20,000 SF	
	Restaurant				35,000 SF	10,000 SF	20,000 SF
	Retail				35,000	None	20,000 SF
	Seasonal camp		10 ac.		35,000 SF		
	School/educational facility		40,000 SF	20,000 SF	35,000	20,000 SF	
	All other uses				35,000 SF	20,000 SF	
Lot area per dwelling unit (min.)			~~None~~[4]40,000 SF[4]	~~None~~20,000 SF[4]	42,500 SF[7]		
Street frontage (min.)			100 ft.[5]	70 ft.[5]	70 ft.[8]	40 ft.	
Lot width (min.)			100 ft.[5]	80 ft.[5]	80 ft.	40 ft.	
Front setback (min.)			30 ft.[5]	25 ft. or the average of adjacent front yards[5]	25 ft.[9]	20 ft. or avg. depth of adjacent front yards	
Rear setback (min.)			30 ft.[5]	25 ft.[5]	25 ft.[9]	10 ft.	
	Detached accessory (< 250 SF footprint)		10 ft.[5]	10 ft.[5]	10 ft.[9]		

TABLE 7-D (CONT.): ISLAND ZONE DIMENSIONAL STANDARDS

		IR-1	IR-2	IR-3	I-B[10] *Served by Public Water & Sewer*	I-B[10] *Not Served by Public Water & Sewer*
Side setback (min.)		20 ft.[5]	20 ft.[5]	20 ft. [9]	10 ft.	
	Detached accessory (< 250 SF footprint)	15 ft.[5]	15 ft. [5]	15 ft. [9]	10 ft.	
	On side street	20 ft.[5]	20 ft.[5]	20 ft. [9]	10 ft.	
Structure height (max.)		35 ft.	35 ft. For Little Diamond Island: 27 ft.	35 ft.	35 ft.	
	Accessory detached	18 ft.	18 ft.	18 ft.	18 ft.	
	Lot coverage (max.)	20%	20%	20%	50%	

[1] PRUDs shall consist of detached dwellings.
[2] 60,000 SF if not served by public water.
[3] For PRUDs, minimum lot area shall be reduced up to 50% provided there is an equivalent corresponding increase in common or public open space that is usable for passive or active recreational opportunities or that serves as a buffer between buildings or between the development and the surrounding neighborhood.
[4] In the case of PRUDs, lot area per dwelling unit shall be calculated based on net land area. ~~Except 1 dwelling unit per 40,000 SF of net land area for PRUDs in IR-1 and 20,000 SF of net land area in for PRUDs IR-2~~.
[5] For PRUDS, standard shall be reduced up to 50%. For accessory structures in the IR-1, IR-2, and I-B zones, side setbacks from principal structures shall be 5 feet.
[6] Except that the minimum lot size per dwelling unit shall be reduced by the amounts specified below, to a minimum lot size of 35,000 SF per dwelling unit, provided that the Planning Board finds that the development meets the following criteria: a. The minimum lot size per dwelling unit shall be reduced by 5,000 SF if a public off-island water source provides 75% of the water needs of the development. b. The minimum lot size per dwelling unit shall be reduced by 2,500 SF if the development provides appropriate permanent restrictions or other agreements precluding the use, maintenance and parking of all private motor vehicles exclusive of construction and common service vehicles.
[7] The maximum density for a PUD shall be based on the applicable minimum lot size for each use as measured in terms of net area. For purposes of calculating density, if separately described lots exceed the applicable minimum lot size, the excess area shall not be credited toward the minimum lot size for any other use.
[8] Except where the Planning Board finds that the development has an adequate street network to permit access for pedestrians and emergency service vehicles.
[9] When adjoining any external property boundary.
[10] All I-B standards apply for lots served by public water and sewer and lots not served by public water and sewer unless otherwise indicated.
[11] In the IR-3, the minimum lot area for buildings containing both residential and nonresidential uses shall be cumulative. Where there are two or more residential uses contained in a building, the minimum lot area shall be the larger of the applicable minimum lot sizes.

TABLE 7-E: MIXED-USE ZONE DIMENSIONAL STANDARDS

		B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c	B-4	B-5/B-5b	B-6	B-7
Lot area (min.)	**School**	20,000 SF			10,000 SF			
	Place of assembly	10,000 SF						
Lot area per dwelling unit (min.)	**On-peninsula**	435 SF	435 SF					
	Off-peninsula	1,000 SF	1,000 SF, except 435 SF if active street frontage[3]					
Lot area per rooming unit (min.)	**On-peninsula**	150 SF	150 SF					
	Off-peninsula	350 SF	350 SF					
Street frontage (min.)		20 ft.	20 ft.	15 ft.	60 ft.			
Front setback (from all street frontages) (max.)		10 ft., or the average front yard depth of nearest developed lots if < 10 ft.	10 ft.	5 ft.	20 ft.	None, except 10 ft. in B-5b	10 ft.[7]	10 ft.
Rear setback (min.)	**Principal**	None, except 10 ft. if abutting a residential zone	10 ft.		20 ft.			
	Accessory	None, except 5 ft. if abutting a residential zone	5 ft.		7 ft.			
Side setback (min.)	**Principal**	None, except 5 ft. if abutting residential zone	None		10 ft.			
	Accessory		5 ft.		5 ft.			
Stepbacks (above 35 ft. when property line abuts a residential zone) (min.)		Side: 10 ft.	Side: 5 ft.					
		Rear: 15 ft.	Rear: 15 ft.					
Length of building wall at maximum setback (min.)							70% of street frontage or 25% of building perimeter[8]	75% of street frontage or 25% of building perimeter[9]
Length of undifferentiated blank wall along publicly accessible way (max.)				30 ft., except 15 ft. within PAD Overlay				
Floor area (max.)		Non-residential uses on first floor: 10,000 SF total[1]	Laboratory and research facilities, warehousing, 10,000 SF	None, except 15,000 SF for each floor above 125 ft.			Laboratory and research facilities and warehousing: 15,000 SF	
		Restaurants (public area): 2,000 SF					Exhibition and meeting halls: 20,000 SF	
		Clinics: 3,000 SF						

TABLE 7-E (CONT.): MIXED-USE ZONE DIMENSIONAL STANDARDS

	B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c	B-4	B-5/B-5b	B-6	B-7
Structure height (max.)	On-Peninsula: 45 ft., except 50 ft. along Congress Street if commercial first floor and residential above[2] Off-Peninsula: 35 ft.	45 ft., except 50 ft. if first floor is in commercial use, 65 ft. in B-2 and B-2c on lots >5 ac. if required side and rear setbacks are increased by 1 foot for each foot of height over 45 ft., or as otherwise governed by the Bayside Height Overlay Map	See Downtown and Bayside Height Overlay Maps	65 ft.	65 ft., except in B-5b along W. Commercial St. south of Danforth St.[5] and 120 ft. on Thompson's Point[6]	65 ft. or as otherwise governed by the B-6 Building Height Overlay Map	See Bayside Height Overlay Map
Lot coverage (max.)			25% of lot area for portions of structures exceeding 125 ft. in height[4]				
Impervious surface ratio (max.)	90%	Residential: None Other uses in B-2 and B-2c: 80% Other uses in B-2b: 90%		80%			

[1] Uses in structures which existed prior to the date of enactment of the B-1/B-1b zones are exempt.
[2] The commercial first floor uses shall utilize at least 75 % of the first-floor frontage along Congress Street and shall have an average depth of at least 20 ft.
[3] A building will be determined to have an active street frontage upon meeting the following guidelines to the greatest extent practicable: the primary building façade shall be within 10 ft. feet of the front lot line; there shall be no parking on the lot within 35 ft. of the front lot line; no more than 25% of the first floor primary façade shall consist of access to garages, unutilized space, service entrances, storage or mechanicals and the remaining minimum 75% shall have an average depth of a minimum of 20 ft. for residential or commercial uses; and all primary ground floor entries to multi-family buildings must orient to street, not to interior blocks or parking lots.
[4] Except that no floor area shall be required to be less than 10,500 SF, gross.
[5] For parcels of land in the B-5b zone located along W. Commercial St. south of Danforth St.: West of the projection of the centerline of the Fletcher St. right-of-way, the maximum building height shall be 45 ft.; and, east of the projection of the centerline of the Fletcher St. right-of-way and west of the projection of the centerline of the Emery St. right-of-way, the maximum building height shall be 55 ft. A projection of the centerline of a street is defined by extending the centerline of the referenced street right-of-way along its most southerly block to the centerline of W. Commercial St. Furthermore, notwithstanding Subsection 7.5.1, no rooftop structure located between the projections of the centerlines of Emery St. and Fletcher St., as described above. shall exceed a height of 62 ft as measured from average grade of the building at its foundation.
[6] Applies only to parcels subject to an approved master development plan. Thompson's Point is defined as the contiguous parcels of upland occupying the peninsula bounded on the east by Route 295, on the north by the Mountain Division Rail right-of-way, and on the south and west by the Fore River and its associated wetlands. Nearby lands accessed from Hobart and Osgood Streets are not included.
[7] Does not apply to parking garages and public transportation facilities. Notwithstanding required setbacks, new structures located in the blocks located south of Fore Street and north of Commercial Street and its extension shall build to the key building envelopes shown on the B6 Building Height Overlay & Building Envelopes map. Buildings located in the area east of the Fore Street Connector shall not have a maximum front setback and shall not be required to build to the key building envelope perimeter. Parking structures and the buildings for public transportation facilities may, however, be set back beyond the key building envelopes (toward the interior of blocks), but may not occupy the land between the key building envelope and the street right-of-way.
[8] For buildings fronting on two or more streets, the minimum building wall on one street may be decreased so long as the frontage is proportionally increased on other streets in so far that the building wall on the secondary street is not reduced to less than 25 ft. Buildings in the area east of the Fore Street Connector shall not be subject to this requirement.
[9] Does not apply to additions to or relocations of designated historic structures or structures determined to be eligible by the Historic Preservation Board.

TABLE 7-F: OFFICE PARK & RESIDENCE PROFESSIONAL ZONE DIMENSIONAL STANDARDS

		O-P	R-P[1]
Lot area (min.)		1.5 ac.	6,000 SF
Street frontage (min.)		100 ft.	60 ft.
Lot width (min.)		150 ft.	60 ft.
Front setback (min.)		50 ft.	20 ft., or avg. depth of adjacent front yards[2]
Rear setback (min.)	**Principal**	50 ft	20 ft.
	Accessory		7 ft.
Side setback (min.)	**Principal**	25 ft., except 40 ft. where side yard abuts residential zone or use	1 story: 10 ft.
			2 stories: 12 ft.
			3+ stories: 14 ft.
	Accessory		7 ft.
	On side street		1-2 stories: 15 ft.
			3+ stories: 18 ft.
Structure height (max.)		55 ft., except 75 ft., including rooftop appurtenances, on lots within office park subdivisions which are > 50 ac. if each minimum setback is increased by 1 ft. for each 1 ft. of height above 55 ft.	45 ft.
Floor area (max)		High-tech manufacturing: 20,000 SF	
Impervious surface ratio (max.)		60%	70%
Pavement setback (min.)		15 ft.	

[1] Residential uses shall meet the dimensional requirements of the nearest residential zone.
[2] The front yard of a lot existing as of April 4, 1988, which lot is less than 100 ft. deep, need not be deeper than 10% of the depth of the lot.

TABLE 7-G: INDUSTRIAL & AIRPORT ZONE DIMENSIONAL STANDARDS

	I-L/I-Lb		I-M/I-Ma/I-Mb		I-H/I-Hb		A-B
Lot area (min.)							20,000 SF
Street frontage (min.)	60 ft.		60 ft.		60 ft.		50 ft.[2]
Lot width (min.)							50 ft.
Front setback (min.)	I-L	25 ft.	I-M/I-Ma	1 ft. for each ft. of building height	I-H	25 ft.	None, except 20 ft. if property has frontage on Westbrook St.
	I-Lb	None	I-Mb	None	I-Hb	None	
Rear setback (min.)	I-L	25 ft., except 40 ft. when abutting residential zone	I-M/I-Ma	1 ft. for each ft. of building height up to 25 ft., except 35 ft. when abutting residential zone	I-H	35 ft.	None., except 50 ft. if abutting residential zone or use[3]
	I-Lb	None, except 25 ft. when abutting residential zone	I-Mb	None, except 25 ft. when abutting residential zone	I-Hb		
Side setback (min.)	I-L	25 ft., except 40 ft. when abutting residential zone	I-M/I-Ma	1 ft. for each ft. of building height up to 25 ft., except 35 ft. when abutting residential zone	I-H	35 ft.	None, except 25 ft. if abutting residential zone or use[3]
	I-Lb	None, except 25 ft. when abutting residential zone	I-Mb	None, except 25 ft. when abutting residential zone	I-Hb		
Structure height (max.)	45 ft.		I-M/I-Mb	75 ft.	75 ft.		75 ft., except 45 ft. within 100 ft. of a residential zone
			I-Ma	45 ft.			
Impervious surface ratio (max.)	I-L	65%	I-M/I-Ma	75%	I-H	85%	70%[2]
	I-Lb	100%	I-Mb	100%	I-Hb	100%	
Pavement setback (min.)[1]	15 ft.		10 ft.		10 ft.		

[1] Shall not apply to entrance drives.
[2] Except for lots in airport restricted access areas, which shall not be subject to this provision.
[3] No structure may extend beyond the building line established for any runway or taxiway. If provided, rear and side yards must not be less than 5 ft. in width.

TABLE 7-H: RECREATION OPEN SPACE ZONE DIMENSIONAL STANDARDS

		R-OS[1]
Front setback (min.)		25 ft.
Rear setback (min.)		25 ft.
Side setback (min.)	**Principal**	12 ft.
	Accessory	
	On side street	
Structure height (max.)	**Principal**	35 ft., except 45 ft. if more than 1,000 ft. from a shoreland zone.
	Accessory	
Floor area ratio (max.)		.5
Impervious surface ratio (max.)		25%[2]

[1] Public open spaces less than 2 ac. and on the peninsula are not required to meet the R-OS dimensional standards.
[2] Except 75% for sports complexes and 100% for sewage treatment facilities.

7.4 SUPPLEMENTAL DIMENSIONAL STANDARDS

7.4.1 Corner clearance

No shrub, wall, fence, sign, or pile of material higher than 3 1/2 feet above the lowest elevation at the curbline shall be permitted on a corner lot within the area of a triangle formed by a line connecting the curblines of the intersecting streets at points 25 feet from the corner, unless said obstruction is reviewed by the Public Works Authority and found not to be a traffic or public safety hazard.

7.4.2 Fences

In residential zones, no wall or fence within 15 feet of the street shall be more than four feet in height, unless said fence is located in the side or rear yard.

7.4.3 Solar energy systems

A. Setbacks

1. Solar energy systems shall be located in side or rear yards wherever possible.
2. Minor solar energy systems shall be setback 50 feet from residential, R-P, B-1/B-1b, and B-2/B-2b/B-2c zones.
3. Major solar energy systems shall be setback 75 feet from residential, RP, B-1/B-1b, and B-2/B-2b/B-2c zones.

B. Height

1. *Ground-mounted solar energy systems.* Where the total height of the support structure plus the solar energy system is equal to or below the zone-based height maximum, the absolute height of the solar energy system shall be 20 feet above the ground as measured from the base of the support.
2. *Roof-mounted solar energy systems.* Where the total height of the support structure/building plus the solar energy system is equal to or below the zone-based height maximum, the absolute height of the solar energy system shall be:
   a. In all residential and R-P zones: 5 feet above the roof and set back from the edge of the roof by one foot for every one foot of solar energy system height.

b. In B-4 and industrial zones: No limit
c. In all other zones: 8 feet above the roof and set back from the edge of the roof by one foot for every one foot of solar energy system height.

7.4.4 Swimming pools

Outdoor swimming pools as accessory uses shall be subject to the following dimensional standards:

A. No swimming pool shall be sited in the front yard.

B. No part of any swimming pool shall be located closer than 10 feet from the principal structure, nor closer than 10 feet from side or rear lot lines.

7.4.5 Wind energy systems

A. Setbacks

1. Wind energy systems and associated facilities shall meet all setbacks for principal structures for the zone in which the system is located. Where setbacks vary, the largest setback shall apply. All parts of the wind energy system, including associated facilities and guy wires, shall be at least 10 feet from the property line (except where connecting to the grid), any utility line (in any direction), or other easement/right-of-way. The setback from utility lines, easements, and right-of-way lines may be reduced where the owner/benefitted party provides written permission.
2. Roof-mounted wind energy systems shall be set back from property boundaries and street right-of-way lines by a distance equal to or greater than four times the height of the system as measured from the roof surface at the point of attachment. For systems in and adjacent to waterfront zones, mixed-use zones (except B-1/B-1b and I-B), OP zone, industrial zones, the Island Transfer Station Overlay zone, and the R-OS zone, the setback from property boundaries and street right-of-way lines may be reduced to a minimum distance of 1.0 times the height of the system, where the system is incorporated into the architecture of the building and a certified engineer confirms that it would not present and public safety risk. The setback shall be measured to the center of the wind generator base.
3. Freestanding wind energy systems with a total height of less than 85 feet shall be set back from property boundaries and street right-of-way lines by a distance equal to or greater than 1.1 times the total height of the system, and from residential buildings and hospitals on other properties by a distance equal to or greater than twice the total height of the system. The setback distance shall be measured to the center of wind generator base.
4. Freestanding wind energy systems with a total height of greater than 85 feet shall be set back away from property boundaries and street right-of-way lines by a distance equal to or greater than twice the total height of the system, and from residential buildings and hospitals on other properties by a distance equal to or greater than four

times the total height of the system.

5. For freestanding wind energy systems in and adjacent to waterfront zones, mixed-use zones (except B-1/B-1b and I-B), the O-P zone, industrial zones, the Island Transfer Station Overlay Zone, and the R-OS zone, the setback from property boundaries and street right-of-way lines may be reduced to a minimum distance of 1.0 times the total height of the system where determined that the minimum required setback would be contrary to the public interest.
6. In residential zones, the B-1/B-1b zones, the I-B zone, and the R-P zone, where the lot is less than 0.5 acres, any vertical element of the wind energy system (tower/pole) shall be located in the rear yard or on the rear half of the existing building. Wind energy systems and associated facilities shall be sited to maximize existing vegetative or other screening from nearby residential buildings and public ways. The location shall minimize changes to existing topography and existing natural vegetation which would result from construction or maintenance of the system.

B. Height

1. Heights of wind energy systems, permitted as either freestanding or roof-mounted structures, shall be as shown in Table 7-I.
2. Roof-mounted wind energy systems shall measure no higher than 10 feet above the highest part of the roof.

TABLE 7-I: WIND ENERGY SYSTEM HEIGHT

Zone	Height (max.)
RPZ	10 ft.
Residential Zones[1], R-P, B-1/B-1b, and I-B	25 ft.
Historic Districts[2] and within 1,000 ft. of designated landmarks	45 ft.
EWPZ, WPDZ, WCZ, B-2/B-2b/B-2c, B-5, and B-6	65 ft.
B-3, B-4, B-7, and O-P	85 ft.
ROS, I-M, I-Mb, I-H, and A-B	160 ft.

[1] Permitted up to 65 ft within USM Overlay Zone or on other sites with institutional uses measuring over 5 acres.
[2] Permitted up to 85 ft in B-3 part of Downtown Historic District.

7.5 SPACE AND BULK EXCEPTIONS

7.5.1 Height

A. In the B-3/B-3b/B-3c zones. Minimum height provisions as depicted on the Downtown Height Overlay Map shall not apply to:

1. Accessory building components and structures such as truck loading docks covered parking, mechanical equipment enclosures and refrigeration units.
2. Information kiosks and ticketing booths.
3. Public transportation facilities of less than 10,000 square feet, or additions of less than 5000 square feet to existing public transportation facilities provided that the cumulative additions as of June 4, 2007 do not exceed 10,000 SF.
4. Additions to buildings existing as of June 4, 2007 provided that the cumulative additions since June 4, 2007 do not exceed 10% of the building footprint on June 4, 2007, except building additions on those portions of the lot located closer to the street line than the building footprint

existing as of June 4, 2007 shall not be included in this 10% limitation.

5. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures, and other similar structures.
6. Additions to and/or relocation of designated historic structures or structures determined by the Historic Preservation Board to be eligible for such designation.
7. Parking attendant booths or bank remote teller facilities.
8. Structures accessory to parks and plazas.
9. Buildings or building additions of less than 2,500 square feet footprint, on lots or available building sites of less than 3,000 square feet.

B. **In the B-6 zone.** Minimum height provisions as depicted on the B-6 Building Height Overlay and Building Envelopes map shall not apply to:

1. Buildings located in the area east of the Fore Street Connector.
2. Parking attendant booths.
3. Information kiosks and ticketing booths.
4. Parking garages.
5. Public transportation facilities.
6. Additions to buildings existing as of December 8, 2004 provided that the cumulative additions since December 8, 2004 do not exceed 25% of the building footprint on December 8, 2004, except that such restriction shall not apply to those portions of the building addition that are constructed closer to the street line than the building footprint existing as of December 8, 2004.
7. Buildings or building additions of less than 2,000 square feet footprint on lots or available building sites of less than 2,000 square feet.
8. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures.
9. Additions to and/or relocations of designated historic structures.

C. **In the B-7 zone.** Minimum floor provisions as depicted on the Bayside Height Overlay Map shall not apply to:

1. Accessory building components such as truck loading docks, mechanical equipment enclosures and refrigeration units.
2. Information kiosks and ticketing booths.
3. Parking garages.
4. Public transportation facilities.
5. Additions to buildings existing as of March 9, 2005 provided that the cumulative additions since March 9, 2005 do not exceed 50% of the ground floor building footprint on March 9, 2005, except that such restriction shall not apply to those portions of the building addition(s) that are constructed closer to the street line than the building footprint existing as of March 9, 2005.
6. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations,

telephone electronic equipment enclosures, and other similar structures.

7. Additions to and/or relocation of designated historic structures or structures determined by the Historic Preservation Board to be eligible for such designation.
8. Portions of buildings more than 50 feet from the street line.

D. In the Bayside Gateway Urban Height District

A. Buildings in the Bayside Gateway Urban Height District A as depicted on the Bayside Height Overlay Map may be greater than 125 feet but no more than 165 feet in height provided that:

1. Such buildings shall be reviewed by the Planning Board as conditional uses under Section 6.5 of this Land Use Code.
2. Such buildings shall be sited to minimize encroachment into designated view corridors and visual landmarks to and from the downtown or that do not substantially further obstruct such corridors blocked by existing development as referenced in the Bayside Height Study Map and the B-7 design standards.
3. Portions of such buildings higher than 125 feet shall be stepped back at upper levels to provide light and air to adjacent streets, trails, and open spaces, with a ratio of no less than the ratio of building height to width of adjacent streets, trails and open spaces equivalent to 1.5 to 1. The Planning Board may modify this requirement for master development plans or major site plans provided that the following conditions are met:
   a. Each building exceeding 125 feet shall contain at least 20 dwelling units per building.
   b. Building wall stepback requirement along public street frontage for buildings with frontage on one street: Minimum 10-foot stepback between third and fifth stories and a minimum 10-foot stepback between the 125 and 145 foot level.
   c. Building wall stepback requirement along public street frontage for buildings with frontage on multiple streets: Above paragraph (b) requirement along longest building façade street wall, and of the remaining street walls the same requirement as paragraph (b) or a 15 foot wide streetscape improvement area containing a public sidewalk, landscaping, and other streetscape improvements within the abutting street right-of-way and/or private property along the remaining street frontage. A building with frontage on four streets shall meet the above requirement except that two of the streets shall have the stepback requirement.
   d. The Planning Board shall have the authority to waive one or more of the required stepbacks provided that one of the following conditions is met:

i. The depth of the building lot precludes a building having an average minimum lot depth dimension of 170 feet.

ii. The proposed building has an architecturally significant design that is articulated to avoid a monolithic appearance and emphasizes slender, vertically-oriented proportions while employing a variety of scales, materials, fenestration, and massing to assure a rich, visually interesting experience as viewed within the context of the downtown skyline and provide visual interest and human scale at the pedestrian level.

e. In the event such a waiver is granted, the Planning Board may require the applicant to mitigate the impacts of the waiver by requiring the following:

i. Along all public street frontages and public open spaces, all buildings (regardless of height) shall maintain a pedestrian scale through the use of building elements at the street level as listed in this standard along no less than 60% of the building's horizontal length.

ii. Along all public street frontages and public open space for the building(s) over 125 feet, a canopy, awning, or similar permanent architectural feature to provide pedestrian protection and wind mitigation shall be provided within the first 35 feet of height.

iii. In order to preserve view corridors and to maintain a varied skyline, all buildings above 125 feet within a single development site should be separated to avoid the appearance of a tall, solid block massing. In accordance with this policy, on development sites of 500 feet or greater as measured parallel to Marginal Way, the aggregate building façade widths above 85 feet shall not exceed 50% of the total development site distance parallel to Marginal Way. Buildings over 125 feet in height that are being reviewed as separate phases of a master development plan shall be entitled to meet the 50% building requirement in aggregate for all such buildings over 125 feet in height in the master development plan, provided that view corridors are retained as each phase is built.

iv. The applicant shall demonstrate building design elements and location will reasonably mitigate downdraft effects of the proposed building or buildings.

4. Such buildings provide publicly accessible and usable open space, meeting the B-7 design standards, of at least 10% of the building lot area.

5. If located on lots including or adjacent to planned or proposed street or pedestrian way connections, land dedication to such street or connection shall be credited toward the 10% open space requirement. Buildings over 125 feet in height that are being reviewed as separate phases of a master development plan shall be entitled to meet the 10% percent open space requirement in aggregate for all such buildings over 125 feet in height, provided that the open space shall not fall below 10% percent at any built phase or combination of built phases.
6. Such development shall comply with all other requirements and design standards as required by this article.

E. Roof-mounted solar energy systems. Photovoltaic panels and thermal water heating panels, whether parallel or angled to a pitched or gable roof, may be erected above the height limitation for principal or accessory buildings as follows:

1. *In all residential zones.* Up to three feet above the maximum height allowed in the underlying zone. In the case of flat roofs, the solar energy system may be up to five feet above the maximum height allowed in the underlying zone. All roof-mounted solar energy systems shall be set back from the edge of the roof by one foot for every one foot of solar energy system height.
2. *In B-4 and industrial zones.* Up to four feet above the maximum height allowed in the underlying zone. In the case of flat roofs, there are no height limits.
3. *In all other zones.* Up to three feet above the maximum height allowed in the underlying zone. In the case of flat roofs, the solar energy system may be up to eight feet above the maximum height allowed in the underlying zone. All roof-mounted solar energy systems shall be set back from the edge of the roof by one foot for every one foot of solar energy system height.

F. Public art. Except in residential zones, public art that has been individually accepted by the City Council for inclusion within the public art collection pursuant to Article 21 shall not be subject to the height limitations within the underlying zone.

G. Rooftop appurtenances. Unless otherwise noted, rooftop appurtenances for the housing of elevators, stairways, tanks, fans, or other building operating equipment not intended for human occupancy, deck railings, skylights, steeples, flag poles, chimneys, smokestacks, radio or television masts, water tanks, or silos may be erected above the height limitations herein prescribed.

H. Telecommunication towers. Where permitted, ground-mounted telecommunication towers may be erected above the height limitations within the underlying zone.

7.5.2 Length of building wall at maximum setback

A. In the B-6 zone. Buildings located area east of the Fore Street Connector shall not be subject to the building wall requirement.

B. **In the B-7 zone.** Additions to and relocations of designated historic structures or structures determined to be eligible under Article 17 shall be exempt from the building wall requirement.

7.5.3 Lot area

A. **Institutional uses in residential zones.** No minimum lot area shall be required for institutional uses in residential zones in the following cases:
   1. Uses existing as of June 1, 1983.
   2. Expansion on to land abutting the lot on which the principal use is located.
   3. Expansion onto land other than the lot on which the principal use is located to the extent that such expansion consists of the reuse of surface parking area or nonresidential structures existing and in nonresidential use as of June 1, 1983, provided that such reuse is contained within the lot of such structure or parking area as of June 1, 1983.
   4. Expansion onto land other than the lot on which the principal use is located of no more than 15% of the total contiguous land area of the existing use, or one acre, whichever is less, within any five-year period.

B. **Residential lots not served by public sewers.** A lot in an unsewered residential district shall meet the provisions of the state Minimum Lot Size Law, 12 M.R.S. § 4807 et seq., or the applicable minimum lot area, whichever is larger, except that the minimum lot size may be reduced on the islands in Casco Bay as provided in (C) below.

C. **In island zones.** In issuing any permit for new development in island zones:
   1. The Building or Planning Authority shall require that any lot located in the IR-1 zone shall be at least 40,000 square feet in area and in the IR-2, IR-3, and I-B zones be at least 20,000 square feet in area when the lot is to be serviced by a subsurface wastewater disposal system, except those lots which are located in a subdivision approved by the Planning Board after June 8, 1968 and excluding Peaks Island.
   2. Excluding Peaks Island from this paragraph (2), any property owner whose lot does not meet the minimum lot size requirements outlined in (1) above may, for purposes of this subsection only, merge two or more separate lots on the same island in order to meet these requirements. Where the lots so merged are not contiguous, the property owner shall grant to the city as holder a conservation easement upon the lot or lots which will not contain the principal structure. The conservation easement shall contain both an existing legal description and a city assessor's chart, block, and lot description. The Planning Authority shall be authorized to accept such conservation easements on behalf of the city. Said easement shall be recorded by the applicant in the registry of deeds. A copy of the recorded easement and copies of the deeds for both lots shall be submitted to the Planning Authority prior to issuance of a building permit. The property over which the conservation easement has been

granted shall be used for passive recreational and conservation purposes only, and shall be subject to the following restrictions:

a. No structure shall be permitted on this property.
b. No parking or storage of vehicles or machinery shall be permitted on this property at any time.
c. No area of this property shall be paved.
d. No exterior storage for commercial use shall be permitted on this property.
e. The easement deed shall reference the lot which is benefited by this conservation easement. No conservation easement shall be used to benefit more than one lot.

3. Conservation easements shall only be granted over lots which conform either to the provisions of Subsection 4.3.1 or to the minimum lot sizes set forth in Table 7-D. Conservation easements shall not be granted over any lot which is encumbered by any other easement which prohibits all construction on that lot. A conservation easement may also name as a holder or grant a third-party right of enforcement to a nonprofit corporation or charitable trust, the purposes or powers of which include retaining or protecting the natural, scenic, or open space values of real property; assuring the availability of real property for agricultural, forest, recreational, or open space use; protecting natural resources; or maintaining or enhancing air or water quality of real property. Nothing in this subsection shall be construed to allow an owner of a currently existing and developed lot to convey or permit a portion of that lot to be used to fulfill the requirements of this subsection if such conveyance would render the existing lot nonconforming under the terms of this Land Use Code. The lot upon which a building is to be constructed shall meet the minimum lot size requirements of Subsection 4.3.1.
4. Where an existing subsurface wastewater disposal system serving an existing structure requires replacement, the replacement system shall meet the applicable state requirements. The land area requirements in paragraph (1) above shall not apply to such a replacement system.
5. For purposes of this subsection, the mean high tide mark shall be considered to be the shoreline lot line.

7.5.4 Lot coverage

A. **Lot surrounded by streets or alleys.** Where a lot containing ten thousand 10,000 square feet or less is completely surrounded by streets or alleys, the lot coverage may be increased 20%.

7.5.5 Setbacks

A. **Setbacks in residential and R-P zones.** In any residential zone and the R-P zone, the width of one side setback may be reduced one foot for every foot that the other side setback is

correspondingly increased, but no side setback shall be less than the minimum required for a one-story building.

B. **Setbacks in the O-P zone.** The Planning Board may reduce by up to 50% the minimum setback if another yard within the lot is correspondingly increased so that the combined minimum yards on all four sides equal 150 feet. If two or more buildings are located on one lot, only the requirements of the front, rear or side setbacks that adjoin any external property boundary must be met, provided a sufficient fire line is provided.

C. **Projections in required setback areas.** Any setback may be occupied by a one-story entrance porch not enclosed, with or without a roof, if the area of the porch does not exceed 50 square feet nor the projection from the building exceed six feet. A basement bulkhead of similar size, but not more than 24 inches in height, is also permitted. A cornice eave, sill, canopy, chimney, bay window, balcony, or other similar architectural feature may project into any required setback a distance of not more than two feet.

D. **Pavement setbacks.** Pavement setbacks shall not apply to entrance drives.

E. **Corner lot setbacks.** In case a principal residential structure has its front yard upon the long side of a corner lot, the rear setback may be reduced to a depth not less than the required side setback on the lot, provided that the aggregate of the widths of both sides and depths of front and rear yards is not less than the similar aggregate of required dimensions of all setbacks if the front yard were faced on the short side of the lot.

F. **Maximum front setbacks**

1. Maximum front setbacks shall not apply to utility substations and secondary building components.
2. *In the B-1/B-1b zone.* Building additions are encouraged but not required to meet front setbacks.
3. *In the B-2/B-2b/B-2c zones*
   a. Building additions do not have to meet maximum front setback requirements.
   b. The Planning Board or Planning Authority may approve a different front setback for irregularly shaped lots or lots with frontage greater than 40 feet in width provided the front setback is met to the maximum extent practicable.
   c. If a lot has less than 40 feet of frontage and is more than 100 feet deep, then no maximum setback is required.
   d. If existing structures are within 20 feet of the street or meet the front setback maximum and the remainder of the lot has less than 40 feet of frontage, then no maximum setback is required.
   e. The Planning Board or Planning Authority may waive the maximum front setback for utility substations and alternative energy installations.
   f. Where setbacks exceed 10 feet, a continuous, attractive, and pedestrian-scaled edge treatment shall be constructed along the street,

consisting of street trees spaced at no more than 15 feet on center, approved by the City arborist, and a combination of landscaping no less than four feet deep, ornamental brick or stone walls, or ornamental fencing.

4. *In the B-3/B-3b/B-3c zones.* The Planning Board may require or approve an additional setback to comply with the design standards of Article 14 and the City of Portland *Design Manual*.
5. *In the B-6 zone.* For lots fronting on more than one street in the B-6 zone, the front setback can be increased more than 10 feet if all of the following conditions are met:
    a. The increased setback occurs at the intersection of the streets.
    b. The increased setback area is the primary pedestrian entrance to the building.
    c. 75% of the total building wall length facing the abutting streets shall be setback no greater than 10 feet. All building wall segments which make up the increased setback shall be included in the calculation of the total building wall length.
    d. For new construction on a lot abutting three or more streets, the maximum setback shall apply only to the two streets with the highest traffic volume.
6. *In the B-7 zone*
    a. Parking structures, public transportation facilities, utility substations, secondary building components such as truck loading docks, mechanical equipment enclosures, and refrigeration units are not subject to the maximum front setbacks.
    b. The maximum front setback may be increased to more than 10 feet if all of the following conditions are met:
        i. 75% of the total building wall length of an individual building facing the abutting streets is setback no greater than 10 feet.
        ii. The increased setback area shall include a functional and accessible public pedestrian entrance into the building that faces the street, unless a public pedestrian entrance already exists along the same street.
        iii. The increased setback shall not be used for surface parking.
    c. For a corner lot having frontage on two streets, the maximum setback shall apply to both streets. In the case of a lot having frontage on two or more street corners, newly constructed buildings shall be sited at street corners and meet the maximum setback requirement prior to other freestanding buildings being constructed on the lot which shall also meet the maximum street setback. In the case of a corner lot having frontage on a third street (but not a corner) the maximum setback need not apply to the third street.

d. In the case of a lot having frontage on two streets but not on a corner, the maximum setback shall apply to all streets but in the case of a lot having frontage on three streets but not on a corner, the maximum setback shall apply to only two streets. For purposes of this subsection only, the first building on a lot shall meet the maximum setback on at least one street with future buildings required to meet the maximum setback on the remaining street(s).

e. In the case of a lot in which a minimum 75% of the total lot frontage has a building within ten feet of the street, other buildings may be located on the lot more than 10 feet from the street. In the case of a lot having frontage on Marginal Way and I-295, the property edge along I-295 shall not be considered street frontage.

f. The maximum building setback shall not apply to vertical building expansions in the following cases:
   i. The upper floors of a building in which the lower floors meet the maximum setback and the minimum height requirement.
   ii. The building existed as of March 9, 2005 and meets the minimum height requirement.
   iii. A building not meeting the maximum street setback and the minimum height requirement may vertically expand a total of one floor from March 9, 2005.
   iv. In the case of a building in which at least 50% of the building wall(s) abutting street(s) is within 20 feet of the street.
   v. Additions to parking garages existing as of March 9, 2005.

g. Additions to buildings existing as of March 9, 2005 that are nonconforming as to the maximum setback need not conform to the maximum street setback provided the cumulative building footprint since March 9, 2005 does not exceed 50% of the existing building footprint. Such restriction shall not apply to those portions of the building addition that are constructed closer to the street line than the building footprint existing as of March 9, 2005 and to vertical expansions as provided for in (f) above.

h. Lots having frontage on streets in which the curve of the street frontage precludes a rectangular-shaped building along the street line, for purposes of calculating the setback, the average setback of the building from the street line may be used, but in no event shall the average setback along the length of the building edge exceed an average setback of 15 feet nor shall the maximum setback exceed 20 feet. The increased setback shall not be used for surface parking, vehicular loading or vehicular circulation.

i. Additions to and relocations of designated historic structures or structures determined to be eligible by the Historic Preservation Board shall be exempt from the maximum setback requirement.

G. Minimum setback exceptions for lots of record

1. In the case of a lot of record existing as of June 5, 1957 in the R-1, R-2, R-3, R-4, R-5, R-5a, and R-6 zones and less than 100 feet deep, the front setback need not be deeper than 20% of the depth of the lot.
2. In the case of a lot of record existing as of June 5, 1957 in a residential zone, the required side setback for principal structures may be reduced in order to provide a buildable width of up to 24 feet, but in no case shall the resulting side yards be less than the following:
   a. R-1, R-2: 12 ft.
   b. R-3, R-5: 8 ft.
   c. R-4, R-5a: 10 ft.

7.5.6 Stepbacks

A cornice eave, sill, canopy, chimney, bay window, balcony, or other similar architectural feature may project into any required stepback a distance of not more than two feet.

7.5.7 Street frontage

In the IR-1 and IR-2 zones, a lot of record that is buildable pursuant to Subsection 4.3.1 and lots created after July 15, 1985, which are not part of a subdivision need not provide street frontage if access is available by means of a permanent easement or right-of-way which existed as of July 15, 1985. Such easement or right-of-way shall have a minimum width of 16 feet and a minimum travel width of eight feet except that an easement or right-of-way providing access for three or more lots or providing the only means of access to a parcel or parcels of three acres or more, shall meet the construction requirements of Chapter 25, Article III of the City of Portland Code of Ordinances. In the IR-1 zone, such easement or right-of-way shall conform to the requirements contained within the City of Portland *Technical Manual*. In the IR-2 zone, such easement or right-of-way shall be a minimum of 32 feet wide. Such easement or right-of-way shall be sufficient to permit municipal service delivery.

18 HOUSING

18.1 HOUSING PRESERVATION AND REPLACEMENT

18.1.1 Purpose

The purpose of the housing preservation and replacement ordinance is:

A. To promote and facilitate an adequate supply of housing, particularly affordable housing for all economic groups.

B. To limit the net loss of housing units in the city.

C. To preserve housing in zones where housing is permitted in the city for all residents in order to promote the health, safety, and welfare of its citizens.

18.1.2 Applicability

A. Except as otherwise provided in this section, the housing preservation and replacement ordinance shall apply to the loss of three or more dwelling units in a five-year period, provided that such dwelling units were a legally registered residential use as of July 1, 2002. For the purposes of this section, dwelling units shall be as defined in Article 3, but also include rooming units that people rent in or sleep in within lodging houses, dormitories, shelters, and sheltered care group homes.

B. Except as otherwise provided in this section, the housing preservation and replacement ordinance shall also apply to proposals that result in the loss of fewer than three dwelling units which were legally registered residential use as of July 1, 2002 for the purposes of creating surface parking.

C. For the purposes of this section, loss of dwelling units shall mean the elimination or conversion to nonresidential use of a dwelling unit and dwelling units that remain vacant for three years or more or are lost due to demolition unless the vacancy or demolition results from accidents outside of the owner's control, fire, natural disasters, or acts of war.

D. Determination of number of the dwelling units within a structure or structures and the number of units lost will be based on the records of the Building Authority indicating the legal, registered use of the property since July 1, 2002 through the time of application. The actual use of the property for purposes of applicability of this section may be rebutted by the owner by proof of documentary evidence including but not limited to photographs, letters, and sworn affidavits. The Planning Authority may conduct its own investigation of the actual use and shall determine the applicability of this section based on the totality of the evidence.

18.1.3 Exemptions

This section does not apply to:

A. Consolidation, elimination, or reconfiguration of one or more dwelling units within an existing structure, as long as all the resulting units remain as dwelling units after such consolidation, elimination, or reconfiguration, except as provided by (E) below. Conversion of a dwelling unit to a hotel or motel room shall not qualify for the exemption provided by the paragraph.

B. Proposals that result in a number of units equal to or greater than the number of units lost as determined by the Planning Authority.

C. Legally nonconforming dwelling units existing in zones which no longer permit residential uses.

D. Property which has been ordered demolished by the City, pursuant to 17 M.R.S. § 2851, et seq.,

as amended, except where it is determined by the Building Authority that the deterioration was caused by neglect or lack of maintenance.

E. Paragraph (A) above notwithstanding, the conversion to a nonresidential use of any dwelling units located on the ground floor of a building within a mixed-use zone.

18.1.4 Planning Authority approval required

Notwithstanding any other provision of this section, a proposal to demolish or to convert three or more dwelling units to a nonresidential use in a zone where such use is otherwise permitted must first obtain approval from the Planning Authority. In addition to any other requirements of the Land Use Code, the applicant must submit a statement certifying the number of dwelling units to be demolished or converted to nonresidential use, as well as a description of the characteristics of each of those units.

18.1.5 Tenant notification requirements

Prior to elimination as a result of demolition or conversion to nonresidential use, the owner shall:

A. Provide the Planning Authority a list containing the name of each tenant currently residing in the dwelling units to be demolished or converted to nonresidential use, as well as verification of compliance with tenant notice requirements of this subsection.

B. Deliver to each tenant who occupies such a dwelling unit a written notice to vacate the unit. The notice shall either be sent by certified mail, return receipt requested, or served in-hand. The notice will grant the tenant not less than 90 days from the date of receipt of the notice to vacate the unit.

C. File proof of service of the notice with the Planning Authority.

18.1.6 Housing replacement requirements

A. The Planning Authority shall require, as a condition of approval, that an owner shall replace any dwelling units that are demolished or converted to nonresidential use.

B. This requirement may be satisfied in any one of the following ways, which may be used in combination:

1. *Construction of units.* The construction of housing units within a new structure or a new addition either on site or off-site.
2. *Residential conversion.* The conversion of a nonresidential building to residential use.

18.1.7 Replacement unit requirement

In addition to the foregoing, all replacement units built pursuant to Subsection 18.1.6.B above shall:

A. Be located within the same United States census block group as the parcel from which the dwelling units are being removed or within 1,500 feet of the dwelling units being removed.

B. Not previously have been on the market as of the date of application.

C. Be situated within a development which has not been a candidate for site plan approval as of the date of the application.

D. Be comparable in size to the units replaced. For the purpose of this section, "comparable in size" means that the aggregate size of the replacement units will be no less than 80% of the size of the aggregate of the original units to be replaced.

18.1.8 Contribution to the Housing Trust Fund

A. The applicant may meet the requirements of this housing replacement ordinance by depositing $50,000 for each dwelling unit into the City's Housing Trust Fund.

B. Beginning on January 1, 2004 and annually thereafter, the amount of the contribution shall be adjusted by multiplying this amount originally deposited for each unit by a fraction, the denominator of which shall be the "Consumer Price Index for Urban Wage Earners and Clerical Workers ("CPI-W")," U.S. City Average, "All Items Index," as published by the United States Bureau of Labor Statistics ("the index") for January 1, 2003 year, and the numerator of which shall be the index for the same month in each subsequent year. In the event that the index is not then in existence, the parties shall use such equivalent price index as is published by any successor governmental agency then in existence, or, if none, then by such nongovernmental agency as may then be publishing an equivalent price index, in lieu of and adjusted to the index. If the index shall cease to use 1982-84 equals 100 as the basis of calculation, or if a substantial change is made in the terms or number of items contained in the index, the base index shall be adjusted to conform to such change, using such computation thereof, if available, as shall be employed by the United States Department of Labor in computing same. Notwithstanding anything herein to the contrary, contributions made after January 1, 2004 shall not be less than the amount originally required to be deposited for each rooming or dwelling unit.

18.1.9 Performance guarantee

Owners or affiliates must post a performance guarantee in the form of a letter of credit, or other security acceptable to the City attorney, in the amount equivalent to the amount the applicant would have been required to contribute to the City's Housing Trust Fund if the applicant had chosen that option pursuant to Subsection 18.1.8. Such a performance guarantee shall be valid for no more than three years, after which the full amount due shall be provided to the City's Housing Trust Fund if replacement units satisfying the conditions of this housing replacement ordinance do not have certificates of occupancy.

18.1.10 Partial waiver of replacement requirements

A. Any owner who has applied for site plan review for elimination or conversion to nonresidential use of dwelling units may apply to the Zoning Board of Appeals for a partial waiver from the housing replacement requirements of this section. Such waiver may be a downward adjustment of up to 50% of the owner's housing replacement obligation if the owner establishes to the board's satisfaction that:

1. The proposed development is consistent with the Comprehensive Plan.
2. The proposed development provides significant value and benefit to the immediate and surrounding neighborhood, including, but not limited to, community enhancement, social benefits or job creation.
3. The applicant demonstrates with objective evidence that the imposition of the requirements of this section would impose such an economic burden upon the

project relative to its scope that it renders the project impossible to develop.

4. The requested relief does not constitute a grant of a special privilege inconsistent with the limitations upon similar properties.

B. The Zoning Board of Appeals must make positive findings on each of the four criteria above in order for any such adjustment to be valid. An applicant aggrieved of a decision of the Zoning Board of Appeals may appeal a decision under this subsection pursuant to the provisions of Article 2.

18.1.11 Effect of other City ordinances

A. Nothing in this section shall permit the demolition or conversion to nonresidential use of dwelling units in residential property protected by Article 17, except as permitted by that ordinance.

B. A conditional zone may not be used to circumvent the application of this section. The terms of this section shall apply to any conditional zone which involves dwelling units affected by this section. Notwithstanding the foregoing, nothing herein shall be deemed to prevent the City and the applicant from agreeing to terms which exceed those imposed by this section by means of a conditional zone.

18.1.12 Appeals

Any applicant aggrieved by a decision of the Planning Authority under this section may appeal to the Zoning Board of Appeals within 30 days of that decision.

18.2 AFFORDABLE HOUSING

18.2.1 Purpose

It is in the public interest to promote an adequate supply of housing that is affordable to a range of households at different income levels. The purpose of this section therefore is to offer incentives to developers to include units of affordable and workforce housing within development projects, thereby mitigating the impact of market rate housing construction, or the demonstrated increase in affordable housing needs resulting from the creation of new lower-income jobs, 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 section 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.

TABLE 18-A: AFFORDABLE HOUSING FEE REDUCTIONS

% of New Units That are Low-Income or Workforce	Development Fee Discount	Cost of Work (Building Permit) Fees
5% up to but not including 10%	5% reduction	$10.50 per $1,000
10% up to but not including 15%	10% reduction	$9.90 per $1,000
15% up to but not including 20%	15% reduction	$9.35 per $1,000
20% up to but not including 25%	20% reduction	$8.80 per $1,000
25% or more	25% reduction	$8.25 per $1,000

18.2.2 Reduction of fees

A. Notwithstanding any other provision of this Land Use Code or Chapter 6 to the contrary, development fees shall be reduced by the City for an eligible project in the manner described in Table 18-A.

B. Development fees shall include:
   1. Site plan review and inspection fees.
   2. Subdivision review and inspection fees.
   3. Impact fees.
   4. Administrative fees.
   5. Construction and permit fees as described in Chapter 6 of the City of Portland Code of Ordinances.

   Development fees do not include any fees charged for review conducted by any party other than the City.

C. Eligible project shall mean a development project:
   1. That is permissible under the provisions of this Land Use Code in the zone in which it is proposed.
   2. That will be a single-family or multi-family dwelling, or subdivision consisting of a group of dwellings, and will not be located in an R-1 or R-2 zone.
   3. That creates new dwelling units, among which is at least one low-income or workforce housing unit for rent or sale, through new construction, substantial rehabilitation of existing structures, adaptive reuse or conversion of a nonresidential use to residential use, or any combination of these elements. Affordable housing units for sale or rent may not differ in exterior design from other units within an eligible project.
   4. Projects shall not be considered "eligible projects" solely because they are subject to Subsection 18.2.3.

D. The Planning Authority shall perform its review of an eligible project in as expedited a manner as is practical, without impairing the scope or thoroughness of the review. The Planning Authority may adopt administrative procedures to prioritize review of eligible projects and facilitate this expedited review.

E. The Planning Board shall make its best efforts to give priority in scheduling workshops and public hearings related to any plans or applications required for an eligible project that are within the Planning Board's jurisdiction, without impairing the scope or thoroughness of its review. At the conclusion of these public meetings, the Planning Board shall promptly issue a decision on all such plans and applications before it for consideration.

18.2.3 Ensuring workforce housing

A. **Purpose.** Based on the City's Comprehensive Plan and the City's 2015 housing study, it is in the public interest to promote an adequate supply of housing that is affordable to a range of households at different income levels. The purpose of this subsection is to ensure that housing developments over a certain size provide a portion of workforce housing units and, by doing so, promote the health, safety, and welfare of Portland citizens.

B. **Applicability.** This subsection shall apply to development projects that create ten or more net new dwelling units for rent or for sale through new construction, substantial rehabilitation of existing structures, adaptive reuse or conversion of a nonresidential use to

residential use, or any combination of these elements, with the exception that projects using public financing requiring affordability restrictions, as defined by tax increment financing, U.S. Department of Housing and Urban Development funds such as HOME or CDBG, other federal, state, or local housing program, or the Low-income Housing Tax Credit program, shall be considered exempt.

C. **Standards.** Development projects subject to this subsection shall be subject to the following requirements:

1. Notwithstanding any language to the contrary in this Land Use Code, all developments of ten units or more are conditional uses subject to Planning Board review on the condition that they comply with the requirements of this subsection, unless they are within the India Street Form-Based Code Zone, in which case the review will be conducted administratively or by the Planning Board in accordance with the thresholds of site plan review for the district.
2. At least 25% of the units in the project shall meet the definition of workforce housing unit for sale or for rent as defined in Article 3. The project shall have the option of paying a partial fee-in-lieu as per (6) below or providing an additional unit on-site for any fractional value.
3. Projects shall not be segmented or phased to avoid compliance with these provisions. In cases where projects are completed in phases, affordable units shall be provided in proportion to the development of market rate units unless otherwise permitted through regulations.
4. Workforce units must be integrated with the rest of the development, must use a common entrance, and must provide no indications from common areas that these units are workforce housing units.
5. Workforce units need not be the same size as other units in the development but the number of bedrooms in such units, either on- or off-site, shall be no less than 10 percent of the total number of bedrooms in the development. For the purposes of calculating the number of bedrooms in a development, every 400 square feet in each market rate unit will count as a bedroom if the Planning Authority determines this method is appropriate in lieu of counting actual bedrooms.
6. As an alternative to providing workforce housing units, projects may pay a fee-in-lieu of some or all of the units. In-lieu fees shall be paid into the Housing Trust Fund. The fee for affordable units not provided shall be $150,000 per unit, adjusted annually in the same way as the fee under Subsection 18.1.8.
7. Workforce housing units for sale, if converted to workforce housing units for rent, shall become subject to the income limits and other requirements of such units.
8. If at least 33% of the units in a development are workforce units, the development is eligible for subsidy through an Affordable Housing TIF, subject to City Council approval.
9. The term of affordability for the required 25% workforce units provided shall be defined as shown in Table 18-B.

TABLE 18-B: MINIMUM TERM OF AFFORDABILITY FOR REQUIRED WORKFORCE UNITS

% of Workforce Units Provided	Minimum Term of Affordability
25%	30 years
50%	20 years
100%	10 years

TABLE 18-C: BONUSES FOR ELIGIBLE PROJECTS

% Low-income or Workforce Units	~~% Work-force Units~~	Density Permitted[1]	Additional Height Permitted[2]	Setback Reductions[3]
10-19%	~~20%~~	1.1 x base	N/A	N/A
20-29%	~~40%~~	1.2 x base	10 ft.	N/A
30-29%	~~60%~~	1.3 x base	10 ft.	5 ft.
50-74%	~~100%~~	2.~~5~~0 x base	15 ft.	5 ft.
≥ 75%	~~N/A~~	2.5 x base	25 ft.	10 ft.

[1] "Base" is the number of units allowed under the zoning without this bonus but with any other bonuses applied. In R-P zones, multifamily is permitted with a "base" no less than 1 unit per 1,500 SF of land area. ~~If an eligible project is providing both workforce and affordable housing units, the applicant shall have the option of utilizing applicable incentives, but not cumulatively.~~

[2] The maximum additional height permitted in the B-1/B-1b zones and the R-P zone shall be 15 feet. In addition, the maximum structure height is 50 feet within 750 feet of the Portland Observatory.

[3] Setback reductions are absolute reductions in front, side, and/or rear setback requirements. The maximum setback reductions in the B-1/B-1b and R-P zones shall be 5 ft.

D. **Implementing regulations.** Regulations to further specify the details of this subsection shall be developed, including, but not limited to:

1. Specific methodology for income verification.
2. Situations where less than permanent affordability might be considered.
3. Guidelines for meeting the requirement that off-site units be "in the same neighborhood."

E. **Reporting to City Council.** In conjunction with the annual report on the Housing Trust Fund, the Planning Authority shall annually report on developments subject to this subsection, the number of units produced, the amount of fee-in-lieu collected, and the overall effectiveness of this subsection in achieving its stated purpose.

18.2.4 Density and dimensional bonuses and reductions

Notwithstanding any other provision of this Land Use Code to the contrary, in order to encourage low-income and workforce units in designated growth areas, eligible projects as defined under Subsection 18.2.2 may avail themselves of the following options:

A. **Density and dimensional bonuses.** The maximum number of units that would otherwise be allowed under this Land Use Code shall be increased for an eligible project in the manner described in Table 18-C, applicable where multi-family is allowed as a permitted or conditional use, with the exception of the I-B zone. Other dimensional bonuses related to height and setbacks shall only be applicable in in the B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-5, R-7, and R-P zones.

B. **Planned Residential Unit Developments (PRUDs).** ~~In order to promote orderly development of low- and moderate-income development as PRUDs,~~ aIn the R-3, R-5, and R-5a zones, any ~~project~~ PRUD in which more than

50% of the units are low-income or workforce units for rent or for sale may utilize the following dimensional bonuses and changes:

1. ~~Minimum lot area per dwelling unit is reduced by 50%.~~The maximum number of units that would otherwise be allowed under this land use code shall be increased by 2.5.
2. Maximum number of units and maximum length of buildings do not apply but may be set through site plan review.
3. Minimum building setbacks may be reduced to 10 feet.
4. The PRUD may cross public rights of way provided that the right of way does not count towards minimum lot size nor towards any open space requirements.
5. Minimum recreation open space area is reduced to 200 square feet per dwelling unit of common area designated for recreational purposes by the residents. Minimum contiguous size and setbacks do not apply and shall be set through site plan review.
6. The Planning Board's *Design Manual*, design standards, and guidelines with respect to PRUDs shall apply in full to PRUDs utilizing this subsection.

C. **Unit size ~~and term of affordability~~.** In order to be eligible for this subsection, the low-income and workforce housing units must meet Subsections 18.2.3(C)(3), (4), and (5).

~~C.~~D. **Term of affordability**. Affordable units under this section shall be deed-restricted to remain ~~and be~~ affordable for 30 years or the longest term permitted under federal, state, and local laws, whichever is longer. Such deed restrictions shall be recorded in the Cumberland County Registry of Deeds.

~~D.~~E. **Required public process.** The developer of the project must also commit to a good faith effort to communicate openly with affected properties as their process moves forward. At a minimum, no less than 30 days prior to application for site plan review, any project that wishes to take advantage of this subsection must hold a public meeting noticed to all properties within 500 feet of their site and post a sign on the property in question describing the proposed project, intent to submit an application to the City in 30 days (cite anticipated submission date), and contact information for the developer and the Planning Authority. The Planning Board may adopt regulations regarding the content and processes for noticing as part of the *Technical Manual*.

~~E.~~F. **Projects under 18.2.3.** Projects that are subject to Subsection 18.2.3 that choose to provide the required workforce housing units on site are eligible for a 25% increase in total permitted units. If an eligible project as defined under Subsection 18.2.2 is also subject to Subsection 18.2.3, the applicant shall have the option of utilizing either this bonus or any bonuses they are eligible for under Subsections 18.2.4(A) and (B) but not both.

18.2.5 Inclusionary zoning for hotel projects

A. **Purpose.** This subsection is based on City analysis, most specifically the analysis documented in the Greater Portland Council of Government study *Proposed Hotel Linkage Fee: Supportable Range* dated August 29, 2018, that finds that new hospitality developments create

a need for new affordable housing. This need is the result of the fact that hospitality developments necessarily create a number of jobs that do not pay employees at a rate sufficient to allow those employees to afford market-rate housing in the City of Portland.

B. **Hotel projects.** For the purposes of this subsection, hotel projects shall include any hotel as defined in Article 3 consisting of 10 or more guest rooms for rent. Any expansion of an existing hotel by 10 or more rooms within any five-year period will also be considered a hotel project.

C. **Hotel projects conditional uses**. Notwithstanding anything to the contrary in this Land Use Code, all hotel projects are conditional uses subject to Planning Board review on the condition that they comply with the requirements of this Subsection 18.2.5.

D. **Low-income housing minimum.** 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, which shall meet the standards outlined in Subsections 18.2.3(C)(3), (4), and (5) and in the implementing regulations governing low-income units. 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.

E. **Fee-in-lieu alternative.** As an alternative to providing low-income housing units under Subsection 18.2.5(D) above, a hotel project may pay a fee-in-lieu of $3,806 per hotel guest room. This amount shall be paid into the City's Housing Trust Fund and used for the purposes set forth in the ordinance and regulations applicable to that trust.

F. **Annual adjustments.** The amounts in Subsection 18.2.5(E) above shall be adjusted annually in the same way as the fee under Section 18.1.8.

G. **Regulations.** The Planning Board may promulgate implementing regulations based on this subsection.

18.3 JILL C. DUSON HOUSING TRUST FUND

18.3.1 Purpose

The purpose of enacting this section is:

A. To establish a City of Portland Housing Trust Fund for the promotion, retention, and creation of an adequate supply of housing, particularly affordable housing, for all economic groups and to limit the net loss of housing units in the city.

B. To serve as a vehicle for addressing very low, low, and median income housing needs through a combination of funds as set out in this article.

18.3.2 Establishment of the Jill C. Duson Housing Trust Fund

The City Council shall establish a special revenue account under the name "City of Portland Jill C. Duson Housing Trust Fund" (Housing Trust Fund). Deposits into the fund shall include:

A. Contributions from the City's housing replacement ordinance under Subsection 18.1.8.

B. In-lieu fees under Subsections 18.2.3 and 18.2.5.

C. Funds appropriated to be deposited into the fund by vote of the City Council.

D. Voluntary contributions of money or other liquid assets to the fund.
E. Any federal, state, or private grant or loan funds provided to the fund.
F. Interest from fund deposits and investments.
G. Repayments of loans made from the fund.

18.3.3 Management of the trust fund

The City Manager, or his or her designee, shall serve as the manager of the Housing Trust Fund. The responsibilities of the manager, subject to the orders of the City Council, shall include:

A. Maintaining the financial and other records of the Housing Trust Fund.
B. Disbursing and collecting Housing Trust Fund monies in accordance with the Housing Trust Fund annual plan.
C. Monitoring the use of monies distributed to successful applicants for Housing Trust Fund support to assure on-going compliance with the purposes of the fund and the conditions under which these monies were granted or loaned.

18.3.4 Housing Trust Fund annual plan

A. Each fiscal year, the City Council shall adopt a Housing Trust Fund annual plan. The City Manager shall submit to the City Council a recommended Housing Trust Fund annual plan, utilizing the revenues of the Housing Trust Fund as well as any other funds the manager may propose as appropriate. The housing committee of the City Council or such other committee as the council shall designate shall conduct public hearings on the recommended plan and refer the matter to the council for action.
B. The Housing Trust Fund annual plan shall include:
    1. A description of all programs to be funded in part or in full by the Housing Trust Fund.
    2. A description of how funds from the Housing Trust Fund will be distributed among very low-income, low-income and moderate-income households.
    3. The amount of funds budgeted for programs funded in part or in full from the Housing Trust Fund.
C. Priority for the expenditure of funds collected pursuant to Section 18.1 shall be given to the creation of new housing stock, through either new construction or conversion of nonresidential buildings to residential use.

18.3.5 Distribution and use of the Housing Trust Fund's assets

A. All distribution of principal, interest, or other assets of the Housing Trust Fund shall be made in furtherance of the public purposes set out in Section 18.1.
B. During each year, the Housing Trust Fund shall disburse as grants or loans so much of the Housing Trust Fund's assets as the City Council in its discretion has approved in the Housing Trust Fund annual plan.
C. Funds shall not be used for City administrative expenses.
D. Funds shall not be used for property operating expenses or supporting services.
E. No grants or loans shall be awarded by the Housing Trust Fund to corporations, partnerships, or individuals who are delinquent at the time of application in the payment of property taxes or other fees to the City of Portland, who have been convicted of arson,

who have been convicted of discrimination in the sale or lease of housing under the fair housing laws of the State of Maine, or who have pending violations of current City electrical, plumbing, building, or housing codes or zoning ordinances.

18.3.6 Term of affordability

A. Whenever funds from the Housing Trust Fund are used for the acquisition, construction, or substantial rehabilitation of an affordable rental or cooperative unit, the City of Portland shall impose enforceable requirements on the owner of the housing unit that the unit remain affordable for the remaining life of the housing unit, assuming good faith efforts by the owner to maintain the housing unit and rehabilitate it as necessary. The remaining life of the housing unit shall be presumed to be a minimum of 30 years.

B. Whenever funds from the Housing Trust Fund are used for the acquisition, construction, or substantial rehabilitation of ownership housing, the City of Portland shall impose enforceable resale restrictions on the owner to keep the housing unit affordable for the longest feasible time, while maintaining and equitable balance between the interests of the owner and the interests of the City of Portland.

C. The affordability restriction requirements described in this subsection shall run with the land and the City of Portland shall develop appropriate procedures and documentation to enforce these requirements and shall record such documentation in the Cumberland County Registry of Deeds.

18.4 CONDOMINIUM CONVERSION

18.4.1 Purpose

The purpose of this section is to regulate the conversion of rental housing to condominiums, to minimize the potential adverse impacts of such conversion on tenants, to ensure that such converted housing is safe and decent, and to maintain a reasonable balance of housing alternatives within the city for persons of all incomes.

18.4.2 Applicability

This section shall apply to the conversion of any rental unit to a condominium unit. For the purposes of this section, developer shall mean any person or other legal entity, but not including an established lending institution unless it is an active participant in a common promotional scheme, who, whether acting as principal or agent, records a declaration of condominium that includes real estate, any portion of which was previously a rental unit.

18.4.3 Protection of tenants

A. **Notice of intent to convert.** A developer shall give to each tenant, meaning any occupant in lawful possession of a rental unit, whether by lease, sublease, or otherwise, written notice of intent to convert at least one 120 days before the tenant is required by the developer to vacate. If a tenant has been in possession of any unit within the same building for more than four consecutive years, the notice period shall be increased by 30 additional days for each additional year, or fraction thereof, to a maximum of 240 additional days. The notice shall set forth specifically the rights of tenants under (A), (B), and (C) of this subsection and Subsection 18.4.4, and shall contain the following statement:

If you do not buy your apartment, the developer of this project is required by law to assist you in finding another place to live and in determining your eligibility for relocation payments. If you have questions about your rights under the law, or complaints about the way you have been treated by the developer, you may contact the Department of Permitting & Inspections, City of Portland, 389 Congress Street, Portland, Maine 04101.

B. If the notice specifies a date by which the tenant is required to vacate, the notice may also serve as a notice of termination under the applicable law of forcible entry and detainer, if it meets the requirements thereof. The notice shall be hand delivered to the tenant or mailed, by certified mail, return receipt requested, postage prepaid, to the tenant at the address of the unit or such other address as the tenant may provide. The notice shall be effective when actually received. No tenant may be required by a developer to vacate without having been given notice as required herein, except for the reasons specified in the applicable law of forcible entry and detainer, and in accordance with the procedures thereof. The terms of a tenancy, including rent, may not be altered during the notice period, except as expressly provided in a preexisting written lease. If, within 120 days after a tenant is required by a developer to vacate, the developer records a declaration of condominium without having given notice as required herein, the developer shall be presumed to have converted in violation of this article.

C. **Option to purchase.** For a 60-day period following the giving of notice as required in Subsection 18.4.3(A), the developer shall grant to the tenant an exclusive and irrevocable option to purchase the unit of which the tenant is then possessed, which option may not be assigned. If the tenant does not purchase or contract to purchase the unit during the 60-day period, the developer may not convey or offer to convey the unit to any other person during the following 180 days at a price or on terms more favorable than the price or terms previously offered to the tenant, unless the more favorable price or terms are first offered exclusively and irrevocably to the tenant for an additional 60-day period. This subsection shall not apply to any rental unit that, when converted, will be restricted exclusively to nonresidential use. If, within two years after a developer records a declaration of condominium, the use of any such unit is changed such that but for the preceding sentence, this subsection would have applied, the developer shall be presumed to have converted in violation of this article.

18.4.4 Relocation payments

If the tenant does not purchase the unit, the developer shall, before the tenant is required by the developer to vacate, make a cash payment to the tenant in an amount equal to the amount of rent paid by the tenant for the immediately preceding two months, provided that this requirement shall not apply to any tenant whose gross income exceeds 80% of the median income of the Portland SMSA, adjusted for family size, as determined by the U.S. Department of Housing and Urban Development at the time notice is given as required

in Subsection 18.4.3. Additionally, the developer shall, upon demand, provide assistance to the tenant in the form of referrals to other reasonable accommodations and in determining the tenant's eligibility for relocation payments as provided herein.

18.4.5 Conversion permit

Before conveying or offering to convey a converted unit, the developer shall obtain a conversion permit from the Building Authority. The permit shall issue only upon receipt of a completed application therefore in a form to be devised for that purpose, payment of a fee of $25,000 per converted unit, to be adjusted annually in the same way as the fee under Chapter 14, Section 18.1.8 of this code, at least $1,000 of which shall be appropriated to the Housing Safety Office for the administration and enforcement of the Rent Stabilization Ordinance, Chapter 6, Articles XII and XIII of this code, and the remainder of which shall be paid into the Jill C. Duson Housing Trust Fund, and a finding, upon inspection, that each unit, together with any common areas and facilities appurtenant thereto, is in full compliance with all applicable provisions of Chapter 6, Articles II, III, and V and Chapter 10, Article II of the City of Portland Code of Ordinances, and the Life Safety Code as adopted by the state. The developer shall post a copy of the permit in a conspicuous place in each unit and shall make copies available to prospective purchasers upon request.

18.4.6 Variation by agreement

No provision of or right conferred by this Section 18.4 may be waived by a tenant, by agreement or otherwise, and any such waiver shall be void. Any attempt to require, encourage, or induce a tenant to waive any provision hereof, or right conferred hereby, shall be a violation of this article. Nothing herein shall be construed to void any term of a lease which offers greater rights than those conferred hereby.

18.5 RELOCATION OF DISPLACED TENANTS

18.5.1 Purpose

The purpose of this section is to encourage the retention of a diverse housing supply throughout the downtown and in areas readily accessible to the downtown, to ensure that persons displaced as the result of redevelopment of residential units to nonresidential uses within the B-3 Downtown Business zone are treated fairly and consistently, and to ensure that persons so displaced will be relocated at the reasonable expense of the developer to comparable housing at a location providing comparable access to services and amenities.

18.5.2 Notice and eligibility for relocation assistance

When a proposed development will result in the displacement of residents of an existing structure, the developer of the property shall give all tenants written notice as set forth below and shall provide relocation assistance as set forth below for any tenant whose gross income is 80% or less of the median income of the Portland SMSA, adjusted for family size, as determined by the U.S. Department of Housing and Urban Development at the time the developer gives the tenant written notice of intent to cause removal of the residential unit. Such written notice shall be given to the tenant at least 120 days before the tenant shall be required to vacate the premises and shall contain the following statement:



The developer of this project is required by law to assist you in finding another place to live and in determining your eligibility for relocation payments. If you have questions about your rights under the law, or complaints about the way you have been treated by the developer, you may contact the Department of Planning and Urban Development, City of Portland, 389 Congress Street, Portland, Maine 04101.

18.5.3 Relocation assistance for all tenants

The developer shall provide, upon demand, assistance to all tenants who will be displaced by the development in the form of referrals to other reasonable accommodations and in determining the tenants' eligibility for relocation payments as provided herein. The developer shall make relocation payments to eligible tenants in accordance with the schedule adopted by the City Council in Subsection 18.5.4.

18.5.4 Schedule of relocation payments for eligible tenants

The developer shall, before the tenant is required by the developer to vacate, make a cash payment to the tenant in an amount equal to the amount of rent paid by the tenant for the immediately preceding two months.

19 OFF-STREET PARKING & LOADING

19.1 OFF-STREET PARKING

19.1.1 General

Off-street parking, either by means of structured or surface spaces, in addition to being a permitted principal use in certain zones, shall be considered as an accessory use when required or provided to serve principal uses. The provisions of this article shall apply to parking as an accessory use.

19.1.2 Uses requiring off-street parking

Except as provided in Table 19-B and as provided elsewhere in this article, minimum off-street parking requirements shall be as provided in Table 19-A. For any use not listed in Table 19-A, the parking provisions for the most similar use, as determined by the Building Authority or the Planning Authority, shall apply.

19.1.3 Rules of calculation

A. **Floor area.** Unless otherwise stated, all square footage-based off-street parking standards shall be computed on the basis of gross floor area used or intended to be used for service to customers, patrons, clients, or patients. It need not include floors or parts of floors used principally for non-public purposes, such as bulk storage, cellar, or food preparation areas. These provisions notwithstanding, the "floor area" used as the basis for computing off-street parking requirements shall never be less than 80% of the total gross floor area.

B. **Fractions.** Any fraction greater than or equal to 0.5 will be rounded up to the nearest whole number. Any fraction less than 0.5 will be rounded down to the nearest whole number.

C. **Multiple uses.** When two or more principal uses or separate establishments are located within the same lot, off-street parking shall be provided for each principal use or separate establishment according to Table 19-A, unless joint use is approved under Subsection 19.1.5.

D. **Accessory uses.** Off-street parking shall not be calculated separately for accessory uses.

E. **New construction.** In the case of new construction, the minimum off-street parking requirements in Table 19-A shall be met.

F. **Changes of use.** In the case of changes of use, the only additional off-street parking required shall equal the difference between the parking required for the new use and the parking required for the existing use.

G. **Building additions or alterations.** In the case of additions or alterations which increase the number of units or square footage of a given use, the only additional off-street parking required shall equal the difference between the parking required for the use in the post-development condition and the parking required for the use in the pre-development condition.

19.1.4 Shared use vehicles

The required parking for multi-family residential buildings may be partially met through provision of shared-use vehicles, which are vehicles available for use on a fee basis to the residents of the building. One shared use vehicle shall be deemed to satisfy eight required car spaces, but in no case shall more than 50% of the parking requirement be satisfied by a shared vehicle use.

TABLE 19-A: OFF-STREET PARKING MINIMUMS

	Vehicular		Bicycle
Single-, two-, or multi-family units	1 space/ dwelling unit		2 spaces/5 units
Lodging house	1 space/5 rooming units[1]		
Special needs independent dwelling unit	1 space/4 dwelling units, plus 1 space/staff member normally present at any one time		
Sheltered care group home	1 space/2 employees		
Congregate care facilities	1 space/3 dwelling units		
Emergency shelters	1 space/2 employees		2 spaces/10 vehicle parking spaces for the first 100 vehicle spaces required, plus 1 space/20 vehicle parking spaces thereafter[4]
Long-term, extended care, and intermediate care facilities	1 space/5 beds, plus 1 space/employee normally present during weekday morning shift		
Governmental uses	1 space/400 SF of floor area		
Hospitals and clinics	1 space/500 SF of floor area		
Places of assembly	1 space/150 SF of floor area used for assembly purposes[2]		
Preschool facilities	1 space/staff member normally present at any one time		
Schools	For students up to 15 years	1 space/room used for instruction purposes	
	For students 16 years and older	1 space/10 seats used for instruction purposes or, if no fixed seats, 1 space/100 SF used for instruction purposes	
Bed and breakfasts	1 space/2 guest rooms for first 4 guest rooms, plus 1 space/additional room thereafter[3]		
General offices	1 space/400 SF of floor area		
Hostels	1 space/8 beds or, if within ¼ mi. of a transit stop, 1 space/12 beds		
Hotels	1 space/4 guest rooms		
Retail	1 space/200 SF of first floor area in excess of 2,000 SF, plus 1 space/700 SF for each floor above		
Restaurants and bars	1 space/150 SF of floor area		
Theaters, performance halls, funeral homes	1 space/5 seats or, if no fixed seats, 1 space/100 SF of assembly space		
Industrial uses	1 space/1,000 SF of floor area in excess of 3,000 SF not including area catering to retail		

[1] Except in the R-5 zone, where the requirement shall be 1 space/2 rooming units.
[2] Except for neighborhood centers which primarily serve clientele from the surrounding neighborhood, where the parking requirement shall be 1/1,000 SF of floor area
[3] Except in the I-B zone, where no off-street parking shall be required for beds and breakfasts.
[4] Development with under 10 required vehicular parking spaces shall provide at least two bicycle parking spaces.

TABLE 19-B: CATEGORICAL EXCEPTIONS TO OFF-STREET PARKING MINIMUMS

Categorical Vehicular Exceptions	
Major site plans	The Planning Board shall establish the off-street parking requirement based on a parking study.
Affordable housing	~~T~~2 spaces are required for every 3 units, except that the Planning Board may establish a lesser parking requirement ~~that is less than 1 space per workforce or low-income housing unit,~~ regardless of the size of the structure.
Multi-family housing	The Planning Board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand, such as housing for persons who cannot drive, housing that participates in a Transportation Demand Management program, or housing which includes permanent restrictions on automobile usage, and which is permanently restricted from utilizing resident on-street parking stickers.
Historic structures	No off-street parking in excess of that existing on or servicing the lot as of March 15, 1999 shall be required.[1]
Accessory Dwelling Units	No off-street parking shall be required.
Transit proximate development and uses	No off-street parking shall be required within ¼ mile of fixed route transit service. New uses or changes of use of more than 10,000 SF taking advantage of this exception shall be required to provide a Transportation Demand Management Plan if they use this provision in lieu of parking requirements.

Zone-Based Vehicular Exceptions		
	Residential	**Nonresidential**
R-6	No off-street parking required for first three dwelling units.[2]	
IR-1/I-B		Off-street parking requirements for nonresidential uses shall be reduced by 75%.
IR-3	No off-street parking required.	
R-OS	Off-street parking shall be adequate to serve projected employee and visitor needs.	
B-2/B-2b/B-2c		For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses.[3]
IS-FBC	No off-street parking required for first three dwelling units.	For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses.[3]
B-3	No off-street parking required for changes of use.	
B-5	No off-street parking required.	
B-6	Off-street parking requirement shall be determined based on a parking study.	
B-7	Off-street parking requirement shall be determined based on a parking study.	
Waterfront Zones	Off-street parking requirements shall be reduced by 50%. No off-street parking required in the WCZ.	

[1] Exception applies for uses within any contributing structure in a local or national register historic district or locally-designated or national register landmark building under Article 17. However, parking may not be decreased from that existing on or servicing the lot on March 15, 1999 except to the extent necessary to meet the requirements of the Americans with Disabilities Act.

[2] For alterations of buildings containing three or more dwelling units in the R-6 zone, no parking shall be required for the creation of one additional dwelling unit above existing conditions as of June 3, 2015. This exemption may be used one time.

[3] If the number of existing parking spaces serving the site is less than the requirements of this article, that number of parking spaces may not be reduced lower than the required amount prior to the change of use except to the extent necessary to meet the requirements of the Americans with Disability Act, to the extent it is a requirement or a condition of site plan review, or to the extent the change of use requires less parking than the previous use and the total number of parking spaces serving the site exceeds the parking requirements of this article for all uses on the site including the change of use. A newly constructed building, a building addition, or a change of the use of a building exceeding 10,000 SF of floor area, shall provide parking as required by this article.

19.1.5 Joint use

The joint use of a parking facility by two or more principal uses may be permitted where it is clearly demonstrated that the parking facility will substantially meet the intent of the off-street parking requirements by reason of variation in the probable time of maximum use by patrons or employees among such establishments.

19.1.6 Off-site parking

Required off-street parking shall be located on the same lot with the principal use, except as follows:

A. **For uses in residential zones.** Off-street parking may be located off-site upon an applicant demonstrating the following:
   1. Off-street parking cannot reasonably be provided on the same lot with the principal use.
   2. Off-site parking is proposed to be located no more than 300 feet from the principal use, measured along lines of public access.
   3. The premises to be used for off-site parking are held, either under the same ownership or by lease, by the applicant. Evidence of such control, either by deed or lease, shall be provided.
   4. The premises to be used for off-site parking have adequate parking supply to meet any parking required for existing uses on those premises.
   5. The premises to be used for off-street parking are located in the same or less restrictive zone as that of the building or use served.

B. **For uses in nonresidential zones.** Off-street parking may be located off-site at a distance of no more than 100 feet from the principal use, measured along lines of public access. Off-street parking may be located further than 100 feet from the principal use provided the applicant demonstrates the following:
   1. Off-site parking is proposed to be located no more than 1,500 feet from the principal use, measured along lines of public access.
   2. The premises to be used for off-site parking are held, either under the same ownership or by lease, by the applicant. Evidence of such control shall be provided by showing, at a minimum, a signed letter of intent, purchase and sale agreement, or option for sale or lease at the time of approval, and an executed deed or lease prior to issuance of any certificate of occupancy for review and approval by Corporation Counsel. Off-site parking leases shall be for a term of not less than five years with an option to renew.
   3. The premises to be used for off-site parking have adequate parking supply to meet any parking required for existing uses on those premises.

19.1.7 Fee-in-lieu of parking

A. **Applicability.** Any development subject to site plan review shall either provide the required parking on- or off-site or pay a fee-in-lieu of parking of not less than $5,000 per space not provided. Fees shall be deposited into the Sustainable Transportation Fund, as established in Section 19.3 of this article. The fee shall be paid on or before the date upon which a certificate of occupancy is issued. Payment shall be secured by a bond at the time the amount of the fee is set.

B. **Annual adjustment.** The value of the fee shall be adjusted annually according to the

Engineering News Record construction index as published on January 1st of the current calendar year. The fee adjustment shall be calculated by dividing the index amount published on January 1st of the current year by the index amount published on January 1, 2010 ($8,660), multiplied by the minimum fee amount of $5,000. The base fee, the adjustment index, or the calculation method may be otherwise amended by action of the City Council from time to time.

19.1.8 Location of vehicular parking

A. In general

1. Tandem vehicular parking shall be permitted for residential uses, and for developments where managed parking is part of an approved site plan.
2. Parking shall be prohibited in the front yard, which shall mean the open space between the street line and building, except for parking within driveways on lots containing single- or two-family dwellings. "Driveway," as used in this paragraph, shall not include any turnaround area.
3. Where an existing front yard exceeds a maximum front setback, a maximum of 10% of the total parking area provided on the site may be located between the principal structure and the street.

B. In residential zones

1. Where off-street parking for six or fewer vehicles is required or provided, parking located within five feet of any lot line shall be located 50 feet or greater from any street line, except for in the R-6 zone, and parking in all residential zones shall maintain the minimum front setback from any street line, except on a corner lot where parking shall maintain the side setback on a side street.
2. Where off-street parking for more than six vehicles is required or provided:
   a. Parking for nonresidential uses shall be located 25 feet or greater from any residential structure on an adjoining lot.
   b. Where vehicles are to be or may be parked within a required setback:
      i. A continuous, permanently-anchored curb guard, at least five feet from the lot line, shall be provided between such off-street parking and that lot line involved, the top of which shall be at least 20 inches in height so that bumpers of vehicles cannot project beyond its face.
      ii. Where such off-street parking abuts a lot in residential use or an unoccupied lot located in a residential zone, a fence, not less than 48 inches in height, shall be provided and maintained between such off-street parking and that part of the lot line involved.

C. In mixed-use zones

1. Where off-street parking for more than six vehicles is required or provided:
   a. Where vehicles are to be or may be parked within 10 feet of any street line, a continuous, permanently-anchored curb guard shall be provided and maintained between such off-street parking and that part of the street line involved so that vehicle

bumpers cannot project beyond its face toward the street line involved.

b. Where such off-street parking abuts a lot in a residential zone or in residential use, a fence, not less than 48 inches in height, shall be provided and maintained between such off-street parking and that part of the lot line involved.

2. In the B-7 zone, off-street surface parking shall be located 35 feet or greater from any street, except in the case of:

a. A lot where 80% of the frontage has a building within 10 feet of that frontage.

b. A lot where all or a portion of the 35-foot setback area had a gravel surface not exceeding 15,000 square feet as of 9/29/15 and the principal use served is in a building meeting the minimum height requirements of the Bayside Height Overlay or of 25,000 square feet or greater. In these cases, the total number of spaces within the 35-foot setback and elsewhere on site shall not exceed parking requirements. Parking within the 35-foot setback shall provide stormwater quality treatment.

c. The 35-foot setback requirement shall not apply to a driveway located perpendicular to the site.

19.1.9 Off-street parking restricted

Off-street parking shall not include:

A. More than one commercial motor vehicle in any residential zone, the R-P zone, or the B-1/B-1b zones.

B. More than six commercial motor vehicles in the B-2/B-2b/B-2c zone.

C. Loading, sales, dead storage, repair, or servicing of any kind, except when customarily incidental or accessory to a conforming principal use when located in an industrial zone.

D. Notwithstanding Section 19.1.9(A), any truck body, commercial trailer, or similar commercial vehicles in any residential zone or the R-P zone.

19.2 OFF-STREET LOADING

19.2.1 Uses requiring off-street loading

Off-street loading is not required in the B-6, B-7 or WCZ zones. In all other zones, the minimum off-street loading bays or loading berths shall be as provided in Table 19-C. These minimum requirements shall be met and maintained in the case of new construction, alterations, and change of use.

19.2.2 Design of off-street loading

Each loading bay shall have minimum dimensions of 50 feet by 14 feet and may be located either within a building or outside and adjoining an opening in the building, except that in the case of hospitals and intermediate, long-term, and extended care facilities, the off-street loading area provided for ambulance and other emergency vehicles shall be exempt from the minimum dimensional requirement but shall be of sufficient width and depth to permit expeditious access and egress from the loading area. Every part of such loading bay shall be located completely off the street. In case trucks, trailers, or other motor vehicles larger than the dimensions of the minimum loading bay habitually serve the building in question, additional space shall be provided so that such vehicle shall park or stand completely off the street.

TABLE 19-C: OFF-STREET LOADING REQUREMENTS

Use and Size (Gross Floor Area)		Minimum Number of Bays or Berths
General offices and hotels (> 100,000 SF)		1
Retail and industrial	5,000 - 40,000 SF	1
	40,000 - 100,000 SF	2
	100,000 - 160,000 SF	3
	160,000 - 240,000 SF	4
	240,000 - 320,000 SF	5
	320,000 - 400,000 SF	6
	Each 90,000 over 460,000 SF	1 additional
Hospitals and intermediate, long-term, and extended care facilities		2 off-street loading areas shall be provided whereby one service area for ambulance and other emergency vehicles shall be separate from one service area accommodating supply vehicles, and whereby both off-street loading areas shall be separate from parking and entrance locations.

19.2.3 Requirements for additional bays, alterations, or modifications

Any additional loading bays which are provided in excess of the requirements of this article or any loading bays otherwise established shall meet the requirements of Subsection 19.2.2, and no alterations or modifications shall be made in an existing building or structure whereby loading openings or platforms are constructed or established unless the provisions of Subsection 19.2.2 are met.

19.2.4 Nonconformity as to off-street loading

A building which is nonconforming as to the requirements for off-street loading shall not be enlarged or added to, unless off street loading is provided sufficient to satisfy the requirements of Article 19 for both the addition or enlargement and the original building or structure.

19.3 SUSTAINABLE TRANSPORTATION FUND

19.3.1 Establishment

By act of the Portland City Council, the Sustainable Transportation Fund is hereby established.

19.3.2 Purpose

The purpose of the Sustainable Transportation Fund is to implement those provisions of the *Peninsula Transit Study Report and Action Plan*, as adopted by the Portland City Council on August 3, 2009, which recommended creation of a Sustainable Transportation Fund. The *Peninsula Transit Study Report and Action Plan* established a goal to reduce the number and impact of single-occupancy vehicle trips to and from the Portland Peninsula. Achieving this goal requires transportation choice for residents, businesses, and visitors. This ordinance establishes a funding source for broadening transportation choice and facilitating development with lower traffic impacts and reduced parking requirements. The mechanism and protocol for collecting fees and spending funds

are consistent with state requirements for utilizing transportation-related impact fees.

19.3.3 Deposits and expenditures

A. **Deposits.** The City shall establish a Sustainable Transportation Fund to be set up as a separate account within the City. Deposits into the fund shall include:
   1. 100% of the revenue generated by the fee in-lieu of parking program, as established in Subsection 19.1.7 of this article.
   2. Funds appropriated for deposit into the fund by vote of the City Council.
   3. Voluntary contributions of money or other liquid assets to the fund.
   4. Any federal, state or private grant or loan funds provided to the fund.

B. **Accounting of deposits**. Funds from the fee in-lieu of parking program, as established in Subsection 19.1.7, shall be individually collected and accounted for by project and the geographic fee in-lieu of parking subdistrict in which it is located.

C. **Funds to be used within 10 years of deposit.** Funds collected under the fee in-lieu of parking ordinance shall be spent on eligible infrastructure and/or capital improvements or expenses within 10 years of the date of collection. Any funds which are not so utilized and which exceed the City's actual costs of implementing the infrastructure improvement or improvements for which such fees were collected shall be refunded. Refunds shall be paid to the owner of records of the property for which the funds were collected, determined as of the date the refund is made.

D. **Use of funds by subdistrict.** Funds collected under the fee in-lieu of parking ordinance shall be spent on permitted expenditures of the fund within the same geographic fee in-lieu of parking sub-district as the contributing project. However, for projects located within 250 feet of an abutting subdistrict, contributed fees can be used for eligible infrastructure projects in either abutting subdistrict.

E. **Permitted expenditures of the fund.** The Sustainable Transportation Fund may only be expended on the activities as described below:
   1. Funds collected as fees in-lieu of parking shall be expended toward capital transportation improvements. Such capital improvements shall include but are not limited to the following:
      a. Parking infrastructure:
         i. Shared use, publicly accessible parking facilities.
         ii. Publicly accessible bicycle racks and bicycle parking shelters.
      b. Transit capital improvements and expenses:
         i. Bus shelters, bus turnouts, transit signage and other transit amenities.
         ii. Buses and transit vehicles.
         iii. Transit and transportation information systems.
         iv. Fixed guide way and/or rail transit systems.
      c. Pedestrian and bicycle infrastructure:
         v. Multi-use trails and non-vehicular transportation corridors.
         vi. Pedestrian infrastructure and amenities located on publicly accessible rights-of-way including but not limited to crosswalks, signalization, landscaping, street

furniture, wayfinding signage, traffic calming, and lighting.

vii. New public sidewalks and new bicycle lanes along publicly accessible rights of way or corridors where such facilities are not previously provided.

d. Other such improvements intended to enhance transportation choice and promote transit and non-automotive transport.

2. Funds collected or appropriated by means other than from a fee in-lieu of parking may be used for any of the capital transportation improvements listed above, and for any of the following uses:
   a. Transportation Demand Management program administration.
   b. On- or off-peninsula transit and/or non-automotive transportation capital or operating expenses.
   c. Transit and/or non-automotive transportation promotion and education material.
   d. Other such programs or improvements intended to enhance transportation choice and promote transit and non-automotive transport for the City of Portland.

F. **Annual Sustainable Transportation Plan and appropriations schedule.** Annually, the City Manager shall submit to the City Council a recommended sustainable transportation plan and appropriations schedule, utilizing the revenues of the Sustainable Transportation Fund. The Transportation Committee of the City Council or such other committee as the council shall designate shall recommend and refer the plan and appropriations schedule to the City Council for action.

Helen Donaldson <hcd@portlandmaine.gov>

Fwd: Question about LD2003

Kevin Kraft <kkraft@portlandmaine.gov> Tue, Oct 10, 2023 at 12:21 PM
To: Helen Donaldson <hcd@portlandmaine.gov>

---------- Forwarded message ---------
From: **Todd Morse** <todd@urbanistportland.me>
Date: Tue, Oct 10, 2023 at 12:20 PM
Subject: Question about LD2003
To: <planning@portlandmaine.gov>

Hello,

I know the discussion about LD2003 is a workshop and not open for public comment. But I found the language in one of the elements of the change is ambiguous and I would appreciate it if the workshop this afternoon cleared up this ambiguity. The language says:

"6.4.2 (E): If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section, the lot is not eligible for any additional units Section 6.6.2(A)"

Take the following scenario: There is a parcel that ordinarily would be allowed one unit, and it had one unit at time of passage. Using the new supplemental use, they add a unit. Would they be allowed to then build an ADU?

Based on one reading, more than one dwelling unit has been constructed on a lot, and this was allowed to happen as a result of the allowance in the section, so they would not be allowed to build an ADU.

Based on a different reading, they only invoked this section to build the second unit, so they have not built more than one unit as a result of the allowance under this section, so they would be allowed to build an ADU.

Bottom line are we looking at 1 additional residential use unit + 2 ADUs or 0 additional residential use units + 2 ADUs?

Thanks,
Todd Morse

--
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A Wasted Opportunity – Portland's LD2003 Response

PUBLISHED OCTOBER 12, 2023 *by* TODD MORSE

The City of Portland is currently in the process of squandering a rare opportunity to allow for much needed new homes. Maine is currently in the midst of an unprecedented housing shortage; a recent study commissioned by MaineHousing, the Governor's Office of Policy Innovation, and the Future and the Maine Department of Economic and Community Development found that we are short around 84,000 units of housing. The state passed LD2003 with the intention of addressing this crisis, but the Portland planning staff's proposed implementation of this law will not even make a dent.

On Tuesday, October 10th, Portland's planning staff presented to the planning board their proposed changes for our zoning code to comply with LD2003. Passed in 2022, LD2003 is a state law that intended to allow for the construction of more housing by updating zoning restrictions across Maine. Zoning restrictions (also referred to as land use restrictions) are local laws set by cities and towns to limit the sorts of buildings that are allowed to be built. The state put together a commission to study how these laws could be updated to encourage the construction of more housing, and LD2003 was built on the recommendations from that committee. Since zoning restrictions are mostly at the discretion of cities and towns, LD2003 sets some minimum standards that cities and towns must meet with their local laws to allow for the construction of more housing.

Cities and towns in Maine have until January 1st, 2024 to bring their local zoning codes into compliance. In order to pass these changes, they must first be read before the planning board, then at a subsequent meeting they must be voted on by the board. The same process must be repeated by the city council, first presented, then voted on. This puts three meetings (at minimum) in between now and the ultimate passage of these changes. Both bodies meet once roughly every 2 weeks, so it may take more than *6 weeks* to pass these changes. This puts us deep into November trying to pass changes with only a month and a half (at most) of wiggle room. And that wiggle room is in the holiday season.

Because LD2003 combines committee recommendations into a single bill, it has several parts that are independent from each other. These recommendations are all important, but I am focused in particular on section 5, titled "Residential areas, generally; up to 4 dwelling units allowed." It's no mystery what the effect of this provision is supposed to be.

Zoning rules can get pretty complicated. Even people who work with these rules every day are often bewildered by the sort of jargon in zoning codes. I will try to keep things simple, but it's important to define a few key terms before we get into it:

Minimum Lot Size: Minimum Lot Size is a per-zone restriction on how large a piece of property needs to be before the city will let someone build on it. The sizes are not based on what is realistic or safe to build, a common misunderstanding, but are intended to shape the character and look of neighborhoods. The minimum varies in different parts of the city. In the West End and Munjoy Hill, which are in the densest residential zone, it is 3,000 square feet, while even in the second most dense residential zone it doubles to 6,000.

Lot Area per Dwelling Unit Minimums: This restriction further demands that each unit of housing require a certain amount of land. For example, in the R-5 zone the minimum lot size is 6,000 ft2 and the lot area per dwelling unit minimum is 3,000 ft2. If you have a 6,000 ft2 lot, you are allowed to build two units on it because each unit needs 3,000 ft2 of lot area. To build a third unit your lot would need to be 9,000 ft2. These laws limit density directly, so they are often referred to as Density Limits.

Accessory Dwelling Unit (ADU): Accessory dwelling units are extra places to live that can be added alongside the primary structure on a property. They can either be attached to the main building or stand on their own; they are often small additions to the home or cottages for older parents to live in. Cities and towns usually have rules that make them somehow "secondary" to the main building, for example, in Portland you can add up to two ADUs so long as they're smaller than the main building. ADUs are often perceived as less intrusive than other forms of housing, so cities and towns use them as a way to allow for more housing while preserving neighborhood character.

Use Standards: These rules limit how land can be used. For example, a restaurant is not an allowed "use" in a residential zone. In addition to limits about numbers of units, single-family homes are also a separate "use" from homes with more than one unit. Use standards can also contain more specific requirements you must meet to use land in a certain way. For example, even if you are allowed to build a residence in your zone, that use is not allowed if the lot doesn't have sufficient street access.

State Requirements

With LD2003 the state has set minimum standards that cities and towns must meet. What are those standards? I am specifically focusing on section 5, "Residential areas, generally; up to 4 dwelling units allowed." This section requires that:

- Any lot that currently allows housing but does not have a home on it must allow ***at least*** two units, and ***at least*** four units if it is in a "growth area." All of Portland, save for the islands, is considered to be a growth area.

- Any lot with a home on it must allow ***at least*** one extra attached unit ***and*** one extra unit that is detached from it, for a total of two potential extra units.

The section gives cities and towns the ***choice*** over whether lots that have become vacant after July 2023 are eligible for four units or not. If they choose to allow it, a lot with a home that was demolished in 2024 would be treated the same as the existing vacant lots. If they chose to prohibit it, only the existing vacant lots – only those which today, in 2023, are vacant – will *ever* be permitted to build four units by this law.

The section also gives cities and towns the ***option*** of enforcing density limits on these additional units provided they are the same for the first unit as they are for any additional units. For example, a city or town could say that you need 3,000 ft^2 per unit, but they could not say the first unit on a lot needs 3,000 ft^2 and any extra units need 300,000 ft^2. This prevents cities from nullifying the law by making units beyond the first require way more land than any lot could realistically have, effectively preserving one unit only limits. While the law can't be fully nullified in this way, density limits still could prevent some lot-

owners from building the full number of units the law would have entitled them to if they are not large enough for the city's tastes.

The Planning Staff Proposal

To comply with these rules, the planning staff could have simply proposed to upgrade the allowed number of units in all residential areas on the mainland. Instead, planning staff have opted to add what's called a "supplemental use standard." This allows the code to permit more units... but with additional restrictions. They are calling this supplemental use: "Additional residential use" (ARU) (See 6.4.2 in the proposed amendments to the land use code.)

If there is already a home on a lot, you would be allowed to add up to two units on that lot. However, staff added the restriction that if you add units in this way, you'd lose the ability to add accessory dwelling units (ADUs), of which you are currently allowed two. This makes the change a purely lateral move in terms of adding new housing units. It is true that adding your two units through this new method may give you more options, for example, your units wouldn't need to be smaller than the main structure. However, it has several new limitations which may make the currently allowed ADUs more attractive.

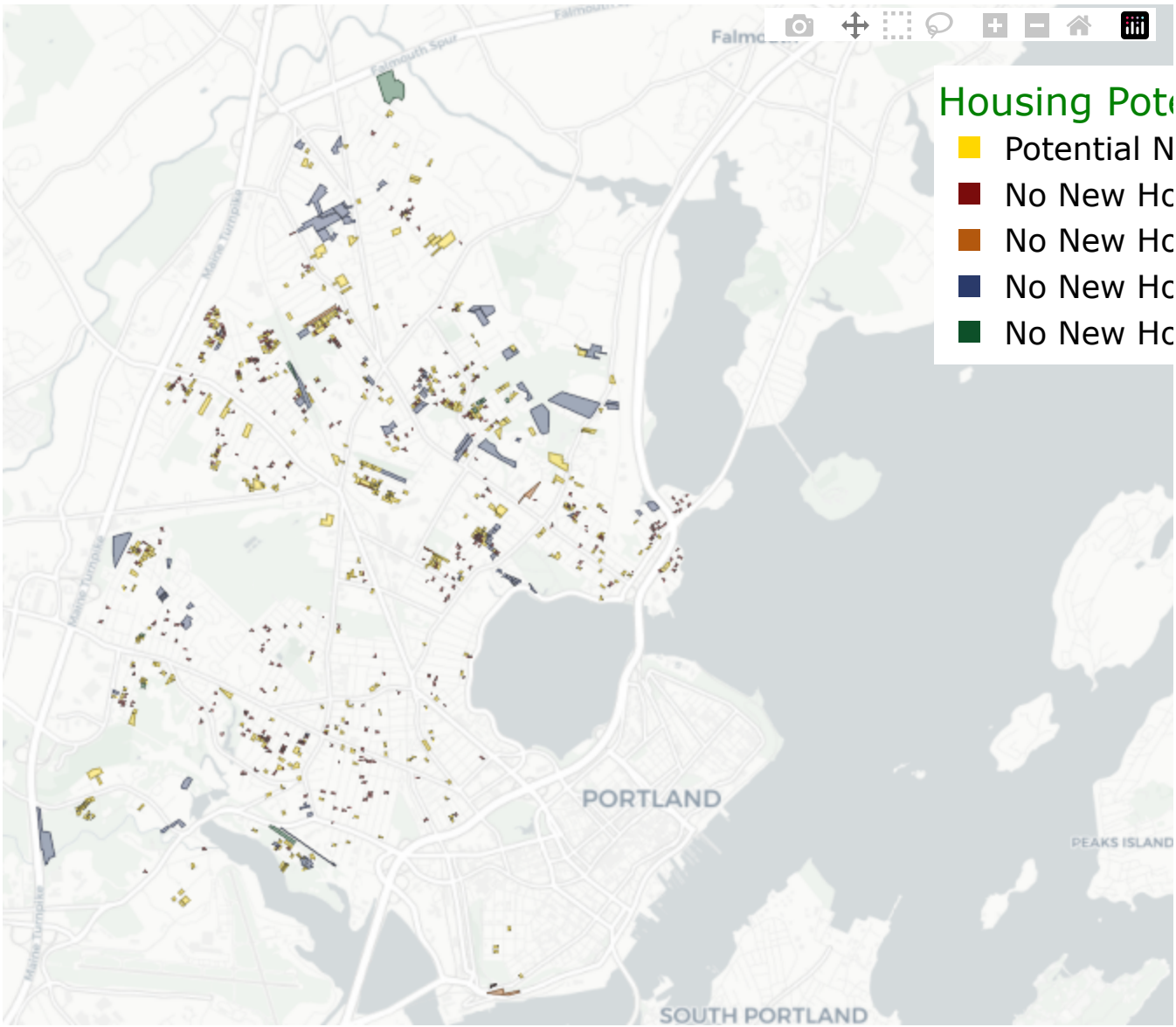
	Additional Residential Use (ARU)	Accessory Dwelling Units (ADU)
Upsides	• Their size is not limited by the size of your main building. • The attached unit doesn't count towards density limits. • You can build them without occupying the main building.	• Don't count towards lot coverage limits. • Don't count towards density limits. • Don't count towards parking minimums. • Can both be built either attached to the main building or separate from it.
Downsides	• You can't add both to your main building or have both as separate buildings. You only get one of each. • The detached unit counts against your density limit. • Counts towards parking minimums.	• Must have no more than ⅔ the floor area of the main building, and the total floor area for both may not be more than that of the main building. • Must be shorter than the main building • Owner must occupy the main building at time of construction.

For vacant lots that meet the minimum lot size in their zone and allow housing, you would be allowed to build up to four units. There are many lots which are vacant because they are too small to legally be built on, so these will not be included. The only lots that this applies to are lots that are currently legal to build on – but have not been built on for some reason. Usually, it's a very good reason.

Much of this land is unofficially part of a park, or otherwise is unfeasible to build on due to drainage issues, oddly shaped boundaries, or lack of road access. After removing wetlands, lots with trails, and irregular lots, only 396 lots in the entire city will now allow up to four units, less than 1% of our land area. This allows for a theoretical maximum of 1,188 additional units total.

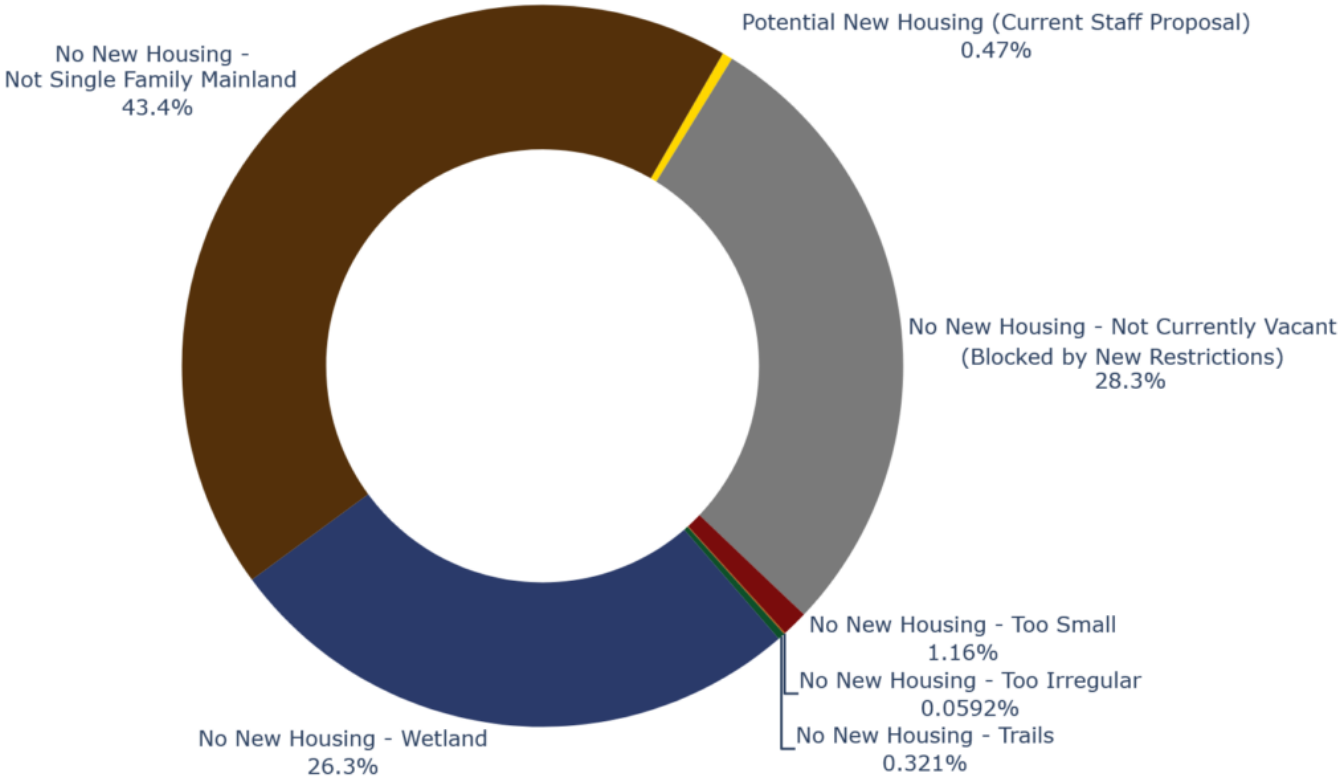
And even this is a generous analysis. In practice it would be surprising if even a handful of these lots were developed; many of these are vacant for reasons not captured in my analysis. For example, some are unofficially used by communities, or others may have deed restrictions which further narrow usage. They also tend to be further from places that are already built up with amenities like shops or transit.

Explore this interactive map to look at all of the examples.



The number of units made possible to build by these changes will not grow over time because planning staff have opted to add that restriction which prevents lots made vacant in the future from qualifying.

That means the lots you see here, right now, are all we are ever going to get. This locks away over 28% of the land in the city from ever qualifying for these additional units.



A Wasted Opportunity

Section 5 of LD2003 is titled "Residential areas, generally; up to 4 dwelling units allowed", but apparently the city of Portland does not fall under this "generally." I have little doubt that planning staff's recommendation follows the letter of the law, but it is clear they are explicitly proposing the minimum amount of change by way of a complex workaround.

LD2003 states that cities and towns *may* place a limit on lots that become vacant after the law is enacted. We don't have to add this new language to our zoning code, but planning staff have chosen to.

We don't have to prevent lots that add these units from adding ADUs, but planning staff have chosen to.

To add these limits, planning staff has added new language to our zoning code. Language that was not there before and is not required by the state. While this language only limits the new changes they have been forced to add to comply with LD2003, they are new limits that planning staff have added.

Getting rid of them would be as simple as not adding two bullet points, 6.4.2 C and E to be precise. We don't have to keep these bullet points, but planning staff have chosen to.

We also have the option of adding language to make these new additions more cohesive with the rest of the zoning code. For example we could exempt these additional units from parking minimums and density limits like we currently do for ADUs. We don't have to leave these tight restrictions in place for these units, creating two similar types of units with subtle benefits and drawbacks, but planning staff have chosen to.

Planning staff have also chosen to push for more time throughout this process to make these changes, claiming that complying with the law was very complicated, and that waiting for specific details from state rule-making was necessary. These justifications should not go unexamined. Complying with LD2003 is only complicated if your goal is to use sophisticated legal strategies to prevent change.

The law states that a city or town may allow more units than the number strictly required. There was no need to skate this close to noncompliance. We could have simply allowed people to build four units on any parcel that is large enough to do so, and we would have complied with this section immediately and unambiguously.

Now we are down to the wire to get changes passed. This is the first time the public has even been able to hear the proposal and the city only has a little over two months to pass it. Making these choices is not an apolitical technical decision, they are choices about what we value. Do we want to be a leader in housing in the state, or resist change as much as we possibly can?

The current proposal goes out of its way to do the latter. It makes our zoning code even more complex, during a ReCode process which is supposedly simplifying it. We now have a new subsection, with specific limits that references a specific calendar date. From now on, if anyone wants to know what they can build on a piece of land, they will need to pore through historical records to figure out what was there on that fateful July in 2023. It creates a new category of housing that is largely redundant as regards ADUs, but lacks the thoroughness that went into our original ADU provision. This complexity makes it hard for people to navigate the code, hard to make future changes, and hard to build the housing we desperately need.

How did planning staff present these proposals to the people of Portland?

The Workshop

On October 10th at 4:30, the planning board held their first workshop on these changes. This author provided a public comment that roughly followed my criticisms as laid out in this article. The planning board members were open to removing the prohibition on building ADUs if you build an ARU, and generally to treating all vacant lots the same, regardless of whether or not they had a home on them in July of 2023. However, ultimately, they seemed to be leaning against these ideas, and suggested floating these options directly to the City Council.

I would like to take the time to highlight and push back against a few key points discussed in the meeting.

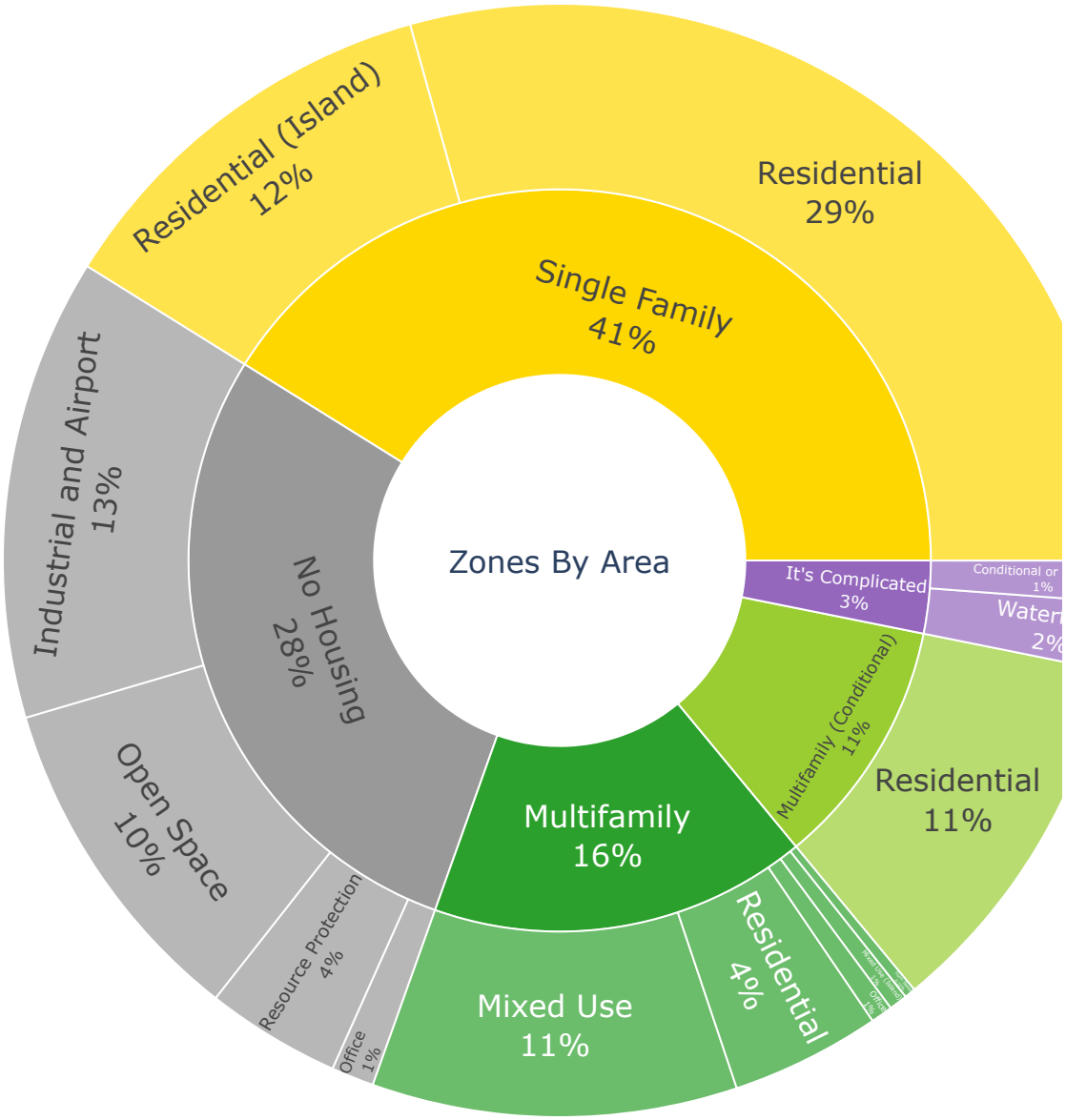
Is LD2003 for Portland?

During the meeting planning staff repeatedly emphasized that this law was not passed with Portland in mind. Christine Grimando, Director of the Department of Planning & Urban Development said, "[I]t is really more focused on lower density areas, and lower scale areas, which again makes perfect sense because it wasn't written for Maine's largest city in particular".

This was immediately followed by a slide of the new proposed downtown height overlay – which is in no way related to LD2003 – but was included to emphasize LD2003's supposed irrelevance to Portland's context.

This interpretation seems unlikely, given the fact that this law passed with unanimous support from the representatives of Portland and all of its surrounding towns: Westbrook, South Portland, Scarborough, Gorham, and Falmouth. Not only did they unanimously support this bill, if their votes were reversed it would not have passed. Furthermore, numerous groups in the Greater Portland Area shaped, refined, and advocated for this bill. Portland and its suburbs have been at the core of this process from the beginning.

Christine also stated that compliance with LD2003 would be a relatively small disruption for Portland because "in many cases Portland's codes meet, or vastly exceed what LD2003 is requiring". It is true that any city with apartment buildings has probably zoned at least some of their land in a way which vastly exceeds what LD2003 is requiring. However, having tall buildings downtown and proposing to make them even taller doesn't change the fact that over 41% of the land in the city, which makes up 60% of the land zoned for housing of any type, is zoned for single family homes **only**. These neighborhoods are precisely the sort of areas in Maine which LD2003 was designed to reform.



Even much of the remaining 40% still is bound by restrictions that do not meet LD2003's standards. This law was designed by our elected representatives, with us in mind, and it is intended to make real change in Portland. While the proposed zoning code changes were merely designed with us in mind.

'Let's Get this Passed Quickly and Save Big Changes for ReCode'

Overall, there was a sense of urgency from both the planning board and planning staff around passing these changes. This is understandable because we are very rapidly approaching the deadline to pass them. Planning staff also suggested that it would be simplest to simply pass the minimum changes now and add ideas around new housing to ReCode.

Just because we need to pass changes urgently, doesn't mean we should just pass the first law in the room. Bringing a complex law to the table just weeks before the deadline makes it easy to deflect scrutiny but this law is not the simplest or fastest way to comply with LD2003. As I mentioned before, we could be

just as compliant by removing the complicated additional restrictions from their proposal. We could simply allow four units wherever size and accessibility permits. We could do this without introducing any delay.

It is also risky to postpone these crucial changes for ReCode. It is no accident that LD2003 has coincided with our ReCode efforts. ReCode has been underway in some form since 2017 and there is no chance of it passing until 2024, at the very earliest. Any zoning policy change in a six-year period would coincide with our ReCode efforts. This slow pace of change is what prompted the state to pass LD2003. It is unclear when the ReCode process will be completed and what the changes will look like – if they are even ultimately passed. We should not let the slow and uncertain ReCode process prevent us from seizing an opportunity for change that we have before us right now.

Does one extra unit matter?

At the meeting there was some discussion of removing the limit on lots that currently have a home on them from ever being allowed four units. During this discussion it was repeated that the difference here is small because adding two additional units makes for a total of three units, making the difference only one unit. This arithmetic is, of course, true, but it misses the very important detail that the four units on a vacant lot can all be built at the same time, in one structure, like a small apartment building or in courtyard cottages. The language allowing you to add two units specifies that it can only be used if there is already a building on the lot and that they can't both be in the same structure. This makes a massive difference in how affordably and sustainably one can build.

And besides, in as deep a housing shortage as we are in, every little bit helps.

What Can We Do?

None of this, to be clear, is to say that the planning staff is incompetent or has bad intentions. I suspect they have gone this route because they are wary that allowing more housing will result in backlash. They even said as much in the meeting. It is time to demonstrate that it is *preventing* more housing that will result in public backlash. It is not too late to change this proposal for the better, but the window is quickly closing. The first chance for the public to engage with this process is right around the corner.

There likely will be more time for public comment at their next meeting on October 24th. You can show up to the meeting or email the planning board at planningboard@portlandmaine.gov to submit your comments. You can also reach out to the city council to raise awareness of this issue. The city council has the ultimate say here they may even end up being presented with multiple options. It is important they

are informed as soon as possible so they can make changes before it is too late. You can email public comments to publiccomment@portlandmaine.gov.

The Urbanist Coalition of Portland will be following this situation closely. Sign up to our mailing list or follow us on instagram to keep up to date with this process.

Todd Morse ~ *Todd is the founder and President of the Urbanist Coalition of Portland. You can follow their work at urbanistportland.me. He is a Portland resident and builds software for infectious disease research and has experience in data analysis.*

Sources

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- https://portlandme.portal.civicclerk.com/event/6414/overview
- https://mainehousing.org/docs/default-source/default-document-library/state-of-maine-housing-production-needs-study_full_final-v2.pdf

CATEGORIES: Opinion

3 Comments

AB- North Deering

Wow, great read. Thanks for doing the research, writing this up, and adding the sources.

OCTOBER 12, 2023 REPLY

Winston

Another part of LD2003 is a 2.5x density bonus for projects with more than 50% affordable units, which mean the assertion that "it's just one unit" is even more off than it at first seems. Simply allowing 4 units everywhere would also allow up to 10 units if half are affordable. There are allready 10 unit buildings that predate zoning in many of these neighborhoods- they can even be smaller than some single family homes...

City staff seem to be delicated to protecting single family homeowners from change, and from the more fair property tax bills (single family neighborhoods are more expensive for the city to maintain than multi family neighborhoods, but pay far less in property taxes) that these changes might bring about, vs, say, doing anything to address any of the needs of workers commuting from far away at great personal risk & expense, or tenants, condo owners (yes, some condos where purchased before the boom & are owned by working class people) & landlords dealing with unfair and ridiculous tax bills on the peninsula...

OCTOBER 12, 2023 REPLY



W- prk ave

The interactive map is a great touch, can't wait to read on my lunch break.

OCTOBER 13, 2023 REPLY

Leave a Reply

Your email address will not be published. Required fields are marked *

Comment

Name*

Email*

Website

Save my name, email, and website in this browser for the next time I comment.

Post Comment

The Portland Townsman © 2023

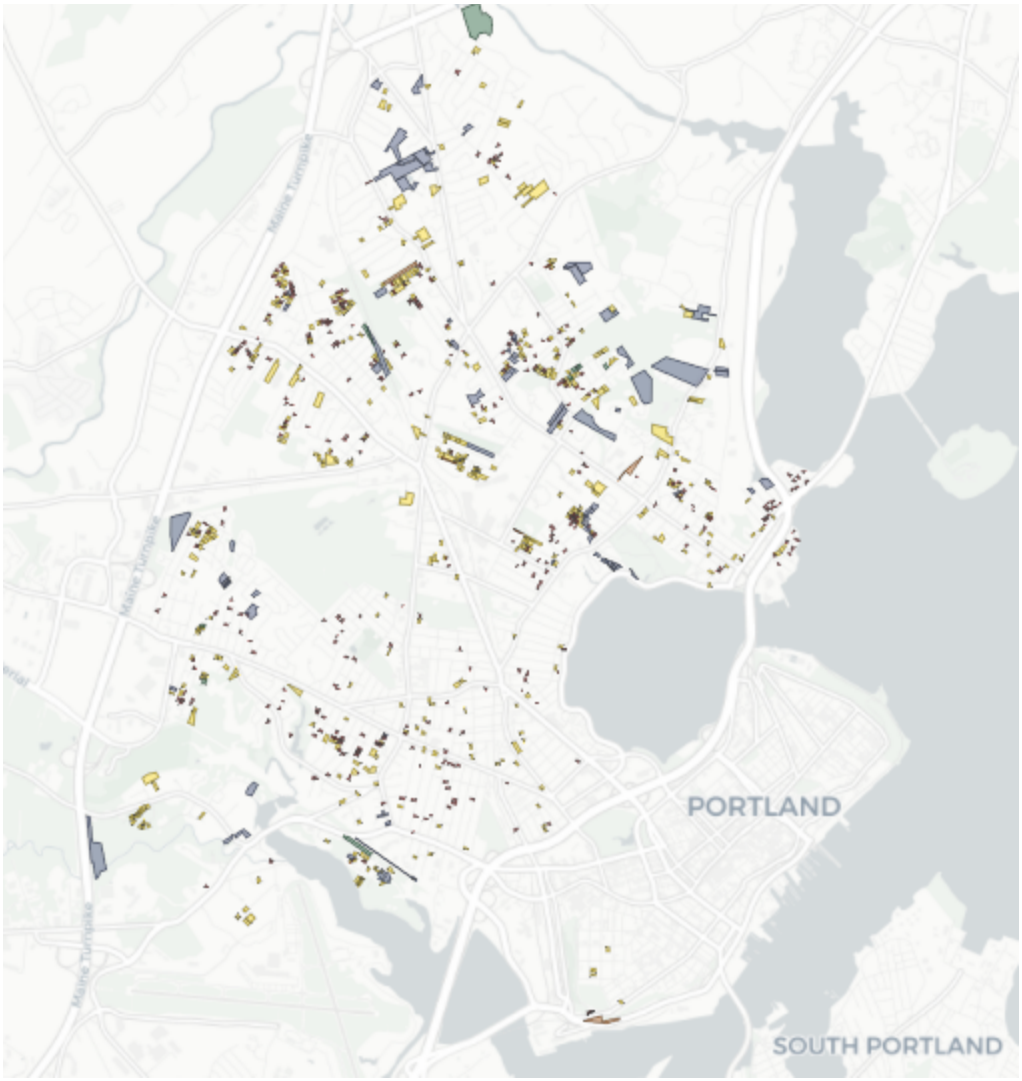
Urbanist Coalition of Portland

Comply with the Spirit of LD2003

Portland must update our land use code by January 1st 2024 to comply with the state law, LD2003. This law intends to expand housing opportunities but Portland's implementation adds additional restrictions that undermine this goal. We must amend this proposal to ensure it complies with the spirit of the law. You can learn more about LD2003 and the Portland Planning Staff's proposal to comply with it in this article in the Portland Townsman.

LD2003 is intended to generally allow up to four units in all residential areas. This map below shows the the small number of lots that will ever qualify for the full four units under Portland Planning Staff's current proposal:

Urbanist Coalition of Portland



Urbanist Coalition of Portland Amendments

We feel it is critical that we update our land use code in a way that honors the spirit of LD2003, however we acknowledge that our city has limited time to comply. This is why we have put together just four short amendments to the current planning staff proposal. Each of these amendments is brief and leaves code simpler than it would be if we passed the planning staff proposal as written. Three out of four of them are simply not adding limits to the LD2003 allowances. The fourth just replaces the new, more restrictive rules for these units with our existing accessory dwelling unit (ADU) rules. These

these minor changes we will unlock the potential for not only more housing opportunities but the housing opportunities that are more affordable, more sustainable, and where we need them.

Portland Planning Staff's proposal is in the form of red changes to our current land use code. Our proposed adjustments to their changes are in blue.

Combined Changes:

- Combined: 6 - Use Standards
- Combined: 19 - Off Street Parking & Loading

Amendment 1: Do not add the limit preventing lots that were not vacant on July 1st, 2023 from ever qualifying as vacant for LD2003

The current planning staff proposal adds a restriction to prevent lots that had a home on them on July 1st 2023 from ever being considered vacant for the purposes of LD2003. This restriction prevents these lots from qualifying for up to four units in the same structure. It limits the number of buildable lots that will qualify from about 28% of our city's land to just about half a percent. The lots that would qualify are lots that could be built on today but aren't. Usually this is because there is something about the lot that makes it unsuitable for housing. It also requires people to do historical research just to know what they can or can't build. This restriction is overly complicated and stands in the way of not just a high quantity of housing, but housing in the places we need it. It should not be added to our land use code.

Changes:

- Amendment 1: 6 - Use Standards

Urbanist Coalition of Portland

units allowed by LD2003

The current planning staff proposal adds a restriction that prevents lots from qualifying to add accessory dwelling units (ADUs) if they have added any of the units that LD2003 entitles them to. This removes a lot of potential housing that could have been allowed by LD2003 because taking advantage of the two LD2003 units you can add to a non-vacant lot disqualifies you from the two ADUs you can already build. ADUs already have restrictions to control their impact, and if you meet them there is no reason you should be prevented from building an ADU.

Changes:

- Amendment 2: 6 - Use Standards

Amendment 3: Do not add additional restrictions to lots that currently have one home

The current planning staff proposal allows four units of housing in the same structure for vacant lots but only an additional two units, in different structures on lots that have a home on them. While this is the minimum required by LD2003 there is nothing forcing us to add those restrictions to lots that have a structure on them. By allowing units to be built in the same structure they can be built more affordably and sustainably.

Changes:

- Amendment 3: 6 - Use Standards

Amendment 4: Give the additional units allowed by LD2003 the same benefits as our current ADUs

Our current accessory dwelling units (ADUs) are exempt from parking requirements, lot coverage maximums, and

Urbanist Coalition of Portland

them from density limits if they are in the same structure. While the units allowed by LD2003 are not the same as ADUs, the rules we have in place for ADUs work and there is no reason we can't apply them to these new units as well.

Changes:

- Amendment 4: 6 - Use Standards
- Amendment 4: 19 - Off Street Parking & Loading

portion and the nearest permanently paved street or portion which is the principal access to such lot, shall be improved, including sewers, storm drains, pavement, curbs and, if located on a designated school walking route, sidewalks, in accordance with the City of Portland *Technical Manual*. Where the nearest permanently paved street does not have granite curbing, the Public Works Authority may waive the requirement of curbing under this subsection, if it determines that an acceptable alternative drainage plan will be provided. Prior to the issuance of a building permit for erection of a building on a lot abutting any portion of a street which is unimproved or improved but not permanently paved, the following shall occur:

1. A plan of the street improvements required by this subsection shall be submitted to the Public Works Authority.
2. Upon determination by the Public Works Authority that the plan meets the street improvement requirements established by this subsection, a performance guarantee and inspection fee for said improvements shall be submitted to the City as set forth under Articles 14 and 15. Also as set forth in Articles 14 and 15, a one-year defect bond shall be tendered to the City prior to release of the performance guarantee required hereby. The provisions of this paragraph (2) shall not apply to the erection of any single-family dwelling on any lot where the owner of the lot establishes that he or she was the owner of that same lot on November 19, 1984, and at all times thereafter, and states his or her intention under oath to make the structure his or her personal residence.

C. The requirements of this subsection shall not apply to the following city streets upon their construction by the Public Works Authority to such standards as are determined by the authority to be the most feasible:
   1. Dingley Court.
   2. Morgan Court.

6.4.2 Additional residential use permissions

A. *In island zones:* Up to two units are permitted on any lawfully conforming lot ~~that does not contain an existing dwelling unit. Such units may be located:~~
   ~~1. In two separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or~~
   ~~2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.~~

Such units shall comply with all dimensional requirements of the underlying zone except lot coverage and lot area per dwelling unit requirements.

B. *In mainland zones where residential is a permitted or conditional use:* Up to four units are permitted on any lawfully conforming lot ~~that does not contain an existing dwelling unit. Such units may be located:~~
   ~~1. In separate structures, so long as the minimum lot area per dwelling unit standards of Article 7 are met, or~~
   ~~2. Within a single structure, in which case the minimum lot area per dwelling unit standards of Article 7 shall not apply.~~

Such units shall comply with all dimensional requirements of the underlying zone except lot coverage and lot area per dwelling unit requirements.

~~C. Sections 6.4.2(A) and (B) shall not apply to lots on which a dwelling unit in existence on July 1, 2023 is torn down and a vacant lot results.~~

~~D. *Lots with one existing dwelling unit in any zone where residential is a permitted or conditional use:*~~

1. Up to two additional dwelling units are permitted on any lot containing one existing dwelling unit.
2. One of these units may be permitted within or attached to the existing structure, one may be permitted detached from the existing structure, or one may be permitted of each. In all cases, the minimum lot area per dwelling unit standards of Article 7 shall apply.
3. Units created under this section shall not be considered accessory dwelling units under Section 6.6.2(A).

E. If more than one dwelling unit has been constructed on a lot as a result of the allowance under this section, the lot is not eligible for any additional units Section 6.6.2(A).

6.4.26.4.3 Adult business establishments

A. Adult business establishments shall be located at least 1,000 feet from any other adult business establishment, and at least 500 feet from any residential zone, as measured in a straight line, without regard to intervening structures or objects.

B. No sexually explicit materials, entertainment, or activity shall be visible from the exterior of the premises.

6.4.36.4.4 Bars and restaurants in the B-6 zone

A. No bars located east of Waterville Street shall be permitted within 50 feet of Fore Street.

B. Restaurants located east of Waterville Street within 50 feet of Fore Street shall be limited in hours of operation to between 5 a.m. and 11 p.m. each day and food service and consumption shall be the primary function of the restaurant.

6.4.46.4.5 Bed and breakfasts

A. In the R-6 and R-6a zones, the minimum gross floor area for bed and breakfasts shall be 2,000 square feet for the first three guest rooms and 500 square feet for each additional guest room.

B. In all mixed-use zones except the B-1/B-1b zones, bed and breakfasts may include a meeting facility limited to use for private parties, business meetings, weddings, receptions, seminars, or business and educational conferences, provided that:

1. *In the B-2/B-2b/B-2c zones.* The meeting facility must be less than 4,000 square feet.
2. *In the B-3/B-3b/B-3c zones.* The building in which the bed and breakfast and meeting facility will be located must have existed on March 3, 1997 and have been greater than 4,000 square feet in floor area on that date.

6.4.56.4.6 Campgrounds

A. Campgrounds shall not include recreational vehicles.

B. Campgrounds shall be licensed by the State of Maine Department of Human Services.

C. No tent shall be located within 75 feet of the perimeter of site.

D. The land area of the campground shall not be less than the equivalent of 5,000 square feet of land area per tent site exclusive of the roadway network.

6.4.66.4.7 Commercial uses in the B-1/B-1b zones

TABLE 19-B: CATEGORICAL EXCEPTIONS TO OFF-STREET PARKING MINIMUMS

Categorical Vehicular Exceptions	
Major site plans	The Planning Board shall establish the off-street parking requirement based on a parking study.
Affordable housing	~~T~~2 spaces are required for every 3 units, except that the Planning Board may establish a lesser parking requirement ~~that is less than 1 space per workforce or low-income housing unit,~~ regardless of the size of the structure.
Multi-family housing	The Planning Board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand, such as housing for persons who cannot drive, housing that participates in a Transportation Demand Management program, or housing which includes permanent restrictions on automobile usage, and which is permanently restricted from utilizing resident on-street parking stickers.
Historic structures	No off-street parking in excess of that existing on or servicing the lot as of March 15, 1999 shall be required.[1]
Accessory Dwelling Units	No off-street parking shall be required.
Transit proximate development and uses	No off-street parking shall be required within ¼ mile of fixed route transit service. New uses or changes of use of more than 10,000 SF taking advantage of this exception shall be required to provide a Transportation Demand Management Plan if they use this provision in lieu of parking requirements.
Units permitted as a result of additional residential use (6.4.2)	No off-street parking shall be required.

Zone-Based Vehicular Exceptions	Residential	Nonresidential
R-6	No off-street parking required for first three dwelling units.[2]	
IR-1/I-B		Off-street parking requirements for nonresidential uses shall be reduced by 75%.
IR-3	No off-street parking required.	
R-OS	Off-street parking shall be adequate to serve projected employee and visitor needs.	
B-2/B-2b/B-2c		For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses.[3]
IS-FBC	No off-street parking required for first three dwelling units.	For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses.[3]
B-3	No off-street parking required for changes of use.	
B-5	No off-street parking required.	
B-6	Off-street parking requirement shall be determined based on a parking study.	
B-7	Off-street parking requirement shall be determined based on a parking study.	
Waterfront Zones	Off-street parking requirements shall be reduced by 50%. No off-street parking required in the WCZ.	

[1] Exception applies for uses within any contributing structure in a local or national register historic district or locally-designated or national register landmark building under Article 17. However, parking may not be decreased from that existing on or servicing the lot on March 15, 1999 except to the extent necessary to meet the requirements of the Americans with Disabilities Act.

[2] For alterations of buildings containing three or more dwelling units in the R-6 zone, no parking shall be required for the creation of one additional dwelling unit above existing conditions as of June 3, 2015. This exemption may be used one time.

[3] If the number of existing parking spaces serving the site is less than the requirements of this article, that number of parking spaces may not be reduced lower than the required amount prior to the change of use except to the extent necessary to meet the requirements of the Americans with Disability Act, to the extent it is a requirement or a condition of site plan review, or to the extent the change of use requires less parking than the previous use and the total number of parking spaces serving the site exceeds the parking requirements of this article for all uses on the site including the change of use. A newly constructed building, a building addition, or a change of the use of a building exceeding 10,000 SF of floor area, shall provide parking as required by this article.

Planning Board Report
Planning and Urban Development Department

89 Elm Street (Phase 1a of Bayside Master Development Plan)
Major Site Plan
PL-002403-2023

Submitted to:	Portland Planning Board	**Prepared By:**	Zach Powell
Public Hearing Date:	October 24, 2023	**Date:**	October 20, 2023

I. INTRODUCTION

89 Elm, LLC has submitted a Major Site Plan application to facilitate the construction of a ±162,000 square foot mixed-use building with 201 dwelling units and 3 commercial retail units totaling ±6,000 square feet. The proposed site plan is identified as Phase 1a of the Bayside Master Development Plan (MDP) (PL-002315-2022), which received unanimous approval from the Planning Board on June 13, 2023. A Planning Board workshop for the Major Site Plan application was held on July 25, 2023 and focused on the building & site design, as well of the provision of affordable dwelling units to meet the inclusionary zoning requirements of future phases of the Bayside MDP. As part of the review of this site plan application, a Traffic Movement Permit (TMP) is being reviewed concurrently for Phases 1-2 of the Bayside MDP.

The Planning and Urban Development Department mailed 65 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the October 14th and 17th editions of the *Portland Press Herald*.



Figure 1: Photo rendering of building looking west on Elm Street mid-block between Cumberland Avenue and Oxford Street.

Applicant: Michael Barton, 89 Elm Street, LLC
Representing Agent: Danielle McGowan & Sam Lebel, Acorn Engineering

II. REQUIRED REVIEWS

Review	Applicable Standards
Major Site Plan Review	Section 14.6
B-3 Design Review Standards	Design Manual & June 10, 2023 Master Development Plan Design Memorandum (**Attachment 1**)
Traffic Movement Permit (TMP)	Technical Manual Section 1.1
Increased Setback Granted Under June 13, 2023 MDP Approval	**Applicable Standard**
Sec. 7.3 – Table 7-E: Mixed-Use Zone Dimensional Standards – to vary the front setbacks on Lancaster Street up to 22 feet.	Sec. 7.3 – The maximum permitted front setback from all street frontages in the B-3 zone is 5 feet.
Waiver Requests	**Applicable Standard**
Sec. 1.10.3. of Technical Manual – to vary two-way drive aisle widths at 18 & 22 feet	Sec. 1.10.3. – The minimum two-way drive aisle width is 24 feet.
Sec. 1.6.1., Appendix A – to vary the materiality of the sidewalk to use a combination of brick and concrete with raised granite tree wells	Sec. 1.6.1., Appendix A. – Sidewalks shall be brick, concrete or hot mix asphalt.
Sec. 1.5.1. – to vary the permitted number of driveways for neighboring properties under shared site control to 5, drive aisle width to 18 & 22 feet, and driveway separation from intersections to 29.40 feet.	Sec. 1.5.1. – The maximum number of driveways permitted for properties under shared site control is 1 for residential parking lots with <10 spaces and 2 for other lots. The minimum two-way drive aisle width is 24 feet. The minimum separation for driveways from intersections is 35 feet.

III. PROJECT DATA

Existing Zoning	B-3 Downtown Business, R-6 Residential, Downtown Entertainment Overlay		
Existing Use	Off-Street Parking (Surface) (132 automobile spaces) (12 bicycle spaces)		
Proposed Use	Multi-family dwelling	156,623 SF (201 units)	
	Retail Space	5,127 SF (3 units)	
	Surface Parking	33 spaces	
Property Size	42,976 SF (0.98 acres)		
	Existing	*Proposed*	*Net Change*
Building Footprint	0 SF	24,882 SF	+24,882 SF
Building Floor Area	0 SF	161,750 SF	+161,750 SF
Automobile Parking Spaces	132 spaces	33 spaces	-99 spaces
Bicycle Parking Spaces	12 spaces	81 spaces	+69 spaces
Curb Cuts	8 (1 blocked)	4	-4 curb cuts
Trees in Streetscape	6	24	+18

IV. EXISTING CONDITIONS

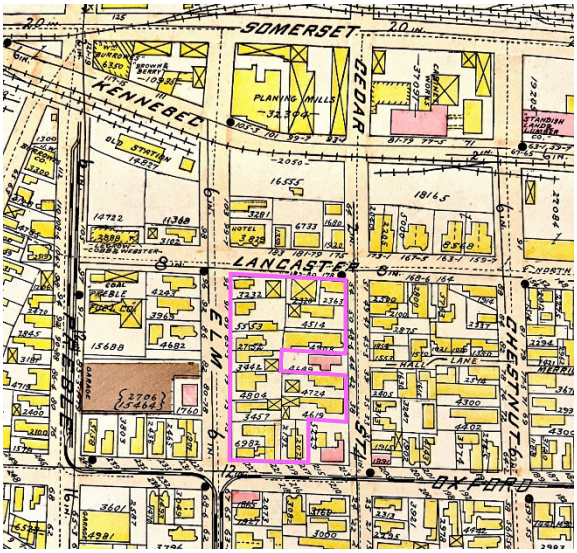


Figure 2: 1914 City Atlas with boundaries of project site shown in pink.

The project site occupies the majority of a city block at 0.98 acres in area. The site is bounded to the north by Cedar Street, to the South by Elm Street, to the East by Oxford Street, and the West by Lancaster Street. Historically, the Bayside neighborhood has included several residential, commercial, and industrial uses, as its location was convenient to downtown and the former freight yard west of Somerset Street.

While **Figure 2** shows a significant number of residential dwellings in the project area in 1914, the neighborhood experienced a reduction in its residential population in the mid-to-late 20th century and has seen a significant change in both uses and physical form. As a result, the majority of the area formerly occupied by residential development has been converted into off-street surface parking, while a number of residential structures outside of the project boundary remain along Cedar Street. Along with these changes, the rail-oriented industrial uses in the area led to soil contamination, which prompted brownfield remediation efforts by the City in the late 1990s and early 2000s. Today, the surrounding area includes a mixture of commercial, residential, and social services of varying scales.

The project site is proximate to public transit, with METRO PULSE at Elm Street (Downtown Transportation Center) located less than two blocks from the eastern boundary of the project site. METRO PULSE serves as a hub for Routes #2, #4, #5, #7, and the Husky Line begins and ends their routes. METRO bus route #8 currently runs along the southern boundary of the project site (Lancaster Street).

Several City-owned open spaces can be found nearby that provide opportunities for active recreation (Kennedy Park) and passive recreation (Deering Oaks Park, Monument Square, and Stone Street Playground), as well as walking/biking trails (Bayside & Back Cove Trails).



Figure 3: Photo of the project site looking northeast at the intersection of Elm & Lancaster Street

V. BAYSIDE MASTER DEVELOPMENT PLAN

The submitted site plan application is Phase 1a of the Bayside Master Development Plan (MDP) (PL-002315-2022). The Bayside MDP consists of 8 phases and proposes to construct approximately 804 total dwelling units and 28,200 square feet of commercial retail space at full build out.

Inclusionary Zoning

New residential projects totaling 10 or more residential units are subject to the City's Inclusionary Zoning (IZ) requirements, which require that 25% of new units be workforce housing units, affordable to households earning 80% of the Area Median Income (AMI). However, §18.2.3.B. of the Land Use Code exempts certain residential projects receiving public financing or subsidy that stipulate affordability restrictions, such as an affordable housing TIF or use of the Low-Income Housing Tax Credit (LIHTC) program for example. As the project at 89 Elm Street will be receiving funding from Maine Housing, the development does not trigger inclusionary zoning requirements. This exemption applies to affordable housing projects that are already meeting or exceeding the City's inclusionary zoning requirements.

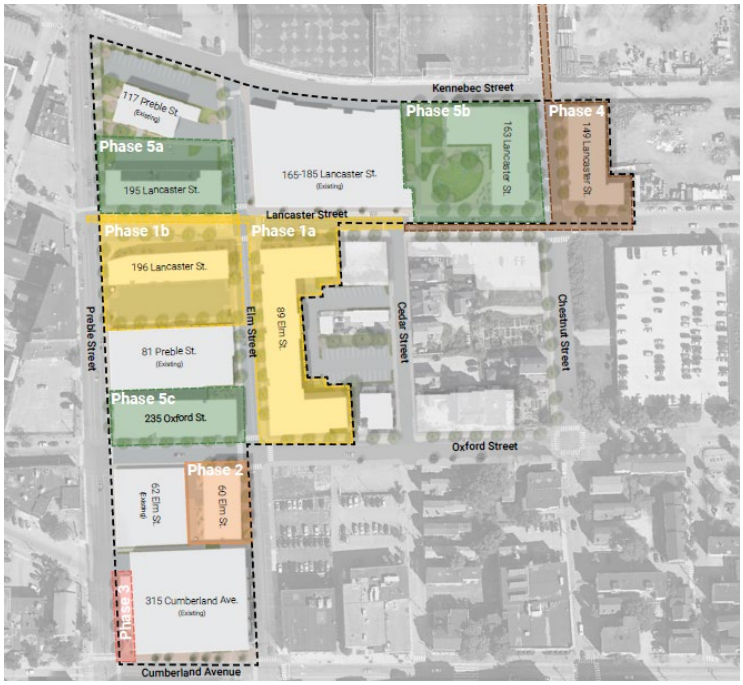


Figure 4: Phasing Plan for the Bayside Master Development Plan (MDP)

As indicated during the Bayside MDP review, the applicant is seeking to satisfy the IZ requirements for each of the future market rate projects using the IZ off-site provisions, with the 201 affordable units proposed at 89 Elm Street being considered 'workforce units' for the 603 market rate units proposed as part of the overall MDP. The City's inclusionary zoning requirements allow the workforce units to be met on-site, off-site, or through contributions to the City's Jill C. Duson Housing Trust Fund, and each of the three modes to satisfy the requirements have been used since implementation. In the case of off-site workforce housing, the owner will be required to record a Workforce Housing Agreement in the chain of title for each property that outlines the terms of affordability as well as unit amenities to ensure amenities are comparable to future market-rate units.

Additionally, as part of fulfilling their intent to use units at 89 Elm Street to meet the workforce housing requirements at the time of site plan review for each future market project, the Applicant will have to:

- Identify which units in the 89 Elm Street building will be used to satisfy the workforce housing requirements
- Demonstrate how the units are comparable in quality and size to the market-rate units constructed in future phases
- Execute affordable housing agreements as part of the deeds for 89 Elm Street and each of the future sites.

Should the units at 89 Elm Street not be deemed to be comparable in quality or size, the Applicant would need to identify alternative units or renovate the units at 89 Elm Street to become comparable, provide the units on site of the market rate project under review, or pay a fee-in-lieu into the City's Jill C. Duson Housing Trust Fund.

As a 100% affordable housing project there is no conditional use application required, and no Board action required. When the first market rate housing application is brought before the Board as part of a future phase of the MDP, the Board will vote on whether the application is meeting the standards of sec. 18.2.3, Ensuring workforce housing.

VI. JULY 25, 2023 WORKSHOP

A Planning Board workshop was held on July 25, 2023 for this project. At the workshop, Planning Staff provided the Board and public with an overview of the application, with a focus on design and relationship of inclusionary zoning standards with future phases of the Bayside MDP. The Board expressed design concerns related to the building's length, location & proposed screening for mounted utilities, as well as the proposed open space. Prior to the meeting, the Applicant had submitted an analysis of separating the building into two structures to address comments on the building length (**Attachment X**). The analysis describes that if the application included two structures with a 30-foot wide separation that additional forms of egress (stair towers & elevators), mechanical equipment, and amenities (bicycle storage & laundry facilities) would result in 32 fewer units. Taking this analysis into consideration, the Board recommended that the Applicant consider an array of design techniques to visually break up the large massing, especially given the historical connotations of larger massing with affordable housing development.

Additional concerns were expressed by the Board about visual & traffic impacts to residents along Cedar Street, with a desire for additional trees in the streetscape.

VII. UPDATED APPLICATION MATERIALS

Since the workshop, the Applicant has revised application materials in consultation with Planning Staff. Notable changes from the workshop include:

- Shifting the location of the proposed solid trash enclosure from the interior of the site to Lancaster Street and addition of open space in the formerly proposed area for solid waste.
- Relocation and consolidation of façade-mounted mechanical equipment to the roof.
- Update in the design of the signature element and addition of a corresponding signature element at the corner of Elm & Oxford Street.
- Reuse of street trees from City's Elm Streetscape project in the Cedar Street streetscape.
- Addition of lighting for the pedestrian connection in the Oxford Street side yard.
- Addition of a mountable curb to separate the easternmost parking lot from the aisle proposed along the northern portion of the building.
- Updates to the Elm Street facades through brick infill under ground-level windows to improve the pedestrian experience.

VIII. PROPOSED DEVELOPMENT

The applicant is proposing to construct an eight story, mixed-use building with 201 dwelling units and approximately 6,000 square feet of retail space, distributed between three separate commercial retail units. The site straddles the B-3 (Downtown Business) and R-6 (Residential) zones, and the building will have a height of approximately 76.5 feet in the B-3 zone and 55 feet in the R-6 zone. To facilitate the development of the site, the applicant is proposing to modify the lot lines for three existing parcels (50 Cedar Street and 73 & 89 Elm Street) into two parcels, as shown in **Figure 6.** The proposed building will be located at 89 Elm Street and the remaining lot would serve as surface parking (Address & CBL to be established).



Figure 5: Photo rendering of building looking northwest at intersection of Elm & Oxford Streets.

Based on the change in grade and proposed site design, all three of the surface parking areas on the new lot shown in yellow will have separate curb cuts.

As part of the MDP, the Applicant aims to have Lancaster Street serve as a node. To serve this design, an expanded pedestrian amenity area along Lancaster Street has been included that is intended to be utilized as seating under an arcade (**Figure 7**).



Figure 6: Proposed lot modifications using shading with current lot lines shown to the left and proposed lot lines on the right.

IX. RIGHT, TITLE & INTEREST

The owner of the properties is 89 Elm, LLC, and has submitted deeds (**Attachment C**) as part of the Master Development Plan application that all three properties are under common ownership.

The submitted existing conditions survey (**P.3**) indicates the property has an existing utility easement with CMP and NET&T (**Attachment E**). The Applicant is continuing to investigating whether relocation and/or burial of aboveground utilities can occur with CMP. The existing easement permits above-ground or buried utility lines.

Given the location of the building and proposed sidewalk being partially located on the project site, pedestrian access easements will need to be established as part of the site plan review.

Additional easements are noted in **Attachment E** for utility and access from other properties to 89 Elm Street and a drainage easement granted to the adjacent parcel is to be created at the southeastern corner of Cedar & Lancaster Streets.

X. FINANCIAL & TECHNICAL CAPACITY

The Applicant has submitted a letter of financial capacity from Gorham Savings Bank (**Attachment G**) and supplied supporting information related to the technical capacity of the Applicant team (**Attachment H**).

XI. ZONING ANALYSIS

The site is encompassed by the B-3 (Downtown Business), R-6 (Residential), and the Downtown Entertainment Overlay Zone. Relevant sections of the B-3 and R-6 purpose statements are included below:

- ***B-3:*** *… to encourage increased housing opportunity downtown for a diverse residential population; to enhance the pedestrian environment through the encouragement of intensive mixed-use activities, through the enhancement and maintenance of public and private open space, and through the enlivenment and increased attractiveness of the street environment; to encourage excellence in urban design; to preserve and capitalize on the unique character and historic fabric of the downtown through the encouragement of reuse of significant existing structures; to provide opportunity for an enhanced presence and integration of the arts and cultural activities; to reinforce the role of the downtown as a meeting place for community residents and visitors alike from all walks of life and all socio-economic groups; to provide adequate parking and transportation facilities which promote accessibility, enhance and encourage development opportunity, and enhance and protect the pedestrian environment; …*

- ***R-6:*** *To set aside areas on the peninsula for housing characterized primarily by multi-family dwellings at a high density providing a wide range of housing for differing types of households; to conserve the existing housing stock and residential character of neighborhoods by controlling the scale and external impacts of professional offices and other nonresidential uses; and to encourage new housing development consistent with the compact lot development pattern typically found on the peninsula.*

The zoning dimensional requirements for both zones are intentionally permissive in this urban area, with a prioritization of creating denser, taller buildings that reinforce a street wall. Prioritization of the first 35 feet of building height, ground-floor building elements/features, and stepbacks in the R-6 zone emphasize the prioritization of the pedestrian realm.

As submitted, the Major Site Plan is consistent with zoning, including the B-3 and R-6 zone purpose statements, uses, and dimensional standards. The height of the building is regulated by the Bayside Height Map Overlay, which states that the maximum permitted height for the B-3 & R-6 portions of the site is 55 feet. However, the Applicant is proposing that 100% of the units will be low-income units at 60% of the Area Median Income (AMI). Per §18.2.4.A. of the Land Use Code, qualifying affordable housing projects are eligible to take advantage of zoning dimensional bonuses related to both building height and setbacks. Within commercial zones, a new residential building comprised of greater than 75% low-income units (Units with rents affordable to households making ≤80% AMI) is eligible for a 25-foot height bonus. The Bayside Height Overlay Map permits a base maximum height of 55 feet within the B-3 portion of this site. This height bonus would permit 25 feet of additional height, or a maximum height of 80 feet. The maximum proposed height for the building is 76.5 feet.

As part of the June 13, 2023 hearing for the Bayside Master Development Plan, the Planning Board endorsed an expanded front setback of the building along Lancaster Street to permit up to a 22-foot front setback. The applicant is proposing that the setback area include outdoor seating and pedestrian amenities.

Further discussion of compliance with the Bayside MDP design memorandum, B-3 design standards, and multiple-family design standards is provided in Section XIII of this report.



Figure 7: Rendering of proposed arcade along Lancaster Street at the intersection of Elm Street.

XII. TRAFFIC MOVEMENT PERMIT

The Applicant has submitted a Traffic Movement Permit (TMP) application for Phases 1-2 of the Bayside MDP, with the submitted site plan for 89 Elm Street also exceeding the threshold for submitting a TMP. Phase 1b at 196 Lancaster Street proposes the construction of a mixed-use building with 140 dwelling units and 5,000 square feet of retail space. Phase 2 proposes the construction of a mixed-use building at 60 Elm Street with 90 dwelling units and 1,500 square feet of retail space. The TMP assesses impacts of the project on the surrounding street network in the area outlined in yellow in Figure 8. As part of the scoping meeting, City Staff requested additional information on internal capture for proposed retail uses, better understanding of mode share usage for market-rate and affordable housing developments given the high alternative mode rates within existing Census data (45%), and additional information on existing parking agreements & driveways.

The Applicant submitted an updated Section 7 to the TMP on September 28th. Table 1 below documents the number of AM (7:45-8:45) and PM (4:30-5:30) peak hour unadjusted trips and adjusted number of trips by internal capture (Trips between uses in the same building) and broken out by transportation mode (Also known as mode share).

Trip Type	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Unadjusted	187	261	448	198	151	349
Adjusted by Internal Capture and Mode Share	172 Auto: 95 Walk: 76 Public Transit/Bike: 1	246 Auto: 135 Walk: 109 Public Transit/Bike: 2	418 Auto: 230 Walk: 186 Public Transit/Bike: 2	170 Auto: 94 Walk: 76 Public Transit/Bike: 1	124 Auto: 68 Walk: 54 Public Transit/Bike: 1	294 Auto: 162 Walk: 130 Public Transit/Bike: 2

With the proposed increase of 418 AM and 294 PM peak hour trips, the TMP application analyzed impacts to the level of service for intersections within the study area for a No Build and a Build scenario in 2026. While

some intersections experienced a few additional seconds in delay, overall the level of service did not change between the build and no build scenarios.

Recommended pedestrian mitigation and safety improvements as part of the development are included below:

- Reconstruction of sidewalk on Oxford Street from Portland Street to Chestnut Street and Cedar Street from Oxford to Lancaster Street.
- Removing obstructive tree branches to improve visibility at Forest Avenue, Marginal Way, Kennebec Street & State Street.
- Add Lane Use signs for each approach to the mast arms for Forest Avenue approaches.
- Increase clearance times to allow more vehicles to clear the intersection at Forest Avenue, Marginal Way, Kennebec Street & State Street.
- Add sun shields to the signal heads for better visibility.
- Add a right turn arrow pavement marking and define the bike line and right-turn travel lane on westbound Portland Street.
- Install a left turn yield on green sign for left turns from Forest Avenue to Portland Street.
- Post-occupancy traffic signal evaluation at Marginal Way & Elm Street to confirm adequate operation.



Figure 8: Study Area for Traffic Movement Permit in yellow, with Phases 1-2 sites shown in green.

Section 7 of the TMP was requested to analyze the impacts of converting Oxford Street from a one-way street to a two-way street, since it was a recommended project in the Bayside Transportation Master Plan. Based on the results of the analysis, the proposed conversion would not significantly improve the level of service, delays, or queuing. Based on these results, the Applicant recommended that the proposed conversion not occur.

Upon review of these findings, consulting traffic engineer Tom Errico has requested additional analysis as part of the conditions for the Traffic Movement Permit, with a scope to be approved by City Staff. In the event that the conversion is deemed feasible, the Applicant would be required to implement the conversion of Oxford Street from Elm Street to Pearl Street.

XIII. DESIGN REVIEW

Since the July 25, 2023 workshop, two additional design reviews were completed on September 22nd and October 12th by Sean King, Urban Designer, Maya Balassa, Planner, and Zach Powell, Senior Planner. Key comments from the September 22nd Design Review Memorandum (**Attachment 3**) are included below:

- Increasing articulation along Elm Street through brick infill below window frames to improve usability and attractiveness of the streetscape.
- Revising signature building roof-top element to reduce height and eliminating louver screen fenestrations, with consideration of a complementary element at the intersection of Oxford & Elm Street.
- Consideration of additional shared-use open space opportunities, such as the driveway aisle along the northern portion of the building.
- Coordination with the City's Urban Designer on the public art proposed to be installed by the Applicant at the corner of Elm & Oxford Streets.

The Applicant has revised the application materials to:

- Provide brick infill below window frames along Elm Street
- Remove louver screen fenestration and replace with crown elements at building corners at Lancaster & Oxford Streets
- Add a mountable curb to vertically separate eastern parking lot from the drive aisle along the northern portion of the building.

Upon review of the updated application materials, the following comments were provided as part of the October 12th design memorandum (**Attachment 4**):

- The pronounced cornice is integrated appropriately to screen the rooftop mechanical equipment. Staff recommends that the Board consider the appropriateness of the proposed crown element in relation to the scale of the surrounding neighborhood, and its compatibility with the overall character of the proposed building.
- Restated requests from the September 22, 2023 Design Memorandum for:
  - Consideration of additional open space opportunities on the site, and
  - Coordination with the City's Urban Designer on the proposed public art to be located at the corner of Elm & Oxford Streets.

As submitted, the proposed application has been determined to meet the B-3 & multiple family design standards. A recommended condition of approval has been added to update the siding material in the R-6 portion of the site to utilize a light gray color, as referenced in the most recent comment letter from the Applicant.

XIV. STAFF REVIEW

A. Site Plan Review Standards Section 14.6

Section 14.6 of the City's Land Use Code establishes standards under which Site Plan applications must be reviewed. Per this section, Site Plans shall adhere to the following requirements:

Section 14.6.1. Transportation Standards

A. Impact on Surrounding Street Systems

As part of the review of the Traffic Movement Permit (TMP) application for Phases 1-2, the Applicant has assessed the projected impacts on the surrounding street network and identified whether substantial congestion is anticipated as a result of the development. Overall, the project aims to reinforce and increase

the use of alternative modes of transportation, and decrease congestion on streets. As shown in Section 7 of the TMP report, the proposed project will not substantially increase congestion on streets operating at a level of service of D or worse, as compared to the 2026 No Build scenario. Mitigation actions identified in **Attachment 11** of this report have been included as a condition of approval to ensure that the project will not create or aggravate any significant hazard to safety on the surrounding street network.

B. Access and Circulation

Overall, the project provides safe and reasonable access points for pedestrians to the residential and commercial uses of the site. On-street parking signage has been updated to facilitate temporary visits and the proposed project is not expected to significantly impact parking for neighboring residential properties, along with available parking leases at the Portland Market Garage. Loading spaces have been provided on street and the proposed solid waste storage has been relocated to Lancaster Street to minimize impacts to neighboring properties on Cedar Street.

Sidewalks and curbing are proposed on all frontages, with improvements on Cedar Street and Oxford Street included as part of the required mitigation activities for the Traffic Movement Permit in **Attachment 11**. The Department of Public Works endorsed the submitted waiver to allow a mixture of materials in sidewalk areas.

As part of the TMP, additional mitigation actions for this phase and phases 1a and 2 of the Bayside MDP are proposed in **Attachment 11** to be implemented to ensure easier access and circulation to the site.

Through these updates and recommended conditions of approval, the proposed project will ensure safe access and circulation to the site.

C. Public Transit Access

The site is located less than ¼ mile from an existing transit shelter at METRO Pulse and is not required to provide a transit shelter on-site.

D. Parking

As discussed during the review of the Bayside MDP application, current parking agreements for the existing surface parking on-site would extend throughout the development of the MDP, with 52 spaces being currently leased by Baxter Academy at the 89 Elm Street property; an agreement that was formalized as part of the site plan approval (2017-022) for the Baxter Academy relocation in 2017. Consulting Traffic Engineer Tom Errico has noted that the existing parking spaces likely do not meet all of the dimensional requirements (Driveway width: 20-24 feet; Aisle width: 20 feet; and parking stall size: 9X18 feet) of §1.10 of the Technical Manual and requested dimensions in the site plan set, which were provided by the Applicant, and corresponding waiver requests. Upon review of the waivers, Tom Errico found the waivers to be reasonable, noting that a condition of approval should be considered for requiring updates to the ADA parking spaces in the event that an anticipated application for development at 50 Cedar Street is not submitted prior to the issuance of a Certificate of Occupancy for 89 Elm Street.

Overall, Tom Errico found the proposed unbundled parking agreement, with available spaces at the Public Market Garage to be reasonable. The proposed project is permitted to receive parking minimum exemptions through a number of different categories, such as Major Site Plans, Affordable Housing, and Transit proximate development and uses.

The project is meeting the minimum bicycle parking requirements of 80.4 bicycle parking spaces (201 residential units *.4 = 80.4) with 81 spaces provided within the building.

Signage for five combination 30-minute & commercial loading spaces (3 on Lancaster Street and 2 on Elm Street) have been identified in the site plan set. Based on recommendations from the Parking Division and the Department of Public Works, the site plan set has been updated to clarify that the remaining on-street parking will be signed as 2-hour parking spaces.

The site plan identifies new electrical conduits that are being provided to enable future EV charging stations. However, because the site is not creating new parking spaces, the city's EV requirements are not applicable.

E. Transportation Demand Management

Staff Comment: Upon review of the updated June 19th TDM plan, Transportation Program Manager Bruce Hyman found that the updated plan (**Attachment T1**) & revisions meet the TDM Plan requirements in the Technical Manual.

Section 14.6.2. Environmental Quality Standards

A. Preservation of Significant Natural Features

Staff Comment: As a surface parking lot within a densely developed urban context, there are no significant natural features located on the subject property.



Figure 9: Photo of pin oak tree looking south along Oxford Street.

B. Landscape Preservation

Staff Comment: As a condition of the Master Development Plan, all proposed street tree removals are subject to final review and approval during site plan reviews. City reviewers requested additional information on the proposed removal of an existing street tree near the intersection of Elm & Oxford Streets. The Applicant submitted an assessment as part of **Attachment A1.** that provides the DBH (21") for the oak tree and reasoning for the removal, which is primarily supported by the encroachment on the existing sidewalk and the claim that the tree would not survive excavation efforts as part of the construction of the building. Upon review of the proposed foundation location and design, the Forestry Division determined that the pin oak should be removed. The Forestry Division has worked with the Applicant team to ensure the health of new street tree plantings through updates to cultivars and requirement to use silva cell systems in the landscaping plan (P.37b). City Forester Mark Reiland has recommended that if the landscaping plan eliminates silva cells, the site design will need to be updated to incorporate the preservation of the pin oak. The Department of Public Works has also worked with the Applicant team to relocate street trees recently planted for the streetscape improvements on Elm Street onto the site.

C. Site Landscaping and Buffers

Staff Comment: The northern portion of the site is subject to zoning setbacks as it is located in the R-6 zone and are required to provide a minimum of one shade tree or six plantings per 30 linear feet. The site has 355 feet of frontage in the R-6 district, which requires the 12 shade trees or equivalent of a shade tree via 6 plantings (1 per 30 feet). The submitted landscaping plan complies by retaining an existing tree, proposing the planting of 11 new trees, and multiple new plantings, which exceeds the requirement.

Buffers have been provided for the proposed solid waste dumpster and roof-mounted mechanical equipment.

The site has 38 parking spaces which require the planting of two trees (or one tree and three shrubs) per five parking spaces. 33 shrubs and 7 trees are proposed in landscaped areas surrounding the parking areas, which exceeds the required parking landscaping for the site.

One street tree is required per dwelling unit (201), with 21 street trees included in the landscaping plan. The remaining street trees will be provided through a contribution to the City of Portland Tree Fund. Through the plantings of the proposed trees and contribution to the Tree Fund, the application will meet the minimum Street Tree planting requirements.

D. Water Quality, Stormwater Management, and Erosion Control

Staff Comment: Please refer to the review of §14.6.3.c. of the Land Use Code on the following page.

Section 14.6.3. Public Infrastructure and Community Safety Standards

A. Consistency with City Master Plans

Staff Comment: The submitted plan is consistent with City Council-approved master plans by:

- Increasing on-site stormwater detention to minimize flow rates to the Back Cove South Sewershed (**CSO Abatement Study, 1993**).
- Proposing the construction of dense housing proximate to Downtown and upgraded pedestrian facilities to promote walkability and connections to open space (**Peninsula Transit Plan, 2009**).
- Providing infill development within a transit-oriented location with pedestrian-oriented streets to make walking more inviting, and connection to bus routes, bike networks, and other mobility options easier to access to other parts of the city. Providing residential density as well as employment and job density that can support and drive transit ridership as well as walk-to-work opportunities **(One Climate Future, 2021)**.

B. Public Safety and Fire Prevention

Staff Comment: The Applicant submitted **Attachment L**, which details the compliance of the design with the Technical Manual and Fire Department standards. The Applicant is still in the process of working with the Department of Public Works to establish an address for the new lot.

The Applicant has updated the plan set to include lighting in the side yard along Oxford Street to respond to staff comments regarding the safety of the proposed pedestrian connection.

C. Public Utilities

Staff Comment: As part of the MDP, the Applicant worked with the Department of Public Works to establish increased on-site detention requirements for each site plan approval in order to add additional connections into the City's sewer infrastructure. Under this agreement, detained volumes would need to equal or exceed 1" inch of rainfall over the entire redeveloped area of the site, as well as the projected average 24-hour daily sanitary sewer flow for each development proposal.

The submitted approach for submission and review of a plan and profile design for the proposed storm drain extension on Lancaster Street has been recommended as a condition of approval by Water Resources.

City staff continue to encourage the relocation of overhead utility lines from the west to east side of Oxford Street if burial is not possible to promote positive growing conditions for the new proposed cherry trees.

As requested in previous comments, Consulting Stormwater Engineer Lauren Swett has recommended confirmation of utility ability to serve as a condition of approval.

A detail for solid waste screening has been submitted (**P.9c**) and restrictions on the hours of solid waste collection have been included in **Attachment 12**. Through the application updates and recommended conditions of approval, the proposed application will not result in significant negative impacts to public utilities and infrastructure.

Section 14.6.4. Site Design Standards

A. Massing, Ventilation, and Wind Impact



Figure 10: Rendering of interior portion of site with building-mounted mechanical equipment

Staff Comment: Based on the proposed setbacks and massing, the proposed building will not impact the health or safety of abutting structures or result in unsafe wind conditions for occupants & visitors to the site. The proposed design of the building and continuation of the adjacent parcel for surface parking would continue to allow the neighboring residential properties to continue their use without diminution. In response to related design comments, the application has been updated to shift wall-mounted mechanical equipment to the roof with additional screening. Through these updates, the submitted application will not result in significant negative massing, ventilation, or wind impacts.

B. Shadows

Staff Comment: A shadow study was submitted and reviewed under the Master Development Plan approval. Based on the location of the resulting shadows, the proposed structure would not result in negative impacts

on adjacent open spaces, including the area of 163 Lancaster Street proposed to be converted into a public open space in Phase 5b of the MDP.

C. Snow and Ice Loading

Staff Comment: In response to Staff concerns about the colocation of snow storage with the proposed sub-surface detention tank, transformer, and passive recreational area, the Applicant has shifted storage for the site is proposed between the western surface parking lot and the paved aisle between the building. Through these updates and the proposed building design, the submitted application will not result in significant snow or ice loading impacts.

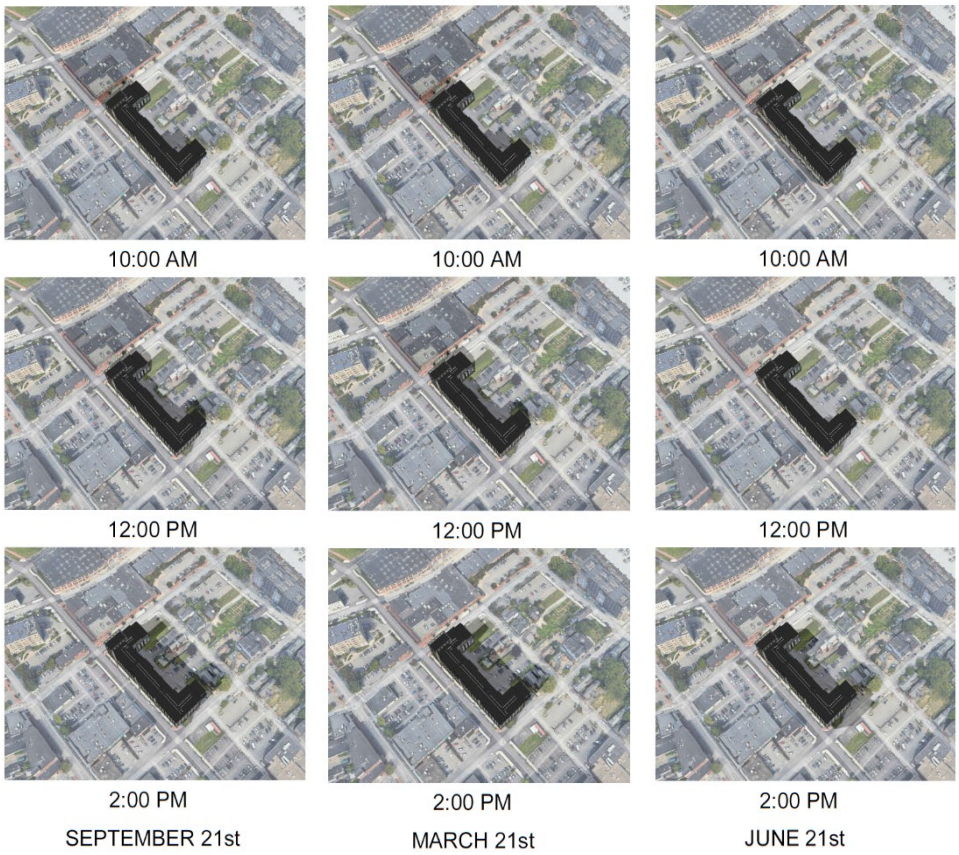


Figure 11: Shadow Study from Master Development Plan application, demonstrating that proposed shadows will not encroach onto any publicly accessible open space.

D. View Corridors

Staff Comment: Not applicable, since the site is not located along a view corridor.

E. Historic Resources

Staff Comment: The proposed development is not located within a locally designated historic district, or within 100 feet of a locally designated historic district or landmark. While the site is not within or proximate to locally designated historic districts, the site is adjacent to two structures predating the Great Fire of 1866 and has the potential of having buried portions of former structures located within or adjacent to the site. Buried portions of colonial and post-colonial period structures or built features located on the Portland Peninsula predating the Great Fire of 1866 are identified as local archaeological resources to be protected under §14.6.4.E.3. of the Land Use Code.

Given this potential, the following note was incorporated as Demolition Note #5 in **P.2c**:
Upon a finding of archaeological resources on the site, consultation with the City of Portland's Historic Preservation Program and the Maine Historic Preservation Commission is required to determine appropriate next steps.

F. Exterior Lighting

Staff Comment: The Applicant has made several updates to the photometric plan to prevent light trespass onto neighboring residential properties, decrease maximum illumination throughout the site to meet maximum lighting standards, and provide lighting along the Oxford Street side yard. Site and street lighting requirements are being met via a combination of new street lights along Elm, Lancaster, and Oxford Streets, and retention of existing lighting on Cedar Street.

G. Noise and Vibration

Staff Comment: In response to staff feedback, the application has been updated to shift the wall-mounted mechanical equipment to the roof which will increase the separation from abutting residential properties.

Similarly, as part of responding to larger site design & circulation comments, the proposed solid waste storage has been relocated to Lancaster Street, which will minimize noise impacts in and around Cedar Street. City Staff requested that collection of solid waste not take place between 11:00 PM and 6:00 AM, which has been agreed to by the Applicant, as demonstrated in **Attachment I2**.

H. Signage and Wayfinding

Staff Comment: The submitted plan has been updated to comply with Article 20 by removing the proposed monument sign in the public right-of-way at the intersection of Elm & Oxford Streets, as well as identify locations for future signage to direct residents towards indoor bicycle parking locations to meet the requirements of §1.12.4 of the Technical Manual.

As the Applicant continues to develop residential and commercial signage for the site, Planning Staff encourage the Applicant to review the requirements of Article 20 (Signs) and identify strategies to support the connected intent of the Bayside MDP through permitted wayfinding signage.

I. Design Standards

Staff Comment: Please refer to the comments in Section XIII of this report.

XV. NEIGHBORHOOD MEETING & PUBLIC COMMENT

As of the writing of this report, eight written comments and focused on the affordability of units, massing of the building, and streetscape improvements. The Applicant held a Neighborhood Meeting on May 16, 2023 and 25 members of the public attended (**Attachment V**). Questions raised at the Neighborhood Meeting addressed the following topics:

- On- and off-street parking
- Changes in traffic circulation & volumes on Cedar & Oxford Streets
- Anticipated retail uses, and
- Affordability of units and use of units for IZ requirements of the Bayside MDP.

XVI. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff recommends that the Planning Board find that application #PL-002403-2023 meets the applicable standards of Portland's Land Use Code.

XVII. PROPOSED MOTIONS & CONDITIONS

A. 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 October 24, 2023 for application #PL-002403-2023 relevant to Portland's Technical Standards and other regulations; and the testimony presented at the Planning Board hearing, the Planning Board **[finds/does not find]** that the plan is in conformance with 23 M.R.S. §704-A and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits, subject to the following conditions of approval:, as identified in **Attachment 11**:

Prior to the Issuance of a Certificate of Occupancy

1. The Applicant shall submit plans to City Staff for review and approval for new sidewalk installations on Cedar Street from the intersection of Oxford Street to Lancaster Street and construct the new sidewalk at the expense of the Applicant.
2. The Applicant shall conduct an Oxford Street Two-Way Conversion Feasibility analysis between Elm Street and Pearl Street with the scope of the analysis to be coordinated and approved by City Staff. IF the analysis determines the conversion is feasible, the Applicant shall be responsible form implementation of all work necessary for completion.

All Other Conditions of Approval in Attachment 11

3. The Applicant shall implement all remaining mitigation measures recommended in Attachment 11 prior to the Certificate of Occupancy for Phase 2 of the Bayside MDP, unless stated to be completed at an earlier time in Attachment 11.

B. MAJOR SITE PLAN

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 October 24, 2023 for application #PL-002403-2023 relevant to the Site Plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board **[finds/does not find]** that the plan is in conformance with the Site Plan standards of the Land Use Code, subject to the following conditions of approval:

1. In the event that the landscaping plan is revised to remove any of the proposed silva cell units, updates to the landscaping plan will need to be reviewed by the Forestry Division and approved as a major site plan amendment by the Planning Board.

Prior to the Submission of a Building Permit

2. The Applicant shall update architectural plans to utilize a light gray smooth fiber cement siding for the body of the building located in the R-6 district.
3. The Applicant shall submit a copy of an Ability to Serve Letter from the Portland Water District.
4. The Applicant shall submit a plan and profile design sheet for the proposed off-site storm drain extension on Lancaster Street to be reviewed and approved by the Department of Public Works.
5. The Applicant shall submit confirmation of the stormwater design from the manufacturer of the proposed proprietary system, to be reviewed and approved by the Department of Public Works.
6. The Applicant shall submit a draft affordable housing agreement as part of the deed for 89 Elm Street, outlining the proposed inclusionary zoning implementation for the Bayside MDP, to be

reviewed and approved by Corporation Counsel, Department of Housing & Community Development, and the Department of Planning and Urban Development.

Prior to the Issuance of a Permanent or Temporary Certificate of Occupancy

7. The Applicant shall submit a sidewalk easement agreement for the pedestrian zone along Lancaster Street on the Applicant's property, to be reviewed and approved by Corporation Counsel, the Department of Public Works, and the Department of Planning and Urban Development. The agreement shall confirm public access and usage, as well as maintenance responsibilities.
8. The Applicant shall coordinate with the City Forester to relocate two existing street trees of the City Forester's selection along the project site frontage to the locations identified in the submitted site plan set at 50 Cedar Street. In the event that a site plan application is submitted for 50 Cedar Street prior to the issuance of a certificate of occupancy for 89 Elm Street, the relocation of the two trees will be addressed as part of the review for the 50 Cedar Street site plan application.

C. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on October 24, 2023 related to application #PL-002403-2023 for 89 Elm Street, which is attached to the draft approval letter and incorporated therein, the Planning Board **[adopts/does not adopt]** the approval letter as drafted as the Planning Board's decision for application #PL-002403-2023, and authorizes the Planning Board Chair to sign the approval letter as drafted.

XVIII. ATTACHMENTS

Staff Attachments

1. Bayside MDP Design Review Memorandum (June 10, 2023)
2. City Staff Design Review Memorandum (May 25, 2023)
3. City Staff Design Review Memorandum (June 26, 2023)
4. City Staff Design Review Memorandum (September 22, 2023)
5. City Staff Design Review Memorandum (October 12, 2023)
6. City Staff Comment Letter (May 17, 2023)
7. Traffic Movement Permit Scoping Meeting Notes (May 8, 2023)
8. City Staff Comment Letter (July 20, 2023)
9. City Staff Comment Letter (September 27, 2023)
10. Consulting Traffic Engineer Comments (October 20, 2023)
11. Traffic Movement Permit Findings (October 20, 2023)
12. Draft Approval Letter

Applicant's Documents

A. Cover Letter
A1. Response Letter 2023-06-19
A2. Response Letter (Design) 2023-06-19
A3. Response Letter 2023-08-30
A4. Response Letter (Design) 2023-08-30
A5. Response Letter 2023-10-03
B. Major Site Plan Checklist
C. Right, Title, and Interest
D. Zoning Analysis Table

D1. Zoning Analysis Table 2023-06-19
E. Easements
F. Waiver Table
F1. Waiver Table 2023-08-30
F2. Waiver Table 2023-10-03
F3. Waiver Table 2023-10-17
G. Financial Capacity
H. Technical Capacity
I. Conformity with Land Use Ordinance
I1. Conformity with Land Use Ordinance 2023-06-19
I2. Conformity with Land Use Ordinance 2023-08-30
J. Stormwater Management Report
K. Erosion & Sedimentation Control
L. Fire Department Letter
M. Wastewater Capacity
N. Lighting
N1. Lighting 2023-06-19
N2. Lighting 2023-08-30
N3. Lighting 2023-10-03
O. Architectural Design Narrative
P. Utilities
Q. Construction Management Plan
Q1. Construction Management Plan 2023-06-19
R. Solid Waste Disposal
S. Parking Analysis
T. TDM
T1. TDM 2023-06-19
U. Turning Template
U1. Turning Template 2023-08-30
V. Neighborhood Meeting Minutes
W. TMP Application
W1. TMP Application – Additional Mode Share Data Memorandum
W2. TMP Application – Section 7 2023-09-28
X. Applicant Assessment of Splitting Building Into Two Structures
Y. Open Space Exhibit 2023-08-30
Y1. Open Space Exhibit 2023-10-03

<u>Plans</u>

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P1a. Cover Sheet & Legend 2023-06-19
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P1c. Cover Sheet & Legend 2023-10-03
P2. General Notes
P2a. General Notes 2023-06-19
P2b. General Notes 2023-08-30
P2c. General Notes 2023-10-03
P3. Topographic Survey

P3a. Topographic Survey
P3b. Topographic Survey (1 of 2) 2023-08-30
P3c. Topographic Survey (2 of 2) 2023-08-30
P4. Construction Management Plan
P4a. Construction Management Plan 2023-06-19
P4b. Construction Management Plan 2023-08-30
P4c. Construction Management Plan 2023-10-03
P4d. Construction Management Plan 2023-10-17
P5. Site Plan
P5a. Site Plan 2023-06-19
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P5c. Site Plan 2023-10-03
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P7. Grading and Drainage Plan
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P7b. Grading and Drainage Plan 2023-08-30
P7c. Grading and Drainage Plan 2023-10-03
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P8a. Site Details-1 2023-06-19
P8b. Site Details-1 2023-08-30
P8c. Site Details-1 2023-10-03
P9. Site Details-2
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P9b. Site Details-2 2023-08-30
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P12c. Drainage Details-1 2023-10-03
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P14. Drainage Details–3
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P14b. Drainage Details-3 2023-08-30
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P15b. Erosion Control Notes and Details 2023-08-30
P15c. Erosion Control Notes and Details 2023-10-03
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P16a. Silva Cell Details 2023-08-30
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P19b. Floor Plan – Floor 3 2023-08-30
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P26c. Elevations – South 2023-10-03
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P34b. Rendering -5 2023-10-03
P34c. Rendering -5 2023-10-10
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P42a. Landscape Details -2 2023-08-30
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P46. Landscape Rendering – 3 2023-06-19
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P47. Landscape Rendering – 4 2023-06-19
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P58. Precedent Images

Public Comment
PC1. Kristina Miller
PC2. George Rheault
PC3. Jim Hall
PC4. Laura Underkuffler
PC5. Amelia Labreck
PC6. Winston Lumpkins
PC7. Avery Kamila
PC8. Sarah Michniewicz
PC9. Ned Payne
P10. Laura Underkuffler

Subject:	196 Lancaster Street – Master Development Plan
Zone:	B3, B7 & R-6
Date of Review:	Thursday, June 8, 2023
Reviewer(s):	Design Review Sean King (Urban Designer), Zachary Powell (Senior Planner), Kevin Kraft (Deputy Director)
Project ID:	PL-002315-2022

I. INTRODUCTION

The proposed Master Development Plan (MDP) is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5*. Portions of the proposed MDP (315 Cumberland Avenue) are also within 100 feet of a historic district (Congress Street Historic District) and therefore will require an advisory review by historic preservation staff.

The proposed MDP is only reviewed according to the Master Development Plan criteria. In future Site Plan design reviews, the projects will be subject to the following guidelines in the City of Portland Design Manual:

- *B-3 Downtown Business Zone, Appendix 1;*
- *B-7 Bayside Mixed-Use Urban District Zone, Appendix 4;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters;*

II. DESIGN REVIEW COMMENTS:

Based on the resubmitted materials to date, staff have the following comments.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation;

Staff comment: The proposed MDP is a collection of existing properties of various dimensions within the West Bayside neighborhood. Multiple zoning districts comprise the development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots that the applicant proposes for infill development. In addition, smaller-scale residential buildings ranging between two- to three stories are concentrated along Cedar and Oxford streets.

The Bayside Height Overlay Map defines allowable building heights to indicate several blocks that require transitional heights to the surrounding residential neighborhood. The preservation of several existing structures shall inform the proposed infill development with transitions in building height, massing and articulation. At the perimeter of the MDP properties are residential buildings of lower heights to the east and west, and larger floor area buildings to the north.

The applicant has resubmitted plans and renderings to illustrate the proposed scale, massing and articulation of the master development plan that staff finds generally creates a cohesive identity. Staff finds the identity of street typologies as a critical unifying characteristic of the master development plan. As part of future site plan applications the Applicant should include effective building scale transitions through building stepbacks that respect existing building datum levels and that respond to the street typologies along Lancaster Street and Chestnut Street, contextual proportions of building elements and consistency of fenestration patterns that are compatible with the adjacent neighborhood. Buildings should also consider design techniques such as incorporating bays and projections to break up building facades.

In addition, Elm Street and Chestnut Street as neighborhood connector streets will be expected to engage gateway intersections to provide pedestrian-oriented ground floors with articulated building entries, canopies and special features.

Rooftop appurtenances, mechanical equipment and façade mounted utilities shall be integrated within the building design and/or screened to minimize views from adjacent properties.

Use of quality exterior material and architectural detailing at pedestrian scale;

Staff comment: The applicant has resubmitted plans and renderings to illustrate exterior materials with architectural detailing at a pedestrian scale. Staff finds the relationship of exterior materials to street typologies creates a stronger cohesive identity within the Bayside MDP.

The proposed buildings within the MDP shall be designed for pedestrian scale with active uses fronting the street that support the neighborhood and shall select exterior materials that are cohesive throughout each building in future Site Plan applications and reviews. Quality exterior materials shall include appropriate scale, articulation, transition, durability, visual interest and placement.

Buildings shall articulate architectural elements at the street and mid-block pedestrian connections to provide architectural detailing that demonstrates the perceived use of the building. These aspects will be reviewed with special attention to the ground floors and areas most visible to pedestrians. In Site Plan review the details should be reviewed to provide depth, articulation, visual interest, and quality transitions.

Consistency of design and materials for streetscape and pedestrian amenities;

Staff comment: The applicant has provided conceptual streetscape guidelines that include surface materials, trees and landscaping, lighting and pedestrian amenities in the furnishing zone that correspond to each street typology that staff finds to unify the master development plan. The Applicant has identified the following streets and pedestrian passages to promote connectivity, traffic calming, on-street parking, and amenities for pedestrians:

- Shared Street (Lancaster Street between Preble Street & Elm Street) – Lower traffic demand and encourage appropriate traffic calming measures through enhanced crosswalks and signage. The Applicant has proposed eight foot sidewalk widths, a four foot

furnishing zone for street trees, landscaping, street lighting, articulated surface paving and seating.

- Neighborhood Main / Commercial Corridor A (Lancaster Street) – The Applicant has proposed a unified material palette to include eight foot sidewalk widths, street trees and landscaping, street lighting, surface paving, enhanced crosswalks, signage and street furnishings.

- Commercial Corridor B (Preble Street, Oxford Street & Cumberland Avenue) – The Applicant has proposed consistent streetscape materials to include six foot sidewalk widths, street trees and landscaping, street lighting and pedestrian amenities.

- Neighborhood Connector (Elm Street, Kennebec Street, & Cumberland Avenue) – The Applicant has proposed consistent streetscape materials to include six foot sidewalk widths, street trees and landscaping, street lighting and pedestrian amenities. Staff requires the applicant to update the Street Typologies diagram from the *Public Realm Design - L Series Exhibits* to include the eastern side of Kennebec Street in the MDP boundaries as a Neighborhood Connector.

- Mid-block Pedestrian Connections & Visual Connections through Buildings – The Applicant has proposed for mid-block permeability to allow for comfortable pedestrian passage and provide breaks in building lengths that exceed two-hundred feet.

The Applicant shall submit a wayfinding and signage program specific to each site plan review submission, as the master development plan does not imply approval of individual building designs and public realm improvements within the right of way.

Furthermore, the Applicant shall continue to coordinate with the City's Parks Department on proposed improvements to ensure changes align with the ongoing Portland Tree Canopy Project in the Bayside neighborhood.

Framing of outdoor open space and linkages;

Staff comment: The proposed MDP indicates a quarter-mile radius from Elm Street and Lancaster Street for proximity to existing open spaces, including Deering Oaks, Monument Square, and the Bayside Trail, with smaller neighborhood open spaces and pocket parks less dispersed within the West Bayside neighborhood.

The applicant has resubmitted the Open Space Typologies diagram from the *Public Realm Design - L Series Exhibits* to illustrate the allocation of proposed open space within the Bayside MDP. Staff finds the major publicly accessible open space, linear parklet and expanded public sidewalk as linkages to existing open spaces outside the MDP boundaries to be appropriate.

A clear conveyance of the function and significance of various buildings, entrances, and features;

Staff comment: Existing buildings within the proposed MDP range in use from multi-family, office, retail, social and health services, education facilities and structured parking. The architectural character of existing buildings demonstrates street frontages at the public right of way with ground-level windows and pedestrian-scaled entrances. Existing services and surface parking are typically located towards the rear of properties, although several surface parking lots along frontages create voids that diminish the street wall. Primary entrances shall front the major streets and significant corner intersections shall demonstrate a clear architectural character.

The applicant has resubmitted plans and renderings to illustrate building function, use and entrances as primary building entry, parking entry, retail entry and existing building entry that staff finds provides clear conveyance as indicated in the Retail & Outdoor Dining Opportunities diagram from the *Public Realm Design - L Series Exhibits*.

And to generally comply with design and development standards of the zone in which it is located.

Staff Comment: In addition to the MDP review standards, the application will be reviewed for general compliance with design standards of the zone in which it is located including, *B-3* Downtown Business Zone, Appendix 1; B-7 Bayside Mixed-Use Urban District Zone, Appendix 4; and Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters. Future Site Plan applications, projects will be reviewed against relevant standards.

Staff has identified key design standards from each applicable zone that shall relate to the Master Development Plan to be applied during future Site Plan applications and reviews:

- B-3 Downtown Urban Design Guidelines – Relationship to Pedestrian Environment
    - Elm Street and Chestnut Street as neighborhood connector streets shall engage gateway intersections to provide pedestrian-oriented ground floors with articulated building entries, canopies and special features.B-3 Downtown Urban Design Guidelines – Relationship to Pedestrian Environment
- B-7 Mixed-Use Urban District Zone Design Principles and Standards – Standard E-2 Height
    - Lancaster Street shall include building stepbacks of fifteen feet above five stories when located at the street build to line or to provide a front setback of fifteen feet to include activation at the ground floor such as linear plaza, retail and building entries.

Subject:	89 Elm Street – Major Site Plan Review
Zone:	B3
Date of Review:	May 25, 2023 Design Review
Reviewer(s):	Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID:	PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles and mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - **Met**

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Use of quality exterior material and architectural detailing at pedestrian scale; - **Met**

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows at the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane.

Consistency of design and materials for streetscape and pedestrian amenities; - Not Met

Staff comment: The proposed development includes streetscape and pedestrian amenities through tree wells, lighting and concrete sidewalks. Staff finds the proposed streetscape amenities shall correspond more closely with the MDP currently in review that align with specific street typologies.

Framing of outdoor open space and linkages; - Not Met

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. Staff recommends additional streetscape amenities to allow for pedestrian comfort. Examples may include paving distinction at building entries, fixed seating, street trees and additional planting on private property.

A clear conveyance of the function and significance of various buildings, entrances, and features; - Met

Staff comment: The proposed building design conveys a clear function of building uses with distinction of retail through storefront windows, entrances and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances and organization of exterior materials.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, ***Land Use Code Section 14.6.4.I Design standards.***

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Staff comment: The exterior design along the street facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to ground plane to allow for recessed planting areas or trellis system for vines).

1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – Not Met

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant shall indicate that a VT of .7 or higher is met at the first 35 feet of the building façade.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - **Met**

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy and accessible stoops.

3. Blank facades; and - **Met**

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration pattern throughout each street facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - **Met**

Staff comment: A proposed building arcade with brick structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street.

B. *Pedestrian Activities District (PAD)*

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. *Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:*

1. Sidewalk, crosswalk, and street paving materials; – **Not Met**

Staff comment: Sidewalk areas in the proposed development include concrete surfaces, pole lighting, and tree wells. Staff recommends adequate pedestrian passage of six-feet minimum based on applicant's proposal to activate the streetscape. In addition, staff recommends a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – **Not Met**

Staff comment: Tree wells are proposed, with the applicant to provide a landscape plan with tree, plant material and irrigation for staff review. In addition, staff recommends removal of tree wells in front of building entrances to eliminate narrowing of sidewalk.

3. Lighting; - **Met**

Staff comment: The proposed development indicates light locations within the right of way and specifies a municipal light fixture as Peninsula Medium street (Figure X-7B) per Technical Manual, section 10 standards.

D. *Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and* - **Met**

Staff comment: The proposed development has not included any pedestrian amenities as indicated in this design standard. Staff recommends the location of pedestrian amenities such as benches and other seating, trash receptacles and other special features be concentrated around building entrances and to enhance the streetscape experience.

E. *Sidewalk vendors and sidewalk cafes.*

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street.

F. *Urban open spaces.*

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setback beyond the street build-to line. Staff finds the provision for varied, high quality, creatively designed and comfortable amenities are not met and recommends additional streetscape elements that highlight entrances with a surface material change and fixed outdoor seating that is usable beyond retail business operating hours.

II. Relationship to existing development

A. *Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:*

1. *Street walls and building setbacks;*

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with street-level plaza and building atrium for outdoor seating is appropriate.

2. *Open space;*

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. *Building form, scale and massing;*

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks and street-level experience. Building form, scale and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variation include articulation of lower floors of a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances and other planes of the exterior wall.

Staff recommends additional variation of the façade plane to recess the upper floors and vertical material delineation, at the charcoal metal panel, to reduce the building's scale.

4. *Façade proportion and composition;*

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of fenestration pattern at the building's middle and change of material at the building's top. Staff finds the punched windows along the street facing facades to be appropriate and recommends further window recession at the lower floors where residential units are proposed to allow for additional privacy, plant screening at foundation walls and further articulate a pedestrian-scaled massing.

The proposed building includes a signature building roof-top element at the Lancaster and Elm Street intersection that staff finds is not integrated into the overall building's composition. Staff recommends a stepback of the signature building roof-top element to clearly define the parapet wall at the upper floor. Furthermore, applicant to clarify if this element is a rooftop appurtenance, which would allow for a consolidation of rooftop mechanical equipment and visual screening where voids are currently proposed. Staff finds the location of façade mounted HVAC equipment to not respect the surrounding residential context and recommends either relocation to roof or an integrated window system for each unit that is less visible.

5. *Pedestrian circulation and building entrances;*

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the building. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that staff finds is appropriate.

6. Parking,

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property.

7. Areas within the downtown

Staff comment: The proposed development would engage with the character of downtown by reinforcing the street wall, street facing building entrances, municipal light fixtures and street trees at a regular interval.

B. Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks:

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follow:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground level retail and building entrance. In addition, Elm Street would accommodate for the addition of street trees, tree wells and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.
4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street afford the highest solar exposure at the west elevation of the building.

III. Roof-top appurtenances

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building,

Staff comment: The building design does not screen the proposed mechanical equipment located on the roof. Staff recommends the applicant explore:

- Building design solutions to extend the parapet wall at facades visible from the surround streets,
- Consolidation of mechanical equipment to the special architectural element at the corner of Lancaster and Elm Street, and
- Enclosing mechanical equipment with a screening element setback from the roofline.

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. Wind impacts

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created.

Staff comment: Staff finds the combination of building setbacks, recessed building planes and other architectural elements, such as canopies and atriums assist to reduce wind impacts.

VI. Setback from existing structures

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. Building tops

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrian with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

   Staff comment: The proposed development includes open space within the building setbacks areas that encourage active street usage. Staff finds the amount of open space to be limited based on the amount of residential units, and recommends the applicant integrate additional open space such as balconies for residents, landscaping or enhanced streetscape elements.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principle living areas and shall also provide sufficient storage areas.*

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

Subject: 89 Elm Street – Major Site Plan Review
Zone: B3
Date of Review: June 26, 2023
Design Review
Reviewer(s): Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID: PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5,* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles, and a mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - **Met**

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing, and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Use of quality exterior material and architectural detailing at pedestrian scale; - **Met**

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows for the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane.

Consistency of design and materials for streetscape and pedestrian amenities; - **Met**

Staff comment: The resubmitted plans for the proposed development include streetscape and pedestrian amenities within a furnishing zone with street trees in tree wells, lighting, and brick pavement that respond to the approved master development plan (MDP). A minimum six-foot concrete sidewalk is proposed throughout by way of a public access easement onto private property.

Framing of outdoor open space and linkages; - **Met**

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. The resubmitted plans for the proposed development include an expanded furnishing zone with pedestrian amenities and an accessible concrete sidewalk to connect to adjacent outdoor open spaces.

A clear conveyance of the function and significance of various buildings, entrances, and features; - **Met**

Staff comment: The proposed building design conveys a clear function of building uses with the distinction of retail through storefront windows, entrances, and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances, and organization of exterior materials.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, ***Land Use Code Section 14.6.4.I Design standards.***

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – **Not Met**

Staff comment: The exterior design along the street-facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. *Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to the ground plane to allow for recessed planting areas or trellis system for vines).*

1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – **Met**

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant has indicated a VT of .7 or higher on the storefront window throughout the proposed development.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - **Met**

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy, and accessible stoops.

3. Blank facades; and - **Met**

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration patterns throughout each street-facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - **Met**

Staff comment: A proposed building arcade with brick structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street.

B. Pedestrian Activities District (PAD)

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:

1. Sidewalk, crosswalk, and street paving materials; – **Met**

Staff comment: Concrete sidewalks in the proposed development include a minimum of a six-foot walkway for adequate pedestrian passage. The resubmitted plans include a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street that staff finds appropriate.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – **Not Met**

Staff comment: Street trees and tree wells are proposed within a furnishing zone, Staff finds the proposed corten raised planter detail at Oxford Street is not appropriate within the City's right-of-

way due to maintenance concerns, Staff recommends a typical tree well detail per technical manual, section 4.

3. Lighting; - Not Met

Staff comment: The proposed development indicates light locations within the right of way and specifies a municipal light fixture as Peninsula Medium street (Figure X-7B) per Technical Manual, section 10 standards. However, the Applicant shall add a decorative light pole and fixture along the building frontage on Oxford Street.

D. *Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and* – Not Met

Staff comment: The resubmitted plans for the proposed development include pedestrian amenities for bench seating, trash receptacles, and signage, staff finds the proposed wood seat top insert (detail 08 tree well type 3 / L3) Elm & Lancaster Street is not appropriate within the City's right-of-way due to maintenance concerns. Staff recommends a honed finish for comfortable seating. In addition, Staff finds the gateway sign at Elm and Oxford Street is restricted within the public right-of-way per LUC 20.6.1, staff recommends a building-mounted sign as the gateway sign.

E. *Sidewalk vendors and sidewalk cafes.*

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street.

F. *Urban open spaces.*

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setbacks beyond the street build-to line and appropriate streetscape amenities to provide street trees, seating, and furnishings.

II. Relationship to existing development

A. *Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:*

1. *Street walls and building setbacks;*

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with a street-level plaza and building atrium for outdoor seating is appropriate.

2. *Open space;*

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. *Building form, scale and massing;*

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks, and street-level experience. Building form, scale, and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variation include articulation of lower floors of a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances, and other planes of the exterior wall.

4. *Façade proportion and composition;*

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of the fenestration pattern at the building's middle, and change of material at the building's top. Staff finds the punched windows along the street-facing facades to be appropriate and *recommends further window recession at the lower floors where residential units are proposed to allow for additional privacy, plant screening at foundation walls, and further articulate a pedestrian-scaled massing.*

The proposed building includes a signature building roof-top element at the Lancaster and Elm Street intersection that staff finds is not integrated into the overall building's composition. Staff recommends a stepback of the signature building roof-top element to clearly define the parapet wall at the upper floor. Furthermore, applicant to clarify if this element is a rooftop appurtenance, which would allow for a consolidation of rooftop mechanical equipment and visual screening where voids are currently proposed. Staff finds the location of façade mounted HVAC equipment to not respect the surrounding residential context and recommends either relocation to roof or an integrated window system for each unit that is less visible.

5. *Pedestrian circulation and building entrances;*

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the

building. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that staff finds is appropriate.

6. Parking,

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property.

7. Areas within the downtown

Staff comment: The proposed development would engage with the character of downtown by reinforcing the street wall, street-facing building entrances, municipal light fixtures, and street trees at a regular interval.

B. Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks:

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follows:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground-level retail and building entrances. In addition, Elm Street would accommodate the addition of street trees, tree wells, and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.
4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street affords the highest solar exposure at the west elevation of the building.

III. Roof-top appurtenances

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building,

Staff comment: *The building design does not screen the proposed mechanical equipment located on the roof. Staff recommends the applicant explore:*

- *Building design solutions to extend the parapet wall at facades visible from the surrounding streets,*
- *Consolidation of mechanical equipment to the special architectural element at the corner of Lancaster and Elm Street, and*
- *Enclosing mechanical equipment with a screening element setback from the roofline.*

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. Wind impacts

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created.

Staff comment: Staff finds the combination of building setbacks, recessed building planes, and other architectural elements, such as canopies and atriums assist to reduce wind impacts.

VI. Setback from existing structures

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. Building tops

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrians with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

   Staff comment: The proposed development includes open space within the building setback areas that encourage active street usage. *Staff finds the amount of open space to be limited based on the number of residential units, and recommends the applicant integrate additional open space such as balconies for residents, landscaping, or enhanced streetscape elements.*

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas.*

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

Subject:	89 Elm Street – Major Site Plan Review
Zone:	B3
Date of Review:	Friday, September 22, 2023 Design Review
Reviewer(s):	Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID:	PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5,* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles, and a mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission and bold text denotes standards being met within resubmission materials.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - Met

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing, and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Staff is recommending the Applicant consider the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to enhance the corner as a gateway element consistent with the approved MDP.

Use of quality exterior material and architectural detailing at pedestrian scale; - Met

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows for the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane that Staff finds to reduce the overall scale of the building that is consistent with the approved MDP.

Consistency of design and materials for streetscape and pedestrian amenities; - Met

Staff comment: The resubmitted plans for the proposed development include streetscape and pedestrian amenities within a furnishing zone with street trees in tree wells, lighting, and brick pavement that is consistent with the approved MDP. A minimum six-foot concrete sidewalk is proposed throughout by way of a public access easement onto private property.

Framing of outdoor open space and linkages; - Met

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. The resubmitted plans for the proposed development include an expanded furnishing zone with pedestrian amenities and an accessible concrete sidewalk to connect to adjacent outdoor open spaces that is consistent with the approved MDP.

A clear conveyance of the function and significance of various buildings, entrances, and features; - Met

Staff comment: The proposed building design conveys a clear function of building uses with the distinction of retail through storefront windows, entrances, and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances, and organization of exterior materials that is consistent with the approved MDP.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, *Land Use Code Section 14.6.4.I Design standards.*

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Staff comment: The exterior design along the street-facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to the ground plane to allow for recessed planting areas or trellis system for vines).

Furthermore, the Applicant has resubmitted plans to indicate changes in materiality, awnings and entrances to enhance the character and attractiveness at the lower 35 feet of building facades facing the street. Staff recommends greater articulation at the first 35 feet at Elm Street to mitigate the grade change along the street from Lancaster Street to Oxford Street that is more consistent with the neighborhood context that includes brick infill beneath window frames, particularly along the Elm street facade of 185 Lancaster Street (Baxter Academy). In response to this observed neighborhood context, Staff recommends the Applicant add brick to reduce the amount of concrete foundation walls exposed directly at the lower 35 feet to improve the usability and attractiveness as an integral element of the streetscape pedestrian experience.



1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – Met

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant has indicated a VT of .7 or higher on the storefront window throughout the proposed development. The applicant has resubmitted plans that indicate awnings above the proposed storefront windows to contribute to a greater visual character at the first 35 feet that Staff finds appropriate.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - Met

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy, and accessible stoops that Staff finds appropriate.

3. Blank facades; and - Met

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration patterns throughout each street-facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - Met

Staff comment: A proposed building arcade with brick-cladding structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street that Staff finds appropriate.

B. Pedestrian Activities District (PAD)

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:

1. Sidewalk, crosswalk, and street paving materials; – Met

Staff comment: Concrete sidewalks in the proposed development include a minimum of a six-foot walkway for adequate pedestrian passage, along with brick paving in the furnishing zone of the right of way that Staff finds appropriate. The resubmitted plans include a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street that Staff finds appropriate.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – Met

Staff comment: The Applicant has resubmitted plans to include revised street trees, tree well types and irrigation that Staff finds is appropriate.

3. Lighting; - Met

Staff comment: The proposed development indicates new ornamental light locations within the right of way along Elm and Lancaster Street that Staff finds appropriate.

D. Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and – Met

Staff comment: The resubmitted plans for the proposed development include pedestrian amenities for bench seating, trash receptacles, art installation and signage that Staff finds appropriate. Staff recommends the Applicant continue to coordinate with the City's Urban

Designer regarding the art installation in the public right-of-way to conform with LUC Article 21 and public art guidelines for the City of Portland.

E. *Sidewalk vendors and sidewalk cafes.* – Met

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street that Staff finds appropriate to activate the street-level pedestrian experience.

F. *Urban open spaces.* – Met

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setbacks beyond the street build-to line and appropriate streetscape amenities to provide street trees, seating, and furnishings that Staff finds appropriate.

II. Relationship to existing development

A. Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:

1. Street walls and building setbacks; – Met

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with a street-level plaza and building atrium for outdoor seating is appropriate.

2. Open space; – Met

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. Building form, scale and massing; – Met

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks, and street-level experience. Building form, scale, and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would

step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variations include an articulation of lower floors with a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances, and other planes of the exterior wall.

4. *Façade proportion and composition;* – Not Met

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of the fenestration pattern at the building's middle, and change of material at the building's top. Staff finds the punched windows, recessed building elements to express entrances and vertically segment the building is appropriate.

The Applicant has resubmitted plans that modify the signature building roof-top element at the Lancaster Street and Elm Street intersection with a stepback from the building edge and expressed cornice that staff finds appropriate. Staff recommends a reduced height of the signature building roof-top element that eliminates the openness above louver screen fenestrations for a clear termination of the building's top articulated with the expressed cornice.

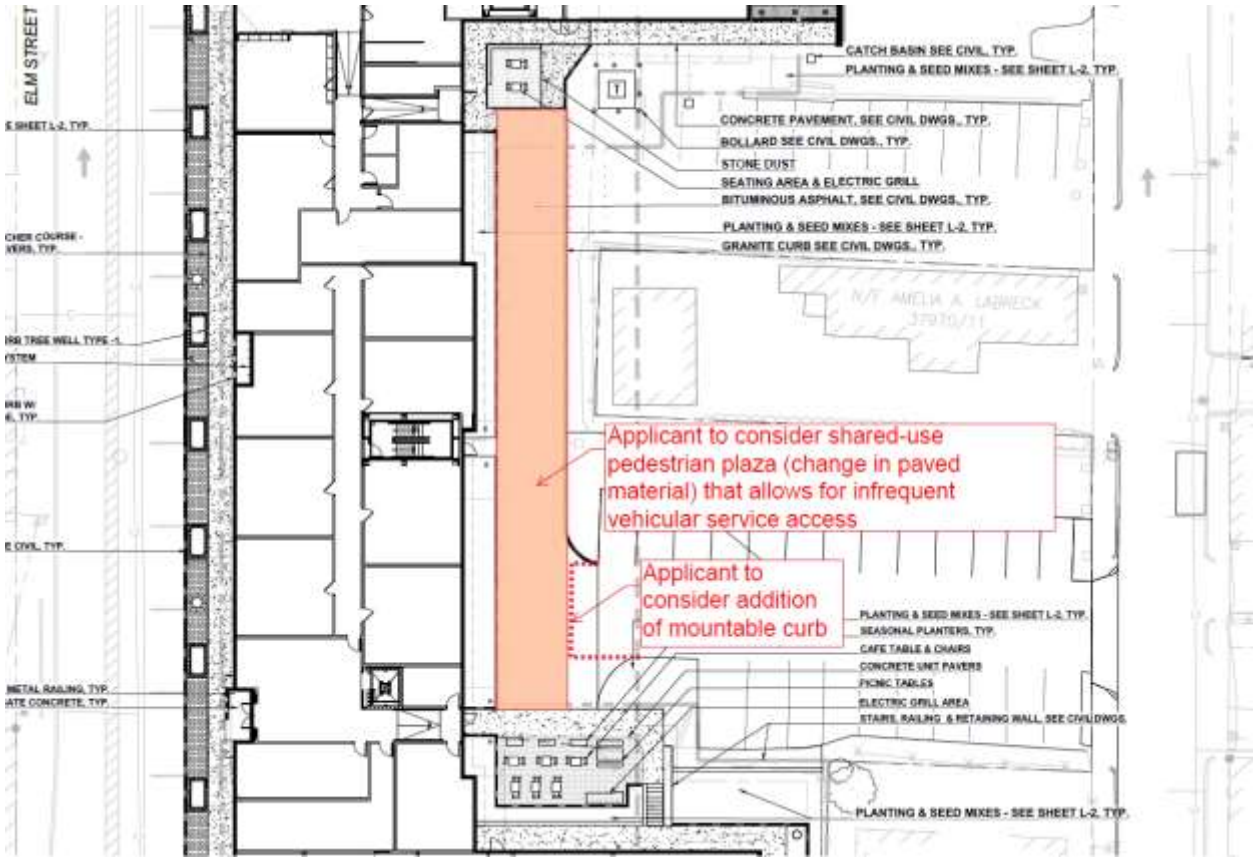
In addition, Staff recommends the Applicant explore the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to balance the building's massing and further transition the increased building heights towards Downtown.

5. *Pedestrian circulation and building entrances;* – Met

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the building's facade. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that Staff finds appropriate.

6. *Parking garage and surface lots;* – Met

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property. The Applicant has resubmitted plans that indicate the relocation of trash service to allow for additional open space for residences at the rear of the property to create an opportunity for an attractive pedestrian environment as a shared use with the access driveway that Staff finds to be used by vehicles infrequently. Staff recommends the applicant consider a shared-use pedestrian plaza that detracts from passenger vehicle use, potentially with a mountable curb at the driveway and a change in paved material type to promote security and attractiveness at the rear property for residences to access.



7. Areas within the downtown – Met

Staff comment: The proposed development would engage with the character of Downtown through reinforcement of the street wall, street-facing building entrances, municipal light fixtures, and street trees at a regular interval.

B. Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks: – Met

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follows:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground-level retail and building entrances. In addition, Elm Street would accommodate the addition of street trees, tree wells, and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.

4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street affords the highest solar exposure at the west elevation of the building.

III. *Roof-top appurtenances*

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building, – Met

Staff comment: Staff finds the location of rooftop mechanical equipment is screened effectively by locating away from the building's edge, the extension of the parapet walls, and consolidation within signature building roof-top element.

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. *Wind impacts*

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created. – Met

Staff comment: Staff finds the combination of building setbacks, recessed building planes, and other architectural elements, such as canopies and atriums assist in reducing wind impacts.

VI. *Setback from existing structures*

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. *Building tops*

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies – Met

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.* – Met

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.* – Met

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrians with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.* – Met

   Staff comment: The proposed development includes open space within the building setback areas that encourage active street usage that Staff finds an appropriate contribution based on the approved MDP distribution of open space beyond property site boundaries. The Applicant has resubmitted plans to include limited private open space for select residential units with balcony access, planting buffers to screen adjacent properties, parking lots and building façade elements. In addition, the Applicant has included two outdoor areas that enhance the communal open space of the development, Staff requests the Applicant consider additional shared-use opportunities (refer to design standard II. Relationship to existing development. 6. Parking garages and surface lots – Shared use) of the site programming to allow adequate open space for the residents.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas.* – Met

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

Subject: 89 Elm Street – Major Site Plan Review
Zone: B3
Date of Review: Thursday, October 12, 2023
Design Review
Reviewer(s): Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID: PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5,* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles, and a mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission and **bold** text denotes standards being met within resubmission materials.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - **Met**

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing, and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Staff is recommending the Applicant consider the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to enhance the corner as a gateway element consistent with the approved MDP.

Use of quality exterior material and architectural detailing at pedestrian scale; - **Met**

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows for the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane that Staff finds to reduce the overall scale of the building that is consistent with the approved MDP.

Consistency of design and materials for streetscape and pedestrian amenities; - Met

Staff comment: The resubmitted plans for the proposed development include streetscape and pedestrian amenities within a furnishing zone with street trees in tree wells, lighting, and brick pavement that is consistent with the approved MDP. A minimum six-foot concrete sidewalk is proposed throughout by way of a public access easement onto private property.

Framing of outdoor open space and linkages; - Met

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. The resubmitted plans for the proposed development include an expanded furnishing zone with pedestrian amenities and an accessible concrete sidewalk to connect to adjacent outdoor open spaces that is consistent with the approved MDP.

A clear conveyance of the function and significance of various buildings, entrances, and features; - Met

Staff comment: The proposed building design conveys a clear function of building uses with the distinction of retail through storefront windows, entrances, and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances, and organization of exterior materials that is consistent with the approved MDP.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, ***Land Use Code Section 14.6.4.I Design standards.***

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Met

Staff comment: **The exterior design along the street-facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances to effectively segment the building length that Staff finds appropriate. The Applicant has resubmitted plans that indicate materiality to include brick in various tones to enhance the fenestration pattern along the building's façade that Staff finds appropriate. Furthermore, the addition of awnings and overhead canopies at major building enhances the usability of the street-level experience.**

1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – **Met**

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant has indicated a VT of .7 or higher on the storefront window throughout the proposed development. The applicant has resubmitted plans that indicate awnings above the proposed storefront windows to contribute to a greater visual character at the first 35 feet that Staff finds appropriate.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - **Met**

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy, and accessible stoops that Staff finds appropriate.

3. Blank facades; and - **Met**

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration patterns throughout each street-facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - **Met**

Staff comment: A proposed building arcade with brick-cladding structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street that Staff finds appropriate.

B. Pedestrian Activities District (PAD)

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:

1. Sidewalk, crosswalk, and street paving materials; – **Met**

Staff comment: Concrete sidewalks in the proposed development include a minimum of a six-foot walkway for adequate pedestrian passage, along with brick paving in the furnishing zone of the right of way that Staff finds appropriate. The resubmitted plans include a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street that Staff finds appropriate.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – **Met**

Staff comment: The Applicant has resubmitted plans to include revised street trees, tree well types and irrigation that Staff finds is appropriate.

3. Lighting; - **Met**

Staff comment: The proposed development indicates new ornamental light locations within the right of way along Elm and Lancaster Street that Staff finds appropriate.

D. Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and – **Met**

Staff comment: The resubmitted plans for the proposed development include pedestrian amenities for bench seating, trash receptacles, art installation and signage that Staff finds appropriate. Staff recommends the Applicant continue to coordinate with the City's Urban Designer regarding the art installation in the public right-of-way to conform with LUC Article 21 and public art guidelines for the City of Portland.

E. *Sidewalk vendors and sidewalk cafes.* – **Met**

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street that Staff finds appropriate to activate the street-level pedestrian experience.

F. *Urban open spaces.* – **Met**

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setbacks beyond the street build-to line and appropriate streetscape amenities to provide street trees, seating, and furnishings that Staff finds appropriate.

II. Relationship to existing development

A. Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:

1. Street walls and building setbacks; – **Met**

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with a street-level plaza and building atrium for outdoor seating is appropriate.

2. *Open space; –* **Met**

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. *Building form, scale and massing; –* **Met**

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks, and street-level experience. Building form, scale, and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variations include an articulation of lower floors with a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances, and other planes of the exterior wall.

4. *Façade proportion and composition; –* **Met**

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of the fenestration pattern at the building's middle, and change of material at the building's top. Staff finds the punched windows, recessed building elements to express entrances and vertically segment the building is appropriate.

The Applicant has resubmitted plans that incorporate a crown element at the building's corners that function as rooftop appurtenance screening. Staff finds the building's termination with a pronounced cornice of various heights is integrated appropriately for screening rooftop mechanical equipment. The Applicant has referenced precedent for the roofline articulation that Staff recommends the Board consider for appropriateness in relationship to neighborhood scale and compatibility with the proposed building's character.

5. *Pedestrian circulation and building entrances; –* **Met**

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the building's facade. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that Staff finds appropriate.

6. *Parking garage and surface lots;* – Met

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property. The Applicant has resubmitted plans that indicate the relocation of trash service to allow for additional open space for residences at the rear of the property to create an opportunity for an attractive pedestrian environment as a shared use with the access driveway that Staff finds to be used by vehicles infrequently.

7. *Areas within the downtown* – Met

Staff comment: The proposed development would engage with the character of Downtown through reinforcement of the street wall, street-facing building entrances, municipal light fixtures, and street trees at a regular interval.

B. *Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks:* – Met

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follows:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground-level retail and building entrances. In addition, Elm Street would accommodate the addition of street trees, tree wells, and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.
4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street affords the highest solar exposure at the west elevation of the building.

III. *Roof-top appurtenances*

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building, – Met

Staff comment: Staff finds the location of rooftop mechanical equipment is screened effectively by locating away from the building's edge, the extension of the parapet walls,

and consolidation behind the crown element as appropriately integrated into the building's design.

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. Wind impacts

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created. – Met

Staff comment: Staff finds the combination of building setbacks, recessed building planes, and other architectural elements, such as canopies and atriums assist in reducing wind impacts.

VI. Setback from existing structures

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. Building tops

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies – Met

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.* – Met

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.* – Met

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrians with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.* – Met

   Staff comment: The proposed development includes open space within the building setback areas that encourage active street usage that Staff finds an appropriate contribution based on the approved MDP distribution of open space beyond property site boundaries. The Applicant has resubmitted plans to include limited private open space for select residential units with balcony access, planting buffers to screen adjacent properties, parking lots and building façade elements. In addition, the Applicant has included two outdoor areas that enhance the communal open space of the development, Staff requests the Applicant consider additional shared-use opportunities (refer to design standard II. Relationship to existing development. 6. Parking garages and surface lots – Shared use) of the site programming to allow adequate open space for the residents.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas.* – Met

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets.*

Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

Consulting Traffic Engineer

- This project is a phase within the Bayside Master Plan, which is currently under review for a Traffic Movement Permit. A traffic study will be prepared in association with the TMP. The applicant should confirm that this project does not meet the threshold for a TMP as an individual project.

- The site plan is maintaining a driveway on Lancaster Street west of Cedar Street. The plan shall include a layout of the parking lot. The applicant shall confirm that this driveway meets city corner clearance requirements.

- The plan shall include improvements to the curb cut for the southerly parking lot located on Cedar Street.

- Dimensions shall be provided for the existing parking lots off Cedar Street including driveway width, aisle width, and parking stall size.

- The applicant shall provide turning template graphics for movements into and out of the Cedar Street parking lots for the design vehicle. A turning template graphic shall be provided for on-site truck movements.

- The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards of §1.5.1.A. of the Technical Manual.

- The applicant shall provide documentation that the current surface parking spaces are not associated with an existing project site plan approval. Also, the applicant shall provide information on how the site parking lots will be managed.

- Pedestrian access easements will be required along the project frontage in some areas.

Fire

At this time, Planning staff has not received comments from the Fire Department for this application. While no comments have been received, this does not result in a de facto approval from the Fire Department. Contact Captain Jason Grant (jgrant@portlandmaine.gov) to confirm if any additional modifications need to be made to meet the City's Fire Code.

Forestry

Comments included below previously provided in May 3rd comment letter for Bayside MDP.

Site Plan

- For street trees at intersection locations with bump out or widened sidewalk conditions, consider creating a larger planting bed for street trees at those locations, keeping in mind safe sight triangles/ lines, generous circulation and room for ramps / tip downs and street utilities / furnishings, and building egress points.

- At the intersection of Oxford and Elm, by the corner building entrance and at retail entrance location, and

at Elm side entry: Street tree locations appear to be close to entrances and might create conflict with circulation. Ensure that any circumstances with trunks, low branching etc. do not block entry ways or unreasonably alter signage / preserve a degree of effective recognition of retail space from the outdoor environment.

- In the parking area and around building foundations, ensure native landscaping selections in planting areas adhere to Technical Manual requirements in Chapter 4, and provide screening from headlights and other off-site lighting or visual intrusion into lower building units, particularly in adjacent parking areas.

Grading Plan

- Provide additional information on the intended use of the stairwell on the east (back) side of building along central access drive? If this stair well is providing informal access for residents, between the parking lot and internal units, consider landing grade and cross slope in relation to drive slope. Allow for egress from building to connect with a striped pedestrian route along drive to upper and lower lot areas if sidewalk or more formal walk material is infeasible.

- Ensure compliance with the standards of Chapter 4, Section 4.5.2 of the Technical Manual for screening along parking lot edges with abutting neighbors is followed. Please also ensure consideration is given to views from building into parking lots or adjacent properties. Please show proposed plantings / landscape screening for the lower parking area, particularly along the walk edge and along the shared property lines with 44 Cedar Street.

- Confirm whether the lower parking area will be connected with the drive aisle / loading dock corridor. Callout references detail inset, but corresponding inset is not shown on the plan. Please clarify circulation intent here.

- The landscape / site condition at upslope entry of delivery / drive aisle appears incomplete / obscured. Please show the condition of this area, and if it is a landscaped area, show screening and buffer design in compliance with Sections 4.5.5 and 4.5.2 of Chapter 4 of the Technical Manual.

- Please share the condition of the site along service ramp and back of abutting residential property along east side of parking lot connector drive.

Roof Plan

- If the applicant seeks additional open space for new building residents, consider utilization of proposed flat roof space for open space within required technical, code and COP planning requirements.

Parking

- While off-street parking is exempted through the transit proximate development and uses exemption, consideration is recommended for restrictions from new buildings utilizing resident on-street parking stickers.

Planning

General Comments

- The proposed lot to the north of 89 Elm Street proposes site modifications that facilitate the development and infrastructure of 89 Elm Street. Application documents shall be updated to incorporate the entirety of the proposed modifications on this lot into the site plan set and provide an anticipated address.
- Update the site plan set to submit a landscaping sheet and photometric plan.
- Update the architectural drawings and site plan set to match the proposed window and door openings.
- Comments related to the design of the building and site will be provided under a future cover in a Design Memorandum.

Land Use Code Comments

- §14.6.1.B.1: Overall, the design provides a number of access points for pedestrians throughout the building. Enhancing pedestrian connections in the northern portion of the building to prevent automobile-pedestrian conflicts should be considered through continuous pedestrian facilities and pavement markings. Relocation of the dumpsters may support these functions and provide easier access for residents who use assistive devices, such as wheelchairs.
- §14.6.1.B.2.: References to turning analyses were provided in the *Conformity with Land Use Ordinance* document, but were not provided. Submit copies of the turning analyses for further review by City staff.
- §14.6.1.B.3.: Include proposed modifications to curb cuts and sidewalk on Cedar Street & Lancaster Street for the new lot to the north of Cedar Street in the site plan set.
- §14.6.1.D.2.a.: Indicate the location of proposed signage to comply with §1.12.4. of the Technical Manual. Staff recommends publicly accessible bicycle parking, given that there is currently accessible bicycle parking at the site and no bicycle parking is required for retail uses.
- §14.6.1.D.3.b.: Snow storage is proposed on the northwestern portion of the site, but does not clarify how encroachments onto pedestrian walkways will be avoided. Update the site plan set to demonstrate how snow storage will not result in encroachment on the walkway.
- §14.6.2.B.: Confirm the DBH of the existing tree in the City right-of-way at the northwestern corner of Oxford & Elm Streets. In the application documents, the tree is proposed to be removed. Provide a narrative demonstrating why the tree cannot remain during construction activities. Further review by Forestry staff will be required.
- §14.6.2.C.2.: Update architectural drawings to demonstrate how the proposed development is screening roof-mounted utility structures. Additional comments related to roof-top appurtenance screening can be

found in the design memorandum for this project.

- §14.6.2.C.4.: Update the submitted *Conformity with Land Use Ordinance* document to identify how many street trees are proposed to be planted. For street trees not able to be planted to meet requirements, document how the remaining required number of street trees will be provided through alternative mechanisms, with any new plantings labeled as an alternative mechanism in the landscaping plan sheet.

- §14.6.3.B.: Staff awaits updated project materials (e.g., landscaping plan, photometric plan) to confirm compliance with §14.6.3.B. in relationship to pedestrian facilities along the surface parking area and pedestrian connections mid-block along Lancaster and Oxford Streets.

- §14.6.3.C.2.: Provide a more comprehensive narrative on the estimated cost, with documented sources, of relocating all electrical service (including utility poles) underground and any barriers to revising existing overhead facilities.

- §14.6.3.C.5.: Submit a detail drawing for the proposed trash enclosure, identifying the materials used for the enclosure.

- §14.6.3.C.5.: Update the submitted *Conformity with Land Use Ordinance* document to state the anticipated collection times. City staff recommends that collection should not occur between the hours of 11:00 PM and 6:00 AM.

- §14.6.4.E.3.: The project site has the possibility of including buried portions of colonial and post-colonial period structures or built features predating the Great Fire. Update the General Notes Sheet of the Site Plan Set, under Demolition Notes, to include the following note:

  5. Upon a finding of archaeological resources on the site, consultation with the City of Portland's Historic Preservation Program and the Maine Historic Preservation Commission is required to determine appropriate next steps.

- §14.6.4.G.: City staff encourages the Applicant to consider opportunities to relocate façade-mounted mechanical equipment to the roof or to integrate equipment into the design of the building (see Ephoca units used for 200 Federal Street) to minimize impacts to abutting residential properties.

Public Works

Transportation

- Improvements in the ROW shall be dimensions on the plan view sheets. For example ROW, street, lanes sidewalk, esplanade driveways (and other improvements) widths as well as when a width changes.

- Adjust the proposed sidewalk and planters to provide a 6-foot minimum clearance width between the planters and the buildings.

- The applicant shall update the plans to label or provide spot grades and slopes for the proposed sidewalks, accessible ramps, and driveways at grade breaks.

- The applicant shall provide spot-grade information at all proposed entrances.

- The applicant shall show existing trees on the plans and provide clarification on the location and

preservation of existing trees along project frontages. The applicant shall Contact City Arborist to determine if trees shall be kept or replaced and design the sidewalk improvements accordingly.

- The proposed planter conflicts with the parking. The applicant shall consider other options such as sloped curb tree wells (SLOPED TYPE "C" GRANITE TREE WELL IN SIDEWALK WITH NO ESPLANADE Figure IV-4C), installing an esplanade, or minimized planter curb reveal to allow for the doors to open.

- Proposed Tree Wells shall not be placed in front of entrances. Revise the plans to remove this conflict.

Water Resources

- The applicant should provide a plan and profile design sheet for the proposed offsite storm drain extension on Lancaster Street for DPW review and approval.
- The storm drain extension in Lancaster Street should be sized to accommodate a 25-year, 24-hour storm event. It is acceptable to only analyze the watershed area draining to this new storm drain extension and size the new pipes based on a simple Manning's equation full flow analysis. The City would like to add watershed area on Elm Street and Cedar Street from Oxford to Lancaster as part of this sizing analysis.
- It would be advisable for the applicant to set up a meeting with DPW Water Resources to discuss the proposed storm drain extension design in greater detail to clear up any questions the applicant might have about what will be required.
- The applicant has provided adequate stormwater storage detention volume requested by DPW as part of the overall sewer/storm capacity analysis for the project. DPW is supportive of the comments provided by the third-party stormwater review engineer which should be addressed by the applicant. The only question is if the overflow weir could be raised any higher to maximize storage volume?
- The proposed sanitary sewer configurations and connection location to the sewer in Elm Street is acceptable. Backflow preventers should be provided in accordance with Section 2 of the Technical Manual.
- Submit an erosion and sediment control sheet as part of the plan set.

TDM Program Manager

- The Plan provides a good overview of the TDM-related transportation Context for the proposed development. It has all the required sections prescribed for the TDM Plans in the Technical Manual.

- I have the following larger context comments for the applicant, and likely have some further ones as well:

    - The TDM Plan does not address/include the two retail spaces that are located on the Lancaster and Oxford Street frontages - at a minimum the employees of the retail uses should be included in surveying/reporting.

    - The guidelines for TDM Plans were amended in November 2022 - the current draft doesn't follow key changes including doing away with vehicle trip and parking reduction targets, replaced by a focus on establishing and monitoring or mode share for TDM sites. The data/information on vehicle trips and parking can be useful in establishing and monitoring mode share but reduction targets for them are not required. An updated reporting form is available on the TDM Resource webpage that integrates the Mode Share Target Table.

- For residential properties, it can be most beneficial to consider all trip-making rather than just commute trips. More explanation regarding what types of trips the Mode Split Targets apply to would be helpful (just peak hours, all day, etc.). My understanding is the baseline targets suggested are based on Journey to Work Data which is focused exclusively on Work Trips.

- It would be beneficial to have more commitments in terms of the TDM strategies that will be implemented such as the real-time display of transit arrival and support/sponsorship of bike share (bike station sponsorship, memberships, trip vouchers/reimbursements, etc.).

Consulting Stormwater Engineer

- The project is required to comply with MaineDEP Chapter 500 and City of Portland Technical Manual Section 5 requirements for stormwater management. In addition, the Applicant has received a number of comments from the City of Portland as part of the ongoing Master Development Plan review with regards to the specific requirements for stormwater management and flow control that have defined their approach for this project. The project will be reducing impervious surface, and as such the stormwater design is driven primarily by the requirements set forward by the City specific to this site. The Applicant is proposing to install a StormFilter system that has been sized adequately for the area draining to it, and an R-tank stormwater storage system that has been sized to adequately manage stormwater flow from the site. I have the following comments for consideration on the proposed system:

    - The Applicant should provide confirmation from the system manufacturers for the proposed design of the StormFilter and R-Tank systems.

    - The R-tank system as proposed as a number of inlet pipes from roof leaders. The Applicant should confirm the depths of these inlets relative to the anticipated water depths in the system to ensure that there are no un-desired back-flow situations.

    - The Applicant has provided a stormwater maintenance plan, and will ultimately need to provide the maintenance agreement.

- I generally understand and agree with the stormwater and grading approach on the site, but I would recommend that the Applicant evaluate the area located northeast of the building for access, use, and cover over the buried features per the following comments:

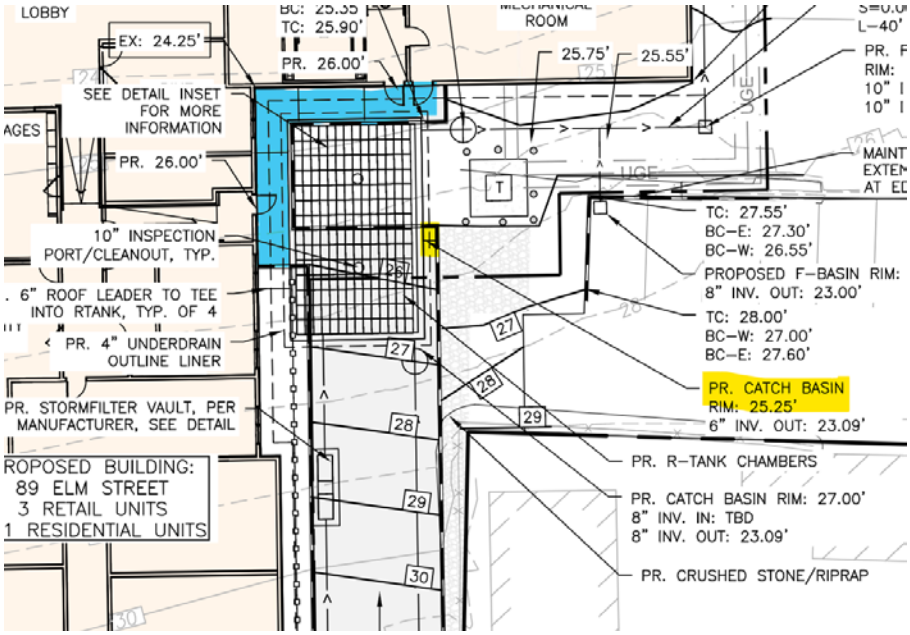
    - The transformer is located in this area, and appears to be accessed from the west based on bollard placement and adjacent site conditions. It should be confirmed that the typical open area next to the transformer can be used for snow storage.

    - There doesn't appear to be a large amount of cover over the top of the Stormfilter vault and the R-tank system. The Applicant should confirm that as proposed, cover is adequate to protect these systems from heavier snow removal equipment, and from the snow storage itself over the R-tank. It also appears that in the event that the transformer needs to be removed or replaced, that would likely be done by placing equipment on the R-tanks, so adequate cover for protection in the event that is required should be considered.

    - The plans reflect a fairly steep slope for the paved way located to the east of the building, leading

back to the snow storage. The Applicant should confirm that this is acceptable for the snow equipment and for any equipment that may need to access to service the transformer.

- There is a series of curbs installed in the area around the R-tanks, and I generally understand the approach, to protect doorways from stormwater flow/snowmelt in this area. I would suggest a few more spot grades in that area and there may also be a need for further drain structures within the narrow walkway along the building to direct stormwater back out of the curbed area, away from doors and into the drainage system. I highlighted the area in blue below. There's not a lot of direct stormwater here, but there could be flow from snow melt. They've also called out a catch basin that I've highlighted in yellow, and it's not clear to me how that connects into the R-Tank or the piping around it.



- The plans should reflect the proposed pavement repair within the roadways for the proposed stormwater and utility installations.

- The utility plan includes a note that the contractor is to relocate existing utility pole and overhead lines or provide underground services to existing buildings. The extent of those changes and impacts on the roadway should be represented.

- The project has reached out to utilities requesting confirmation of ability to serve, and has noted responses will be provided when received.

Zoning

- Buildings in the B-3 zone need to be within 5′ of the street. 89 Elm Street is not currently meeting this and a waiver request has not been submitted at this time.

City of Portland

TRAFFIC MOVEMENT PERMIT SCOPING MEETING

Permit Category: ____100 - 200 PCEs x 200 + PCEs
____ New ____ Modification

Attendance: **Date:** May 8, 2023

Tom Errico, Jeremiah Bartlett, Zack Powell, Jenn Conley, Mike Cristiani, Bruce Hyman, Will Savage, Mike Barton, Amelia Labreck, Jim Hall, Sarah Michniewicz, Andrew Rosenstein,

Meeting Location: Zoom Meeting

Project Name: West Bayside
Address:

Applicant: West Bayside Partners, LLC

Address:

Project Engineer: VHB

Address: **South Portland**

Portland Traffic Engineer (reviewer): Tom Errico

Filings: Has the Applicant notified abutters via certified mail at least 7 days prior to this meeting? To be Provided
Has the "Notice of Intent to File" been published in a local newspaper? To be Provided

Section 1 - Site and Traffic Information

1A. Site Plan

Size of development parcel (acres): N/A

Size of development parcel to be left non-vegetated (acres): N/A

1B. Existing and Proposed Site Uses

Type of development:

USE	SIZE
See application	

1C. Site and Vicinity Boundaries

Yes, Boundary or title survey signed and sealed by a professional land surveyor.
Yes, Vicinity map provided.

1D. Proposed Uses in the Vicinity of Proposed Development

Other approved development(s): The applicant should add 52 Hanover, 75 Chestnut Street (remaining unoccupied), and Federal Street.
Background growth will be applied for other city and regional growth.

1E. Trip Generation

Summary tables for each land use code:

ITE (LUC)	Weekday	AM Peak	PM Peak	Saturday Peak
See Application				

It was asked that the peak hour of the generator be used to create the worst-case volume network. After consultation with MaineDOT after the meeting the methods used in the Application are acceptable.
It was also requested that the coffee trip rates be reevaluated and to consider Bayside locations. The applicant to coordinate with the city on a site to count.

Trip rates obtained from other sources:
Number of locations where driveway counts taken: _____
Dates & time periods when driveway counts taken: _____
Locations where driveway counts where taken: _____
OTHER: _____

1F. Trip Distribution

_____Stick diagram for each major intersection on either side of the development driveway(s)?
_____ ITE trip generation handbook
_____ Actual survey done? Location? _____
_____ Other. Explain. _____

Comments: _____

1G. Trip Assignment

_____ Stick diagram for each major intersection on either side of the development driveway(s)?
Percent primary trips 100%
Percent passer-by trips _____
Percent diverted trips _____

Basis for using above-listed percentages:
_____ Existing traffic patterns of adjacent street
_____ Zip code survey
_____ Gravity model
_____ Other. Explain._____

Comments: Requested revisions to account for the likely use of local roads and trips toward Cumberland. The trips should be traced to the intersections where the MaineDOT threshold is no longer met.

Section 2 - Traffic Crashes

___Year(s) of MDOT crash records for study area
_____Number of high crash locations
_____ Collision diagrams provided.

Mitigation provided for each high crash location: _____

Other traffic problems: _____

Comments: ___Requested that the limits of crash data be from I295 to the north, Cumberland to south, Franklin to east and Forest to west. A review will be required at Marginal/Elm, although it is not a High Crash Location.

Section 3 - Development Entrances and Exits

3A. Entrance and Exit Locations

Distance to nearest intersecting road or town line (to the nearest hundredth of a mile)

_____ Number, width and surface of each proposed entrance/exit

3B. Plan View of Each Intersection Created

Names of intersecting road _____

Posted speed limits _____

Entrance/Exit Sight Distance: Left Right

3C. Entrance/Exit Design

_____ Lighting
_____ Driveway spacing and corner clearance (Access Management)
_____ Adequate sight distance for vehicles exiting development
_____ Entrance grade (see fact sheet)
_____ Entrance/exit widths less than 42 feet (12.8 meters)
_____ Left turn lane
_____ Right turn lane
_____ Signal warranted
_____ Lane encroachment
_____ Separation islands (see fact sheet)
_____ Drainage study using 50 year storm for culverts and to connect to MDOT system
_____ Capacity Analysis
_____ Queuing Analysis
_____ Study to be submitted to MDOT Division Engineer

Comments: It was requested that information be provided for all driveways, not just the garage. Driveway will be reviewed for truck movements.

Section 4 - Title, Right or Interest

x Title, right or interest in project site
x Title, right or interest in entrance/exits
x Title, right or interest in drainage easement affecting MDOT

Section 5 - Public or Private Rights-of-Way

x Location and width or proposed streets, easements and other public or private rights-of-way
x No signs, structures or pavement connected to the entrance

Section 6 - Schedule

Project schedule: 2026

Further study items required **($500.00 additional fee)**:

Section 7 - Full Traffic Study

KEY COMMENTS

- **The applicant will revisit the mode share based upon looking at individual uses, traffic data from new counts, and the understanding that demographics in the study area may be skewing the ACS survey.**
- **Accounting for nearby schools (Portland High School and Baxter Academy) in the traffic counts.**
- **Parking calculations to be provided.**
- **Trip assignment should reflect other parking areas and not just the garage.**
- **Internal capture seems acceptable, except for the Retail portion during the PM peak hour.**
- **A bike/ pedestrian facility analysis is required within ¼ mile of the site per MaineDOT regulations.**
- **The study area is likely to include the following. This list is pending updated information.**
    - **Marginal Way/Elm**
    - **Marginal Way/Forest (and maybe Forest/High due to proximity)**
    - **Cumberland/Preble**
    - **Cumberland/Elm**
    - **Portland/Preble**
    - **Forest/Preble (and maybe Park/High and Park/State due to proximity)**
    - **Oxford Street intersections dure to Two-Way conversion**
    - **Garage entrances**

Consulting Traffic Engineer

- According to information contained in the applicant's Traffic Movement Permit application, the proposed project will generate traffic levels that would require a Traffic Movement Permit. Accordingly, I would suggest a condition of approval be included that notes occupancy of the project cannot occur until the Traffic Movement Permit is issued and all required mitigation of that permit is implemented as defined.

- Outstanding Comment: The applicant has not provided a layout of the parking lot on Lancaster Street west of Cedar Street, nor confirmed whether it meets the City corner clearance requirements. Submit a layout that meets City dimensional requirements, along with defining the improvements at the Lancaster Street driveway (e.g., radii, sidewalk section between the driveway and Cedar Street). Lastly, I would suggest some form of buffer/separation be provided between the parking spaces and sidewalk on Lancaster Street.

- Outstanding Comment: The applicant shall submit a dimensioned plan sheet of the two parking lots on Cedar Street to document driveway width, aisle width and parking stall size. The layout shall meet City dimensional requirements and/or documentation on waiver requests shall accompany the plan sheet.

- The applicant has provided turning template graphics and those graphics indicate reasonable access can be provided. However, it is unclear whether the design vehicle used is representative of trucks that will service the site. The applicant shall provide documentation that the design vehicle used is appropriate.

- Outstanding Comment: The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards of §1.5.1.A. of the Technical Manual.

- It is likely that the traffic study associated with the Traffic Movement Permit will include an evaluation of converting Oxford Street from one-way to two-way traffic flow. The applicant should confirm the proposed northerly curb line would be compatible with a two-way conversion.

Fire

At this time, Planning staff has not received comments from the Fire Department for this application. While no comments have been received, this does not result in a de facto approval from the Fire Department. Contact Captain Jason Grant (jgrant@portlandmaine.gov) to confirm if any additional modifications need to be made to meet the City's Fire Code.

Forestry

General comment:

We appreciate the applicant's revisions to date, particularly including further information on silva cells and on site stormwater management elements proposed.

Specific comments:

Silva Cell Details Sheet

Silva Cell System - Note V - Underdrain with first flush capacity to wash salts and other surface water pollutants should be included in proposed systems subject to salts and deicing materials.

Tree Grate at Silva Cells -Include additional information on root barrier material along specified edges to protect

adjacent infrastructure and guide root growth as appropriate.

Tree Grate at Silva Cells and Silva Cell System - Note S - All street tree systems without an open bed design and curbing or edge guard should have openings provided around tree trunk and root flare that are 4' in diameter. Openings should have root ball planted up to base of grate, consider a cobble or gravel infill material up to root flare if soils within opening need to be flush with adjacent grate edge.

Landscape Materials and Layout Plan

Silva Cell & Paver Detailing - Please clarify if the silva cell system will extend under a portion of proposed unit pavers along street tree plantings areas. Applicant is strongly encouraged to utilize silva cells in this way as to capture permeable paver potential and expand soil volumes for street tree plantings. Street tree wells or other tree planting areas should provide a minimum volume of 600 cubic feet of soil material per tree.

Preferred volumes are as follows:

- Large Trees: 1,500 cubic feet of soil within a 27 foot radius (the radius includes tree well planting area and any adjacent subsoil zones that could support / reasonably accommodate rooting growth).
- Medium Trees: 1,000 cubic feet of soil within a 22 foot radius.
- Small Trees: 600 cubic feet of soil within a 16 foot radius.

Where soil volumes within the maximum allowable radii for adjacent trees overlap, up to 25% of the required soil volume per tree may be shared.

For trees that are designed to have a covered soil volume which connects to an open area (for example behind the sidewalk), the open area can be considered as part of the required soil volume.

For existing trees to remain, the root structure of existing tree shall be protected to the extent feasible and provided with additional soil volumes to meet the above requirements.

Soil Volume Calculation shall be calculated as:

- Area of Open Soil x Depth of Soil) plus (Area of Covered Soil x Depth of Soil)
- All soil types are calculated at full volume.
- There may be multiple soil volume areas included in the calculation depending on design

The applicant is encouraged to find opportunities to create continuous/connected, unified soil volumes along linear blocks of street tree plantings where possible, or individual tree planting conditions that support a mature and healthy street tree. Street tree and street tree support infrastructure shall provide consideration and accommodation for:

1. Sufficient soil volume
2. Trunk flare and adequate space / capacity for trunk and trunk flare growth over time
3. Water into soil (very important part of success)
4. Water out of soil
5. Sufficient room for canopy growth of tree
6. Specifications to ensure quality of nursery stock.

Landscape Planting Plan

(3) LL tree planting call out. - "LL" tree code not listed on planting schedule.

"PQ" call out. - Please describe planting area conditions for proposed Virginia creeper plantings and clarify how planting will be contained. For trellis - provide additional section / elevation and detailing information for trellis and planting condition with relationship to building.

Plant schedule - Liquidambar styraciflua - Most cultivars of sweetgum eventually produce seed pods, which are round form and treacherous along walkways. Recommend alternate fastidget species at proposed location. All walkways should be clear of any species that typically produce seeds or fruits that would track inside buildings (staining from various fruits) or when trod upon do not compress and would form a walking hazard (sweet gum seed pods, buckeye or chestnut seeds, etc...)

Plant schedule - RA Rhus aromatica - Grow low sumac habit and form are not conducive to spaces adjacent to walkways or high profile areas. Consider alternate species "aronia melanocarpa'.

Plant schedule "XS" xanthorizza simplissima - Ensure yellowroot and other spreading plants that may undesirably overtake planting areas are edged or otherwise contained adequately to prevent maintenance issues and impacts to adjacent planting areas. Hay-scented fern, Virginia creeper, and possibly Virginia sweetspire can be aggressive in growing habits and should be adequately contained where risk of intrusion or escapement is possible.

L2 - Plant Schedule - Consider pin oak (Quercus palustris) where overhead clearance is appropriate and if soils are not alkaline.

L2 - Plant Schedule – Forestry would strong recommend the "Jefferson" cultivar of elm species because of a stronger central leader growth habit and less problematic crown growth pattern. Other elm species tend to have overcrowded leader formation and co-dominant leader growth.

Plant Schedule - "CC" tree species – A small tree species along walk edge raises some concerns about inadequate and inconsistent street tree canopy at maturity Consider larger canopy species, such as pin oak species suggested above, for better reduction of urban heat island effect and more uniform canopy cover with Ulmus species, or a medium tree species. If applicant insists on smaller species, please provide rationale. Carpinus species typically are slower growing and less drought tolerant than proposed site location will accommodate. Prunus sargentnii, gleditisa or other medium sized tree species could be more appropriate.

Pin Oak Removal – The pin oak removal has some potential to be controversial for the neighborhood and would likely benefit from a more personalized update and coordination with neighborhood members. Forestry would strongly encourage pin oaks to be incorporated into street tree design, particularly as a replacement for Carpinus Caroliniana species (shown as "hornbeam" species in plant schedule). Forestry is still reviewing the removal of the pin oak tree and will provide additional comments in a future correspondence.

Landscape Materials Plans

Pavers & Soil Volumes - For unit pavers along the side edge of proposed street tree areas of streetscape, applicant is strongly encouraged to extend subsoil volumes under paver areas and along street for additional rooting for street tree elements. Consider bridging or an approved volumetric design to ensure paver areas can support a soil volume of street trees. See earlier comment about ensuring paver details, landscape materials plan callouts and silva cell details / systems relate and reference each other clearly and consistently. Show where pavers are being integrated into silva cell systems and extent of street tree subsoils in plan (ghosted or dashed line for example)

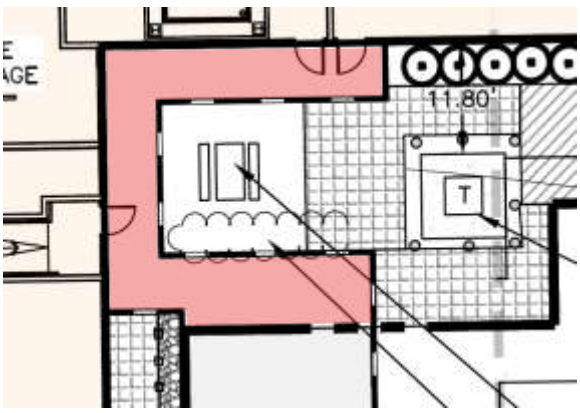
Parking

- Two 30-minute zone parking spaces on Elm Street are acceptable, and if necessary, three 30-minute zone parking spaces on Lancaster Street, but it seems excessive. The remainder of spaces labeled as "No signed for time limits or usage" should be signed as 1-Hour or 2-Hour spaces as they currently are.

Planning

- Please refer to the attached design memorandum for comments related to the building and site design. Planning staff is in receipt of two documents related to the splitting of the building into two structures and will provide comments in a subsequent letter.
- Based on responses from the Applicant, Planning staff is awaiting the submission of:
    - Updated architectural drawings to demonstrate how roof-mounted utility structures will be screened
    - Information on the estimated cost, with documented sources, of relocating all electrical service (including utility poles) underground and any barriers to revising existing overhead facilities
    - Updated application materials related to the design and location of mechanical equipment (façade- and roof-mounted)

  Planning staff will provide comments in a future comment letter once these items have been submitted.
- §14.6.1.B.1: Based on the current location and proposed interior chutes for solid waste, it is unclear how residents on the ground floor in the western portion of the building would dispose of solid waste. Submit a narrative describing how ground-floor residents would dispose of solid waste. Staff recommends providing options for solid waste disposal that do not necessitate ground-floor residents who use assistive devices from having to exit onto Elm Street, go along to Oxford Street, and go to the back of the building to dispose of solid waste.
- Outstanding Comment: §14.6.1.D.2.a.: Indicate the location of proposed signage to comply with §1.12.4. of the Technical Manual.
- Outstanding Comment: §14.6.1.D.3.b.: Snow storage is proposed on the northwestern portion of the site, but does not clarify how encroachments onto pedestrian walkways (shown to the right highlighted in red) will be avoided. Update the site plan set to demonstrate how snow storage will not result in encroachment on the walkway.



- §14.6.2.C.4.: Update the submitted *Conformity with Land Use Ordinance* document to identify how the application is providing the required number of street trees (201) through new plantings (20 street trees) or alternative mechanisms (Fee in-lieu or existing plantings), with any new plantings labeled as an alternative mechanism in the landscaping plan sheet.
- §14.6.3.B.: Upon review of the submitted photometric plan, Planning staff requests the following updates::
    - Update the photometric plan and site plan to comply with the spacing and fixture requirements for

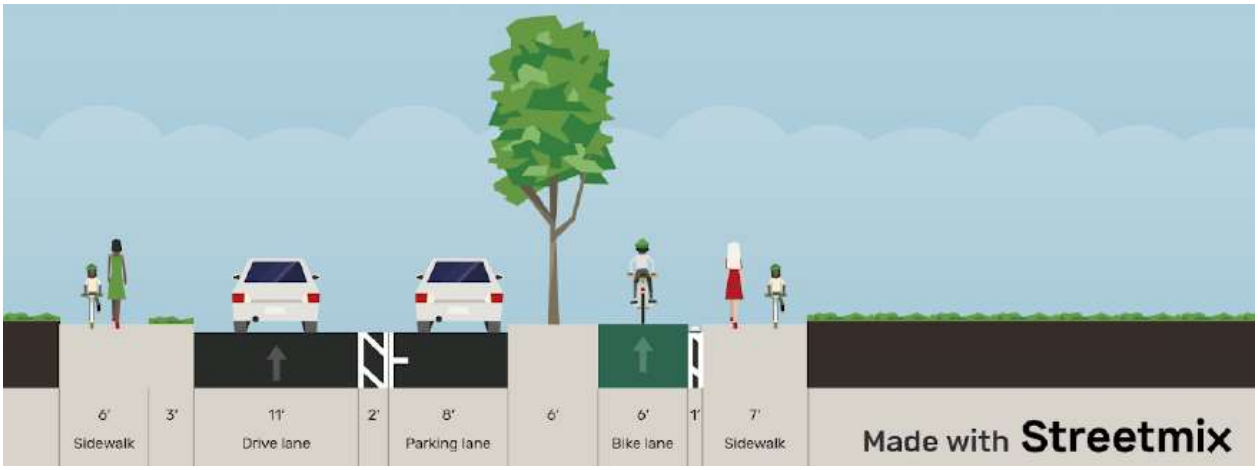
Downtown decorative lights in §10.4 of the Technical Manual.

- Confirm compliance with §12.3.1. of the Technical Manual (Maximum to Minimum Illumination levels shall not exceed a ratio of 20:1, and with the average illumination level (1.25 fc) of §12.3.2. of the Technical Manual on the photometric plan.
- Update the photometric plan to comply with §12.3.2. of the Technical Manual:
  - Minimum (0.2 fc) and maximum (5.0 fc) illumination levels. The submitted plan includes minimum illumination of 0 fc and a maximum of 8.4 fc.
  - Average illuminance level (0.5 fc), uniformity ratio (Average-to-Minimum: 3:1), and maximum illuminance level (4.0 fc) for surface parking
  - Uniformity
- Update the photometric plan to ensure that the proposed light trespass across property lines does not exceed 0.1-foot candles with the property boundary of 44 Cedar Street.
- Add notes on the photometric plan that the proposed wallpacks will utilize models that do not exceed 3,500 lumens or 3,000K CCT to comply with the standards of §12.3.3. and §12.3.5. of the Technical Manual.
- Update the photometric plan and site plan to provide lighting along the mid-block pedestrian connection on Oxford Street, while managing light trespass onto 215 Oxford Street. A combination of ground-mounted lighting and required street lighting may help to meet this requirement.

Public Works

Transportation

- The applicant shall review the placement of the trees in relation to the on street parking spaces. Passenger doors may conflict with the (raised curb) tree wells.
- Improvements in the ROW shall be dimensioned on the plan view sheets. For example ROW, street, lanes sidewalk, esplanade driveways (and other improvements) widths as well as at locations when a width changes. In this case it is still needed from curb face to curb face. The overall ROW width should be shown for streets impacted by the project (Elm Street and Lancaster Street). In addition, the Applicant shall consider the option of shifting the curb line of Elm Street farther to the east in order to construct a cycle track from Oxford Street to Lancaster Street, including transitions to and from the existing in-street facility. A possible cross-section for Elm Street North of Oxford Street is included below:



- What is the timing proposed for the on street parking outside of the 30min signed spaces?
- The applicant shall submit a draft sidewalk easement for review.
- The applicant shall submit a draft maintenance agreement for the Bayside master plan that addresses each phase / project proposed under one agreement. Would parking meters be proposed? The Parking Division should weigh in on this item as well.
- The City has invested heavily in this area. All of the sidewalks on Elm Street between Oxford & Lancaster Streets are less than seven years old (the west side was constructed last year), including the pedscale lighting. DPW asks, to the extent that is feasible, that the applicant limit disturbance or reconstruction, and reuse equipment/materials when possible.

Water Resources

- DPW recommends that the proposed catch basin where the untreated flow enters the R-Tank have a 3' sump and be equipped with a trash guard type device to limit the migration of debris into the storage system.
- DPW recommends that the submission of a plan and profile design sheet for the proposed off-site storm drain extension on Lancaster Street, with DPW review and approval, be submitted as a condition of approval.

TDM Program Manager

I have reviewed the revised TDM Plan and find that it and the revisions made in response to comments substantively meet the plan requirements as specified in the Technical Manual (as amended November 2022).

Zoning

- The proposed *Elm Street Gateway Sign* identified in the site plan sheet and Landscape Architecture renderings is classified as a monument sign in the Land Use Code. §20.6.1.A. of the Land Use Code does not permit monument signs in the public right-of-way and there is not authorization for monument signs elsewhere in §20 of the Land Use Code. The application shall be updated to comply with the standards of §20 of the Land Use Code.

Dear Danielle McGowan and Sam Lebel,

The City's Development Review Team has completed a review of your August 30, 2023 resubmission for project # PL-002403-2023 which proposes the development of a ±162,000 square foot mixed-use project, with 201 residential units and three retail units totaling 6,000 square feet at 89 Elm Street in the R-6 and B-3 zones. This development triggers major site plan review and a traffic movement permit application, and is subject to the following regulations:

- Site Plan – Article 14.6
- Zoning – Table 7-A and Table 7-E, Zoning Performance Standards (§6.8), Affordable Housing Density Bonus (§18.2.4), and Downtown Entertainment Overlay Zone (§8.2)

An overview of the City's review can be viewed in the attached project review worksheets and peer review comments.

Next Steps

Please review all feedback and reach out to the project review manager if you have any questions or would like to discuss this feedback in more detail. In order to proceed, the applicant shall prepare a written response to all feedback, and shall update plans, documents and other materials as necessary to address the above listed comments. The applicant shall notify the project review manager when a resubmission is uploaded to ProjectDox. Once received, the project review manager will notify the applicant of their scheduled review timeline for this resubmission.

Sincerely,

Zach Powell, AICP
Senior Planner

Attachments

1. Site Plan Worksheet
2. Zoning Worksheet
3. September 22, 2023 Design Review Memorandum
4. Peer Review Comments

Site Plan Review Standards (Sec. 14.6)

Transportation Standards (Sec. 14.6.1)

Standard	Discussion	Reviewer	Finding
Impact on Surrounding Street Systems	Overview: This application has exceeded the minimum threshold for a Traffic Movement Permit and is current included as part of the Bayside MDP Traffic Movement Permit review. City Staff await the submission of Part 7 of the Traffic Study, including an analysis of the two-way conversion of Oxford Street. Updates Requested • Applicant to address comments from Tom Errico submitted as part of the related Traffic Movement Permit, as well as submitting Part 7. Approval of the TMP will need occur concurrently or before the approval of this site plan application.	Tom Errico, P.E., T.Y. Lin (Att. 4)	Not Met
Access and Circulation	Overview: Updates to the application have shifted the proposed solid waste storage to Lancaster Street, which reduces pedestrian conflicts and vehicle sizing constraints along Cedar Street. Loading spaces have been identified in the site plan set along Elm and Lancaster Streets for use by commercial and residential tenants. As mentioned in the assessment of the Impact on Surrounding Street Systems section, review of the associated TMP is ongoing and will require approval before or concurrent with this site plan application. Updates Requested • Applicant to address comments from Tom Errico submitted as part of the related Traffic Movement Permit, as well as submitting Part 7. Approval of the TMP will need occur concurrently or before the approval of this site plan application.	Tom Errico, P.E., T.Y. Lin (Att. 4) Zach Powell, Senior Planner	Not Met
Public Transit Access	Overview: The site is located less than ¼ mile from an existing transit shelter at METRO Pulse and is not required to provide a transit shelter on-site. No action required.	Zach Powell, Senior Planner	Met
Parking	Overview: Indoor bicycle parking & appropriate signage has been included to meet the minimum bicycle parking requirements for the site (80 required, 81 proposed). Snow storage has been identified on the site and designed to prevent encroachment & conflict with pedestrian walkways and landscaping. Outstanding comments remain from Consulting Transportation Engineer Tom Errico as to the compliance of proposed on-street space widths and existing lots being updated or modified, including the lot with four ADA spaces located at the corner of Cedar & Lancaster Streets. Deviations from the Technical Manual Standards of Section 1 will updates to the application to comply or the submission of formal waiver requests.	Zach Powell, Senior Planner Tom Errico, P.E., T.Y. Lin (Att. 4)	Not Met

	Updates Requested: • Update the application to satisfy comments from Tom Errico (Attachment 4)		
Transportation Demand Management	Overview: Upon review of the June 19th TDM Plan, Transportation Program Manager Bruce Hyman found the plan to meet the TDM Plan requirements in the Technical Manual. No action required.	Bruce Hyman, Transportation Program Manager (Att. 4)	Met
Environmental Quality Standards (Sec. 14.6.2)			
Standard	***Discussion***	***Reviewer***	***Finding***
Preservation of Significant Natural Features	Overview: As a surface parking lot within a densely developed urban context, there are no significant natural features located on the subject property. No action required.	Zach Powell, Senior Planner	Met
Landscape Preservation	Overview: The proposed removal of a pin oak street tree along Oxford Street has been reviewed by members of the Forestry Division. Given the proposed investment of the Silva Cell systems and proximity of the building to the tree roots, City Forester Mark Reiland has concluded that based on the submitted building design, the pin oak tree should be removed. In the event that Silva Cells are removed from the proposed project, the removal of the pin oak tree will need to be reassessed. Given the recent plantings of street trees as part of streetscape updates to Elm Street, the Department of Public Works requests that the Applicant explore opportunities to replant existing trees on site or elsewhere in the City. Updates Requested • None at this time. If Silva Cells are removed from future versions of the landscaping plan, further consultation will need to occur between the Applicant and the Forestry Division.	Bob Massengale, Project Manager (Att. 4) Janine Ba, Project Engineer (Att. 4)	Met
Site Landscaping and Buffers	Overview: The Parks Department appreciates the project approach to ensure long term health and performance of proposed street plantings. Minor comments from the Parks Department have been included in Attachment 4, along with a recommendation to remove granite curing around tree wells to allow for irrigation and first flush type capability for the Silva Cell systems. The site has 355 feet of frontage in the R-6 district, which requires the 12 shade trees or equivalent of a shade tree via 6 plantings (1 per 30 feet). The submitted landscaping plan complies by retaining an existing tree, proposing the planting of 11 new trees, and multiple new plantings, which exceeds the requirement. Buffers have been provided for the proposed solid waste dumpster and roof-mounted heat pump units. Staff have provided some additional comments about the proposed heat pump screening on the roof.	Bob Massengale, Project Manager (Att. 4) Zach Powell, Senior Planner	Not Met

	The site has 38 parking spaces which require the planting of two trees (or one tree and three shrubs) per five parking spaces. 33 shrubs and 7 trees are proposed in landscaped areas surrounding the parking areas, which exceeds the required parking landscaping for the site. One street tree is required per dwelling unit (201), with 21 street trees included in the landscaping plan. The remaining street trees will be provided through a contribution to the City of Portland Tree Fund. Through the plantings of the proposed trees and contribution to the Tree Fund, the application will meet the minimum Street Tree planting requirements. Updates Requested • Update application to satisfy comments from the Parks Department.		
Water Quality, Stormwater Management and Erosion Control	Overview: The resubmission has addressed the majority of comments provided by Consulting Stormwater Engineer Lauren Swett. An outstanding comment that have not been addressed is included below in the Updates Requested section. Updates Requested • The Applicant should provide confirmation from the system manufacturers for the proposed design of the StormFilter and R-Tank systems. In the event that confirmation cannot be provided prior to approval, confirmation from manufacturers prior to issuance of a building permit will be recommended as a condition of approval.	Lauren Swett, Consulting Stormwater Engineer (Att. 4)	Not Met
Public Infrastructure and Community Safety Standards (Sec. 14.6.3)			
Standard	***Discussion***	***Reviewer***	***Finding***
Consistency with City Master Plans	Overview: The submitted plan is consistent with City Council-approved master plans by: • Increasing on-site stormwater detention to minimize flow rates to the Back Cove South Sewershed (**CSO Abatement Study, 1993**). • Proposing the construction of dense housing proximate to Downtown and upgraded pedestrian facilities to promote walkability and connections to open space (**Peninsula Transit Plan, 2009**). • Providing infill development within a transit-oriented location with pedestrian-oriented streets to make walking more inviting, and connection to bus routes, bike networks, and other mobility options easier to access to other parts of the city. Providing residential density as well as employment and job density that can support and drive transit ridership as well as walk-to-work opportunities (**One Climate Future, 2021**).	Zach Powell, Senior Planner	Met

Public Safety and Fire Prevention	Overview: The updated application has addressed staff concerns related to the side yard on Oxford Street by including wall packs to provide sufficient lighting for the pedestrian pathway. An assessment of the compliance of the application with the City's Fire Code has been submitted to the Fire Department and no updates have been requested. No further action is required.	Zach Powell, Senior Planner	Met
Public Utilities	Overview: The submitted approach for submission and review of a plan and profile design for the proposed storm drain extension on Lancaster Street as a condition of approval has been acknowledged by Water Resources and no further action on this topic is required of the Applicant at this time. City staff continue to encourage the relocation of overhead utility lines from the west to east side of Oxford Street if burial is not possible to promote positive growing conditions for the new proposed cherry trees. As requested in previous comments, Consulting Stormwater Engineer Lauren Swett has requested confirmation of utility ability to serve prior to Planning Board action or as a condition of approval.	Janine Ba, Project Engineer (Att. 4) Bob Massengale, Project Manager (Att. 4) Zach Powell, Senior Planner Lauren Swett, Consulting Stormwater Engineer (Att. 4)	Not Met
	Updates Requested • The Applicant should provide confirmation of utility ability to serve. In the event that confirmation cannot be provided prior to approval, confirmation prior to issuance of a building permit will be recommended as a condition of approval.		
Site Design Standards (Sec. 14.6.4)			
Standard	***Discussion***	***Reviewer***	***Finding***
Massing, Ventilation and Wind Impact	Overview: As submitted, the building design will not result in negative ventilation or wind climate issues or diminution in value and utility of neighboring structures. Venting has been relocated to the roof to avoid conflicts with public spaces and adjacent residential properties. No further action required.	Zach Powell, Senior Planner	Met
Shadow	Overview: A shadow study was submitted and reviewed under the Master Development Plan approval. Based on the location of the resulting shadows, the proposed structure would not result in negative impacts on adjacent open spaces, including the area of 163 Lancaster Street proposed to be converted into a public open space in Phase 5b of the MDP. No further action required.	Zach Powell, Senior Planner	Met

Snow and Ice Loading	Overview: Snow storage has been relocated on the site to avoid conflicts with pedestrian pathways, proposed open space, and utility infrastructure. The use of a flat roof in the proposed building design does not present significant negative concerns related to ice loading. No further action required.	Zach Powell, Senior Planner	Met
View Corridors	Overview: The site is not located along a view corridor. No action required.	Zach Powell, Senior Planner	Met
Historic Resources	Overview: The proposed development is not located within a locally designated historic district, or within 100 feet of a locally designated historic district or landmark. While the site is not within or proximate to locally designated historic districts, the site is adjacent to two structures predating the Great Fire of 1866 and has the potential of having buried portions of former structures located within or adjacent to the site. Buried portions of colonial and post-colonial period structures or built features located on the Portland Peninsula predating the Great Fire of 1866 are identified as local archaeological resources to be protected under §14.6.4.E.3. of the Land Use Code. Given this potential, the following note was incorporated as Demolition Note #5 in the site plan set: *Upon a finding of archaeological resources on the site, consultation with the City of Portland's Historic Preservation Program and the Maine Historic Preservation Commission is required to determine appropriate next steps.* No action required at this time.	Zach Powell, Senior Planner	Met
Exterior Lighting	Overview: Updates have been made to address comments on the average and maximum illuminance levels for parking, uniformity for the overall application, and wallpack lumen levels. Outstanding comments remain for the average illumination for the entirety of the site, as well as the maximum permitted illumination level (5.0 required; 5.8 proposed at Elm Street entrance). Wallpacks have been added to respond to staff comments on illumination for the pedestrian pathway in the Oxford Street side yard. Based on the updated photometric plan, it is unclear what the light trespass onto 215 Oxford Street will be since the recorded foot candle values exceed 0.1 at the lot line. As mentioned in the previous comment letter, ground-mounted or bollard lighting may be able to satisfy both requirements. Updates Requested	Zach Powell, Senior Planner	Not Met

	• Update the application to comply with average and maximum illumination levels for the entirety of the site or submit waiver requests with narrative justifications. • Submit additional photometric information to confirm or update the photometric plan to ensure that light trespass will not exceed 0.1 foot candles onto 215 Oxford Street.		
Noise and Vibration	Overview: Updates to the application have shifted façade-mounted heat pumps to the roof, which has increased the separation between equipment and abutting residential properties. As part of meeting design considerations in comments under the design standards section, updates to screening will enhance conformance with this section. Updates Requested • Refer to screening comments under Design Standards section.	Zach Powell, Senior Planner	Met
Signage and Wayfinding	Overview: The submitted plan has been updated to comply with Article 20 by removing the proposed monument sign in the public right-of-way at the intersection of Elm & Oxford Streets, as well as identify locations for future signage to direct residents towards indoor bicycle parking locations to meet the requirements of §1.12.4 of the Technical Manual. As the Applicant continues to develop residential and commercial signage for the site, Planning Staff encourage the Applicant to review the requirements of Article 20 (Signs) and identify strategies to support the connected intent of the Bayside MDP through permitted wayfinding signage. No further action at this time.	Zach Powell, Senior Planner	Met
Design Standards	Overview: Updates have been identified in the September design memorandum to comply with the Downtown Urban Design Guidelines *Relationship to pedestrian environment* and *Façade proportion and composition*. A recommendation has been included to allow for the interior driveway between the northeastern façade of the building and the rear lot line of 44 Cedar Street to be redesigned/allow for a shared-use pedestrian plaza. Additionally, a note has also been included about coordination with the Public Art Committee on the proposed public art at the intersection of Elm & Oxford Streets. Planning Staff encourage a follow-up design discussion with the Applicant team to walk through remaining comments to help support future application updates. Updates Requested • Update the application to satisfy comments from the September design memorandum.	Sean King, Urban Designer (Att. 3)	Not Met

Zoning Use Review (Article 6)

Use Permissions (Table 6-A – Table 6-F)

Proposed Use	*Permitted, Conditional or Accessory Use*	*Zone*	*Use Standard*
Multi-family dwellings	***Permitted***	R-6, B-3	None
Retail	***Permitted***	B-3	6.4.15

Supplemental or Accessory Use Standard

Standard	*Discussion*	*Reviewer*	*Finding*
6.4.15	Overview: Wholesale and bulk purchase lumber and construction supply sales are not permitted in the B-3 Zone. The proposed retail uses of the site do not include any of the aforementioned uses.	Zach Powell	Complies

Zoning Performance Standards (Sec. 6.8)

Standard	*Discussion*	*Reviewer*	*Finding*
6.8.1	Overview: In the B-3 zone, all development, all building and site alterations, and all provision of landscaping or other pedestrian amenities shall be consistent with the Downtown Urban Design Guidelines. In the attached September 22nd Design Memorandum for the project, there are outstanding comments on relationship to the pedestrian environment and façade proportion and composition. Updates Requested Application to be updated to satisfy comments from the September 22nd Design Memorandum.	Sean King, Urban Designer (Att. 3)	Does Not Comply
6.8.8	Overview: In all mixed-use zones, sites shall be landscaped to screen parking and accessory site elements, including storage and solid waste receptacles, from the right-of-way, public open space, or abutting residential zones. Surface parking on the site is screened by the building from the B-3 district and the solid waste receptacle is screened with an 8-foot stockade fence shown in Site Plan Sheet C-41.	Zach Powell	Complies
6.8.12	Overview: There shall be no exterior storage with the exception of fully enclosed receptacles for solid waste disposal. The sole exterior storage for the site is a fully enclosed solid waste disposal receptacle.	Zach Powell	Complies

Zoning Dimensional Review (Article 7)

Dimensional Standards (Table 7-A & Table 7-E)

Standard	B-3 Requirement	R-6 Requirement	Proposed	Finding
Lot Size (SF)	-	2,000 square feet	34,771 square feet	Complies
Area per D.U.	-	725 square feet	1,960 square feet	Complies
Street Frontage	15 feet	20 feet	883 feet	Complies
Front Setback (Min)	-	5 feet	7.6 - 18 feet	Complies. Expanded front setback permitted in MDP approval.
Front Setback (Max)	5 feet	-		
Rear Setback	-	10 feet	10.40 feet	Complies
Side Setback	-	5 feet	5.25 feet	Complies
Stepback (Min)	-	10 feet (Side) 15 feet (Rear)	10.25 feet (Side) 15.40 feet (Rear)	Complies
Building Height	55 feet		55 feet (R-6) 80 feet (B-3)	Complies
Lot Coverage (Max)	Not Applicable	60%	43%	Complies
Landscaped open space ratio (Min)	-	20%	28%	Complies
Undifferentiated Wall (Max)	30 feet	-	14 feet	Complies

Affordable Housing Density Bonuses (Sec. 18.2.4)

Bonus Type	Allowed Under Density Bonus	Proposed	Finding
Maximum Density	2.5 x base	Base density	Complies
Maximum Height	25 feet	25 additional feet	Complies
Minimum Setback	10 feet	Base setbacks	Complies

Overlay Zones (Article 8)

Downtown Entertainment Overlay Zone (8.2)

Standard	Discussion	Reviewer	Finding
8.2.3	The site is not located within 100 feet of an existing business with an entertainment license and does not propose a use/uses that would require an entertainment license.	Zach Powell	Complies

Subject:	89 Elm Street – Major Site Plan Review
Zone:	B3
Date of Review:	Friday, September 22, 2023 Design Review
Reviewer(s):	Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID:	PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5,* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles, and a mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission and bold text denotes standards being met within resubmission materials.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - Met

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing, and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Staff is recommending the Applicant consider the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to enhance the corner as a gateway element consistent with the approved MDP.

Use of quality exterior material and architectural detailing at pedestrian scale; - Met

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows for the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane that Staff finds to reduce the overall scale of the building that is consistent with the approved MDP.

Consistency of design and materials for streetscape and pedestrian amenities; - Met

Staff comment: The resubmitted plans for the proposed development include streetscape and pedestrian amenities within a furnishing zone with street trees in tree wells, lighting, and brick pavement that is consistent with the approved MDP. A minimum six-foot concrete sidewalk is proposed throughout by way of a public access easement onto private property.

Framing of outdoor open space and linkages; - Met

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. The resubmitted plans for the proposed development include an expanded furnishing zone with pedestrian amenities and an accessible concrete sidewalk to connect to adjacent outdoor open spaces that is consistent with the approved MDP.

A clear conveyance of the function and significance of various buildings, entrances, and features; - Met

Staff comment: The proposed building design conveys a clear function of building uses with the distinction of retail through storefront windows, entrances, and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances, and organization of exterior materials that is consistent with the approved MDP.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, *Land Use Code Section 14.6.4.I Design standards.*

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Staff comment: The exterior design along the street-facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to the ground plane to allow for recessed planting areas or trellis system for vines).

Furthermore, the Applicant has resubmitted plans to indicate changes in materiality, awnings and entrances to enhance the character and attractiveness at the lower 35 feet of building facades facing the street. Staff recommends greater articulation at the first 35 feet at Elm Street to mitigate the grade change along the street from Lancaster Street to Oxford Street that is more consistent with the neighborhood context that includes brick infill beneath window frames, particularly along the Elm street facade of 185 Lancaster Street (Baxter Academy). In response to this observed neighborhood context, Staff recommends the Applicant add brick to reduce the amount of concrete foundation walls exposed directly at the lower 35 feet to improve the usability and attractiveness as an integral element of the streetscape pedestrian experience.



1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – Met

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant has indicated a VT of .7 or higher on the storefront window throughout the proposed development. The applicant has resubmitted plans that indicate awnings above the proposed storefront windows to contribute to a greater visual character at the first 35 feet that Staff finds appropriate.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - Met

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy, and accessible stoops that Staff finds appropriate.

3. Blank facades; and - Met

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration patterns throughout each street-facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - Met

Staff comment: A proposed building arcade with brick-cladding structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street that Staff finds appropriate.

B. Pedestrian Activities District (PAD)

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:

1. Sidewalk, crosswalk, and street paving materials; – Met

Staff comment: Concrete sidewalks in the proposed development include a minimum of a six-foot walkway for adequate pedestrian passage, along with brick paving in the furnishing zone of the right of way that Staff finds appropriate. The resubmitted plans include a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street that Staff finds appropriate.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – Met

Staff comment: The Applicant has resubmitted plans to include revised street trees, tree well types and irrigation that Staff finds is appropriate.

3. Lighting; - Met

Staff comment: The proposed development indicates new ornamental light locations within the right of way along Elm and Lancaster Street that Staff finds appropriate.

D. Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and – Met

Staff comment: The resubmitted plans for the proposed development include pedestrian amenities for bench seating, trash receptacles, art installation and signage that Staff finds appropriate. Staff recommends the Applicant continue to coordinate with the City's Urban

Designer regarding the art installation in the public right-of-way to conform with LUC Article 21 and public art guidelines for the City of Portland.

E. *Sidewalk vendors and sidewalk cafes.* – Met

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street that Staff finds appropriate to activate the street-level pedestrian experience.

F. *Urban open spaces.* – Met

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setbacks beyond the street build-to line and appropriate streetscape amenities to provide street trees, seating, and furnishings that Staff finds appropriate.

II. Relationship to existing development

A. Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:

1. Street walls and building setbacks; – Met

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with a street-level plaza and building atrium for outdoor seating is appropriate.

2. Open space; – Met

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. Building form, scale and massing; – Met

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks, and street-level experience. Building form, scale, and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would

step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variations include an articulation of lower floors with a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances, and other planes of the exterior wall.

4. *Façade proportion and composition;* – Not Met

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of the fenestration pattern at the building's middle, and change of material at the building's top. Staff finds the punched windows, recessed building elements to express entrances and vertically segment the building is appropriate.

The Applicant has resubmitted plans that modify the signature building roof-top element at the Lancaster Street and Elm Street intersection with a stepback from the building edge and expressed cornice that staff finds appropriate. Staff recommends a reduced height of the signature building roof-top element that eliminates the openness above louver screen fenestrations for a clear termination of the building's top articulated with the expressed cornice.

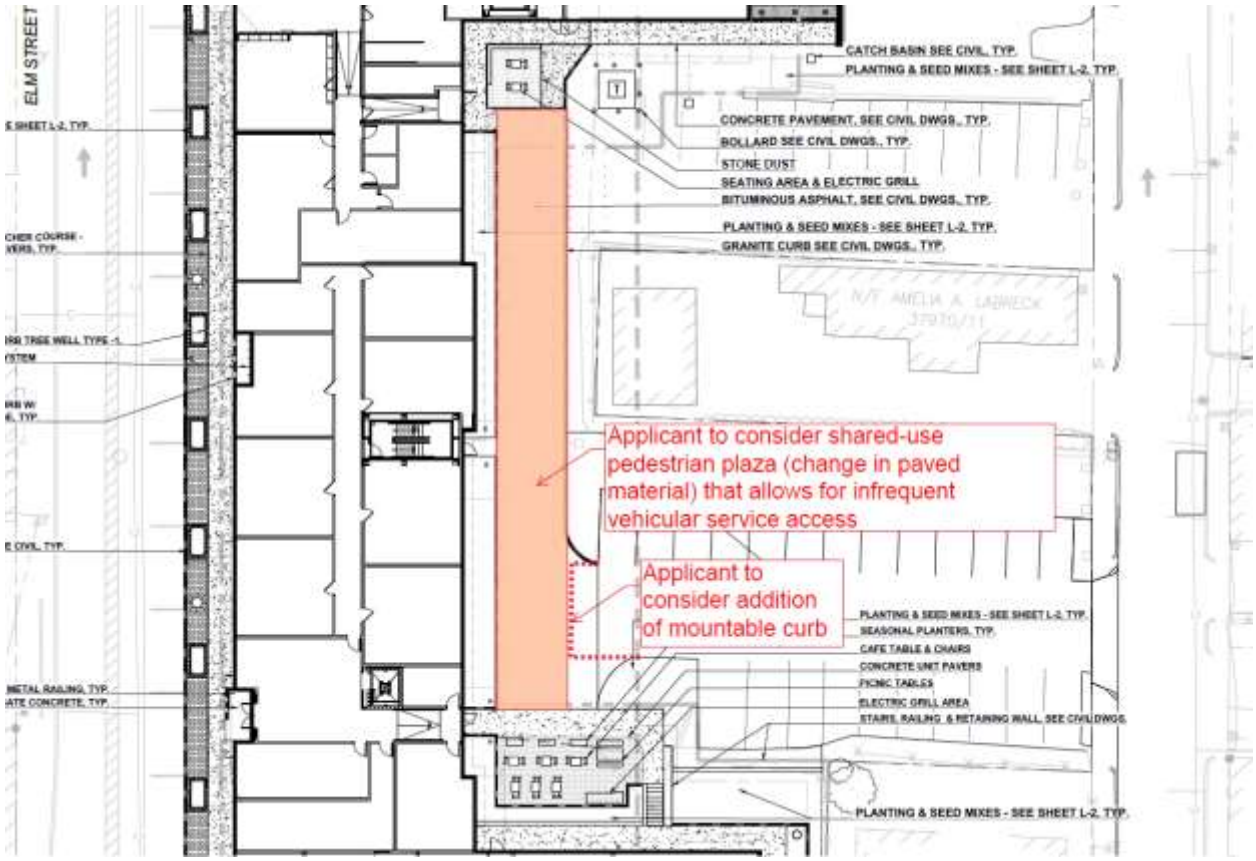
In addition, Staff recommends the Applicant explore the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to balance the building's massing and further transition the increased building heights towards Downtown.

5. *Pedestrian circulation and building entrances;* – Met

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the building's facade. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that Staff finds appropriate.

6. *Parking garage and surface lots;* – Met

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property. The Applicant has resubmitted plans that indicate the relocation of trash service to allow for additional open space for residences at the rear of the property to create an opportunity for an attractive pedestrian environment as a shared use with the access driveway that Staff finds to be used by vehicles infrequently. Staff recommends the applicant consider a shared-use pedestrian plaza that detracts from passenger vehicle use, potentially with a mountable curb at the driveway and a change in paved material type to promote security and attractiveness at the rear property for residences to access.



7. *Areas within the downtown* – Met

Staff comment: The proposed development would engage with the character of Downtown through reinforcement of the street wall, street-facing building entrances, municipal light fixtures, and street trees at a regular interval.

B. *Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks:* – Met

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follows:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground-level retail and building entrances. In addition, Elm Street would accommodate the addition of street trees, tree wells, and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.

4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street affords the highest solar exposure at the west elevation of the building.

III. *Roof-top appurtenances*

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building, – Met

Staff comment: Staff finds the location of rooftop mechanical equipment is screened effectively by locating away from the building's edge, the extension of the parapet walls, and consolidation within signature building roof-top element.

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. *Wind impacts*

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created. – Met

Staff comment: Staff finds the combination of building setbacks, recessed building planes, and other architectural elements, such as canopies and atriums assist in reducing wind impacts.

VI. *Setback from existing structures*

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. *Building tops*

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies – Met

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.* – Met

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.* – Met

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrians with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.* – Met

   Staff comment: The proposed development includes open space within the building setback areas that encourage active street usage that Staff finds an appropriate contribution based on the approved MDP distribution of open space beyond property site boundaries. The Applicant has resubmitted plans to include limited private open space for select residential units with balcony access, planting buffers to screen adjacent properties, parking lots and building façade elements. In addition, the Applicant has included two outdoor areas that enhance the communal open space of the development, Staff requests the Applicant consider additional shared-use opportunities (refer to design standard II. Relationship to existing development. 6. Parking garages and surface lots – Shared use) of the site programming to allow adequate open space for the residents.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas.* – Met

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

Zachary Powell <zpowell@portlandmaine.gov>

89 Elm Street - Traffic Comments

Tom Errico <thomas.errico@tylin.com> Tue, Sep 26, 2023 at 8:22 AM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Janine Ba <janineba@portlandmaine.gov>

Hi Zack – I have reviewed the updated application materials and offer the following status traffic review comments.

- This project is a phase within the West Bayside Master Plan, which is currently under review for a Traffic Movement Permit. A traffic study will be prepared in association with the TMP. The applicant should confirm that this project does not meet the threshold for a TMP as an individual project.

Status: According to information contained in the applicants Traffic Movement Permit Application, this project will generate traffic levels that would require a Traffic Movement Permit. Accordingly, I would suggest a condition of approval be included that notes occupancy of the project cannot occur until the Traffic Movement Permit is issued and all required mitigation of that permit is implemented as defined.

Current Status: A revised Section 7 Traffic Study is pending and accordingly the TMP approval is pending.

- The site plan is maintaining a driveway on Lancaster Street west of Cedar Street. The plan shall include a layout of the parking lot. The applicant shall confirm that this driveway meets city corner clearance requirements.

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Also, the corner clearance standard is for the Lancaster Street driveway and its proximity to Cedar Street. Also, the site plan should specifically define the improvements at the Lancaster Street driveway (radii, sidewalk section between the driveway and Cedar Street). Lastly, I would suggest some form of buffer/separation be provided between the parking spaces and the sidewalk on Lancaster Street.

Current Status: The above comment has not been adequately addressed. The subject lot is part of the project as the dumpster driveway is on the lot. The above comments shall be addressed as well as introducing a new curb cut on Lancaster Street and how that meets standards or requires a waiver.

- The plan shall include improvements to the curb cut for the southerly parking lot located on Cedar Street.

Status: DPW shall provide comments on the scope of improvements at the two driveways.

Current Status: Refer to DPW comments.

- Dimensions shall be provided for the existing parking lots off Cedar Street including driveway width, aisle width and parking stall size.

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Or documentation on waiver requests shall be provided.

Current Status: This comment has not been adequately addressed. Only an aisle width dimension for the southern lot has been provided. This is pending.

- The applicant shall provide turning template graphics for movements into and out of the Cedar Street parking lots for the design vehicle. A turning template graphic shall be provided for on-site truck movements.

Status: The applicant has provided turning template graphics and those graphics indicate reasonable access can be provided. However, it is unclear whether the design vehicle used is representative of trucks that will service the site. The applicant shall provide documentation that the design vehicle used is appropriate.

Current Status: Service trucks will no longer use the Cedar Street driveway. A turning template has been provided for the Lancaster Street driveway and I find that to be acceptable. The site plan depicts a 16-foot paved area on the east side of the building. Given that service trucks will not be accessing this area and it is not required for life safety needs, repurposing this space is suggested.

- The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards.

Status: It is my understanding the two existing driveways on Cedar Street and the one driveway on Cedar Street are considered part of this approved site plan and therefore a waiver is required. The number of driveways is not grandfathered. This is outstanding.

Current Status: It is my interpretation the project needs a waiver for the number of driveways and thus this is pending.

- The applicant shall provide documentation that the current surface parking spaces are not associated with an existing project site plan approval. Also, the applicant shall provide information on how the site parking lots will be managed.

Status: The applicant has provided the requested information and the planning department shall determine how to incorporate this information into the project approval.

Current Status: The applicant has provided details on parking commitments and how these commitments can be honored in the future. I find the applicants response to be reasonable.

- Pedestrian access easements will be required along the project frontage is some areas.

Status: The applicant notes that these easements will be provided. I have no further comment.

Current Status: I have no further comment.

<u>Additional Comments</u>

- It is likely the traffic study associated with the Traffic Movement Permit will include an evaluation of converting Oxford Street from one-way to two-way traffic flow. The applicant should confirm the proposed northerly curb line would be compatible with a two-way conversion.

Status: Pending the receipt of the Section 7 Study

- **DPW should confirm that 7-foot wide on-street parking spaces on Lancaster Street are acceptable. Additionally, the proposed on-street parking space width shall be noted for Oxford Street and Elm Street.**

Please contact me if you have any questions.

Best regards,

Tom Errico, P.E.
NE TRAFFIC ENG. DIRECTOR
T +1 207.347.4354
M +1 207.400.0719
thomas.errico@tylin.com

TYLin

12 Northbrook Drive
Building A, Suite One
Falmouth, ME 04105, United States

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Zachary Powell <zpowell@portlandmaine.gov>

PL-002403-2023 89 Elm Street DPW Comments

Janine Ba <janineba@portlandmaine.gov> Tue, Sep 26, 2023 at 12:17 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Justin Pellerin <jrp@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Benjamin Pearson <bnp@portlandmaine.gov>, Lauren Swett <lswett@woodardcurran.com>, Tom Errico <thomas.errico@tylin.com>

Zachary,

Below are DPW's comments for PL-002403-2023 89 Elm Street. Let me know if you have any questions.

PL-002403-2023
89 Elm Street
DPW Development Review Comments
09/26/2023

- DPW Transportation
  - Comments to follow later today.
- DPW Water Resources
  - *7/11/2023 Original Comment: DPW recommends that the submission of a plan and profile design sheet for the proposed off-site storm drain extension on Lancaster Street, with DPW review and approval, be submitted as a condition of approval.*
  - *8/29/2023 Response: A plan and profile will be submitted to DPW for review and approval as a condition of approval. We anticipate submitting this plan as part of Phase 1B, 196 Lancaster Street which will be submitted to the City in the coming weeks. We have analyzed this corridor and are confident both the new MS4 and water main systems can be installed from the 89 Elm frontage on Lancaster Street through to Preble Street.*
  - **Comment 9/25/2023: Noted.**

--
Janine Ba
Project Engineer
City of Portland Department of Public Works
212 Canco Rd. Suite B
Portland, ME 04103
janineba@portlandmaine.gov
Desk: 207-874-8463
Cell: 207-245-2074

Zachary Powell <zpowell@portlandmaine.gov>

PL-002403-2023 89 Elm Street DPW Comments

Janine Ba <janineba@portlandmaine.gov> Wed, Sep 27, 2023 at 12:56 PM
To: Robert Massengale <rmassengale@portlandmaine.gov>
Cc: Zachary Powell <zpowell@portlandmaine.gov>, Justin Pellerin <jrp@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Benjamin Pearson <bnp@portlandmaine.gov>, Lauren Swett <lswett@woodardcurran.com>, Tom Errico <thomas.errico@tylin.com>, Mark Reiland <mreiland@portlandmaine.gov>, Tatyana Vashchenko <tvashchenko@portlandmaine.gov>

Zachary,

See below.

- DPW Transportation
  - The City has made a significant investment in the trees, granite curbing and sidewalks for this block of Elm Street. We would like you to preserve as much of this infrastructure where possible. The City asks that the applicant explore opportunities to replant the existing trees on site or somewhere in the city.
  - DPW asks that it be noted that the sidewalk easement needed for this project be reviewed and approved by the our Department before certificate of occupancy is issued.
  - Waiver is required for sidewalk material being utilized in the right-of-way, as opposed to grass/loam.

[Quoted text hidden]

Zachary Powell <zpowell@portlandmaine.gov>

89 Elm Street site plan review comments

Robert Massengale <rmassengale@portlandmaine.gov> Fri, Sep 22, 2023 at 1:07 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Mark Reiland <mreiland@portlandmaine.gov>, Tatyana Vashchenko <tvashchenko@portlandmaine.gov>

Hi Zach,

The updates are looking better, thank you for steering this effort forward. Hoping the below comments are appropriate for this stage of the project. Matt had referenced some potential for the applicant to back away from Silva cells based on tree credits. I would be very concerned if silva cells are not part of this project, and would strongly advocate for some form of waiver or amendment or conditional modification to allow for the silva cells to be retained. Furthermore, if we can trade granite curbing for irrigation and first flush type capability for the silva cell system, it would have even more benefit to health and longevity of the trees, in my opinion. Would defer to Mark as subject expert, but strongly encourage us to work with applicant to keep sylva cell style system (with bonus if irrigation / first flush can be included in lieu of curb - or with curb if so desired)

PL-002403-2023.Major Site Plan and IZ (89 Elm Street): 8 Story, 201 Unit Residential Development

Site plan LA plan - Patio area on north side of Oxford street building wing - consider adding some form of shade tree in parking lot bump out if possible to benefit patio occupants and building and more adequately screen parking lot from patio. (Tech manual 4.5.5) (Currently shown as plant mix “A”)

Site Plan - for Utilities being “temporarily replaced” along Oxford street, applicants are strongly encouraged to find means of seeking overhead line relocation to the north side of Oxford street (opposite side of street) if burial is not possible to ensure best growing and establishment conditions for new cherry trees.

L5 Landscape Details 3 - Tree trunks in detail appear to show a trunk wrap material drawn around the trunk of the tree (detail 03). Trunk wrap is not recommended for tree plantings.

Silva cell detail - Will inspection port be included in silva cell away from trunk / open planter area? Consider inclusion in detail for long term tree health and sylvia cell inspection.

Landscaping plan - Comment of appreciation. The parks department wishes to acknowledge the foresight and considerate approach of the applicant to ensuring long term health and performance of proposed street tree plantings. We anticipate reduced maintenance and tree replacement costs, with increased longevity, aesthetics and environmental benefits from these expanded soil volumes. This approach will create needed benefits to the bayside community tree canopy.

Hope you have a great weekend!

Bob
--
Bob Massengale, Maine RLA, CPSI
Project Manager, City of Portland
www.portlandprf.com

Parks, Recreation, and Facilities
212 Canco Road, suite A
Portland, Maine, 04103

(o) 207-808-5440
(f)207-808-5400

Pronouns I use: he/ him/ his


parks,
recreation
& facilities

Zachary Powell <zpowell@portlandmaine.gov>

89 Elm Street

Lauren Swett <lswett@woodardcurran.com> Wed, Sep 27, 2023 at 7:42 AM
To: Zachary Powell <zpowell@portlandmaine.gov>

Hi Zach,

I have reviewed the resubmitted materials. The Applicant generally addressed my comments with the previous round of comments – a lot of my comments were design-related suggestions for them to consider, so I have no issue with how they have presented those items now.

The remaining items that they noted in the prior response that were still pending that should be provided to the City prior to approval, or as a condition of approval:

- Confirmation of the stormwater design from the manufacturer of the proposed proprietary system
- Confirmation of utility ability to serve

I didn't see that those had been provided yet as part of their materials.

If there are any questions, let me know.

Thanks,

Lauren

Lauren Swett, PE*
Technical Manager | Principal

Woodard & Curran

207-558-3763 207.219.3591 woodardcurran.com

lswett@woodardcurran.com

Zachary Powell <zpowell@portlandmaine.gov>

PL2403-2023 89 Elm Street TDM Plan - Meets TDM Plan Requirements

Bruce Hyman <bhyman@portlandmaine.gov> Mon, Jul 10, 2023 at 3:08 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Tom Errico <thomas.errico@tylin.com>, Jeremiah Bartlett <jbartlett@portlandmaine.gov>, Matt Grooms <mgrooms@portlandmaine.gov>

Good afternoon, Zach,

I have reviewed the revised TDM Plan for PL2403-2023, 89 Elm Street (dated May 2023) and find that it and the revisions made in response to comments substantively meet the plan requirements as specified in the Technical Manual (as amended November 2022).

Please do not hesitate to contact me if you or the applicant have any questions.

Bruce
--
Bruce Hyman
Transportation Program Manager
City of Portland
Department of Planning and Urban Development
389 Congress Street, 4th Floor
Portland, Maine 04101
(207) 874-8717 phone
bhyman@portlandmaine.gov

Zachary Powell <zpowell@portlandmaine.gov>

89 Elm Street - Final Traffic Comments

Tom Errico <thomas.errico@tylin.com> Fri, Oct 20, 2023 at 8:10 AM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Janine Ba <janineba@portlandmaine.gov>

Hi Zack – I have reviewed the updated application materials and offer the following final traffic review comments.

- This project is a phase within the West Bayside Master Plan, which is currently under review for a Traffic Movement Permit. A traffic study will be prepared in association with the TMP. The applicant should confirm that this project does not meet the threshold for a TMP as an individual project.

Status: According to information contained in the applicants Traffic Movement Permit Application, this project will generate traffic levels that would require a Traffic Movement Permit. Accordingly, I would suggest a condition of approval be included that notes occupancy of the project cannot occur until the Traffic Movement Permit is issued and all required mitigation of that permit is implemented as defined.

Current Status: A revised Section 7 Traffic Study is pending and accordingly the TMP approval is pending.

Final Status: A revised study has been provided and Traffic Movement Permit conditions are provided in a separate document.

- The site plan is maintaining a driveway on Lancaster Street west of Cedar Street. The plan shall include a layout of the parking lot. The applicant shall confirm that this driveway meets city corner clearance requirements.

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Also, the corner clearance standard is for the Lancaster Street driveway and its proximity to Cedar Street. Also, the site plan should specifically define the improvements at the Lancaster Street driveway (radii, sidewalk section between the driveway and Cedar Street). Lastly, I would suggest some form of buffer/separation be provided between the parking spaces and the sidewalk on Lancaster Street.

Current Status: The above comment has not been adequately addressed. The subject lot is part of the project as the dumpster driveway is on the lot. The above comments shall be addressed as well as introducing a new curb cut on Lancaster Street and how that meets standards or requires a waiver.

Final Status: Given that the parking lot currently exists and is anticipated to be redeveloped in the future, I have no comments. The city should consider a condition of approval that requires upgrades to the corner lot if a site plan is not submitted for the corner lot before occupancy of 89 Elm Street.

- The plan shall include improvements to the curb cut for the southerly parking lot located on Cedar Street.

Status: DPW shall provide comments on the scope of improvements at the two driveways.

Current Status: Refer to DPW comments.

Final Status: Refer to DPW comments.

- Dimensions shall be provided for the existing parking lots off Cedar Street including driveway width, aisle width and parking stall size.

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Or documentation on waiver requests shall be provided.

Current Status: This comment has not been adequately addressed. Only an aisle width dimension for the southern lot has been provided. This is pending.

Final Status: The requested information has been provided and I support waivers given these lots currently exist and expected low vehicle turnover.

- The applicant shall provide turning template graphics for movements into and out of the Cedar Street parking lots for the design vehicle. A turning template graphic shall be provided for on-site truck movements.

Status: The applicant has provided turning template graphics and those graphics indicate reasonable access can be provided. However, it is unclear whether the design vehicle used is representative of trucks that will service the site. The applicant shall provide documentation that the design vehicle used is appropriate.

Current Status: Service trucks will no longer use the Cedar Street driveway. A turning template has been provided for the Lancaster Street driveway and I find that to be acceptable. The site plan depicts a 16-foot paved area on the east side of the building. Given that service trucks will not be accessing this area and it is not required for life safety needs, repurposing this space is suggested.

Final Status: The applicant has indicated the need for access to the rear of the building and therefore I have no further comment.

- The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards.

Status: It is my understanding the two existing driveways on Cedar Street and the one driveway on Cedar Street are considered part of this approved site plan and therefore a waiver is required. The number of driveways is not grandfathered. This is outstanding.

Current Status: It is my interpretation the project needs a waiver for the number of driveways and thus this is pending.

Final Status: Given overall changes to driveway conditions and the future closure of the 4-space parking lot at the corner of Lancaster Street and Cedar Street, I support a waiver for the number of driveways to the site.

- The applicant shall provide documentation that the current surface parking spaces are not associated with an existing project site plan approval. Also, the applicant shall provide information on how the site parking lots will be managed.

Status: The applicant has provided the requested information and the planning department shall determine how to incorporate this information into the project approval.

Current Status: The applicant has provided details on parking commitments and how these commitments can be honored in the future. I find the applicants response to be reasonable**.**

Final Status: I have no further comment.

- Pedestrian access easements will be required along the project frontage is some areas.

Status: The applicant notes that these easements will be provided. I have no further comment.

Current Status: I have no further comment.

Final Status: I have no further comment.

Additional Comments

- It is likely the traffic study associated with the Traffic Movement Permit will include an evaluation of converting Oxford Street from one-way to two-way traffic flow. The applicant should confirm the proposed northerly curb line would be compatible with a two-way conversion.

Status: Pending the receipt of the Section 7 Study

Final Status: The TMP requires a detailed feasibility study of the two-way conversion and implementation if deemed feasible.

- DPW should confirm that 7-foot wide on-street parking spaces on Lancaster Street are acceptable. Additionally, the proposed on-street parking space width shall be noted for Oxford Street and Elm Street.

Final Status: Refer to DPW comments.

Please contact me if you have any questions.

Best regards,

Tom Errico, P.E.
NE TRAFFIC ENG. DIRECTOR
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M +1 207.400.0719
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TYLin

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Building A, Suite One
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City of Portland Traffic Movement Permit

Applicant: West Bayside Partner, LLC, 82 Hanover Street, Suite 5, Portland, ME. 04101

Project Location: Project is bounded by Preble Street to the southwest, Lancaster to the northwest, Cedar Street to the northeast. Cumberland and Oxford Street to the southeast.

Parcel #: Tax Map 33, Lot # G003, g006, H005-7, H0018, M012001, M004001

Project: West Bayside Development

Identification #: PL2403-2023

Permit Category: 200+ PCE's

Traffic Engineer: Jennifer Conley, VHB, 500 Southborough Drive, Suite 105B, South Portland, ME. 04106

Pursuant to the provision of 23 M.R.S.A. § 704-A and Chapter 305 of the MaineDOT's Regulations, the City of Portland through their Delegated Review Authority has considered the application of West Bayside Development with supportive data, city review and other related materials on file.

PROJECT DESCRIPTION

The development consists of 215 multi-family housing units, 201 affordable housing units, 6,000 sf retail, 2,000 sf coffee shop, and 6,000 sf restaurant. The existing 595 space Portland Public Market Garage will provide parking for these uses.

Findings

Based on a review of the files and related information, The City of Portland approves the Traffic Movement Permit Application of West Bayside Development subject to the following conditions:

MITIGATION

If the descriptions contained herein conflict with the plans, these descriptions shall take precedence over the plans. Not all of the mitigation discussed herein may be shown on those or any plan. The following mitigation shall be constructed or implemented to the City of Portland's satisfaction prior to the opening of the facility, unless otherwise approved by the City of Portland.

All proposed traffic signal upgrades shall be designed and specified to be in compliance with the City of Portland and MaineDOT traffic signal specifications.

On-Site Mitigation

All entrances shall meet City of Portland standards.

Off-Site Mitigation

1. The applicant shall perform traffic counts and recommend a phasing and timing plan for implementation at the Marginal Way/Preble Street/Elm Street intersection. The timing plan shall also include a review of clearance times related to crash patterns. This work shall be performed post-occupancy of the 89 Elm Street project.
2. Forest Avenue/Marginal Way/Kennebec Street/State Street – Remove obstructive tree branches for better line of sight and convert the Marginal Way right from a yield condition to a stop. Install lane use signs for each approach on the mast arms. Traffic signal clearance times shall be reviewed and revised to allow more vehicles to clear the intersection. Additional signal heads shall be installed and location/number shall be determined during the design development process.
3. Forest Avenue/Cumberland Street – Traffic signal clearance times shall be reviewed and revised. Sun shields shall be installed on signal heads for improved visibility.
4. Forest Avenue/Park Avenue/Portland Street – Right turn arrow pavement markings, defining the bike lane on the Portland Street approach shall be installed, including appropriate green markings as per NACTO best practice. Install a left turn yield on green sign for left turns from Forest Avenue to Portland Street. Review and revise clearance times to allow more vehicles to clear the intersection.
5. Forest Avenue/Marginal Way/Kennebec Street/State Street - Remove obstructive tree branches on Marginal Way for improved sight. Install lane use signs for each lane for the Forest Avenue approaches. Review and revise clearance times to allow more vehicles to clear the intersection.
6. The applicant shall reconstruct the sidewalks, including meeting ADA requirements, on Cedar Street from Lancaster Street to Oxford Street and Oxford Street between Portland Street and Chestnut Street.
7. All crosswalks on Elm Street and Preble Street between Lancaster Street and Cumberland Avenue be re-striped with high visibility paint.
8. The applicant shall conduct an Oxford Street Two-Way Conversion Feasibility analysis between Elm Street and Pearl Street with scope of the analysis to be coordinated and approved by city staff. If the analysis determines the conversion is feasible, the applicant shall be responsible for implementation of all work necessary for completion.

Overall Requirements

A. Provide all necessary auxiliary signs, striping and pavement markings to implement the improvements described herein according to City, MaineDOT and/or National standards.

B. All plantings and signs (existing and/or proposed; permanent and/or temporary) shall be placed and maintained such that they do not block available sight distances and do not violate the State's "Installations and Obstructions" law. No signage, plantings or structures shall be allowed within the "clear zone" if they constitute a deadly fixed object as determined by MaineDOT. All signs shall meet MRSA Title 23, Chapter 21, Section 1914: "On-Premise Signs".

C. If any of the supporting data or representations for which this permit is based changes in any way or is found to be incorrect / inaccurate, the applicant shall request in writing from the City of Portland a decision of what impacts those changes will have on the permit. The applicant will then be required to submit those changes for review and approval and additional mitigation as a result of those changes may be required at the expense of the applicant.

D. The applicant must obtain approval of the design plans and coordinate work through the City of Portland Department of Public Works.

By: 

Jeremiah J. Bartlett, PE, PTOE
City of Portland

Date: October 20, 2023

CITY OF PORTLAND, MAINE

PLANNING BOARD

Brandon Mazer, Chair
Justin Barker, Vice Chair
Marpheen Chann
Sean Murphy
David Silk
Austin Smith
Maggie Stanley

October 24, 2023

Michael Barton
89 Elm Street, LLC
62 Portland Road, Suite 25
Kennebunk, ME 04043

Project Name:	Major Site Plan & Traffic Movement Permit	**Project ID:**	PL-002403-2023
		Address:	89 Elm Street
CBL:	033 H006001; 033 H018001; 033 H009001		
Applicant:	Michael Barton, 89 Elm Street LLC		
Planner:	Zach Powell		

Dear Michael Barton:

On October 24, 2023, the Planning Board approved a major site plan application for a 162,000 square foot mixed-use building in the R-6 Residential & B-3 Downtown Business zones. The decision is based upon the application, documents and plans as submitted. The Planning Board reviewed the proposal for conformance with the standards of the Site Plan Ordinance, Ch. 14, Article 14, Section 14.6. Based on the information provided to the Board in the application, plans, and reports. Through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on October 24, 2023, which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted #-#-# to approve the application with the following conditions as presented below.

Traffic Movement Permit

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section XVI of the Planning Board Report for the public hearing on October 24, 2023, which is attached hereto and incorporated herein by reference. The Planning Board voted #-#-# to find that the plan is in conformance with Portland's Technical Standards, 23 M.R.S. §704-A, and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits, subject to the following conditions of approval:

PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY

1. The Applicant shall submit plans to City Staff for review and approval for new sidewalk installations on Cedar Street from the intersection of Oxford Street to Lancaster Street and construct the new sidewalk at the expense of the Applicant.
2. The Applicant shall conduct an Oxford Street Two-Way Conversion Feasibility analysis between Elm Street and Pearl Street with the scope of the analysis to be coordinated and approved by City Staff. IF the analysis determines the conversion is feasible, the Applicant shall be responsible form implementation of all work necessary for completion.

FOR ALL OTHER CONDITIONS OF APPROVAL LISTED IN ATTACHMENT 11

3. The Applicant shall implement all remaining mitigation measures recommended in Attachment 11 prior to the Certificate of Occupancy for Phase 2 of the Bayside MDP, unless stated to be completed at an earlier time in Attachment 11.

Site Plan Review

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section XVI of the Planning Board Report for the public hearing on October 24, 2023, which is attached hereto and incorporated herein by reference. The Planning Board voted #-#-# to find that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following conditions of approval:

1. In the event that the landscaping plan is revised to remove any of the proposed silva cell units, updates to the landscaping plan will need to be reviewed by the Forestry Division and approved as a major site plan amendment by the Planning Board.

PRIOR TO THE SUBMISSION OF A BUILDING PERMIT

2. The Applicant shall update architectural plans to utilize a light gray smooth fiber cement siding for the body of the building located in the R-6 district.
3. The Applicant shall submit a copy of an Ability to Serve Letter from the Portland Water District.
4. The Applicant shall submit a plan and profile design sheet for the proposed off-site storm drain extension on Lancaster Street to be reviewed and approved by the Department of Public Works.
5. The Applicant shall submit confirmation of the stormwater design from the manufacturer of the proposed proprietary system, to be reviewed and approved by the Department of Public Works.
6. The Applicant shall submit a draft affordable housing agreement as part of the deed for 89 Elm Street, outlining the proposed inclusionary zoning implementation for the Bayside MDP, to be reviewed and approved by Corporation Counsel, Department of Housing & Community Development, and the Department of Planning and Urban Development.

PRIOR TO THE ISSUANCE OF A PERMANENT OR TEMPORARY CERTIFICATE OF OCCUPANCY

7. The Applicant shall submit a sidewalk easement agreement for the pedestrian zone along Lancaster Street on the Applicant's property, to be reviewed and approved by Corporation Counsel, the Department of Public Works, and the Department of Planning and Urban Development. The

agreement shall confirm public access and usage, as well as maintenance responsibilities.

8. The Applicant shall coordinate with the City Forester to relocate two existing street trees of the City Forester's selection along the project site frontage to the locations identified in the submitted site plan set at 50 Cedar Street. In the event that a site plan application is submitted for 50 Cedar Street prior to the issuance of a certificate of occupancy for 89 Elm Street, the relocation of the two trees will be addressed as part of the review for the 50 Cedar Street site plan application.

The approval is based on the submitted plans and findings related to site plan review contained in the Planning Board report dated 10-24-2023 for application PL-002403-2023, which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

4. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

5. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved

site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

6. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

7. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

8. Stormwater Management The owner/operator of an 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.

   A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

9. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

   The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.

12. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.

13. Impact Fees New development or changes of use that result in net new residential dwelling units, non- residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit https://www.portlandmaine.gov/2409/Impact-Fees

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at drc@portlandmaine.gov or (207)874-8901. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Zach Powell by phone at 207-756-8083 or email at zpowell@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:
1. Planning Board Report
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet

ACORN ENGINEERING, INC.

Planning and Urban Development Department
Planning Division
Attn: Zach Powell, Senior Planner
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

April 4th, 2023

Subject: Major Site Plan Application – 89 Elm Street Redevelopment

Zach:

On behalf of 89 Elm LLC, we are pleased to submit the accompanying package of submission materials related to the proposed redevelopment of 89 Elm Street in Portland, Maine. The project will reside at Map, Book Lot (033 H006001) whose lot line will be adjusted to encompass the entire development. Parcels 033 H018001 and 033 H009001 will be merged into one parcel whose area will remain outside the building footprint.

The project area is bisected by a zoning district boundary. The applicable zoning districts include the B3 Downtown Business along Elm Street and R6 Residential along Cedar Street. The building has been designed with a step-back approach within the R6 portions of the property to meet the more stringent dimensional standards in the R6 than the adjoining B3 zone. The project is also located in the Bayside Height Overlay Zone and is a part of the greater West Bayside Master Development Plan (MDP) submitted by the same Applicant in December of 2022.

The project proposes to redevelop the parcels, currently used as a parking lot, into an 8-story building featuring affordable housing and three ground level retail spaces along Lancaster and Oxford Streets. The development will include 201 residential units, all of which will be affordable, satisfying the 25% inclusionary zoning requirement for the larger 804-unit MDP. This application package is intended to meet the City's submission requirements as outlined in the Major Site Plan application procedures.

89 Elm LLC, and the design team look forward to your review of this project. If you have any questions regarding these materials or the completeness of the application materials, please do not hesitate to contact me.

Sincerely,

Sam Lebel

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

City of Portland Planning Department
Zach Powell – Senior Planner
389 Congress Street, 4th Floor
Portland, Maine 04101

June 14th, 2023

Subject: Comment Response Letter
89 Elm Street, Portland, Maine – Major Site Plan Application

On behalf of 89 Elm Street, LLC, Acorn Engineering is pleased to respond to the following comments from the City of Portland Planning Department review of the 89 Elm Street, Major Site Plan Application.

The following is in response to the City Staff comments received May 17th, 2023, and the forestry comments received May 5th, 2023.

Consulting Traffic Engineer:

Comment: This project is a phase within the Bayside Master Plan, which is currently under review for a Traffic Movement Permit. A traffic study will be prepared in association with the TMP. The applicant should confirm that this project does not meet the threshold for a TMP as an individual project.

Response: The TMP currently under City review is associated with the permitting of 89 Elm Street (phase 1) as well as the 196 Lancaster Street, 60 Elm Street, and 315 Cumberland Avenue parcels of the Bayside Master Plan.

Comment: The site plan is maintaining a driveway on Lancaster Street west of Cedar Street. The plan shall include a layout of the parking lot. The applicant shall confirm that this driveway meets city corner clearance requirements.

Response: The site plan proposes combining two existing curb cuts at 50 Cedar Street into one curb cut. The single curb at 50 Cedar Street is to define/establish the proposed access easement to support the proposed development at 89 Elm with respect to solid waste removal. The proposed curb cut is over 100' away from the unsignalized intersection at Oxford and Cedar Street, therefore in compliance with the corner clearance requirements.

Comment: The plan shall include improvements to the curb cut for the southerly parking lot located on Cedar Street.

Response: The existing parking lots accessed by Cedar Street are to remain. The revised site plan now includes the proposed offsite curb cut improvements on the existing parking lot.

Comment: Dimensions shall be provided for the existing parking lots off Cedar Street including driveway width, aisle width, and parking stall size.

Response: The proposed development does not intend to alter the layout of the existing parking lots that are accessed from Cedar Street. These parking lots currently have leases and are intended to remain as is. Dimensions of the existing parking lots that are to remain are now provided on the Site Plan for reference.

Comment: The applicant shall provide turning template graphics for movements into and out of the Cedar Street parking lots for the design vehicle. A turning template graphic shall be provided for on-site truck movements.

Response: Turning Templates have been included as part of this application. Please refer to document "CC. Turning Template" for more information.

Comment: The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards of §1.5.1.A. of the Technical Manual.

Response: The project does not propose 3 driveways. Please refer to the Site Plan and the associated property line. The project proposes to eliminate the sole curb cut on its frontage while reducing the existing curb cut on Lancaster that accesses several parking spaces on the adjacent parcel. The two curb cuts on Cedar Street front a separate parcel. The proposed parcel technically has zero proposed driveways.

Comment: The applicant shall provide documentation that the current surface parking spaces are not associated with an existing project site plan approval. Also, the applicant shall provide information on how the site parking lots will be managed.

Response: Documentation on the current surface parking spaces and any relation to existing site plans will be forthcoming as part of the condition of approval associated with the Bayside Master Development Plan approved by the Planning Board on June 13, 2023.

Comment: Pedestrian access easements will be required along the project frontage in some areas

Response: Understood. These easements will be detailed in the future once other details of the project have been further flushed out. In general, the easement consists of additional sidewalk width on private property that the Applicant has elected to contribute to the streetscape.

Forestry:

Comment: Street tree well design - COP Parks department appreciates the applicant team for their willingness to collaborate with Parks in finding a best practice in creating a tree health centric approach in street tree wells and planters. Parks seeks to strike a balance that creates a comfortable, and enjoyable pedestrian circulation experience, and nourishes a healthy and lush street tree canopy for improvement of this district. We hope to facilitate any opportunity for the applicant to coordinate further with Parks and other divisions, particularly water resources, to find means of combining street tree health with stormwater infrastructure opportunities in this project.

Comment: Please distinguish street tree well typology in landscaping plan and future site plans (flush, metal style planters, vs raised granite vs. any other type, etc.). Ensure any planters with raised edges do not create conflict with building circulation, parked car doors, winter plowing routes or other circulation and element adjacent site needs.

Response: Please refer to the landscape planting plan and details for more information on

the proposed planters.

Comment: Ensure any planting areas in ROW or public spaces that have expectations of maintenance from the City of Portland use simplified, native plantings and follow low maintenance principles.

Response: Understood. All plantings within the ROW will follow the City of Portland guidelines and maintenance principles.

Comment: Some public / private partnerships exist in other areas of the city that share maintenance needs in ROW. Portland Downtown District works with City and private businesses and private entities on specific programming and maintenance efforts within the Downtown District for example. Cary Tyson is PDD executive director (cary@portlandmaine.com). Please reach out to him for any additional questions or insights.

Response: Thank you for this information.

Comment: The Parks Department will continue to work with COP planning and applicant team on ensuring a robust and effective street tree design conditions and implementation approach can be met to support future urban canopy in this neighborhood as much as possible.

Response: The project proposes to use Silva Cell modular system, or an approved equivalent, to provide an appropriate density and soil volume to support healthy and sustainable tree growth.

Comment: Opportunities to integrate street tree infrastructure with water resources / stormwater treatment is strongly encouraged. Parks is eager to facilitate that coordination between applicant and city departments, to help ensure successful and efficient integration.

Response: The design team will continue to study opportunities with the silva cell. It should be noted that the project will be significantly improving the stormwater runoff from this site by providing on-site water quality treatment, as well as detention and an extension of the separated storm drain from Preble Street.

Comment: Please consider burial of utilities that would be in conflict or prohibit a fuller canopy growth of the street tree environment.

Response: The project team is currently undergoing discussions with CMP regarding the existing overhead utility lines and the potential to reroute underground in certain areas.

Site Plan:

Comment: For street trees at intersection locations with bump out or widened sidewalk conditions, consider creating a larger planting bed for street trees at those locations, keeping in mind safe sight triangles/ lines, generous circulation and room for ramps / tip downs and street utilities / furnishings, and building egress points.

Response: Understood. Please refer to the Landscape plan for Street tree locations and typology.

Comment: At the intersection of Oxford and Elm, by the corner building entrance and at retail entrance location, and at Elm side entry: Street tree locations appear to be close to entrances and might create conflict with circulation. Ensure that any circumstances with trunks, low branching etc. do not block entry ways or unreasonably alter signage / preserve a degree of effective recognition of retail space from the outdoor environment.

Response: Please refer to the revised landscape plan and street tree layout. As shown on the plan, street tree locations have been modified to mitigate conflict with pedestrian circulation.

Comment: In the parking area and around building foundations, ensure native landscaping selections in planting areas adhere to Technical Manual requirements in Chapter 4, and provide screening from headlights and other off-site lighting or visual intrusion into lower building units, particularly in adjacent parking areas.

Response: Please refer to the Landscape plan which provides more detail on the proposed plantings as part of this site plan application.

Grading Plan:

Comment: Provide additional information on the intended use of the stairwell on the east (back) side of building along central access drive? If this stair well is providing informal access for residents, between the parking lot and internal units, consider landing grade and cross slope in relation to drive slope. Allow for egress from building to connect with a striped pedestrian route along drive to upper and lower lot areas if sidewalk or more formal walk material is infeasible.

Response: The stairwell on the east (back) side of the building is intended for egress as well as access to the solid waste enclosure. This stairwell will outlet to a "landing pad" which has been graded with slopes ranging from 1-3% to create a welcoming and accessible area, prior to the drive aisle slope of 8% down the remainder of the drive aisle.

Comment: Ensure compliance with the standards of Chapter 4, Section 4.5.2 of the Technical Manual for screening along parking lot edges with abutting neighbors is followed. Please also ensure consideration is given to views from building into parking lots or adjacent properties. Please show proposed plantings / landscape screening for the lower parking area, particularly along the walk edge and along the shared property lines with 44 Cedar Street.

Response: Please refer to the Landscape Plan for more information. Screening/vegetation has been incorporated where feasible.

Comment: Confirm whether the lower parking area will be connected with the drive aisle / loading dock corridor. Callout references detail inset, but corresponding inset is not shown on the plan. Please clarify circulation intent here.

Response: It is not proposed to connect the drive aisle to the existing parking area, there is a proposed curb providing separation. The detail inset for the subsurface R-tank system is provided on sheet C-46.

Comment: The landscape / site condition at upslope entry of delivery / drive aisle appears incomplete / obscured. Please show the condition of this area, and if it is a landscaped area, show screening and buffer design in compliance with Sections 4.5.5 and 4.5.2 of Chapter 4 of the Technical Manual.

Response: It is unclear which location is being addressed in this comment. Please refer to the Civil Site Plan and Landscape plan for further information and clarification as the landscape plan has been overhauled.

Comment: Please share the condition of the site along service ramp and back of abutting residential property along east side of parking lot connector drive.

Response: Please refer to the Landscape Plan for more information.

Comment: If the applicant seeks additional open space for new building residents, consider utilization of proposed flat roof space for open space within required technical, code and COP planning requirements.

Response: This comment will be taken into consideration. At this time, no programming is proposed on the roof.

Comment: While off-street parking is exempted through the transit proximate development and uses exemption, consideration is recommended for restrictions from new buildings utilizing resident on-street parking stickers.

Response: This does not appear to be an appropriate restriction and the Applicant does not support it.

Planning:

Comment: The proposed lot to the north of 89 Elm Street proposes site modifications that facilitate the development and infrastructure of 89 Elm Street. Application documents shall be updated to incorporate the entirety of the proposed modifications on this lot into the site plan set and provide an anticipated address.

Response: Modifications and maintenance to abutting lots are proposed as necessary. Please refer to the Civil Plan Set for further clarification on the extent of the proposed and modified conditions.

Comment: Update the site plan set to submit a landscaping sheet and photometric plan.

Response: The revised plan set now includes the landscape plan and photometric plan.

Comment: Update the architectural drawings and site plan set to match the proposed window and door openings.

Response: Please refer to the revised architectural drawings which reflect this change.

Comment: Comments related to the design of the building and site will be provided under a future cover in a Design Memorandum.

Response: Understood – please refer to the design narrative from the project architect, RSA.

Land Use Code Comments:

Comment: §14.6.1.B.1: Overall, the design provides a number of access points for pedestrians throughout the building. Enhancing pedestrian connections in the northern portion of the building to prevent automobile- pedestrian conflicts should be considered through continuous pedestrian facilities and pavement markings. Relocation of the dumpsters may support these functions and provide easier access for residents who use assistive devices, such as wheelchairs.

Response: The Site has been designed to accommodate pedestrian circulation and reducing sloping impacts where feasible.

Comment: §14.6.1.B.2.: References to turning analyses were provided in the Conformity with Land Use Ordinance document, but were not provided. Submit copies of the turning analyses for further review by City staff.

Response: Please refer to the submitted turning template, document "CC. Turning Template", which models a 25' long refuse truck accessing the dumpsters on site.

Comment: §14.6.1.B.3.: Include proposed modifications to curb cuts and sidewalk on Cedar Street & Lancaster Street for the new lot to the north of Cedar Street in the site plan set.

Response: It is proposed that emergency vehicles and refuse trucks will access the site via the proposed access easement through the existing parking lot drive aisle on 50 Cedar Street. As part of this access easement, it is proposed to combined the existing two curbs at 50 Cedar Street into one compliant curb cut.

Comment: §14.6.1.D.2.a.: Indicate the location of proposed signage to comply with §1.12.4. of the Technical Manual. Staff recommends publicly accessible bicycle parking, given that there is currently accessible bicycle parking at the site and no bicycle parking is required for retail uses.

Response: The development proposes public and private spaces to store bicycles. Public bicycle parking spaces are proposed to be visible and located within the public ROW. Please refer to the Site and Landscape plans for more information on bike storage and proposed locations.

Comment: §14.6.1.D.3.b.: Snow storage is proposed on the northwestern portion of the site, but does not clarify how encroachments onto pedestrian walkways will be avoided. Update the site plan set to demonstrate how snow storage will not result in encroachment on the walkway.

Response: The proposed snow storage is located behind the pedestrian walkway. It is not anticipated that storage in this location would impact the pedestrian walkway. The property will be maintained by a professional maintenance company.

Comment: §14.6.2.B.: Confirm the DBH of the existing tree in the City right-of-way at the northwestern corner of Oxford & Elm Streets. In the application documents, the tree is proposed to be removed. Provide a narrative demonstrating why the tree cannot remain during construction activities. Further review by Forestry staff will be required.

Response: The existing tree at the corner of the Oxford and Elm Street intersection has a DBH of 21". Under current conditions the roots of this tree are emerging through the sidewalk resulting in an inaccessible condition for pedestrians requiring ADA access. Due to the current condition and non-compliance of the sidewalk due to the existing tree roots, in combination with the location of the proposed building and its foundation, preservation of the tree is extremely unlikely from a construction and accessible standpoint. Please refer to the attached narrative provided by the Landscape Architect for more information.

Comment: §14.6.2.C.2.: Update architectural drawings to demonstrate how the proposed development is screening roof-mounted utility structures. Additional comments related to roof-top appurtenance screening can be found in the design memorandum for this project.

Response: The Architect is currently reviewing opportunities for screening.

Comment: §14.6.2.C.4.: Update the submitted Conformity with Land Use Ordinance document to identify how many street trees are proposed to be planted. For street trees not able to be planted to meet requirements, document how the remaining required number of street trees will be provided through alternative mechanisms, with any new plantings labeled as an alternative mechanism in the landscaping plan sheet.

Response: Please refer to the revised Conformity with Land Use Document which outlines the proposed street trees in part of the 89 Elm Street development.

Comment: §14.6.3.B.: Staff awaits updated project materials (e.g., landscaping plan, photometric plan) to confirm compliance with §14.6.3.B. in relationship to pedestrian facilities along the surface parking area and pedestrian connections mid-block along Lancaster and Oxford Streets.

Response: Please refer to these plans as part of the resubmission.

Comment: §14.6.3.C.2.: Provide a more comprehensive narrative on the estimated cost, with documented sources, of relocating all electrical service (including utility poles) underground and any barriers to revising existing overhead facilities.

Response: Communication with CMP regarding relocating utility poles and rerouting utilities underground is in progress. Pending the outcome of the ongoing conversations, cost estimates and final layout design will be provided.

Comment: §14.6.3.C.5.: Submit a detail drawing for the proposed trash enclosure, identifying the materials used for the enclosure.

Response: Please refer to Sheet C-41 for the detail of the proposed trash enclosure. The enclosure will be contained by a 6' tall stockade fence.

Comment: §14.6.3.C.5.: Update the submitted Conformity with Land Use Ordinance document to state the anticipated collection times. City staff recommends that collection should not occur between the hours of 11:00 PM and 6:00 AM.

Response: Please refer to the Conformity with Land Use document which reflects/ incorporates this request.

Comment: §14.6.4.E.3.: The project site has the possibility of including buried portions of colonial and post-colonial period structures or built features predating the Great Fire. Update the General Notes Sheet of the Site Plan Set, under Demolition Notes, to include the following note:
5. Upon a finding of archaeological resources on the site, consultation with the City of Portland's Historic Preservation Program and the Maine Historic Preservation Commission is required to determine appropriate next steps.

Response: Please refer to the revised General Note Sheet, Demolition Notes which reflects this request.

Comment: §14.6.4.G.: City staff encourages the Applicant to consider opportunities to relocate façade-mounted mechanical equipment to the roof or to integrate equipment into the design of the building (see Ephoca units used for 200 Federal Street) to minimize impacts to abutting residential properties.

Response: Noted. The configuration of rooftop equipment is under review and this suggestion will be taken into consideration.

Public Works:

Transportation

Comment: Improvements in the ROW shall be dimensions on the plan view sheets. For example ROW, street, lanes sidewalk, esplanade driveways (and other improvements) widths as well as when a width changes.

Response: ROW improvements associated with this project are provided on Sheet C-10.

Comment: Adjust the proposed sidewalk and planters to provide a 6-foot minimum clearance width between the planters and the buildings.

Response: Please see Sheet C-10 which provides the revised planting/furnishing and pedestrian zone clearances.

Comment: The applicant shall update the plans to label or provide spot grades and slopes for the proposed sidewalks, accessible ramps, and driveways at grade breaks.

Response: Please see Sheet C-30 for more detail on spot grades and slopes throughout the site.

Comment: The applicant shall provide spot-grade information at all proposed entrances.

Response: Please see Sheet C-30 for spot grades at all proposed entrances.

Comment: The applicant shall show existing trees on the plans and provide clarification on the location and preservation of existing trees along project frontages. The applicant shall Contact City Arborist to determine if trees shall be kept or replaced and design the sidewalk improvements accordingly.

Response: Please see Sheet C-03 for the location of the existing trees along the property frontage. It is our understanding that none of the existing trees within the project street frontage are considered to be a Heritage Tree. Street trees proposed as part of the development can be found on sheet C-10 and on the Landscape Plan. Please refer to narrative prepared by the landscape architect attached to this letter for more information.

Comment: The proposed planter conflicts with the parking. The applicant shall consider other options such as sloped curb tree wells (SLOPED TYPE "C" GRANITE TREE WELL IN SIDEWALK WITH NO ESPLANADE Figure IV-4C), installing an esplanade, or minimized planter curb reveal to allow for the doors to open.

Response: Please refer to the Landscape plans for more detail on the proposed planter and tree well styles.

Comment: Proposed Tree Wells shall not be placed in front of entrances. Revise the plans to remove this conflict.

Response: Please refer to the Landscape and Site Plan for the proposed location of the street trees which have been placed to not create conflict with building entrances.

Water Resources

Comment: The applicant should provide a plan and profile design sheet for the proposed offsite storm drain extension on Lancaster Street for DPW review and approval.

Response: Understood. A plan and profile sheet will be provided and coordinated with DPW for their review and approval. This will be submitted under separate cover in tandem with the new water main replacement design and the phase 1b project, 196 Lancaster. A feasibility study has been conducted and the extension appears technically feasible.

Comment: The storm drain extension in Lancaster Street should be sized to accommodate a 25-year, 24-hour storm event. It is acceptable to only analyze the watershed area draining to this new storm drain extension and size the new pipes based on a simple Manning's equation full flow analysis. The City would like to add watershed area on Elm Street and Cedar Street from Oxford to Lancaster as part of this sizing analysis.

Response: After further discussion with Justin Pellerin, P.E. of Water Resources/DPW, due to as-built conditions within the Preble and Lancaster Street intersection, a 12" MS4 extension is the largest feasible line that can be provided. This is what's currently proposed as part of the application.

Comment: It would be advisable for the applicant to set up a meeting with DPW Water Resources to discuss the proposed storm drain extension design in greater detail to clear up any questions the applicant might have about what will be required.

Response: We have had several discussions with DPW regarding this subject, and will reach back out once the plans are further detailed and reconciled against the other utility company upgrades such as water and electric/telecom.

Comment: The applicant has provided adequate stormwater storage detention volume requested by DPW as part of the overall sewer/storm capacity analysis for the project. DPW is supportive of the comments provided by the third-party stormwater review engineer which should be addressed by the applicant. The only question is if the overflow weir could be raised any higher to maximize storage volume?

Response: We will continue to study this condition; however the current design features an optimized system.

Comment: The proposed sanitary sewer configurations and connection location to the sewer in Elm Street is acceptable. Backflow preventers should be provided in accordance with Section 2 of the Technical Manual.

Response: Please refer to Sheet C-20 for the proposed location of the Backflow preventer and sewer configuration. The proposed sewer connection is to be constructed in accordance with Section 2 of Technical Manual and Chapter 24 of the City Code.

Comment: Submit an erosion and sediment control sheet as part of the plan set.

Response: Please see Sheet C-03 the Construction Management and Erosion and Sedimentation Control Plan.

TDM Program Manager:

Comment: The Plan provides a good overview of the TDM-related transportation Context for the proposed development. It has all the required sections prescribed for the TDM Plans in the Technical Manual.

Comment: I have the following larger context comments for the applicant, and likely have some further ones as well:

- *The TDM Plan does not address/include the two retail spaces that are located on the Lancaster and Oxford Street frontages - at a minimum the employees of the retail uses should be included in surveying/reporting.*
- *The guidelines for TDM Plans were amended in November 2022 - the current draft doesn't follow key changes including doing away with vehicle trip and parking reduction targets, replaced by a focus on establishing and monitoring or mode share for TDM sites. The data/information on vehicle trips and parking can be useful in establishing and monitoring mode share but reduction targets for them are not required. An updated reporting form is available on the TDM Resource webpage that integrates the Mode Share Target Table.*

- *For residential properties, it can be most beneficial to consider all trip-making rather than just commute trips. More explanation regarding what types of trips the Mode Split Targets apply to would be helpful (just peak hours, all day, etc.). My understanding is the baseline targets suggested are based on Journey to Work Data which is focused exclusively on Work Trips.*
- *It would be beneficial to have more commitments in terms of the TDM strategies that will be implemented such as the real-time display of transit arrival and support/sponsorship of bike share (bike station sponsorship, memberships, trip vouchers/reimbursements, etc.).*

Response: Please refer to the revised TDM plan

Consulting Stormwater Engineer:

*Comment: The project is required to comply with MaineDEP Chapter 500 and City of Portland Technical Manual Section 5 requirements for stormwater management. In addition, the Applicant has received a number of comments from the City of Portland as part of the ongoing Master Development Plan review with regards to the specific requirements for stormwater management and flow control that have defined their approach for this project. The project will be reducing impervious surface, and as such the stormwater design is driven primarily by the requirements set forward by the City specific to this site. The Applicant is proposing to install a StormFilter system that has been sized adequately for the area draining to it, and an R-tank stormwater storage system that has been sized to adequately manage stormwater flow from the site. I have the following comments for c*onsideration on the proposed system:

- *The Applicant should provide confirmation from the system manufacturers for the proposed design of the StormFilter and R-Tank systems.*

Response: As the project gets closer to approval/building, this step will be taken. In general the proposed system is a very conventional layout/design.

- *The R-tank system as proposed as a number of inlet pipes from roof leaders. The Applicant should confirm the depths of these inlets relative to the anticipated water depths in the system to ensure that there are no un-desired back-flow situations.*

Response: The R-tanks systems have been designed and analyzed intentionally and are not anticipated to cause backflow on any of the pipes entering into the system. We will continue to progress the plans and detail all inverts.

- *The Applicant has provided a stormwater maintenance plan, and will ultimately need to provide the maintenance agreement.*

Response: Understood.

Comment: I generally understand and agree with the stormwater and grading approach on the site, but I would recommend that the Applicant evaluate the area located northeast of the building for access, use, and cover over the buried features per the following comments:

- *The transformer is located in this area, and appears to be accessed from the west based on bollard placement and adjacent site conditions. It should be confirmed that the typical open area next to the transformer can be used for snow storage.*

Response: The bollard placement has since been revised to ensure that adequate area is provided for snow storage and transformer access. The transformer will be adequately protected.

- *There doesn't appear to be a large amount of cover over the top of the Stormfilter vault and the R-tank system. The Applicant should confirm that as proposed, cover is adequate to protect these systems from heavier snow removal equipment, and from the snow storage itself over the R-tank. It also appears that in the event that the transformer needs to be removed or replaced, that would likely be done by placing equipment on the R-tanks, so adequate cover for protection in the event that is required should be considered*

Response: Please refer to Sheet C-46 for a profile of the Stormfilter vault and R-Tank system. As shown in the profile, the cover over the systems varies with grade. The R-Tank HD system was selected and designed with the required cover to accommodate H-20 loading. As shown in the profile and plan view the critical cover over the R-tank system is achieved and increases throughout the system as the grade varies.

- *The plans reflect a fairly steep slope for the paved way located to the east of the building, leading back to the snow storage. The Applicant should confirm that this is acceptable for the snow equipment and for any equipment that may need to access to service the transformer.*

Response:

- *There is a series of curbs installed in the area around the R-tanks, and I generally understand the approach, to protect doorways from stormwater flow/snowmelt in this area. I would suggest a few more spot grades in that area and there may also be a need for further drain structures within the narrow walkway along the building to direct stormwater back out of the curbed area, away from doors and into the drainage system. I highlighted the area in blue below. There's not a lot of direct stormwater here, but there could be flow from snow melt. They've also called out a catch basin that I've highlighted in yellow, and it's not clear to me how that connects into the R-Tank or the piping around it.*

Response: Please refer to the revised grading plan and detail inset that provides more context to the grades in this location. The catch basin as highlighted in the Comment Response report is intended to be the final collection point of stormwater runoff prior to entering into the proposed R-Tank system. This will be a single catch basin with one outlet into the R-Tank system. Further detail connections in coordination with the manufacturer will be provided as the plans/project progress past the first Planning Board workshop.

Comment: The plans should reflect the proposed pavement repair within the roadways for the proposed stormwater and utility installations.

Response: Please refer to the Utility Plan that provides the anticipated trenching widths for utility construction within the Public ROW.

Comment: The utility plan includes a note that the contractor is to relocate existing utility pole and overhead lines or provide underground services to existing buildings. The extent of those changes and impacts on the roadway should be represented.

Response: The project team is currently undergoing consultation with CMP and

relevant providers on rerouting of the existing utility poles. This process is complex and lengthy, we will communicate our final findings once ready to do so.

Comment: The project has reached out to utilities requesting confirmation of ability to serve, and has noted responses will be provided when received.

Response: Ability to serve letters will be provided when received.

Zoning:

Comment: Buildings in the B-3 zone need to be within 5' of the street. 89 Elm Street is not currently meeting this and a waiver request has not been submitted at this time.

Response: Per the Cities Design Manual, within the B-3 Downtown Business zone standards, (b,1,e,2); increasing setback beyond street is allowed, as it provides substantial and viable publicly assessable open space and amenities. This was also accounted for, and communicated, during the Master Development Plan phase. The Master Development Plan approval on 6/13/23 formally waived this requirement which is integral to the overall site design and allocation of private space into the public realm.

In addition to the supplemental material included in this submission pertaining to the City staff comments received May 17th. The 89 Elm project team would like to address comments and provide the following supplemental material to support and assist the planning staff in response to the design review comments received May 25th, 2023, under a separate cover. Please refer to the attachment outline below for the supplemental materials provided as part of this submission.

Please let us know if you have any additional questions or comments.

Sincerely,

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Danielle McGowan, E.I.
Design Engineer
Acorn Engineering, Inc.

Attachments:

Documents:

- Street Tree Narrative

dry landscape architecture l.l.c.

31 Miller Avenue
Biddeford, ME 04005
Tel: 603.496.8020
Email: dry-la@outlook.com

June 15, 2023

City Arborist - City of Portland Maine
Parks, Recreation & Facilities
Forestry, Parks & Horticulture
212 Canco Road - Suite A
Portland, ME. 04103

Subject: Tree #02772 Removal of Pin Oak Tree on Oxford Street

I am writing regarding Tree #02772, facility ID 02772 - a Pin Oak tree situated on Oxford Street adjacent to the 89 Elm Street affordable housing project. As the team's landscape architect, I have assessed the current conditions and would like to present the reasons for the tree's proposed removal in relation to the upcoming housing project.



The oak tree, while notable at 21-inch DBH does not fall into the Heritage tree category, has grown in a manner that now poses challenges to accessibility and its long-term health. Its growth has extended through the power lines in the area, raising concerns about safety hazards and potential disruptions to power supply. The sidewalk is currently not accessible at this time due to the tree's root flair and should be addressed in the near term by any determination (see image below). These current conditions along with the proposed building location and improved streetscape design we find the probability of the trees survival to be unlikely.

Our team does not take the removal of street trees lightly and the decision to move ahead with the removal request comes after careful consideration. Acorn engineering has reviewed the field conditions and concluded that based upon their findings and previous experience, the tree's chances of survival during the construction process are minimal. Given the proximity of the building, the existing tree poses potential risks of damage and impediments to accessibility.



While the decision to remove such a tree is not taken lightly, we believe it is essential to balance the need for progress and the responsibility to provide affordable housing options. In

recognition of the tree's significance, we have committed to planting multiple new trees within the vicinity and incorporating green infrastructure into the housing project within the urban context. This approach ensures that we enhance the area's tree canopy while fulfilling our commitment to environmental sustainability and celebrating the important ecological function and economic function of urban trees.



We understand the importance of public sentiment surrounding these matters and will ensure that the removal process is conducted with the utmost care. Our team will coordinate closely with the appropriate departments and follow all necessary guidelines to minimize any disruption and to repurpose the tree's wood effectively.

We would be happy to meet onsite and discuss the plans further. If you have any questions or concerns, please do not hesitate to contact me at dry-la@outlook.com or by telephone (603) 496-8020. We are committed to keeping the community informed throughout the process and working together to create a balance between progress and preserving our natural environment.

Thank you for your attention to this matter.

Sincerely,

Braden Drypolcher, Principal
dry landscape architecture, LLC.

Design Review
Planning and Urban Development Department

Subject: 89 Elm Street – Major Site Plan Review
Zone: B3
Date of Review: May 25, 2023
Design Review
Reviewer(s): Sean King (Urban Designer), Zach Powell (Senior Planner), Maya Balassa (Planner)
Project ID: PL-002403-2023

I. INTRODUCTION

The proposed major site plan application for 89 Elm Street is subject to the *Master Development Plan Standards of Review, Land Use Code Section 14.7.5* and design standards of the City of Portland *Design Manual, Land Use Code Section 14.6.4.I* to include:

- *B-3 Downtown Business Zone, Appendix 1;*
- *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters;*

The built context of the surrounding area contains a variety of building types, architectural styles and mix of uses that vary in height and proximity to the street typically found throughout Portland's Bayside neighborhood. Several zoning districts encapsulate the proposed development area and the existing pattern of development contains large building footprints facing the street with multiple surface parking lots.

II. DESIGN REVIEW COMMENTS: red text denotes standards not met and require resubmission.

Master development plan (MDP) design standards, land use ordinance section 14.7.5 is currently under review.

A. Creation of a cohesive identity.

A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; - **Met**

Staff comment: The proposed development includes a new multi-family building at 89 Elm Street consistent with the approved MDP for building scale, massing and articulation. The proposed building is oriented to the street along three facades with massing variation through reductions in building heights toward the residential zone.

Use of quality exterior material and architectural detailing at pedestrian scale; - **Met**

Staff comment: The proposed exterior materials utilize brick with texture at the ground floor with storefront windows at the proposed retail use. Additional exterior materials include corrugated metal and metal panel siding separated horizontally with a pronounced belt course and vertically with recession on the façade plane.

Consistency of design and materials for streetscape and pedestrian amenities; - Not Met

Staff comment: The proposed development includes streetscape and pedestrian amenities through tree wells, lighting and concrete sidewalks. Staff finds the proposed streetscape amenities shall correspond more closely with the MDP currently in review that align with specific street typologies.

Framing of outdoor open space and linkages; - Not Met

Staff comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. Staff recommends additional streetscape amenities to allow for pedestrian comfort. Examples may include paving distinction at building entries, fixed seating, street trees and additional planting on private property.

A clear conveyance of the function and significance of various buildings, entrances, and features; - Met

Staff comment: The proposed building design conveys a clear function of building uses with distinction of retail through storefront windows, entrances and material articulation at a pedestrian scale from the residential function that is identified through window fenestration pattern, distinct entrances and organization of exterior materials.

And to generally comply with design and development standards of the zone in which it is located.

Staff comment: See B-3 design standards below.

The project at 89 Elm Street shall meet the following standards based on the B-3 Downtown Business Zone design standards in the City of Portland Design Manual, ***Land Use Code Section 14.6.4.I Design standards.***

I. Relationship to pedestrian environment

A. Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Staff comment: The exterior design along the street facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to ground plane to allow for recessed planting areas or trellis system for vines).

1. Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design. – Not Met

Staff comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant shall indicate that a VT of .7 or higher is met at the first 35 feet of the building façade.

2. Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs. - **Met**

Staff comment: Building entrances are compatible and recessed from the primary building facades and articulated with glass panels, canopy and accessible stoops.

3. Blank facades; and - **Met**

Staff comment: Blank facades are minimized through variation in exterior materials and fenestration pattern throughout each street facing facade.

4. Special features, such as selective use of such features as building arcades and skywalks or elevated walkways. - **Met**

Staff comment: A proposed building arcade with brick structural supports and storefront windows along Lancaster Street creates a special feature at the corner of Elm and Lancaster Street.

B. *Pedestrian Activities District (PAD)*

Staff comment: Not applicable. The site is not located within the PAD or PAD encouragement area overlay district.

C. *Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:*

1. Sidewalk, crosswalk, and street paving materials; – **Not Met**

Staff comment: Sidewalk areas in the proposed development include concrete surfaces, pole lighting, and tree wells. Staff recommends adequate pedestrian passage of six-feet minimum based on applicant's proposal to activate the streetscape. In addition, staff recommends a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street.

2. *Landscaping, planters, irrigation, and tree guards and grates;* – **Not Met**

Staff comment: Tree wells are proposed, with the applicant to provide a landscape plan with tree, plant material and irrigation for staff review. In addition, staff recommends removal of tree wells in front of building entrances to eliminate narrowing of sidewalk.

3. Lighting; - **Met**

Staff comment: The proposed development indicates light locations within the right of way and specifies a municipal light fixture as Peninsula Medium street (Figure X-7B) per Technical Manual, section 10 standards.

D. *Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and* - **Met**

Staff comment: The proposed development has not included any pedestrian amenities as indicated in this design standard. Staff recommends the location of pedestrian amenities such as benches and other seating, trash receptacles and other special features be concentrated around building entrances and to enhance the streetscape experience.

E. *Sidewalk vendors and sidewalk cafes.*

Staff comment: The proposed development includes opportunities for sidewalk cafes along Lancaster Street.

F. *Urban open spaces.*

Staff comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setback beyond the street build-to line. Staff finds the provision for varied, high quality, creatively designed and comfortable amenities are not met and recommends additional streetscape elements that highlight entrances with a surface material change and fixed outdoor seating that is usable beyond retail business operating hours.

II. Relationship to existing development

A. *Integrate with, respect and enhance: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:*

1. *Street walls and building setbacks;*

Staff comment: The proposed development creates a defined street wall and minimizes building setbacks to allow for pedestrian passage or public open space. Staff finds the front setback along Lancaster Street to activate the corner with street-level plaza and building atrium for outdoor seating is appropriate.

2. *Open space;*

Staff comment: The proposed development does not detract from existing open space and allows for pedestrian connection along sidewalks to access existing open spaces beyond the property's boundaries.

3. *Building form, scale and massing;*

Staff comment: The Bayside neighborhood is composed of a mixture of building typologies, heights, organization of blocks and street-level experience. Building form, scale and massing adjacent to the proposed development responds generally to parcel lot division and use; smaller lots are residential in scale while larger lots include either surface parking or large building footprints of moderate height.

The proposed development would infill existing surface parking with a large building footprint that would span the Elm Street frontage from Lancaster Street to Oxford Street. Existing street grades slope upward from Lancaster Street toward Oxford Street. The proposed development would step floors and heights towards Oxford Street and reduce heights towards adjacent residential buildings along Cedar Street that staff finds to be appropriate for massing variation. Additional massing variation include articulation of lower floors of a brick base with a belt course to delineate upper floors, recessed portions of the façade at building entrances and other planes of the exterior wall.

Staff recommends additional variation of the façade plane to recess the upper floors and vertical material delineation, at the charcoal metal panel, to reduce the building's scale.

4. *Façade proportion and composition;*

Staff comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of fenestration pattern at the building's middle and change of material at the building's top. Staff finds the punched windows along the street facing facades to be appropriate and recommends further window recession at the lower floors where residential units are proposed to allow for additional privacy, plant screening at foundation walls and further articulate a pedestrian-scaled massing.

The proposed building includes a signature building roof-top element at the Lancaster and Elm Street intersection that staff finds is not integrated into the overall building's composition. Staff recommends a stepback of the signature building roof-top element to clearly define the parapet wall at the upper floor. Furthermore, applicant to clarify if this element is a rooftop appurtenance, which would allow for a consolidation of rooftop mechanical equipment and visual screening where voids are currently proposed. Staff finds the location of façade mounted HVAC equipment to not respect the surrounding residential context and recommends either relocation to roof or an integrated window system for each unit that is less visible.

5. *Pedestrian circulation and building entrances;*

Staff comment: Pedestrian circulation is maintained along the sidewalks with building entrances accessible at the street. Frequent building entrances are proposed along each of the building's façades for residents that are recessed with a pronounced canopy that is integrated into the building. Building entrances for retail use are deeply recessed and create street-level opportunities for outdoor seating that staff finds is appropriate.

6. Parking,

Staff comment: In general, any surface parking associated with the proposed development is located at the rear of the property.

7. Areas within the downtown

Staff comment: The proposed development would engage with the character of downtown by reinforcing the street wall, street facing building entrances, municipal light fixtures and street trees at a regular interval.

B. Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks:

Staff comment: The proposed development increases setbacks beyond the street build-to line with exceptions to this pattern demonstrated as follow:

1. Open space and amenity: Lancaster Street would activate the setback beyond the street build-to line for outdoor eating space with supportive ground level retail and building entrance. In addition, Elm Street would accommodate for the addition of street trees, tree wells and sidewalk widths for appropriate pedestrian circulation.
2. Prevailing character and continuity: The placement of the building as an infill development does not substantially detract from the prevailing street wall character.
3. Support for existing open space: The development does not detract from existing publicly accessible open space with the majority of existing open space located several blocks from the property.
4. Quality and orientation: The location on the corner of Lancaster Street and Elm Street afford the highest solar exposure at the west elevation of the building.

III. Roof-top appurtenances

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building,

Staff comment: The building design does not screen the proposed mechanical equipment located on the roof. Staff recommends the applicant explore:

- Building design solutions to extend the parapet wall at facades visible from the surround streets,
- Consolidation of mechanical equipment to the special architectural element at the corner of Lancaster and Elm Street, and
- Enclosing mechanical equipment with a screening element setback from the roofline.

IV. Shadow impact on open space

The location, massing and orientation of portions of buildings in excess of 65 feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided.

Staff comment: Not applicable. The proposed development is not adjacent to any existing publicly accessible open spaces.

V. Wind impacts

The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created.

Staff comment: Staff finds the combination of building setbacks, recessed building planes and other architectural elements, such as canopies and atriums assist to reduce wind impacts.

VI. Setback from existing structures

The location and design of proposed structures shall not create a detrimental impact on the structural integrity or safety of adjacent structures or the safety of occupants thereof.

Staff comment: Not applicable. The proposed development would not be constructed at the property line and would not burden adjacent properties.

VII. Building tops

Buildings or structures which exceed one hundred fifty feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building.

Staff comment: Not applicable. The proposed development does not exceed one hundred fifty feet.

VIII. View corridors, visual landmarks and gateways

The placement and massing of proposed development shall not substantially obstruct public views to landmarks and natural features from those locations identified on the View Corridor Protection Plan.

Staff comment: Not applicable. The proposed development is not within a view corridor, visual landmark or gateway location.

IX. Signage / Awnings / Canopies

Staff comment: Staff finds the design, placement, location and number of signs to be appropriate for the residential building entrances and retail uses as mounted to the building elements at a pedestrian scale.

MULTIPLE-FAMILY STANDARDS. Multiple-family shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

   Staff comment: The proposed development is located in the B-3 Downtown Business zone and is adjacent to the B-7 Bayside neighborhood with comparable mid-rise residential buildings that include the Schlotterbeck and Foss building and 75 Chestnut Street building. The proposed multi-family building includes architectural elements that enhance a residential character through the façade material of brick and horizontal siding and window pattern.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

   Staff comment: The proposed development is located within close proximity to the street and includes streetscape elements for pedestrian with building entrances facing the street.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

   Staff comment: The proposed development includes open space within the building setbacks areas that encourage active street usage. Staff finds the amount of open space to be limited based on the amount of residential units, and recommends the applicant integrate additional open space such as balconies for residents, landscaping or enhanced streetscape elements.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principle living areas and shall also provide sufficient storage areas.*

   Staff comment: Staff finds the proposed multi-family overall provides ample windows and sufficient interior storage for each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Not applicable. Existing surface parking to remain.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

   Staff comment: Not applicable

June 19, 2023

Sean King
Urban Designer
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Re: 89 Elm Street Apartments - Design Narrative

Dear Sean,

Please see the below responses to the Design Review Comments provided on 5/25/23.

I A. = A note has been added to indicate 0.7 Max VT of glazing

3. = The Charcoal panel is recessed from other portions off the facade and is recessed for a portion of Elm Street

4. = The area on Elm Street where residential units are located have windows with a minimum sill height of 4'-3" above grade, the windows with lower sills are not apartments but common amenity spaces. The lowest apartment window sill on Oxford Street is 4'-2" Aff. We believe that this provides adequate privacy to the living units and is a similar relationship existing living unit windows have in the neighborhood.

4. = We can review the corner rooftop element further

4. = We can review the wall mounted HVAC unit locations for a more discreet visual appearance

III. = We can look at a parapet wall at the exterior wall to further screen the rooftop HVAC unit visibility from the surrounding neighborhood.

Sincerely,



Ryan Senatore, AIA LEED AP

Principal

207-747-5159

senatorearchitecture.com

ryan@senatorearchitecture.com

500 Congress Street, Suite 2
Portland, Maine 04101

ACORN ENGINEERING, INC.

City of Portland Planning Department
Zach Powell – Senior Planner
389 Congress Street, 4th Floor
Portland, Maine 04101

June 19th, 2023

Subject: Design Review Comment Response Letter
89 Elm Street, Portland, Maine – Major Site Plan Application

On behalf of 89 Elm Street, LLC, Acorn Engineering is pleased to respond to the following comments from the City of Portland Planning and Urban Development Department review of the 89 Elm Street, Major Site Plan Application.

The following is in response to the Design Review Comments received May 25th, 2023.

Design Review Comments:

Consistency of design and materials for streetscape and pedestrian amenities; - Not Met

Comment: The proposed development includes streetscape and pedestrian amenities through tree wells, lighting, and concrete sidewalks. Staff finds the proposed streetscape amenities shall correspond more closely with the MDP currently in review that align with specific street typologies.

Response: The proposed streetscape and pedestrian amenities for the 89 Elm Street development align with the street typologies submitted with the MDP. Please refer to the site and Landscaping plans which reflect the street scape amenities associated with the 89 Elm Street development.

Framing of outdoor open space and linkages; - Not Met

Comment: Staff identifies linkages to existing open spaces in the surrounding neighborhood to contribute to the outdoor open space of the proposed development. Staff recommends additional streetscape amenities to allow for pedestrian comfort. Examples may include paving distinction at building entries, fixed seating, street trees and additional planting on private property.

Response: Please refer to the Site and Landscaping plan which reflects the paving distinction and amenities proposed.

Relationship to Pedestrian Environment:

Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Comment: The exterior design along the street facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to ground plane to allow for recessed planting areas or trellis system for vines).

Response: Please refer to the Design Narrative and Renderings (dated 6.9.23) prepared by Ryan Senatore Architecture for more detail on the exterior design of the building.

Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) or .7 higher) and contemporary design. – Not Met

Comment: Storefront windows identify the retail use and building entrances to activate the street. The applicant shall indicate that a VT of .7 or higher is met at the first 35 feet of the building façade.

Response: Please refer to the Design Narrative prepared by Ryan Senator Architecture dated 6.15.23.

Sidewalk, crosswalk, and street paving materials; - Not Met

Comment: Sidewalk areas in the proposed development include concrete surfaces, pole lighting, and tree wells. Staff recommends adequate pedestrian passage of six-feet minimum based on applicant's proposal to activate the streetscape. In addition, staff recommends a crosswalk across Lancaster Street at the corner of Elm and Lancaster Street.

Response: Please refer to the site plan which reflects the 6' concrete pedestrian zone. The plan also reflects the proposed crosswalks across the Lancaster and Elm Street intersection.

Landscaping, planters, irrigation, and tree guards and grates; - Not Met

Comment: Tree wells are proposed, with the applicant to provide a landscape plan with tree, plant material and irrigation for staff review. In addition, staff recommends removal of tree wells in front of building entrances to eliminate narrowing of sidewalk.

Response: The street tree well placement has been altered to not impede entrances. Please refer to the Site and Landscaping Plan for more information.

Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and – Met

Comment: The proposed development has not included any pedestrian amenities as indicated in this design standard. Staff recommends the location of pedestrian amenities such as benches and other seating, trash receptacles and other special features be concentrated around building entrances and to enhance the streetscape experience.

Response: Please refer to the Site and Landscaping plans which reflect the placement of proposed amenities.

Urban open spaces.

Comment: The proposed development would create a publicly accessible urban open space along Lancaster Street through setback beyond the street build-to line. Staff finds the provision for varied, high quality, creatively designed and comfortable amenities are not met and recommends additional streetscape elements that highlight entrances with a surface material change and fixed outdoor seating that is usable beyond retail business operating hours.

Response: Please refer to the Revised Site and Landscaping plans which include the proposed surface material change and street scape elements.

Building form, scale and massing;

Comment: Staff recommends additional variation of the façade plane to recess the upper floors and vertical material delineation, at the charcoal metal panel, to reduce the building's scale.

Response: Please refer to the Design Narrative prepared by Ryan Senator Architecture dated 6.15.23.

Façade proportion and composition;

Comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of fenestration pattern at the building's middle and change of material at the building's top. Staff finds the punched windows along the street facing facades to appropriate and recommends further window recession at the lower floors where residential units are proposed to allow for additional privacy, plant screening at foundation walls and further articulate a pedestrian-scaled massing.

The proposed building includes a signature building roof-top element at the Lancaster and Elm Street intersection that staff finds is not integrated into the overall building's composition. Staff recommends a stepback of the signature building roof-top element to clearly define the parapet wall at the upper floor. Furthermore, applicant to clarify if this element is a rooftop appurtenance, which would allow for a consolidation of rooftop mechanical equipment and visual screening where voids are currently proposed. Staff finds the location of façade mounted HVAC equipment to not respect the surrounding residential context and recommends either relocation to roof or an integrated window system for each unit that is less visible.

Response: Please refer to the Design Narrative prepared by Ryan Senatore Architecture dated 6.15.23.

Roof-top Appurtenances:

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building,

Comment: The building design does not screen the proposed mechanical equipment located on the

roof. Staff recommends the applicant explore:

- *Building design solutions to extend the parapet wall act facades visible from the surround streets,*
- *Consolidation of mechanical equipment to the special architectural element at the corner of Lancaster and Elm Street, and*
- *Enclosing mechanical equipment with a screening element setback from the roofline.*

Response: Please refer to the Design Narrative prepared by Ryan Senator Architecture dated 6.15.23.

Multiple-Family Standards. Multiple-family shall meet the following standards:

Open space on the site for all multiple-family development shall be integrated into the development site.

Comment: The proposed development includes open space within the building setbacks areas that encourage active street usage. Staff finds the amount of open space to be limited based on the amount of residential units, and recommends the applicant integrate additional open space such as balconies for residents, landscaping or enhanced streetscape elements.

Response: The site design is in compliance with the open space standards set forth in the City of Portland Land Use Code. Please refer to the Landscaping plans for the enhanced streetscape elements.

Please let us know if you have any additional questions or comments.

Sincerely,

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Danielle McGowan, E.I.
Project Engineer
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

City of Portland Planning Department
Zach Powell – Senior Planner
389 Congress Street, 4th Floor
Portland, Maine 04101

August 25, 2023

Subject: Comment Response Letter #2
89 Elm Street, Portland, Maine – Major Site Plan Application

On behalf of 89 Elm Street, LLC, Acorn Engineering is pleased to respond to the following comments from the City of Portland Planning Department review of the 89 Elm Street, Major Site Plan Application.

The following is in response to the City Staff comments dated July 21st, 2023 and Design Review Comments dated June 26, 2023. Feedback from the Board, neighbors, and other stakeholders has also been implemented into the revised application materials.

Consulting Traffic Engineer:

Comment: According to information contained in the applicant's Traffic Movement Permit application, the proposed project will generate traffic levels that would require a Traffic Movement Permit. Accordingly, I would suggest a condition of approval be included that notes occupancy of the project cannot occur until the Traffic Movement Permit is issued and all required mitigation of that permit is implemented as defined.

Response: The Traffic Movement Permit project Scoping Meeting was held on May 8th, 2023. Based upon the feedback obtained at that meeting the Traffic Impact Study (Section 7) was completed and submitted to the City on August 3rd, 2023. The Traffic Movement Permit application/review is underway and making active progress with the City and Maine DOT.

Comment: The applicant has not provided a layout of the parking lot on Lancaster Street west of Cedar Street, nor confirmed whether it meets the City corner clearance requirements. Submit a layout that meets City dimensional requirements, along with defining the improvements at the Lancaster Street driveway (e.g., radii, sidewalk section between the driveway and Cedar Street). Lastly, I would suggest some form of buffer/separation be provided between the parking spaces and sidewalk on Lancaster Street.

Response: The existing parking lot, west of Cedar Street, is currently paved up to the Lancaster ROW with two, 30' wide curb cuts to access the lot. As part of the 89 Elm Street project, the Applicant is proposing to close one of those curb cuts and maintain the other to provide access to the existing ADA parking spaces in this lot, which is otherwise not associated with the 89 Elm Street project. This parcel is its own separate lot intended to remain as is and may be redeveloped in the future subject to a standalone Site Plan application. Since this is an existing curb cut, we

have not analyzed whether it meets the City corner clearance requirements. Please refer to the site plan for more information and associated dimensions.

Comment: The applicant shall submit a dimensioned plan sheet of the two parking lots on Cedar Street to document driveway width, aisle width and parking stall size. The layout shall meet City dimensional requirements and/or documentation on waiver requests shall accompany the plan sheet.

Response: Please refer to the site plan which provides dimensional details on the existing parking lots and drive aisles. The southern most parking lot on Cedar St parking aisle width has been increased from 16 ft to 22 ft for two-way traffic. A waiver request has been requested for a 22 ft drive-aisle, similar to recently approved projects. Please also refer to the updated Waiver Request document.

Comment: The applicant has provided turning template graphics and those graphics indicate reasonable access can be provided. However, it is unclear whether the design vehicle used is representative of trucks that will service the site. The applicant shall provide documentation that the design vehicle used is appropriate.

Response: The attached turning template models a 29' long refuse truck accessing the proposed trash enclosure. The turning template was modeled using AutoCAD 2020 Vehicle Tracking Software. The size vehicle modeled was cross referenced and verified with Casella Waste Systems. Note that in response to feedback from the neighborhood, Planning staff, and the Planning Board, the Applicant has relocated the solid waste enclosure to Lancaster Street to eliminate the need for a refuse truck to utilize Cedar Street to access the enclosure.

Comment: The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards of §1.5.1.A. of the Technical Manual.

Response: There are five existing curb cuts located on the Southwest side of Cedar Street. Two of the five existing curb cuts are proposed to be combined to improve access to the existing parking lot on the Southeast side of the Site Plan, which also provides an access easement to 89 Elm Street for various infrequent services such as building maintenance. The Applicant has considered this driveway as one of the two driveways associated with the project because there is an access easement and improvements are proposed to the curb cut and parking lot. The remaining curb cuts on Cedar Street are outside of the project boundary and are proposed to remain as is.

Furthermore, along this block, Lancaster Street currently has three existing curb cuts. The project proposes to close one, modify one, and maintain one. The modified curb cut, which is being considered a driveway associated with the project, is accessed from Lancaster Street for solid waste access. The Applicant is proposing to provide a beveled mountable curb to maintain the curbline and drainage while allowing biweekly access for a refuse truck in response to stakeholder feedback. Please refer to the Site Plan for more information, along with the dimensional details on the existing and proposed curb cuts.

In summary, although the Applicant maintains site control over four curb cuts on this block, only two are associated with this Application by virtue of access needs and proposed surface improvements. The other two curb cuts under site control are existing and serve existing parking. Neither the parking lots nor the curb cuts are proposed to be modified by this project and will be subject to City review in the future should modifications ever be proposed.

Comment: It is likely that the traffic study associated with the Traffic Movement Permit will include an evaluation of converting Oxford Street from one-way to two-way traffic flow. The applicant should confirm the proposed northerly curb line would be compatible with a two-way conversion.

Response: That study is still ongoing between the Traffic Consultant and the City. Oxford Street is proposed to remain a one-way street as part of this application. A curb extension is proposed at the corner of Oxford and Elm Street to enhance pedestrian safety and circulation for the building and to formalize the on-street parking located along Oxford Street. Please refer to the Site Plan which depicts over 24' of remaining travel width between the existing easterly Oxford curbline and the proposed westerly curbline/on-street parking projection.

Forestry:

Silva Cell Details Sheet

Comment: Silva Cell System – Note V – Underdrain with first flush capacity to wash salts and other surface water pollutants should be included in proposed systems subject to salts and deicing materials.

Response: The Silva Cell Tree Well is intended to be utilized for the sole purpose of the excess space and structure that allows for healthy and successful root growth. The Street tree wells along Lancaster Street are to be placed in raised Granite Planter beds which will act as a barrier for salt from entering the street tree wells. Otherwise, stormwater attenuation and filtration is occurring on site within the internal access drive.

Comment: Tree Grate at Silva Cells – Include additional information on root barrier material along specified edges to protect adjacent infrastructure and guide root growth as appropriate.

Response: The purpose of the Silva cell system is to provide a protected/enclosed area to support and promote root growth and reduce impact of root growth on or affecting the abutting infrastructure. The root barrier material is to be in accordance with the Silva Cell manufacturer guidelines along with the City of Portland approved material. Please refer to the Silva cell cross section detail. Please note that this level of detail will be continually progressed as the project approaches construction. Coordination with various utilities is ongoing to ensure these systems are compatible with the various underground infrastructure in the area.

Comment: Tree Grate at Silva Cells and Silva Cell System – Note S – All Street tree systems without an open bed design and curbing or edge guard should have openings provided around tree trunk and root flare that are 4' in diameter. Openings should have root ball planted up to base of grate, consider a cobble or gravel infill material up to root flare if soils within opening need to be flush with adjacent grade edge.

Response: Please refer to the narrative provided by the Dry Landscape Architecture for tree grate cover.

Comment: Silva Cell & Paver Detailing – Please clarify if the silva cell system will extend under a portion of proposed unit pavers along street tree plantings areas. Applicant is strongly encouraged to utilize silva cells in this way as to capture permeable paver potential and expand soil volumes for street tree plantings. Street tree wells or other tree planting areas should provide a minimum volume of 600 cubic feet of soil material per tree.

Preferred volumes are as follows:

- *Large Trees: 1,500 cubic feet of soil within a 27 foot radius (the radius includes tree well planting area and any adjacent subsoil zones that could support/reasonably accommodate rooting growth).*
- *Medium Trees: 1,000 cubic feet of soil within a 22 foot radius.*
- *Small Trees: 600 cubic feet soil within a 16 foot radius.*

Where soil volumes within the maximum allowable radii for adjacent trees overlap, up to 25% of the required soil volume per tree may be shared.

For trees that are designed to have a cover soil volume which connects to an open area (for example behind the sidewalk), the open area can be considered as part of the required soil volume.

Response: The silva cells are proposed to be placed beneath the proposed pavers. This will be a continuous connecting system; therefore, the intended soil volume may utilize the 25% shared soil volume requirement. The proposed footprint of the silva cell system is provided on the attached exhibit and the extent of the silva cell footprint is provided on the landscape architect plan. Please refer to the narrative provided by the Dry Landscape Architecture for more information on the proposed tree selection and soil quantity.

Comment: For existing trees to remain, the root structure of existing tree shall be protected to the extent feasible and provided with additional soil volumes to meet the above requirements.

Soil Volume Calculation shall be calculated as:

- *Area of Open Soil x Depth of Soil) plus (Area of Covered Soil x Depth of Soil)*
- *All soil types are calculated at full volume.*
- *There may be multiple soil volume areas included in the calculation depending on design*

The applicant is encouraged to find opportunities to create continuous/connected, unified soil volumes along linear blocks of street tree plantings where possible, or individual tree planting conditions that support a mature and healthy street tree. Street tree and street tree support infrastructure shall provide consideration and accommodation for:

1. *Sufficient soil volume*
2. *Truck flare and adequate space/capacity for trunk and trunk flare growth over time*
3. *Water into soil (very important part of success)*
4. *Water out of soil*
5. *Sufficient room for canopy growth of tree*
6. *Specifications to ensure quality of nursery stock.*

Response: In the event any of the existing trees remain, the team will analyze incorporating silva cells to support the existing and growing root structure.

Landscape Planting Plan

Comment: (3) LL tree planting call out – "LL" tree code not listed on planting schedule.

Comment: "PQ" call out – Please describe planting area conditions for proposed Virginia creeper

plantings and clarify how planting will be contained. For trellis – provide additional section/elevation and detailing information for trellis and planting condition with relationship to building.

Comment: Plant Schedule – Liquidambar styraciflua – Most cultivars of sweetgum eventually produce seed pods, which are round form and treacherous along walkways. Recommend alternate fastidget species at proposed location. All walkways should be clear of any species that typically produce seeds or fruits that would track inside buildings (staining from various fruits) or when trod upon do not compress and would form a walking hazard (sweet gum seed pods, buckeye or chestnut seeds, etc…)

Comment: Plant schedule – RA Rhus aromatica – Grow low sumac habit and form are not conducive to spaces adjacent to walkways or high profile areas. Consider alternate species "aronia melanocarpa'.

Comment: Plant schedule "XS" xanthorizza simplissima – Ensure yellowroot and other spreading plants that may undesirably overtake planting areas are edged or otherwise contained adequately to prevent maintenance issues and impacts to adjacent planting areas. Hay-scented fern, Virginia creeper, and possibly Virginia sweetspire can be aggressive in growing habits and should be adequately contained where risk of intrusion or escapement is possible.

Comment: L2 – Plant Schedule – Consider pin oak (Quercus palustris) where overhead clearance is appropriate and if soils are not alkaline.

Comment: L2 – Plant Schedule – Forestry would strong recommend the "Jefferson" cultivar of elm species because of a stronger central leader growth habit and less problematic crown growth pattern. Other elm species tend to have over crowded leader formation and co-dominant leader growth.

Comment: Plant Schedule – "CC" tree species – A small tree species along walk edge raises some concerns about inadequate and inconsistent street tree canopy at maturity. Consider larger canopy species, such as pin oak species suggested above, for better reduction of urban heat island effect and more uniform canopy cover with Ulmus species, or a medium tree species. If applicant insists on smaller species, please provide rationale. Carpinus species typically are slower growing and less drought tolerant than proposed site location will accommodate. Prunus sargentnii, gleditisa or other medium sized tree species could be more appropriate.

Comment: Pin Oak Removal – The pin oak removal has some potential to be controversial for the neighborhood and would likely benefit from a more personalized update and coordination with neighborhood members. Forestry would strongly encourage pin oaks to be incorporated into street tree design, particularly as a replacement for Carpinus Caroliniana species (shown as "hornbeam" species in plant schedule). Forestry is still reviewing the removal of the pin oak tree and will provide additional comments in a future correspondence.

Response: Please refer to the Landscape Plans and narrative prepared by Dry Landscape Architecture for more information on the proposed plant species.

Landscape Materials Plan

Comment: Pavers & Soil Volumes – For unit pavers along the side edge of proposed street tree areas of streetscape, applicant is strongly encouraged to extend subsoil volumes under paver areas and

along street for additional rooting for street tree elements. Consider bridging or an approved volumetric design to ensure paver areas can support a soil volume of street trees. See earlier comment about ensuring paver details, landscape materials plan callouts and silva cell details/systems relate and reference each other clearly and consistently. Show where pavers are being integrated into silva cell systems and extent of street tree subsoils in plan (ghosted or dashed line for example).

Response: Understood. The proposed silva cell network has been laid out to support the necessary soil volume needed for the proposed tree selection. Please refer to the Silva cell exhibit and the Landscape plan and narrative prepared by Dry Landscape Architecture for more information.

Parking

Comment: Two 30-minute zone parking spaces on Elm Street are acceptable, and if necessary, three 30-minute zone parking spaces on Lancaster Street, but it seems excessive. The remainder of spaces labeled as "No signed for time limits or usage" should be signed as 1-Hour or 2-Hour spaces as they currently are.

Response: Understood. Please refer to the revised Site Plan and attached Parking Signage exhibit.

Planning

Comment: Based on responses from the Applicant, Planning staff is awaiting the submission of:

- *Updated architectural drawings to demonstrate how roof-mounted utility structures will be screened.*
- *Information on the estimated cost, with documented sources, of relocating all electrical service (including utility poles) underground and any barriers to revising existing overhead facilities.*
- *Updated application materials related to the design and location of mechanical equipment (façade- and roof mounted)*

Planning staff will provide comments in a future comment letter once these items have been submitted.

- Response: Please refer to the Design Narrative and Renderings (dated 7.27.23) prepared by Ryan Senatore Architecture for more detail on the exterior design of the building and more information on the roof-mounted utility structures screening.
- Regarding electrical services, we are not aware of any ordinance or requirement that requests a cost estimate for utilities until the building permit/performance guarantee phase of the project. The design team has worked diligently with CMP to find solutions that improve the aesthetics throughout the Bayside MDP area while being technically and economically feasible. This process is still ongoing and is not at a point of collecting accurate cost estimates. Because 89 Elm Street is benefitted by the fact that it has minimal conflict with overhead wires (no overhead electrical on Oxford and existing overhead electrical on Elm and Lancaster are on the opposite side of the street), significant changes to the electrical distribution system are not proposed as part of this application. As previously communicated, significant changes to the overhead system are proposed as part of Phase 1B of the MDP (196 Lancaster) where there are conflicts and a desire to remove overhead wires from the shared-street.

Those plans and application will be forthcoming.

Comment: §14.6.1.B.1: Based on the current location and proposed interior chutes for solid waste, it is unclear how residents on the ground floor in the western portion of the building would dispose of solid waste. Submit a narrative describing how ground-floor residents would dispose of solid waste. Staff recommends providing options for solid waste disposal that do not necessitate ground-floor residents who use assistive devices from having to exit onto Elm Street, go along Oxford Street, and go to the back of the building to dispose of solid waste.

Response: Please refer to the revised location of the trash enclosure. It can be expected that residential and retail tenants will utilize the 'back of house' pathway to the dumpster enclosure where they can utilize the trash chutes into the enclosure. Please refer to the Civil and Architectural plan set for more information on the location and accessibility.

Comment: §14.6.1.D.2.a.: Indicate the location of proposed signage to comply with §1.12.4. of the Technical Manual.

Response: Public bicycle parking signage will be installed to comply with section 1.12.4 of the technical manual. Please refer to the Landscape plan for more information on bike storage location.

Comment: §14.6.1.D.3b.: Snow storage is proposed on the northwestern portion of the site, but does not clarify how encroachments onto pedestrian walkways (shown to the right highlighted in red) will be avoided. Update the site plan set to demonstrate how snow storage will not result in encroachment on the walkway.

Response: The proposed snow storage location has been revised and is now provided on the north side of the 16' access aisle, as seen on the Civil Site Plan, Sheet C-10.

Comment: §14.6.2.C.4.: Update the submitted Conformity with Land Use Ordinance document to identify how the application is providing the required number of street trees (201) through new plantings (20 street trees) or alternative mechanisms (Fee in-lieu or existing plantings), with any new plantings labeled as an alternative mechanism in the landscaping plan sheet.

Response: The development currently proposes 21 Street trees spaced at 25ft-35ft along the property frontage in accordance with the City requirements. The development proposes two street trees to be installed on Cedar St as a condition of occupancy for 89 Elm Street, for a total of 23 street trees, unless a site plan is submitted for 50 Cedar Street in which case landscaping will be addressed as part of the site plan requirements. It is not feasible to provide 201 trees in the dense area, therefore, the equivalent fee for the remaining 178 trees is proposed to be paid to the City of Portland Tree Fund.

Comment: §14.6.3.B.: Upon review of the submitted photometric plan, Planning staff requests the following updates::

- *Update the photometric plan and site plan to comply with the spacing the fixture requirements for Downtown decorative lights in §10.4 of the Technical Manual.*
- *Confirm compliance with §12.3.1. of the Technical Manual (Maximum to Minimum Illumination levels shall not exceed a ratio of 20:1, and with the average illumination level (1.25 fc) of §12.3.2. of the Technical Manual on the photometric plan.*
- *Update the photometric plan to comply with §12.3.2. of the Technical Manual:*
  - *Minimum (0.2 fc) and maximum (5.0 fc) illumination levels. The submitted plan includes minimum illumination of 0 fc and a maximum of 8.4 fc.*

  - *Average illuminance level (0.5 fc), uniformity ratio (Average-to-Minimum: 3:1), and maximum illuminance level (4.0 fc) for surface parking.*
  - *Uniformity*
- *Update the photometric plan to ensure that the proposed light trespass across property lines does not exceed 0.1-foot candles with the property boundary of 44 Cedar Street.*
- *Add notes on the photometric plan that the proposed wallpacks will utilize models that do not exceed 3,500 lumens or 3,000K CCT to comply with the standards of §12.3.3. and §12.3.5. of the Technical Manual.*
- *Update the photometric plan and site plan to provide lighting along the mid-block pedestrian connection on Oxford Street, while managing light trespass onto 215 Oxford Street. A combination of ground-mounted lighting and required street lighting may help to meet this requirement.*

Response: Please refer to the photometric plan that has been revised to comply with the City of Portland Technical Manual as noted above. Please note the photometric plan only models the proposed lighting associated with the project on private property. Locations where "0.0 fc" are shown reflect locations where the lighting for the 89 Elm building will not extend into. These zero values are placeholders and do not mean the area will be unconforming to the city standards given we are not able to capture lighting from the ROW lighting infrastructure, neighbors spillover, etc. Existing lighting outside the property line is to remain and is expected to maintain an appropriately lit area for the surrounding area in tandem with the revised lighting plan. Relevant notes regarding the lumen and temperature levels have been added to the photometric plan.

Public Works:

Transportation

Comment: The applicant shall review the placement of the trees in relation to the on street parking spaces. Passenger doors may conflict with the (raised curb) tree wells.

Response: Please refer to the Landscape Plans and narrative prepared by Dry Landscape Architecture for more information. Where possible, elimination or reduction of conflict has been made.

Comment: Improvements in the ROW shall be dimensioned on the plan view sheets. For example ROW, street, lanes sidewalk, esplanade driveways (and other improvements) widths as well as at locations when a width changes. In this case it is still needed from curb face to curb face. The overall ROW width should be shown for streets impacted by the project (Elm Street and Lancaster Street). In addition, the Applicant shall consider the option of shifting the curb line of Elm Street farther to the east in order to construct a cycle track from Oxford Street to Lancaster Street, including transitions to and from the existing in-street facility. A possible cross-section for Elm Street North of Oxford Street is included below:

Response: Please refer to the Civil Site Plan, Sheet C-10 for more dimensional information. The existing bike lane is proposed to remain along Elm Street from Oxford to Lancaster Street. The modifications to Elm Street suggested above were not contemplated in the MDP process which promotes a cohesive, holistic approach to the overall 8-acre redevelopment area. This Application does not propose to alter the Elm Street cross section. It should also be noted that Elm

Street is currently under moratorium until 2027.

Comment: What is the timing proposed for the on street parking outside of the 30min signed spaces?

Response: Please refer to the Parking Signage exhibit and Site plan for more information on the proposed signage.

Comment: The applicant shall submit a draft sidewalk easement for review.

Response: It's understood that this document can be developed and executed after Planning Board approval between the Applicant and Staff.

Comment: The applicant shall submit a draft maintenance agreement for the Bayside master plan that addresses each phase/project proposed under one agreement. Would parking meters be proposed? The parking Division should weigh in on this item as well.

Response: It's understood that this document can be developed and executed after Planning Board approval between the Applicant and Staff. Parking meters are not proposed.

Comment: The City has invested heavily in this area. All of the sidewalks on Elm Street between Oxford & Lancaster Streets are less than seven years old (the west side was constructed last year), including the pedscale lighting. DPW asks, to the extent that is feasible, that the applicant limit disturbance or reconstruction, and reuse equipment/materials when possible.

Response: Understood. Reuse of existing equipment and material will be utilized when feasible. The intention is to maintain the existing curbline along Elm Street and pour new sections of reinforced concrete sidewalk as needed, after construction of the building. Please refer to the Document F. Waiver Requests for the waiver to DPW to limit disturbance in Elm Street.

Water Resources

Comment: DPW recommends that the proposed catch basin where the untreated flow enters the R-Tank have a 3' sump and be equipped with a trash guard type device to limit the migration of debris into the storage system.

Response: Please see the revised Drainage & Grading Plan which reflects this comment.

Comment: DPW recommends that the submission of a plan and profile design sheet for the proposed off-site storm drain extension on Lancaster Street, with DPW review and approval, be submitted as a condition of approval.

Response: A plan and profile will be submitted to DPW for review and approval as a condition of approval. We anticipate submitting this plan as part of Phase 1B, 196 Lancaster Street which will be submitted to the City in the coming weeks. We have analyzed this corridor and are confident both the new MS4 and water main systems can be installed from the 89 Elm frontage on Lancaster Street through to Preble Street.

Please note that as part of this Application, the intention is to leave the linear portion of Elm Street largely untouched to avoid unnecessary moratorium paving. Sawcuts in the ROW are intended to provide a smooth and uniform repair section; however, given the public improvements through the new bumpout at Oxford Street and the new utility mains in Lancaster Street, the Applicant wishes to confirm and/or request that this work be exempt from any potential moratorium regulations associated with Elm Street. In other words, the intention is provide a repair section at each intersection without triggering the need to repave the entire frontage along Elm Street which

appears unnecessary and intrusive. Please refer to Document F and Sheet C-03 for the proposed pavement sawcut limits and waiver justifications.

Zoning:

Comment: The proposed Elm Street Gateway Sign identified in the site plan sheet and Landscape Architecture renderings is classified as a monument sign in the Land Use Code. §20.6.1.A. of the Land Use Code does not permit monument signs in the public right-of-way and there is not authorization for monument signs elsewhere is §20 of the Land Use Code. The application shall be updated to comply with the standards of §20 of the Land Use Code.

Response: The previous proposed "Gateway Sign" has been replaced with an art installation. Please refer to the Landscape plan for more information.

Design Review Comments:

Relationship to Pedestrian Environment:

Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following – Not Met

Comment: The exterior design along the street facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to ground plane to allow for recessed planting areas or trellis system for vines).

Response: Please refer to the Design Narrative and Renderings (dated 7.27.23) prepared by Ryan Senatore Architecture for more detail on the exterior design of the building.

Landscaping, planters, irrigation, and tree guards and grates; - Not Met

Comment: Street trees and tree wells are proposed within a furnishing zone, staff finds the proposed corten raised planter detail at Oxford Street is not appropriate within the City's right-of-way due to maintenance concerns, Staff recommends a typical tree well detail per technical manual, section 4.

Response: Please refer to the Landscape Plans and narrative prepared by Dry Landscape Architecture for more information on the proposed plant species.

Comment: The proposed development indicates light locations within the right of way and specifies a municipal light fixture as Peninsula Medium street (figure X-7B) per Technical Manual, section 10 standards. However, the Applicant shall add a decorative light pole and fixture along the building frontage on Oxford Street.

Response: As shown on the Civil Site and Utility Plan, the existing utility light pole on Oxford Street is to be replaced with a light overhanging on Oxford Street. Given the height of the

utility lines connected to this pole (relatively short telecommunications line), it is not feasible to include an additional decorative light pole beneath these lines along the Oxford Street frontage. We are continuing outreach to the various utility providers to explore opportunities to reroute this line to accommodate a new light pole.

Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and – Not Met

Comment: The resubmitted plans for the proposed development include pedestrian amenities for bench seating, trash receptacles, and signage, staff finds the proposed wood seat top insert (detail 08 tree well type 3/L3) Elm & Lancaster Street is not appropriate within the City's right-of-way due to maintenance concerns. Staff recommends a honed finish for comfortable seating. In addition, Staff finds the gateway sign at Elm and Oxford Street is restricted within the public right-of-way per LUC 20,6.1, staff recommends a building mounted sign as the gateway sign.

Response: Please refer to the Landscape Plans and narrative prepared by Dry Landscape Architecture for more information on the proposed plant species.

Façade proportion and composition;

Comment: The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of fenestration pattern at the building's middle and change of material at the building's top. Staff finds the punched windows along the street facing facades to appropriate and recommends further window recession at the lower floors where residential units are proposed to allow for additional privacy, plant screening at foundation walls and further articulate a pedestrian-scaled massing.

The proposed building includes a signature building roof-top element at the Lancaster and Elm Street intersection that staff finds is not integrated into the overall building's composition. Staff recommends a stepback of the signature building roof-top element to clearly define the parapet wall at the upper floor. Furthermore, applicant to clarify if this element is a rooftop appurtenance, which would allow for a consolidation of rooftop mechanical equipment and visual screening where voids are currently proposed. Staff finds the location of façade mounted HVAC equipment to not respect the surrounding residential context and recommends either relocation to roof or an integrated window system for each unit that is less visible.

Response: Please refer to the Design Narrative and Renderings (dated 7.27.23) prepared by Ryan Senatore Architecture for more detail on the exterior design of the building.

Roof-top Appurtenances:

All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building,

Comment: The building design does not screen the proposed mechanical equipment located on the roof. Staff recommends the applicant explore:

- *Building design solutions to extend the parapet wall act facades visible from the surround streets,*
- *Consolidation of mechanical equipment to the special architectural element at the corner of Lancaster and Elm Street, and*
- *Enclosing mechanical equipment with a screening element setback from the roofline.*

Response: Please refer to the Design Narrative and Renderings (dated 7.27.23) prepared by Ryan Senatore Architecture for more detail on the exterior design of the building.

Multiple-Family Standards. Multiple-family shall meet the following standards:

Open space on the site for all multiple-family development shall be integrated into the development site.

Comment: The proposed development includes open space within the building setbacks areas that encourage active street usage. Staff finds the amount of open space to be limited based on the amount of residential units, and recommends the applicant integrate additional open space such as balconies for residents, landscaping or enhanced streetscape elements.

Response: Please refer to the Landscape Plans and narrative prepared by Dry Landscape Architecture for more information on the proposed plant species.

Please let us know if you have any additional questions or comments.

Sincerely,

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Danielle McGowan, E.I.
Project Engineer
Acorn Engineering, Inc.

Attached:

- Arch Narrative
- Landscape Architect Narrative
- Parking Signage Exhibit
- Silva Cell footprint plan & extents

Revised/New Documents:

- Conformity with Land Use
- Waiver Requests
- Photometric Plan
- Turning template 29' truck
- Open Space Exhibit

August 29, 2023

Sean King
Urban Designer
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Re: 89 Elm Street Apartments - Design Narrative

Dear Sean,

Please see the below revisions to the building design based on feedback from the planning board workshop.

1.) The corner ‘crown’ element has been further defined, we have added mechanical louvered screens for the bottom portion of the openings in the crown to screen mechanical units beyond.

2.) Mechanical units have been removed from the facades and moved to the roof top within the ‘crown’ element, units have been removed from the closest point on the roof near the corner along Oxford Street

3.) We have revised the siding colors to alternate the massing along Elm Street between the ‘green’ siding and a ‘white’ siding

4.) A glazing transom has been added above the upper apartment entry which is the view corridor throughout he building toward cedar street.

5.) We have pulled the retail corner entry on Oxford Street out closer to the street for a less dark and recessed entry

6.) Awnings have been added above the retail space storefront windows and entry at the corner of Oxford and Elm to reflect the use within and provide an enhanced scaling element to the pedestrian experience at that level.

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500 Congress Street, Suite 2
Portland, Maine 04101

7.) A brick base has been added to the elevation facing Cedar Street

8.) Entry canopies have been added at the multiple entries facing Cedar Street to provide more visual interest and a more inviting elevation as requested.

9.) We have revised the siding colors for the portions of the building in the R6 Zone as a result of a meeting between Reveler and the neighbor's at which time the neighbor's indicated a desire for lighter siding at those ends of the building. The revised design has a light gray siding color within the R6 Zone.

We look forward to discussing the revised design at the upcoming planning board meeting.

Sincerely,



Ryan Senatore, AIA LEED AP

Principal

207-747-5159

senatorearchitecture.com

ryan@senatorearchitecture.com

500 Congress Street, Suite 2
Portland, Maine 04101

dry landscape architecture l.l.c.

31 Miller Avenue
Biddeford, ME 04005
Tel: 603.496.8020
Email: dry-la@outlook.com

August 25, 2023

Zach Powell
City Planner - City of Portland Maine
389 Congress Street
Portland, ME 04101

Subject: Open Space & the Public Realm

Dear Zach,

I am writing on behalf of Dry Landscape Architecture, LLC. and the development team for the 89 Elm Street project to formally present our open space and public realm improvements. Our proposal is the result of careful consideration and collaboration, incorporating valuable insights from public feedback and multiple meetings with both City staff and direct abutters.

- Forestry Discussion & City Staff review meeting- 08.23.2023
  - Attendees:
    - Robert Massengle
    - Alex Marshell
    - Mark Reiland
    - Zachary Powell
    - Kevin Kraft
    - Matt Grooms
- City Staff site walk - 08.23.2023
  - Attendees:
    - Robert Massengle
    - Alex Marshell
    - Mark Reiland
    - Danielle McGowen
- 89 Elm Landscaping Cedar Street Abutters Meeting - 08.23.2023
  - Attendees:
    - Sara Michniewicz
    - Amelia Lebreck
    - Andrew Rosenstein

The 89 Elm site is currently a surface parking lot spanning the B3 zone and R6 zones. The proposed development, and accompanying open space and public realm improvements, seek to enrich the neighborhood's public realm through improvements to the site while also incorporating feedback from the neighborhood and direct abutters. Specifically, the proposal focuses on the following key elements:

1. <u>Open Space and Public Realm Improvements:</u> As discussed during the coordination meetings, we are committed to enhancing the public realm in the vicinity of the development. This will include integrating public and private open spaces: balconies, multiple seating and café style areas, a range of bench types suitable for the public realm, additional soil volume for healthy urban trees, bike racks/storage, contributing to the overall well-being and aesthetics of the

Bayside neighborhood. We believe these improvements address the Planning Board's request to see a more robust open space program. In our meeting on August 23rd, we collected additional feedback from direct abutters to better understand the area between Cedar Street and the 89 Elm building. During the meeting we discussed approaches for better planting areas and preferred species to implement along the corridor. It was a productive meeting, and we have incorporated their feedback into the revised plans.

2. Urban context: The site does not allow us the space to provide the required number of street trees. The owner has maintained their commitment to the future improvements of the Bayside neighborhood and will address this short fall by an alternative mechanism - contribute fees in lieu of. The amended plan increases the street trees from 20 to 23 with the addition of two Pin Oaks along the western edge of Cedar Street.
3. Community Engagement: Our engagement with the community has been instrumental in shaping our proposal. We have taken their feedback into account and will continue to ensure ongoing communication as the project progresses.
4. Sustainability: We recognize the importance of sustainability. Our proposal incorporates energy-efficient design elements, waste reduction strategies, and sustainable materials to minimize the ecological footprint of the project.
5. Traffic and Accessibility: We have taken measures to address potential concerns related to traffic and accessibility, ensuring that the development will have a minimal impact on the neighborhood's infrastructure.

We appreciate the guidance and insights provided by the city staff and the neighborhood throughout this process. We believe that considerable progress has been made by the design team and the open space proposal for the development at 89 Elm Street balances the interests of the City of Portland, the neighbors, and the development. We are committed to working collaboratively to ensure that this project contributes positively to the community and adheres to the highest standards of design, sustainability, and inclusivity.

Thank you for considering our proposal. We look forward to further discussions and the opportunity to contribute to the growth and vitality of Portland.

Thank you for your attention to this matter.
Sincerely,

Braden Drypolcher, Principal
dry landscape architecture, LLC.

PUBLIC SIGNAGE SCHEDULE

A

℄

NO PARKING ANY TIME

B

B1 ℄: 2 HR PARKING, 9:00 AM TO 5:00 PM

B2 ℄: 2 HR PARKING, 9:00 AM TO 5:00 PM

C

C1 ℄: 30 MIN PARKING, 6:00 AM TO 6:00 PM

C2 ℄: 30 MIN PARKING, 6:00 AM TO 6:00 PM

D

D1 ℄: 15 MIN PARKING, 6:00 AM TO 6:00 PM

D2 ℄: 15 MIN PARKING, 6:00 AM TO 6:00 PM

E

E1

NO PARKING THIS SIDE OF THE STREET 1ST & 3RD WEDNESDAY OF THE MONTH 12:01AM TO 7AM (OCTOBER 1st – MAY 31st)

F

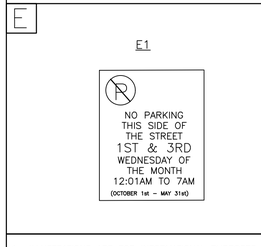
F1: NO PARKING ANY TIME

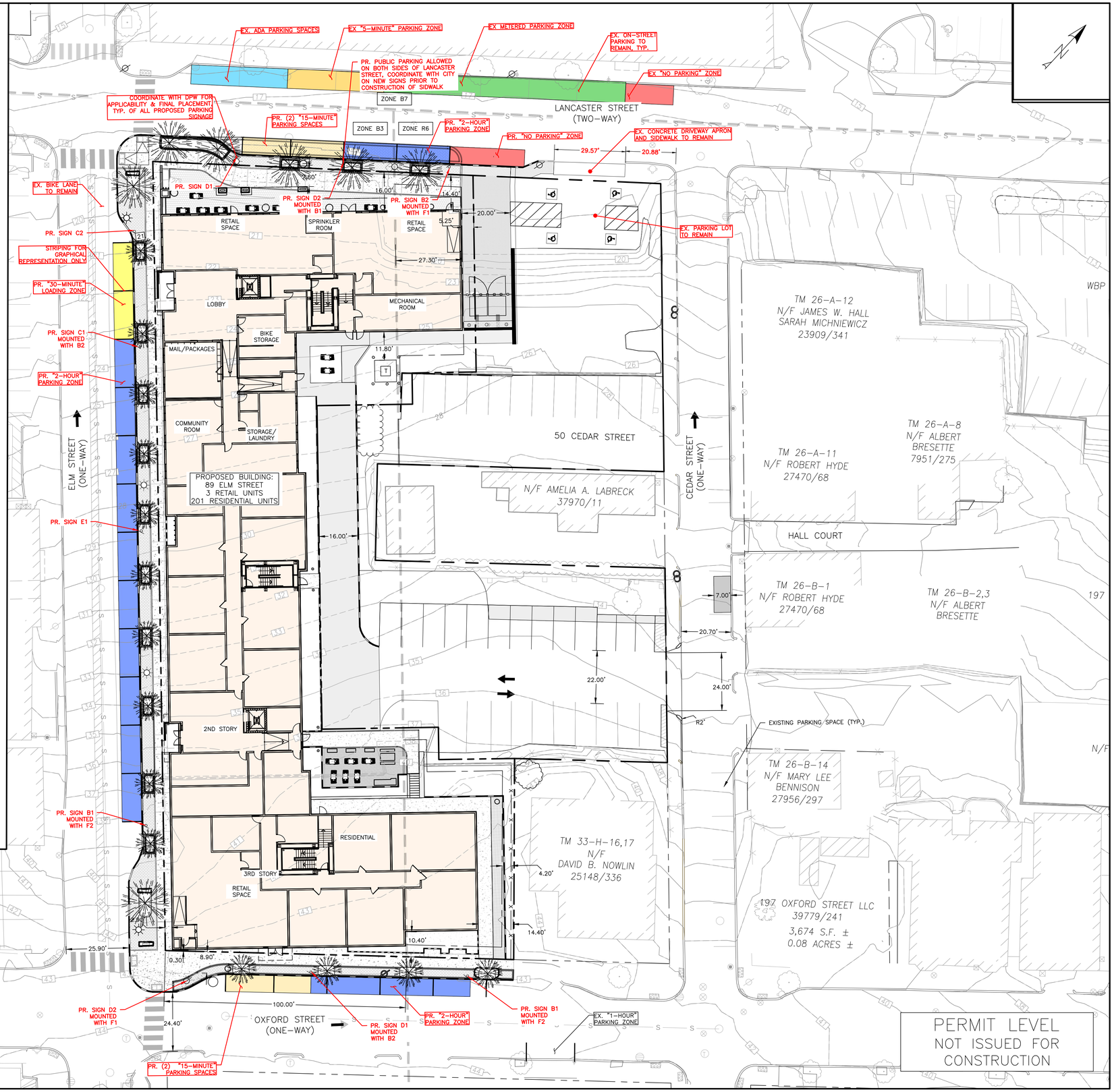
F2: NO PARKING ANY TIME

1. ILLUSTRATIONS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL SIGNAGE SHALL BE APPROVED AND INSTALLED BY THE TRAFFIC DIVISION OF THE DEPARTMENT OF PUBLIC WORKS.
2. CONTRACTOR TO INSTALL POST SLEEVES WITHIN THE CONCRETE SIDEWALK. LOCATIONS TO BE REVIEWED IN FIELD BY TRAFFIC DIVISION PRIOR TO POURING CONCRETE.
3. SIGN POST SHALL BE ALIGNED WITH CENTERLINE DENOTATION.
4. SIGN POSTS ARE OFFSET 5' FROM DRIVEWAYS AND 25' FROM INTERSECTIONS.

LEGEND:

- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB





ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: **ON-STREET PARKING SIGNAGE**

PROJECT NAME: **89 ELM STREET REDEVELOPMENT – PORTLAND**

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
CIVIL ENGINEERING • LAND PLANNING
PO BOX 3337, PORTLAND, MAINE 04104
(207) 775-2655

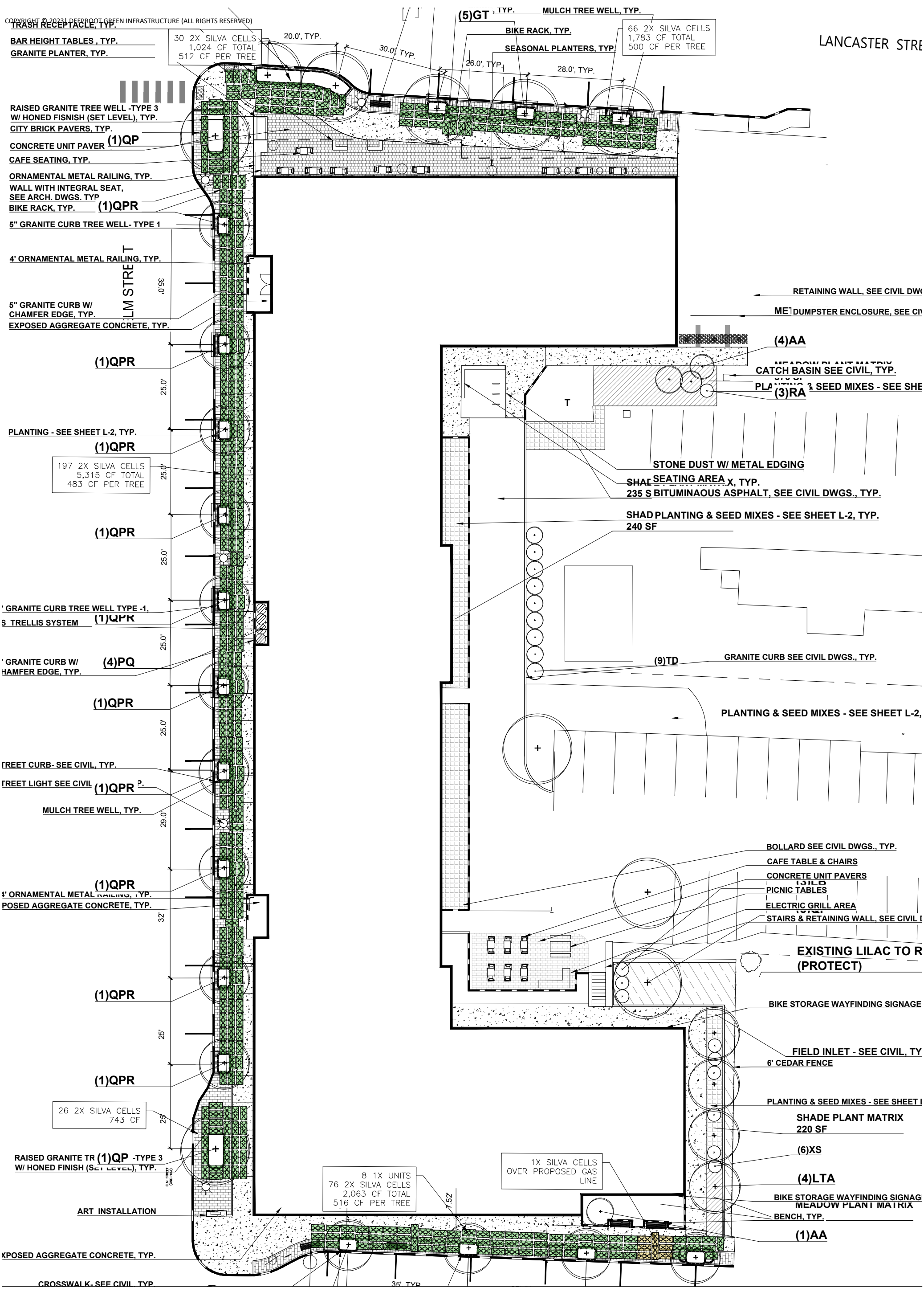
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

DRAWING NO.

EX

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deeproot

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San Francisco, CA 94122-2200
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Tel: 800 458 7668 or 415 781 9700
Fax: 800 277 7668 or 415 781 0191

98 ELM STREET
Portland, ME
US-23-0629

August 24, 2023

SILVA CELL LAYOUT

8 1x Silva Cells
383 2x Silva Cells

DISCLAIMER:
Silva Cell 2 layouts are preliminary, and are based on the accuracy of the provided base information.
Layouts use 6" spacing by default. Spacing between Silva Cells can vary between 1-6". Field adjustment may be required.

Client/Contractor is responsible for verifying location of structures and utilities that may be in conflict with this proposed Silva Cell 2 layout.
When determining size of excavation, allow space for Cells, spacing between frames, and backfill.

NOT TO SCALE

ACORN ENGINEERING, INC.

Planning and Urban Development Department
Attn: Zach Powell, Senior Planner
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

August 29, 2023

Subject: Final Application / Comment Response #2 – 89 Elm Street Redevelopment

Zach:

On behalf of 89 Elm LLC, we are pleased to submit this final site plan application and respond to the second and third round of comments received from neighbors, City Staff, and the Planning Board. Since the Planning Board workshop on July 25th, the design team has worked diligently with project stakeholders to revise the application in response to feedback. The design team has held separate in-person site walks and remote meetings with interested neighbors as well as the Forestry/Planning divisions, totaling four additional meetings since the Workshop was held. Attached to this letter is the full line-by-line comment response letter addressing site, landscape, and architectural comments. Notable outcomes from the aforementioned meetings and revised application materials include:

- The solid waste enclosure has been relocated towards a shared drive on the Lancaster Street frontage. As a result, Cedar Street is no longer required to be used as an accessway for refuse collection.
- Open space opportunities, both private and public, have been increased including seating/gathering areas internally and a curb bumpout at the Oxford intersection to enhance pedestrian functionality and safety.
- Vegetative buffering has been added between the development and neighbors along Cedar Street, including two proposed street trees along the Cedar frontage.
- Architectural revisions have been made in response to Staff feedback which are outlined in a design narrative authored by the project Architect, RSA.
- The on-site secure bicycle capacity has doubled from 41 to 81 by adding a second dedicated internal bicycle room near the Oxford building entrance.

We trust these modifications demonstrate the responsiveness and thoughtfulness of the Applicant and design team. We look forward to presenting the revised project at the next available Planning Board hearing, in which we will be seeking final approval to allow us to deliver these critical 201 affordable apartments. Per Land Use Ordinance Section 18.2.2.E., we are requesting that priority be given to this application to expedite its appearance in front of the Planning Board.

Sincerely,

Samuel J. Lebel
Project Manager
Acorn Engineering, Inc.

William H. Savage, P.E.
Principal
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

City of Portland Planning Department
Zach Powell – Senior Planner
389 Congress Street, 4th Floor
Portland, Maine 04101

October 3, 2023

Subject: Comment Response Letter #3
89 Elm Street, Portland, Maine – Major Site Plan Application

On behalf of 89 Elm Street, LLC, Acorn Engineering is pleased to respond to the following comments from the City of Portland Planning Department review of the 89 Elm Street, Major Site Plan Application.

The following is in response to the City Staff comments received September 27th, 2023. The comments were derived from the following reviewer teams:

- Zoning Worksheet/Site Plan Worksheet dated September 27th, 2023.
- Design Review Comments dated September 22nd, 2023.
- Traffic Comments (Tom Erico) dated September 26th, 2023.
- DPW Water Resources Comments dated September 26th, 2023.
- DPW Transportation Comments dated September 27th, 2023.
- Site Plan Review Comments (Bob Massengale) dated September 22nd, 2023.
- Technical Manager Comments – Woodard & Curran (Lauren Swett) dated September 27th, 2023.
- TDM Plan Requirement Comments (Bruce Hyman) dated July 10th, 2023.

The feedback received from the Board, neighbors, and other stakeholders has been implemented into the revised application materials as demonstrated within this document along with the attached and resubmitted application material.

Transportation Standards:

Comment -*Overview: This application has exceeded the minimum threshold for a Traffic Movement Permit and is current included as part of the Bayside MDP Traffic Movement Permit review. City Staff await the submission of Part 7 of the Traffic Study, including an analysis of the two-way conversion of Oxford Street.*

Updates Requested: Applicant to address comments from Tom Errico submitted as part of the related Traffic Movement Permit, as well as submitting Part 7. Approval of the TMP will need occur concurrently or before the approval of this site plan application.

Response: Please refer to Section 7 -Traffic Impact Study, prepared by VHB, dated September 2023. VHB submitted Section 7 to Tom Errico on 9/28/23.

Comment -*Overview: Updates to the application have shifted the proposed solid waste storage to Lancaster Street, which reduces pedestrian conflicts and vehicle sizing constraints along Cedar Street. Loading spaces have been identified in the site plan set along Elm and Lancaster Streets for use by commercial and residential tenants.*

As mentioned in the assessment of the Impact on Surrounding Street Systems section, review of the associated TMP is ongoing and will require approval before or concurrent with this site plan application.

Updates Requested: Applicant to address comments from Tom Errico submitted as part of the related Traffic Movement Permit, as well as submitting Part 7. Approval of the TMP will need occur concurrently or before the approval of this site plan application.

Response: Please refer to Section 7 -Traffic Impact Study, prepared by VHB, dated September 2023. VHB submitted Section 7 to Tom Errico on 9/28/23.

Comment - *Overview: Indoor bicycle parking & appropriate signage has been included to meet the minimum bicycle parking requirements for the site (80 required, 81 proposed). Snow storage has been identified on the site and designed to prevent encroachment & conflict with pedestrian walkways and landscaping.*

Outstanding comments remain from Consulting Transportation Engineer Tom Errico as to the compliance of proposed on-street space widths and existing lots being updated or modified, including the lot with four ADA spaces located at the corner of Cedar & Lancaster Streets. Deviations from the Technical Manual Standards of Section 1 will updates to the application to comply or the submission of formal waiver requests.

Updates Requested: Update the application to satisfy comments from Tom Errico (Attachment 4)

Response: Please see page 7 of this document for responses to Tom Errico's comments.

<u>Environmental Quality Standards:</u>

Comment - *Overview: The Parks Department appreciates the project approach to ensure long term health and performance of proposed street plantings.*

Minor comments from the Parks Department have been included in Attachment 4, along with a recommendation to remove granite curing around tree wells to allow for irrigation and first flush type capability for the Silva Cell systems.

The site has 355 feet of frontage in the R-6 district, which requires the 12 shade trees or equivalent of a shade tree via 6 plantings (1 per 30 feet). The submitted landscaping plan complies by retaining an existing tree, proposing the planting of 11 new trees, and multiple new plantings, which exceeds the requirement.

Buffers have been provided for the proposed solid waste dumpster and roof-mounted heat pump units. Staff have provided some additional comments about the proposed heat pump screening on the roof.

The site has 38 parking spaces which require the planting of two trees (or one tree and three shrubs) per five parking spaces. 33 shrubs and 7 trees are proposed in landscaped areas surrounding

the parking areas, which exceeds the required parking landscaping for the site.

One street tree is required per dwelling unit (201), with 21 street trees included in the landscaping plan. The remaining street trees will be provided through a contribution to the City of Portland Tree Fund. Through the plantings of the proposed trees and contribution to the Tree Fund, the application will meet the minimum Street Tree planting requirements.

Updates Requested: Update application to satisfy comments from the Parks Department.

Response: Please refer to the Architectural Narrative and Plans prepared by Ryan Senatore Architecture, dated 9/28/23, for more information regarding the screening features on the roof. It should be noted that this project does not feature any parking spaces. Given the ratio of one required street tree per dwelling unit, it is the intent that the equivalent of the remaining street trees needed will be provided through a contribution to the City of Portland Tree Fund.

The silva cell system was selected to maximize the soil volume and tree root capacity for the proposed street trees. As the sidewalk surface area is minimal, this approach helps maximize the root volume. The granite tree well approach reduces the impact of sand and salt from entering the trees' growing media. Although the irrigation component is useful in many applications, due to this the reduced surface area flowing to the system, in addition to the various utilities surrounding the systems, the design team feels the raised granite tree well design is the best approach to reduce potential for sand/salt runoff into the system, provide more soil volume to the trees, and provide aesthetic appeal. It should be noted that significant investments into stormwater management are being made internally on site as well as across the street at 196 Lancaster Street in which a Site Plan application is forthcoming. The granite curbing around tree wells is in accordance with the approved West Bayside Master Development Plan.

***Comment** - Overview: The resubmission has addressed the majority of comments provided by Consulting Stormwater Engineer Lauren Swett. An outstanding comment that have not been addressed is included below in the Updates Requested section.*

Updates Requested: The Applicant should provide confirmation from the system manufacturers for the proposed design of the StormFilter and R-Tank systems. In the event that confirmation cannot be provided prior to approval, confirmation from manufacturers prior to issuance of a building permit will be recommended as a condition of approval.

Response: Confirmation from the manufacturer regarding the proposed design is forthcoming and will be provided when available. Typically, the finer details of proprietary BMP systems get refined during the construction process through submittals and shop drawings. In general, the proposed layout and design is conventional, and representative of dozens of other constructed systems developed by these manufacturers. We are comfortable with a condition of approval to provide these materials prior to issuance of a building permit.

Public Infrastructure and Community Safety Standards:

***Comment** - Overview: The submitted approach for submission and review of a plan and profile design for the proposed storm drain extension on Lancaster Street as a condition of approval has been acknowledged by Water Resources and no further action on this topic is required of the Applicant at this time. City staff continue to encourage the relocation of overhead utility lines from the west to east side of Oxford Street if burial is not possible to promote positive growing conditions for the new*

proposed cherry trees. As requested in previous comments, Consulting Stormwater Engineer Lauren Swett has requested confirmation of utility ability to serve prior to Planning Board action or as a condition of approval.

Updates Requested: The Applicant should provide confirmation of utility ability to serve. In the event that confirmation cannot be provided prior to approval, confirmation prior to issuance of a building permit will be recommended as a condition of approval.

Response: Confirmation letters along with the proposed road profile and MS4 design forthcoming and will be provided when available. We are comfortable with a condition of approval to provide these materials prior to issuance of a building permit.

Site Design Standards:

Comment - *Overview: Updates have been made to address comments on the average and maximum illuminance levels for parking, uniformity for the overall application, and wallpack lumen levels.*

Outstanding comments remain for the average illumination for the entirety of the site, as well as the maximum permitted illumination level (5.0 required; 5.8 proposed at Elm Street entrance).

Wallpacks have been added to respond to staff comments on illumination for the pedestrian pathway in the Oxford Street side yard. Based on the updated photometric plan, it is unclear what the light trespass onto 215 Oxford Street will be since the recorded foot candle values exceed 0.1 at the lot line. As mentioned in the previous comment letter, ground-mounted or bollard lighting may be able to satisfy both requirements.

Updates Requested: Update the application to comply with average and maximum illumination levels for the entirety of the site or submit waiver requests with narrative justifications.

Submit additional photometric information to confirm or update the photometric plan to ensure that light trespass will not exceed 0.1 food candles onto 215 Oxford Street.

Response: Please refer to the revised Photometric Plan. Please note that a 6' tall stockade fence is proposed along the property line abutting 215 Oxford Street. Light is not anticipated to travel past the fence line, and furthermore will not carry over onto the 215 Oxford Street property.

Comment - *Overview: Updates have been identified in the September design memorandum to comply with the Downtown Urban Design Guidelines Relationship to pedestrian environment and Façade proportion and composition.*

A recommendation has been included to allow for the interior driveway between the northeastern façade of the building and the rear lot line of 44 Cedar Street to be redesigned/allow for a shared-use pedestrian plaza. Additionally, a note has also been included about coordination with the Public Art Committee on the proposed public art at the intersection of Elm & Oxford Streets. Planning Staff encourage a follow-up design discussion with the Applicant team to walk through remaining comments to help support future application updates.

Updates Requested: Update the application to satisfy comments from the September design memorandum.

Response: The purpose of the 16' back-alley drive aisle is for emergency vehicles (ambulance/police) and annual service/maintenance vehicles. The drive aisle is steep at an 8% slope and is not conducive

to gathering areas. Alternatively, in response to Staff and Board feedback, a resident open space was designated just uphill of this driveway in the previous plan iteration where the terrain is much flatter and the space is more cohesive with the building program. This driveway will not be dominated by vehicles and therefore, is still usable by pedestrians; however, the Applicant does not wish to program this space or treat it with special surfacing. Those investments have been incorporated elsewhere into the project where it makes more sense. It should be noted that in response to this comment, we have added a mountable curb to divide the existing parking lot off Cedar Street from the proposed access driveway, as suggested by the Reviewer.

The team anticipates coordination with the Public Art Committee on the proposed public art at the Elm & Oxford Street intersection. The project team plans to update the City with correspondence as necessary. In response, the team requests outcome of said coordination as a condition of approval for the 89 Elm Street Application.

Zoning Performance Standards:

Comment - *Overview: In the B-3 zone, all development, all building and site alterations, and all provision of landscaping or other pedestrian amenities shall be consistent with the Downtown Urban Design Guidelines. In the attached September 22nd Design Memorandum for the project, there are outstanding comments on relationship to the pedestrian environment and façade proportion and composition.*

Updates Requested: Application to be updated to satisfy comments from the September 22nd Design Memorandum.

Design Review Comments: Planning and Urban Development Department (September 22nd)

Relationship to Pedestrian Environment:

Comment *– Distinguish the lower 35 feet of building facades: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following - Not Met*

Staff comment: The exterior design along the street-facing facades include a clear distinction in materiality with recessed portions that reinforce building entrances. Staff finds the length of façade bays and pattern of windows to be compromised by the existing Elm Street slope and recommends further articulation to enhance the pedestrian environment (e.g. punched windows at the lower floors that extend to the ground plane to allow for recessed planting areas or trellis system for vines).

Furthermore, the Applicant has resubmitted plans to indicate changes in materiality, awnings and entrances to enhance the character and attractiveness at the lower 35 feet of building facades facing the street. Staff recommends greater articulation at the first 35 feet at Elm Street to mitigate the grade change along the street from Lancaster Street to Oxford Street that is more consistent with the neighborhood context that includes brick infill beneath window frames,

particularly along the Elm street facade of 185 Lancaster Street (Baxter Academy). In response to this observed neighborhood context, Staff recommends the Applicant add brick to reduce the amount of concrete foundation walls exposed directly at the lower 35 feet to improve the usability and attractiveness as an integral element of the streetscape pedestrian experience.

Response: Please refer to the Architectural Narrative and Plans prepared by Ryan Senatore Architecture, dated 9/28/23, for more information regarding the screening features on the roof.

Façade proportion and composition; - Not Met

Comment *– The proposed building design has a clearly identifiable three-part composition with appropriate articulation to define the building's base of a pedestrian scale, organization of the fenestration pattern at the building's middle, and change of material at the building's top. Staff finds the punched windows, recessed building elements to express entrances and vertically segment the building is appropriate.*

The Applicant has resubmitted plans that modify the signature building roof-top element at the Lancaster Street and Elm Street intersection with a stepback from the building edge and expressed cornice that staff finds appropriate. Staff recommends a reduced height of the signature building roof-top element that eliminates the openness above louver screen fenestrations for a clear transition of the building's top articulated with the expressed cornice.

In addition, Staff recommends the Applicant explore the addition of a complementary signature building roof-top element at the Oxford and Elm Street intersection to balance the building's massing and further transition the increased building heights towards Downtown.

Response: Please refer to the Architectural Narrative and Plans prepared by Ryan Senatore Architecture, dated 9/28/23, for more information regarding the screening features on the roof.

Traffic Comments: (September 26th, 2023 - Tom Errico)

Comment *– This project is a phase within the West Bayside Master Plan, which is currently under review for a Traffic Movement Permit. A traffic study will be prepared in association with the TMP. The applicant should confirm that this project does not meet the threshold for a TMP as an individual project.*

Status: According to information contained in the applicant's Traffic Movement Permit application, the proposed project will generate traffic levels that would require a Traffic Movement Permit. Accordingly, I would suggest a condition of approval be included that notes occupancy of the project cannot occur until the Traffic Movement Permit is issued and all required mitigation of that permit is implemented as defined.

Current Status: A revised Section 7 Traffic Study is pending and accordingly the TMP approval is pending.

Response: Please refer to Section 7 -Traffic Impact Study, prepared by VHB, dated September 2023. VHB submitted Section 7 to Tom Errico on 9/28/23.

***Comment** – The site plan is maintaining a driveway on Lancaster Street west of Cedar Street. The plan shall include a layout of the parking lot. The applicant shall confirm that this driveway meets city corner clearance requirements.*

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Also, the corner clearance standard is for the Lancaster Street driveway and its proximity to Cedar Street. Also, the site plan should specifically define the improvements at the Lancaster Street driveway (radii, sidewalk section between the driveway and Cedar Street). Lastly, I would suggest some form of buffer/separation be provided between the parking spaces and the sidewalk on Lancaster Street.

Current Status: The above comment has not been adequately addressed. The subject lot is part of the project as the dumpster driveway is on the lot. The above comments shall be addressed as well as introducing a new curb cut on Lancaster Street and how that meets standards or requires a waiver.

Response: Please refer to the revised Site Plan which provides the requested dimensions. The existing curb cut for the parking lot serving the existing 4 ADA parking spaces at 50 Cedar Street will remain untouched (as will the parking lot itself).

To minimize disturbance and maintain the recent city sidewalk renovations in the area along Lancaster Street, the design was tailored to tie into the existing sidewalk and curb network as requested by DPW. It should also be noted that this parcel in question (50 Cedar) will likely be redeveloped in the coming years under a separate application. Therefore, the existing curb cut serving the existing ADA parking spaces will remain as is. The parking lot itself does not feature a drive aisle that meets the technical standard (24'); however, the parking lot is currently functional and benefits from the 8' wide access aisles between all 4 parking spaces. As a result of these access aisles, a 24' drive aisle is not necessary because the parked vehicle can cut the wheel much sharper to maneuver in and out of the parking spaces.

It is our interpretation that the portions of this parcel (50 Cedar) that are not being disturbed/improved are not included within the Major Site Plan Application before the Board, and as such, would not require a waiver. If the Planning Department disagrees with this assessment, then we would respectfully request a waiver for the drive aisle and intersection corner clearance dimensions to allow this existing 4-stall ADA parking lot to remain as is.

The proposed driveway to service the solid waste enclosure will be utilized at a low frequency and features a mountable curb. This "curb cut" is well in exceedance of the minimum 35' separation from the Cedar Street intersection and therefore, a waiver is not required.

***Comment** – The plan shall include improvements to the curb cut for the southerly parking lot located on Cedar Street.*

Status: DPW shall provide comments on the scope of improvements at the two driveways.

Current Status: Refer to DPW comments.

Response: Please refer to the revised Site Plan.

***Comment** – Dimensions shall be provided for the existing parking lots off Cedar Street including driveway width, aisle width and parking stall size.*

Status: This is outstanding. The parking lot is not grandfathered and a layout that meets city dimensional requirements shall be provided. Or documentation on waiver requests shall be provided.

Current Status: This comment has not been adequately addressed. Only an aisle width dimension for the southern lot has been provided. This is pending.

Response: Please refer to the Site Plan for the dimensions on the existing Cedar Street parking lots. A waiver has been requested for the 22' drive aisle on the upper parking lot given this lot is on the same 89 Elm subject parcel and will be utilized by occasional maintenance and emergency vehicles serving the proposed building.

***Comment** – The applicant shall provide turning template graphics for movements into and out of the Cedar Street parking lots for the design vehicle. A turning template graphic shall be provided for on-site truck movements.*

Status: The applicant has provided turning template graphics and those graphics indicate reasonable access can be provided. However, it is unclear whether the design vehicle used is representative of trucks that will service the site. The applicant shall provide documentation that the design vehicle used is appropriate.

Current Status: Service trucks will no longer use the Cedar Street driveway. A turning template has been provided for the Lancaster Street driveway and I find that to be acceptable. The site plan depicts a 16-foot paved area on the east side of the building. Given that service trucks will not be accessing this area and it is not required for life safety needs, repurposing this space is suggested.

Response: The 16' drive aisle is still needed for emergency vehicles, occasional maintenance, and access to the padmounted transformer per CMP requirements.

***Comment** – The project will be providing three driveways and therefore the applicant shall provide supporting documentation on a waiver from city standards.*

Status: It is my understanding the two existing driveways on Cedar Street and the one driveway on Cedar Street are considered part of this approved site plan and therefore a waiver is required. The number of driveways is not grandfathered. This is outstanding.

Current Status: It is my interpretation the project needs a waiver for the number of driveways and thus this is pending.

Response: Please refer to the attached Site Plan for the 89 Elm Street Development. It is our opinion that there are two driveways associated with this project: (1) driveway with mountable curb along Lancaster St to service the solid waste, and (1) driveway serving the upper parking lot and access to the back of the building including maintenance and emergencies. The other two

driveways, while technically under site control of the Applicant, are not associated with the 89 Elm project because they are not part of the subject parcel nor are they proposed to be altered. The fate of these two driveways will be contemplated under a separate, future application for 50 Cedar Street. If the Planning Department disagrees with this assessment, then we would respectfully request a waiver to allow more than two driveways.

***Comment** –The applicant shall provide documentation that the current surface parking spaces are not associated with an existing project site plan approval. Also, the applicant shall provide information on how the site parking lots will be managed.*

Status: The applicant has provided the requested information and the planning department shall determine how to incorporate this information into the project approval.

Current Status: The applicant has provided details on parking commitments and how these commitments can be honored in the future. I find the applicants response to be reasonable.

Response: Thank you for your review.

***Comment** –It is likely the traffic study associated with the Traffic Movement Permit will include an evaluation of converting Oxford Street from one-way to two-way traffic flow. The applicant should confirm the proposed northerly curb line would be compatible with a two-way conversion.*

Status: Pending the receipt of the Section 7 Study

Current Status: DPW should confirm that 7-foot wide on-street parking spaces on Lancaster Street are acceptable. Additionally, the proposed on-street parking space width shall be noted for Oxford Street and Elm Street.

Response: Please refer to the Site plan which provides the available dimensions for the on-street parking.

DPW Comments:

***Comment**: The City has made a significant investment in the trees, granite curbing and sidewalks for this block of Elm Street. We would like you to preserve as much of this infrastructure where possible. The City asks that the applicant explore opportunities to replant the existing trees on site or somewhere in the city.*

Response: Understood. The site aims to limit disturbance and reuse materials when feasible. The team will coordinate with the city on the potential transplanting of the existing street trees on Elm Street.

***Comment**: DPW asks that it be noted that the sidewalk easement needed for this project be reviewed and approved by the our Department before certificate of occupancy is issued.*

Response: Agreed, documentation will be provided for review and approval when available.

Comment: *Waiver is required for sidewalk material being utilized in the right-of-way, as opposed to grass/loam.*

Response: We interpret that this comment refers to proposed brick and concrete sidewalk combination within the furnishing zone. As this condition is in line with the approved West Bayside Master Development Plan, we have updated the waiver table accordingly.

Site Plan Review Comments – Bob Massengale

Comment: *Site plan LA plan - Patio area on north side of Oxford street building wing - consider adding some form of shade tree in parking lot bump out if possible to benefit patio occupants and building and more adequately screen parking lot from patio. (Tech manual 4.5.5)(Currently shown as plant mix "A")*

Response: Please refer to the site plan for the revised patio area and mountable curb that delineates the existing parking lot and the proposed access driveway. In effort to provide an efficient design in a parking lot, there is no proposed tree in this area to enhance visibility and reduce negative impact that could occur to the tree from snow plow operations.

Comment*: Site Plan - for Utilities being "temporarily replaced" along Oxford street, applicants are strongly encouraged to find means of seeking overhead line relocation to the north side of Oxford street (opposite side of street) if burial is not possible to ensure best growing and establishment conditions for new cherry trees.*

Response: Discussion of the overhead communication lines is still ongoing with respective utility companies at this location. At this time, there are no plans to reroute these lines; however, the project will benefit from the fact that there will be little to no overhead electric or communications lines along its direct frontage.

Comment: *L5 Landscape Details 3 - Tree trunks in detail appear to show a trunk wrap material drawn around the trunk of the tree (detail 03). Trunk wrap is not recommended for tree plantings.*

Response: Please refer to the revised Landscape plan and details, prepared by Dry LA, dated 10/3/23.

Comment: *Silva cell detail - Will inspection port be included in silva cell away from trunk / open planter area? Consider inclusion in detail for long term tree health and sylvia cell inspection.*

Response: Inspection ports are not currently proposed within the design.

Comment: *Landscaping plan - Comment of appreciation. The parks department wishes to acknowledge the foresight and considerate approach of the applicant to ensuring long term health and performance of proposed street tree plantings. We anticipate reduced maintenance and tree replacement costs, with increased longevity, aesthetics and environmental benefits from these*

expanded soil volumes. This approach will create needed benefits to the bayside community tree canopy.

Response: Thank you for your comment. The design team is happy to be able to support the trees' health where practical.

Please let us know if you have any additional questions or comments.

Sincerely,

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Danielle McGowan, E.I.
Project Engineer
Acorn Engineering, Inc.

Attached:

- Architectural Narrative prepared by Ryan Senatore Architecture, dated 9-28-23
- Section 7 – Traffic Impact Study prepared by VHB, dated September 2023.

Revised Documents:

- F. Waiver Requests
- N. Photometric Plan
- U. Open Space Exhibit

August 29, 2023
Amended 9/28/23

Sean King
Urban Designer
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Re: 89 Elm Street Apartments - Design Narrative

Dear Sean,

Please see the below revisions to the building design based on feedback from the planning board workshop.

1.) The corner ‘crown’ element has been further defined, we have added mechanical louvered screens for the bottom portion of the openings in the crown to screen mechanical units beyond.

The Crown Element has been reduced in height and open voids filled with louvers, a complimentary crown element has been added to the building corner at Elm and Oxfords Streets.

2.) Mechanical units have been removed from the facades and moved to the roof top within the ‘crown’ element, units have been removed from the closest point on the roof near the corner along Oxford Street

3.) We have revised the siding colors to alternate the massing along Elm Street between the ‘green’ siding and a ‘white’ siding

4.) A glazing transom has been added above the upper apartment entry which is the view corridor throughout he building toward cedar street.

5.) We have pulled the retail corner entry on Oxford Street out closer to the street for a less dark and recessed entry

6.) Awnings have been added above the retail space storefront windows and entry at the corner of Oxford and Elm to reflect the use within and provide an enhanced scaling element to the pedestrian experience at that level.

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500 Congress Street, Suite 2
Portland, Maine 04101

7.) A brick base has been added to the elevation facing Cedar Street

8.) Entry canopies have been added at the multiple entries facing Cedar Street to provide more visual interest and a more inviting elevation as requested.

9.) We have revised the siding colors for the portions of the building in the R6 Zone as a result of a meeting between Reveler and the neighbor's at which time the neighbor's indicated a desire for lighter siding at those ends of the building. The revised design has a light gray siding color within the R6 Zone.

10.) The cladding below the windows on the Elm Street Facade at Street level have been revised to brick cladding which is a recessed panel to enhance the panel and pier facade articulation. This brick cladding is more in keeping with the neighborhood context.

11.) Proposed recessed planting with vines and trellis treatments have been added along Elm Street to enhance the pedestrian environment

We look forward to discussing the revised design at the upcoming planning board meeting.

Sincerely,



Ryan Senatore, AIA LEED AP

Principal

207-747-5159

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ryan@senatorearchitecture.com

500 Congress Street, Suite 2
Portland, Maine 04101

West Bayside Development

Revised Section 7 – Traffic Impact Study (Phase 1 & 2)

PREPARED FOR

West Bayside Partners, LLC
82 Hanover Street, Suite 5
Portland, ME 04101

PREPARED BY

500 Southborough Drive
Suite 105B
South Portland, ME 04106-6928

September 2023

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1

Introduction

This Traffic Impact Study is provided as Section 7 of the Traffic Movement Permit (TMP) application for the proposed mixed use-development in the West Bayside neighborhood including 215 multi family housing units, 201 affordable housing units, and 14,000 sf of commercial space comprising of retail, restaurant, and a coffee shop. This study incorporates comments received at the project Scoping Meeting held virtually on May 8th, 2023, with The City of Portland and the City's Traffic Peer Reviewer.

Project Area

The site is located on multiple streets in the West Bayside neighborhood including Preble Street, Elm Street, Lancaster Street, and Oxford Street in Portland, Maine. Existing space to be developed includes predominately surface lots and one existing building.

196 Lancaster Street is currently being used as a 4,250 sf office building. 89 and 60 Elm Street are currently surface parking lots. The Portland Public Market Garage is a seven-level, 595-space parking structure. Vehicular access to and from the garage is provided on both Preble Street and Elm Street.

The Project consists of a mixed-use two-phase redevelopment of four sites. The following presents the land use program by phase.

Phase 1

- 130 Multi-family housing units
- 201 Affordable housing units
- 4,000 sf general retail
- 2,000 sf coffee shop
- 6,000 sf restaurant

Phase 2

- 85 Multi-family housing units
- 2,000 sf general retail

The existing 595 space Portland Public Market Garage will provide parking for these uses since it is controlled by the developer and is largely vacant. As it does today, the parking garage will continue to have access/egress on both Preble Street and Elm Street.

The site locations are shown in Attachment 7A along with updated site plans for 196 Lancaster Street, 89 Elm Street, and 60 Elm Street.

2

Study Area

The study area intersections for the project are based on the requirements for inclusion criteria set forth by MaineDOT. The intersection parameters and thresholds are as follows:

- Development entrances and exits
- First major intersection in either direction from the Development entrances and exits
- All intersections where, during any one-hour period, traffic attributable to the proposed Development equals or exceeds:
    - 25 left turn movements per lane; or
    - 50 through and/or right turn movements per lane

Based on the above criteria, the study area intersections for the proposed development were determined as outlined below:

- Elm Street / Garage Entrance/Exit
- Preble Street / Portland Street / Garage Entrance/Exit
- Marginal Way / Preble & Elm Street / Preble Street Extension
- Preble Street / Cumberland Avenue
- Elm Street / Cumberland Avenue
- Forest Avenue / Park Avenue / Portland Street
- Elm Street / Somerset Street
- Preble Street / Somerset Street / Kennebec Street
- Elm Street / Kennebec Street
- Preble Street / Kennebec Street / Albert Street
- Elm Street / Lancaster Street
- Preble Street / Lancaster Street
- Elm Street / Oxford Street
- Preble Street/ Oxford Street

3

Existing Traffic Volume Data

Turning movement count data was collected for the study area intersections described above. Traffic data was collected on Wednesday May 31, 2023. The weather was clear/cloudy and approximately 60-degrees. Data was collected during the typical peak commuter peak periods, 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The network peak hour occurred from 7:45 AM to 8:45 AM and 4:30 PM to 5:30 PM at the study area intersections.

4

Adjusted Traffic Volumes

The appropriate adjustment to result in the 30th highest hour of the year was researched using the weekly mean factors published by MaineDOT based on the urban classification of the roadway. As a result, the raw volumes collected in May 2023 were adjusted by a factor of 1.01.

In addition to seasonally adjusting the traffic volumes, to account for background traffic growth, the traffic associated with seven nearby permitted projects was investigated (see Section 5), the volumes were also increased by a half percent per year to a future horizon year of 2026 when the proposed project is anticipated to open.

5

Proposed Uses in the Study Area

Projects that have been approved but are not yet occupied as well as projects that have applied for approval are required to be included in the predevelopment traffic volumes. The projects listed below were agreed upon at the project scoping meeting as well as email correspondence with the City of Portland on May 30th, 2023. A mapping of locations of these projects is provided in Attachment 7B.

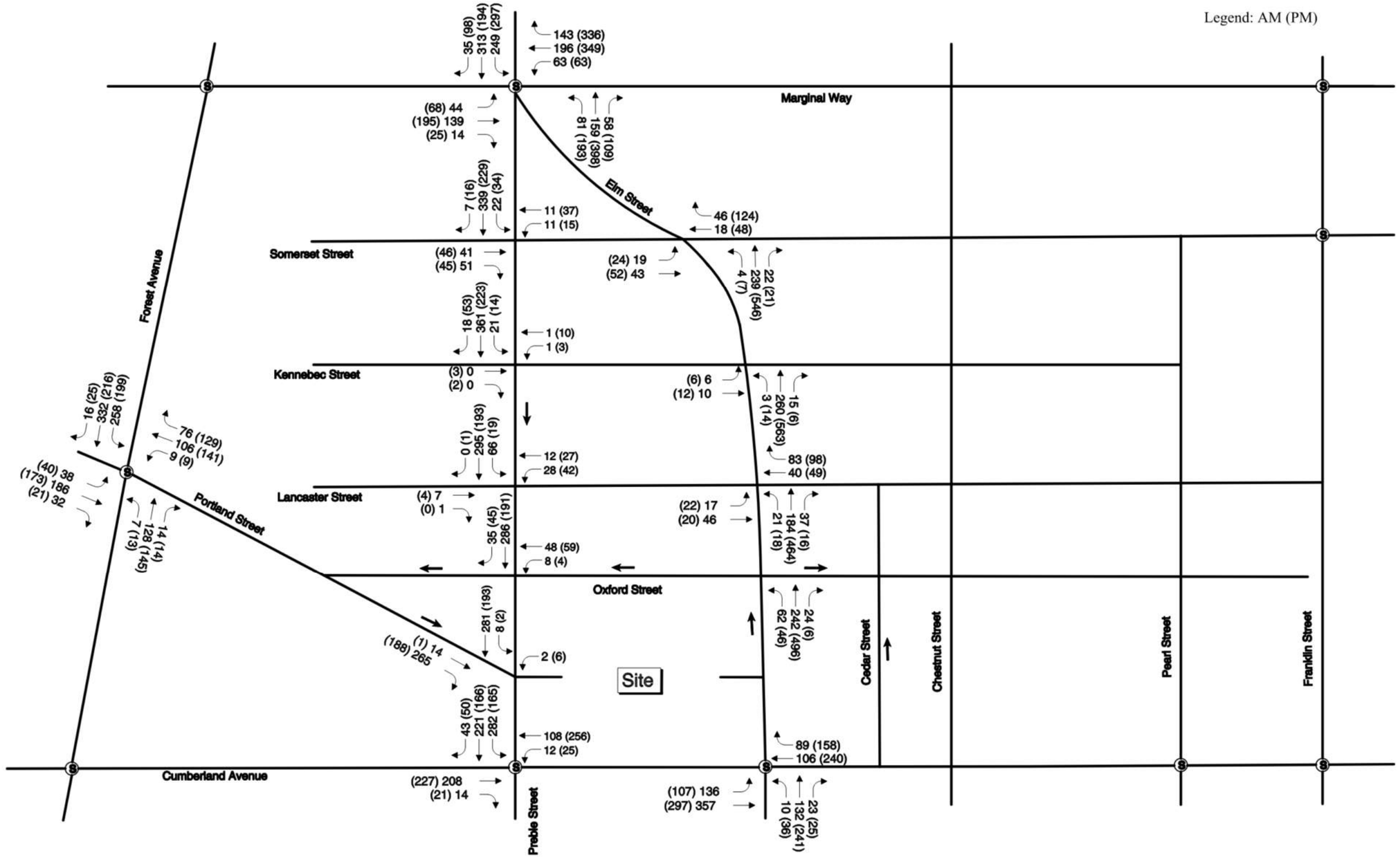
- 385 Congress Street (Mixed-Use Development) (PL001970-2022) This mixed-use development is approved and not yet constructed. A minimal number of trips may pass near the West Bayside proposed development.
- 477-481 Congress Street (PL-01003-2021) This project is a redevelopment of the existing building at 477 Congress Street into a 186-room hotel with retail space, restaurant, rooftop bar, and associated hotel amenities.
- 29 Marginal Way (PL-01879-2021) 29 Marginal Way is a multi-tenant commercial site with a total of six commercial buildings. The re-development of this site has been constructed and occupied.
- 343 Cumberland Street (PL-002095-2022) This project combines two existing facilities within 500' of each other and is not expected to increase traffic on the adjacent roadway network.
- 52 Hanover Street (PL) This project contains 171 apartment units as well as 6,500 sf retail space and is expected to be occupied summer 2023. 52 Hanover Street is adjacent to the proposed West Bayside development and trips associated with this project will pass near the development.
- 200 Federal Street (PL-001235-2020) This project proposes an 18-story residential building consisting of 266 residential apartments and a 1,950sf retail space. A minimal number of trips may pass near the West Bayside proposed development.
- 75 Chestnut Street (PL-001343-2020) 75 Chestnut Street is a seven-story apartment building containing a total of 54 residential units and approximately 2,328sf commercial-retail space.

6

No Build Traffic Volumes

The traffic associated with the background developments was added to the intersection traffic volumes increased to the future horizon years. The resulting 2026 traffic volumes are illustrated in Figure 1 below.

Figure 1 2026 No-Build Traffic Volumes



7

Trip Generation

Trip generation estimates for the Project are based on the Institute of Transportation Engineers (ITE) publication, Trip Generation, 11th Edition. The ITE Trip Generation Manual categorizes various land uses and provides weekday daily, weekday morning peak hour, and weekday evening peak hour unadjusted vehicle trip generation estimates for each use. Trip generation estimates for the proposed uses were projected using data published in the ITE Trip Generation Manual based on the metrics and land use codes presented in Table 1.

Table 1 Project Program and ITE Land Use Code

Land Use	Size	Land Use Code	
Multi-family housing	215 units	221	Multifamily Housing (Mid-Rise)
Affordable housing	201 units	223	Affordable Housing
General retail	6,000 sf	822	Strip Retail Plaza (<40k)
Coffee shop	2,000 sf	936	Coffee/Donut Shop without drive through window
Restaurant	6,000 sf	932	High-Turnover (Sit-Down)

Source: ITE Trip Generation 11th Edition

The unadjusted ITE vehicle trip generation was calculated for the weekday AM and PM peak hours for the land uses on site as presented in **Error! Reference source not found.** 2. Trip generation calculations are provided in Attachment 7C.

Table 2 Total Unadjusted Trips

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Multi-family housing	19	64	83	51	33	84
Affordable housing	29	72	101	54	38	92
General retail	12	8	21	27	27	54
Restaurant	31	26	57	33	21	54
Coffee shop	95	91	186	33	33	65
Total	**187**	**261**	**448**	**198**	**151**	**349**

Source: ITE Trip Generation 11th Edition

Internal Capture

As a multi-use development, the trip generation characteristics of the Project will be different from single-use sites. Some of the traffic to be generated by the Project will be contained among the components of the site as "internal" or "shared vehicle" trips. This concept means that some patrons could visit more than one of the uses on the Project Site. For example, apartment residents may also patronize the site's retail and restaurant spaces.

While these shared trips represent new traffic to the individual uses, they would not correspond to new vehicle trips on the surrounding roadway network.

As described in the ITE Trip Generation Handbook, "because of the complementary nature of these land uses, some trips are made among the on-site uses. This capture of trips internal to the Development Site has the net effect of reducing vehicle trip generation between the overall Development Site and the external street system (compared to the total number of trips generated by comparable land uses developed individually on stand-alone sites). An internal capture rate can generally be defined as the percentage of total person trips generated by a site that are made entirely within the Development Site. The trip origin, destination, and travel path are all within the site."

Because this site is not contiguous, internal capture has been determined at the building level rather than site level. Credit is taken only for trips that would occur between uses in the same building. The internal capture adjustment calculations are presented in Attachment 1C. The internal and external trips are presented in Table 3 and Table 4.

Table 3 Internal Capture Adjustment – AM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	116	12	--	8	1	119
Exit	--	108	39	--	1	8	138
89 Elm							
Enter	8	10	29	2	3	1	41
Exit	5	9	72	2	1	3	80
60 Elm							
Enter	4	--	8	0	--	0	12
Exit	3	--	25	0	--	0	28
TOTAL	**20**	**243**	**185**	**4**	**13**	**13**	**418**

Table 4 Internal Capture Adjustment – PM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	55	31	--	4	5	77
Exit	--	47	20	--	5	4	58
89 Elm							
Enter	18	11	54	5	5	6	67
Exit	18	7	38	8	4	4	47
60 Elm							
Enter	9	--	20	1	--	2	26
Exit	9	--	13	2	--	1	19
TOTAL	**54**	**120**	**176**	**16**	**18**	**22**	**294**

Mode Share

Due to this project's central location, it is expected that a significant portion of site trips will be by alternative modes including walking, biking and transit. A localized mode share estimate was explored by consulting the American Community Survey (ACS) Five-Year Estimates for 2017-2021. The ACS provides the mode share for work commutes by residents of each census tract. Since this development is largely residential, these mode shares were considered applicable. Data for Census Tract 6 was used, which includes the development site. This area is shown in Figure 2. The mode shares are presented in Table 5.

Figure 2 Census Tract



The only adjustment made to the Census data mode shares was to exclude "work from home". To be conservative, mode shares were recalculated without that option. Although we know remote work continues to depress peak hour trips somewhat, mode share was based on only trips taken.

Table 5 Mode Share, Based on ACS Data

Mode of Transportation	ACS 2017-2021 5-Year Data Profile	Mode Share – Excluding "Worked from home"
Drove alone	**44%**	**55%**
Carpool	**3%**	**4%**
Public Transit	**5%**	**6%**
Walked	**28%**	**35%**
Other means	**2%**	
Worked from Home	**18%**	

Source: US Census Bureau American Community Survey. Census Tract 6, Workers 16 yrs and over

In order to address a request from the City of Portland to further support the proposed mode shares with field data, additional mode share data has been collected.

VHB has collected data at the following three residential locations all located in Portland, Maine:

- Back Bay Tower
- Hiawatha
- 117 Lofts

Each development has market rate apartments with unbundled parking which is consistent with the residential proposed in this project. During data collection, visual following was employed to differentiate between pedestrian trips to and from the developments and people walking to and from on street parking. Observations of pedestrians walking to and from on street parking as were tabulated as vehicular trips. The resulting trips and mode share percentages are illustrated in Tables 6 to 11 below.

Table 6 AM Back Bay Tower Mode Share

Time	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	1	2	0	4	2	0
7:15 to 7:30 AM	4	0	0	5	6	0	9	6	0
7:30 to 7:45 AM	2	2	0	5	3	0	7	5	0
7:45 to 8:00 AM	1	1	0	6	9	0	7	10	0
8:00 to 8:15 AM	0	1	0	2	7	0	2	8	0
8:15 to 8:30 AM	2	0	0	1	1	0	3	1	0
8:30 to 8:45 AM	2	3	0	0	2	0	2	5	0
8:45 to 9:00 AM	3	1	1	2	3	0	5	4	1
Total	**17**	**8**	**1**	**22**	**33**	**0**	**39**	**41**	**1**
							48%	**51%**	**1%**

Source: AM peak hour is based on data collected at Back Bay Tower

Table 7 PM Back Bay Tower Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	5	4	0	2	2	0	7	6	0
7:15 to 7:30 AM	2	1	0	3	2	0	5	3	0
7:30 to 7:45 AM	3	5	0	1	3	0	4	8	0
7:45 to 8:00 AM	6	3	0	3	4	1	9	7	1
8:00 to 8:15 AM	6	6	0	5	5	0	11	11	0
8:15 to 8:30 AM	6	1	0	1	4	0	7	5	0
8:30 to 8:45 AM	3	2	0	1	5	0	4	7	0
8:45 to 9:00 AM	2	2	1	1	4	0	3	6	1
Total	**33**	**24**	**1**	**17**	**29**	**0**	**50**	**53**	**2**
							48%	**50%**	**2%**

Source: PM peak hour is based on data collected at Back Bay Tower

Table 8 AM Hiawatha Mode Share

Time	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	2	0	0	1	0	0	3	0
7:15 to 7:30 AM	0	0	0	6	5	0	6	5	0
7:30 to 7:45 AM	3	1	0	15	3	0	18	4	0
7:45 to 8:00 AM	7	1	1	8	4	0	15	5	1
8:00 to 8:15 AM	2	4	0	13	5	0	15	9	0
8:15 to 8:30 AM	0	0	0	4	3	0	4	3	0
8:30 to 8:45 AM	2	3	0	4	4	1	6	7	1
8:45 to 9:00 AM	1	3	0	11	0	0	12	3	0
Total	**15**	**14**	**1**	**61**	**25**	**1**	**76**	**39**	**2**
							65%	**33%**	**2%**

Source: AM peak hour is based on data collected at Hiawatha

Table 9 PM Hiawatha Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	2	1	0	5	1	0
7:15 to 7:30 AM	6	2	0	7	0	1	13	2	1
7:30 to 7:45 AM	3	1	0	2	2	0	5	3	0
7:45 to 8:00 AM	10	1	0	4	3	0	14	4	0
8:00 to 8:15 AM	8	3	0	9	3	0	17	6	0
8:15 to 8:30 AM	8	4	0	9	1	0	17	5	0
8:30 to 8:45 AM	8	4	0	4	4	2	12	8	2
8:45 to 9:00 AM	5	1	0	6	3	0	11	4	0
Total	**51**	**16**	**0**	**43**	**17**	**3**	**94**	**33**	**3**
							72%	**26%**	**2%**

Source: PM peak hour is based on data collected at Hiawatha

Table 10 AM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	2	0	0	3	1	0	5	1	0
7:15 to 7:30 AM	0	2	0	0	2	0	0	4	0
7:30 to 7:45 AM	0	2	0	2	1	0	2	3	0
7:45 to 8:00 AM	1	0	0	1	0	0	2	0	0
8:00 to 8:15 AM	0	1	0	2	2	0	2	3	0
8:15 to 8:30 AM	0	1	0	0	1	0	0	2	0
8:30 to 8:45 AM	0	1	0	1	1	0	1	2	0
8:45 to 9:00 AM	0	1	0	3	0	0	3	1	0
Total	**3**	**8**	**0**	**12**	**8**	**0**	**15**	**16**	**0**
							48%	**52%**	**0%**

Source: AM peak hour is based on data collected at 117 Lofts on Preble Street

Table 11 PM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	1	0	0	1	0	0	2	0
7:15 to 7:30 AM	0	0	0	0	1	0	0	1	0
7:30 to 7:45 AM	1	1	0	0	0	0	1	1	0
7:45 to 8:00 AM	1	2	0	1	0	0	2	2	0
8:00 to 8:15 AM	4	2	0	1	1	0	5	3	0
8:15 to 8:30 AM	0	0	0	1	1	0	1	1	0
8:30 to 8:45 AM	0	1	0	0	0	0	0	1	0
8:45 to 9:00 AM	1	1	0	1	0	0	2	1	0
Total	**7**	**8**	**0**	**4**	**4**	**0**	**11**	**12**	**0**
							47%	**53%**	**0%**

Source: PM peak hour is based on data collected at 117 Lofts on Preble Street

The mode share data collected for the developments was summarized into Table 12. In addition to the summaries of mode shares for AM and PM for each of the developments, the Census based mode shares are provided for comparison.

Table 12 Mode Share Comparison

Mode of Transportation		Back Bay Tower Mode Share[1]	Hiawatha Mode Share[2]	117 Preble Mode Share[3]	**Field Collected Residential Average**	**ACS 2017-2021 Mode Share – Excluding "Worked from home"[4]**
Vehicle	AM	51%	33%	52%	**45%**	**55%**
	PM	50%	26%	53%	**43%**	
Walk	AM	48%	65%	48%	**54%**	**45%**
	PM	48%	72%	47%	**56%**	
Bike	AM	1%	2%	0%	**1%**	
	PM	2%	2%	0%	**1%**	

[1]Back Bay Tower – 116 Market Rate apartments, parking garage unbundled

[2]Hiawatha – 139 Market rate apartments, parking garage unbundled

[3]117 Lofts – 56 Market Rate apartments, surface parking unbundled

[4]US Census Bureau American Community Survey. Census Tract 6, Workers 16 yrs and over

As shown in the tables above, the average mode split observed at 117 Lofts, Back Bay Tower, and The Hiawatha building is approximately **55% pedestrian trips and 45% vehicular trips.** Conversely, Census data reflected **45% pedestrian trips and 55% vehicular trips**.

At each of the market rate apartment buildings with various unit sizes, there is parking associated with each building. Back Bay Tower and The Hiawatha provide unbundled parking in attached parking garages while 117 Lofts offers unbundled surface lot parking.

Data collected at all three residential developments support a vehicular mode share in this area similar to or less than that provided in the Census data, indicating that the Census mode share (55% auto and 45% walking/biking/transit) is appropriate, if not conservatively high, for residential use on the proposed site. Because the restaurant and retail space is anticipated to draw a significant amount of trips from the new residential units in the surrounding buildings (internal capture only calculated for trips captured on single sites, not between sites), and only limited on-street parking will be available, a similarly high walk/bike/transit percentage is also anticipated for those uses.

The mode share rates were applied to the trip generation to estimate project-generated trips by mode. Both driving alone and carpooling were counted as new vehicle trips. Non-vehicular trips were broken out by walk and public transit/bike. Using the data collected in the field it was assumed that 99% of non-vehicular trips are classified as walk with 1% classified as public transit/bike. The trips by mode share are shown in Table 13.

Table 13 Adjusted Trips by Mode Share

Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto	**95**	**135**	**230**	**94**	**68**	**162**
Walk	76	109	186	76	54	130
Public Transit/Bike	1	2	2	1	1	2

Notes: Trip generation estimates with mode share and internal capture calculations applied.

8

Trip Distribution

To determine the likely travel patterns of trips to the redevelopment area, the US Census Journey to Work data was consulted. Based on this data, most Portland residents work in either Portland or points to the north and south along the interstate. The distribution of these Portland resident work trips is presented in Table 14. The likely travel patterns to and from the redevelopment area are illustrated to follow the patterns from the Journey to Work data.

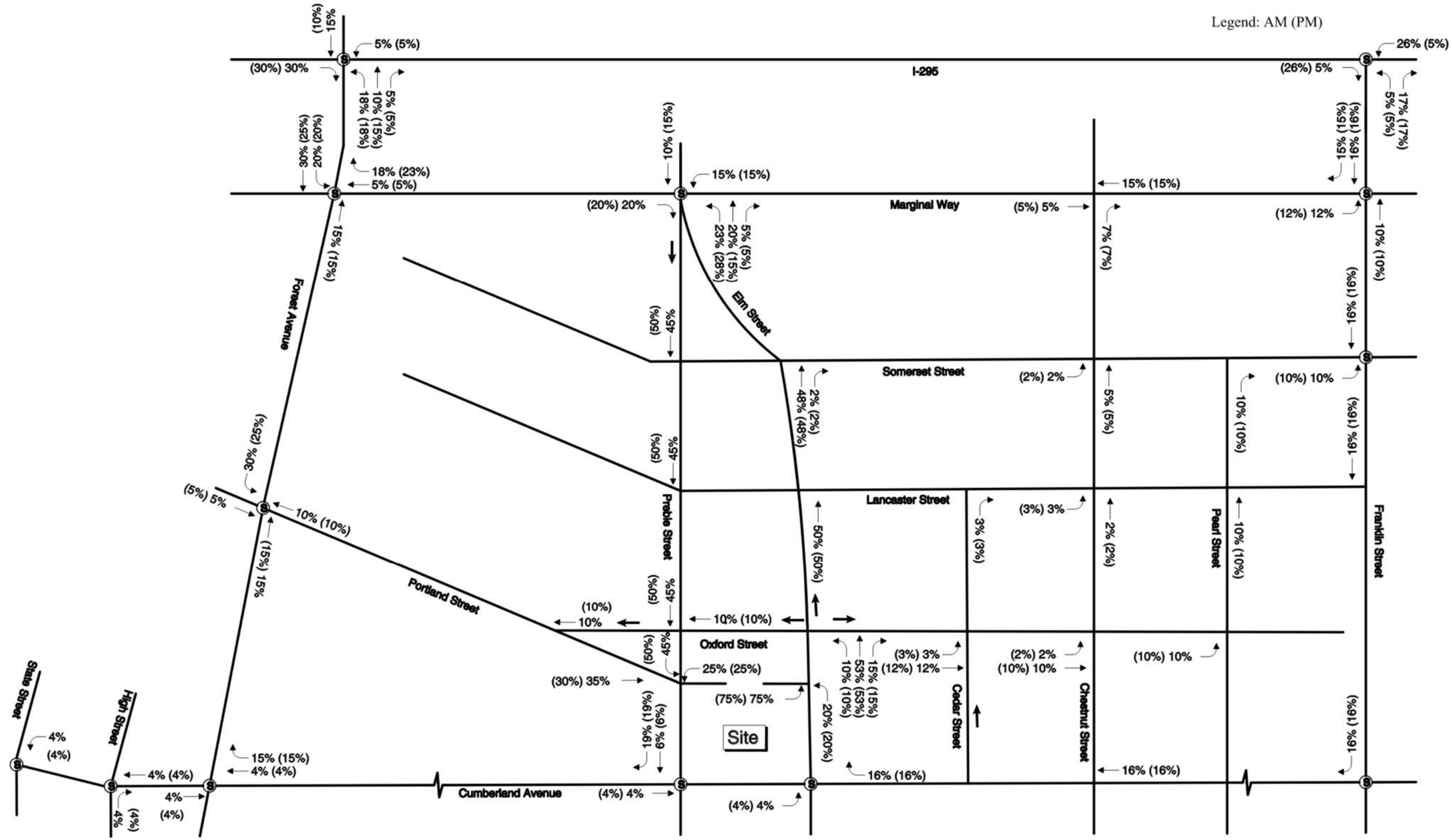
Table 14 Trip Distribution Percentages for Residents

Route	Proposed Distribution[1]
I-295 points north	28%
I-95 points north	7%
26/100 points north/west	9%
302 points north/west	8%
25 points west	2%
I-295 points south	41%
Marginal Way	1%
Casco Bay Bridge points south	3%
High or State streets (local)	1%
Cumberland Ave (local)	1%

1: Trip distribution based on Census Journey to Work information sorted by Portland residence.

Based on discussions at the scoping meeting, the trip distribution in the immediate vicinity of the site was refined and can be seen in Figure 3 below:

Figure 3 Trip Distribution



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Trip Assignment

Typically, some share of trips to coffee shops and restaurants are counted as pass-by trips. To be conservative, all vehicle trips are assumed to be 100% primary with reductions only for internal capture. With no pass-by trips accounted for, all vehicle trips are anticipated to start or end at the existing Portland Public Market Garage at Preble and Elm Streets. New vehicle trips were assigned based on the distribution in Figure 3. The resulting trip assignment and resulting 2026 Build volumes are shown in Figures 4 and 5 respectively.

Figure 4 Trip Assignment

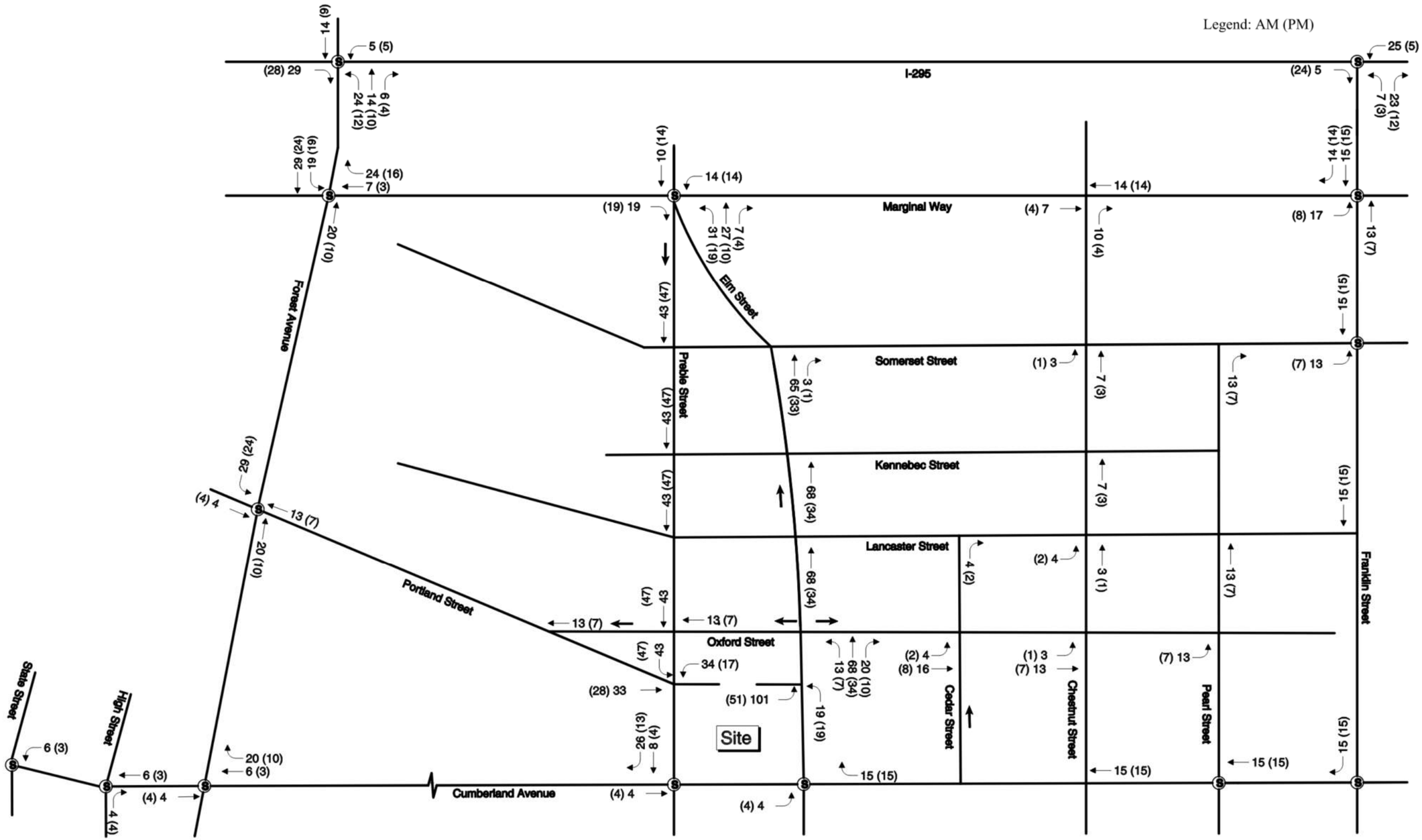
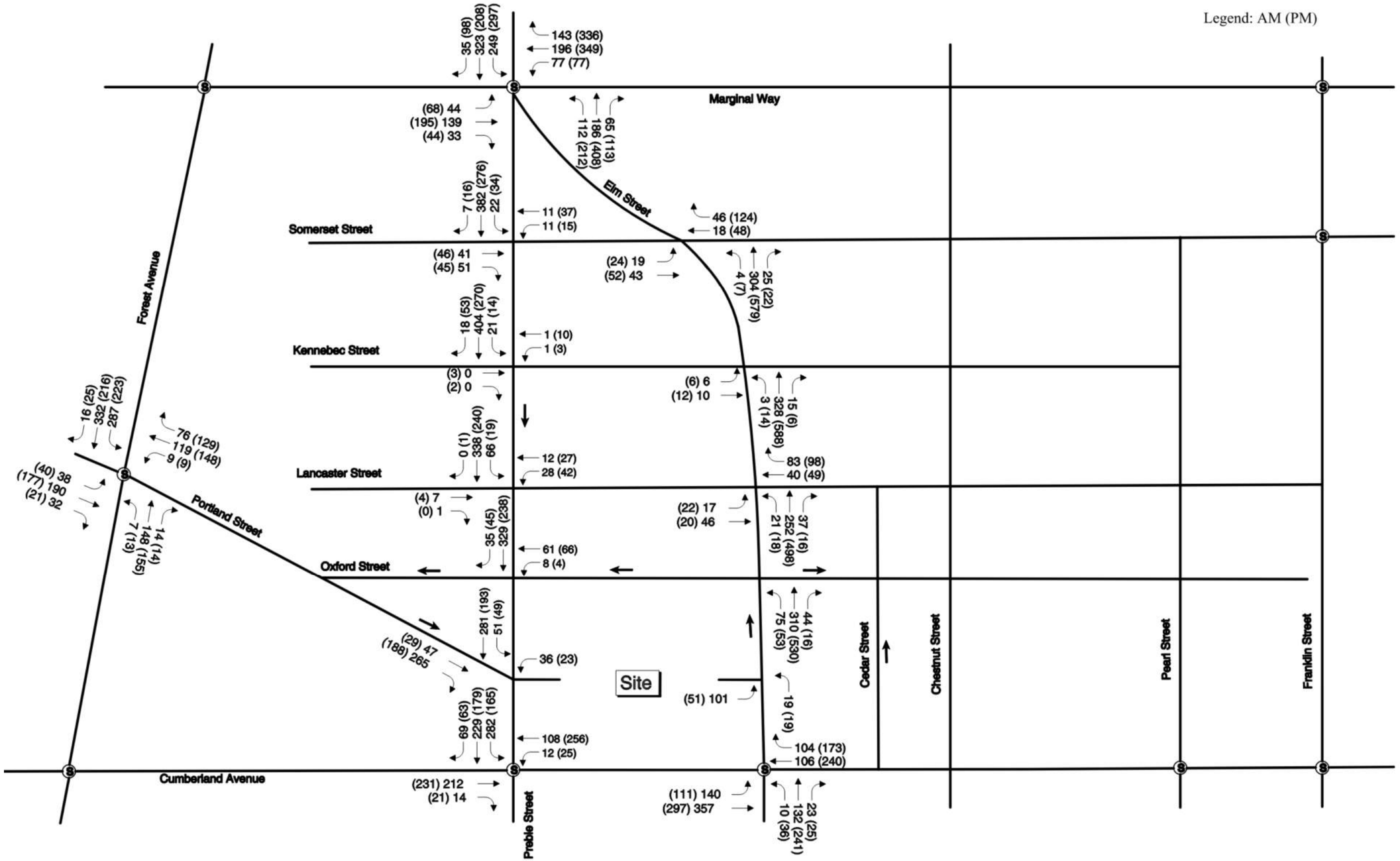


Figure 5 **2026 Build Traffic Volumes**



10

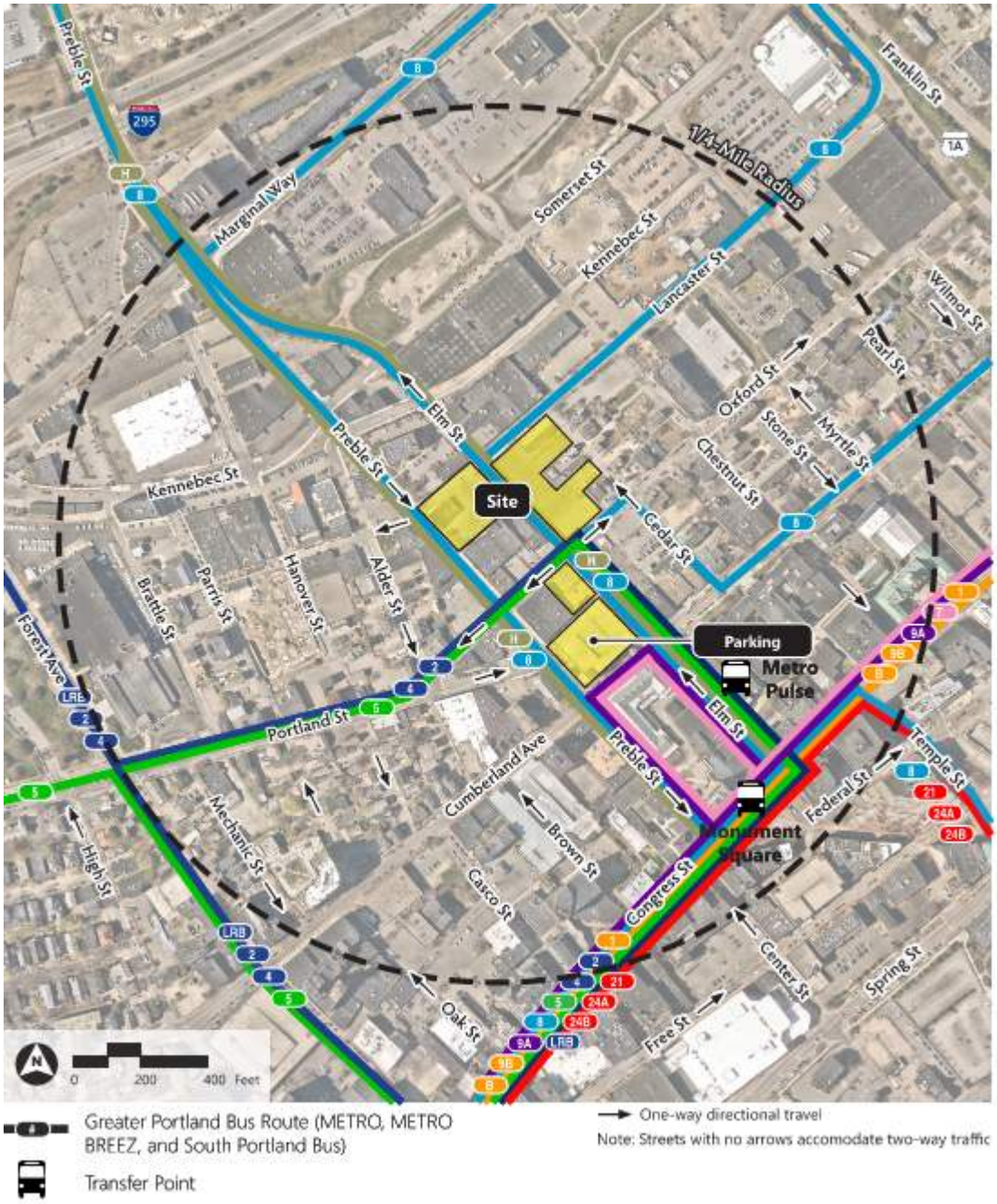
Pedestrian, Bicycle Facilities, Transit

A review of the existing conditions in the site vicinity was conducted, including transit, vehicular, bicycle, and pedestrian infrastructure and current commuting patterns.

Public Transit

As illustrated in Figure 6, the site is located along several METRO bus stops. Route #8 and H both stop on Preble Street and Elm Street just south of the site. Numerous other METRO bus routes also run along Oxford Street (Routes 2, 4, 5) and Congress Street (Routes 1, 2, 5, 8, 9A, 9B) which is a 5-minute walk away.

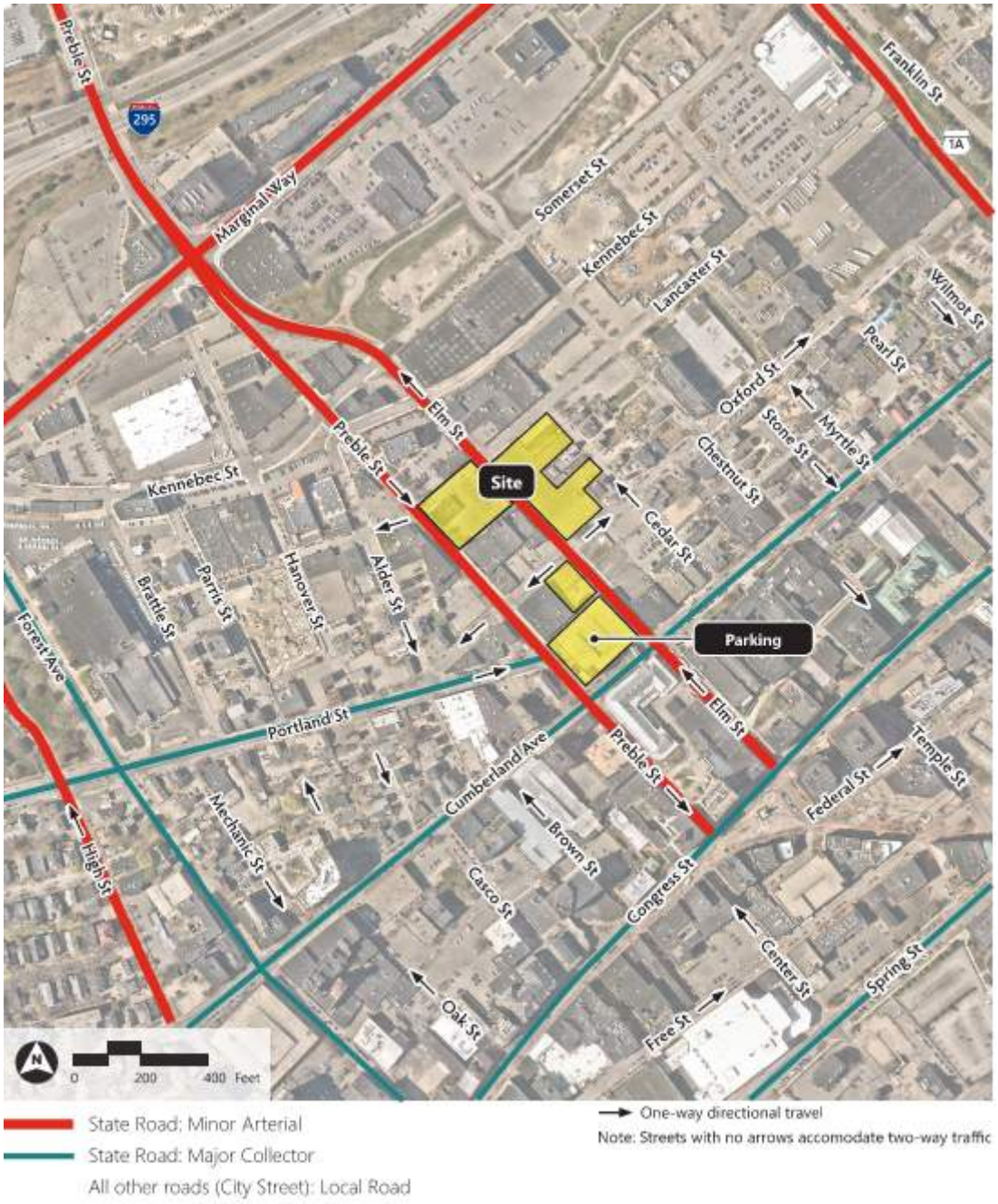
Figure 6 Existing Public Transit Services



Vehicular Facilities

The West Bayside area is just south of I-295 on the Portland peninsula. Major roads adjacent to the site are classified as minor arterial (Preble Street and Elm Street) and major collector (Portland Street and Cumberland Ave). There are also numerous one-way streets connecting in a grid system around the site. Figure 7 below represents the existing roadway network.

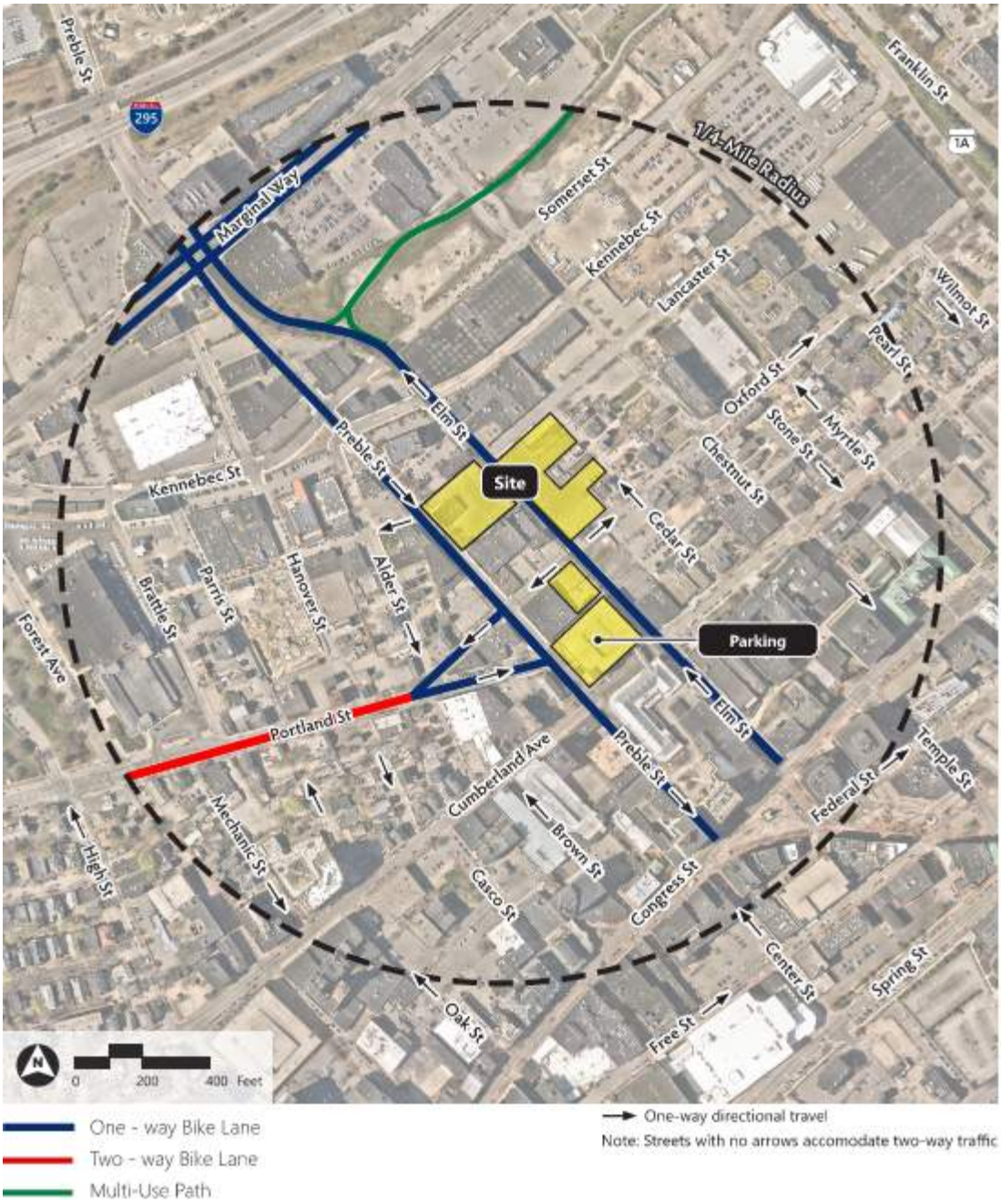
Figure 7 Existing Roadway Network



Bicycle Facilities

As illustrated in Figure 8, existing one-way bike lanes are present on Preble Street and Elm Street and two-way bike lanes are present on part of Portland Street and Marginal Way. Bayside Trail multi-use path connects to Elm Street north of the site for both pedestrian and bicyclist users. In addition, a number of study area roadways; Somerset, Lancaster, Oxford, and Chestnut Street; are low speed, low volume roadways and cyclists can travel with traffic, although not signed or striped for this use.

Figure 8 Existing Bicycle Network



All of the bike lanes shown in Figure 8 are in good condition and do not have any sections where paint is fading or hard to see. Most of the bike lanes in the study area were recently implemented.

There are bike lanes provided in each direction on Portland Street. In the eastbound direction, the bike lane terminates at Preble Street and in the westbound direction the bike lane terminates at Oxford Street.

The bike lanes on Preble Street are continuous from Marginal Way to Congress Street with no breaks at any intersection or segment. Similar to Preble Street Elm Street also has a bike lane that runs from Marginal Way to Congress Street, however the bike lane breaks and does not continue through Lancaster and Oxford Street. At Marginal Way / Preble Street Extension / Preble and Elm intersection there is a bike box on the Preble and Elm Street approach.

Pedestrian Facilities

As indicated above, Bayside Trail multi-use path connects to Elm Street north of the site for both pedestrian and bicyclist users. As illustrated in Figure 9, pedestrians are well accommodated in this urban environment. There are sidewalks on each side of the street throughout the study area. Crosswalks are provided on most legs of major intersections. A notable exception is at the intersection of Elm Street at Kennebec Street where crosswalks are only provided across the south leg of Elm Street and west leg of Kennebec Street.

Figure 10 shows an evaluation of the existing pedestrian facilities on the major streets in the study area that are non ADA-compliant, in poor or condition, or have gaps. As shown, there are poor segments of sidewalk located on Kennebec Street, Cedar Street, and Oxford Street. Fair segments of sidewalk are located Kennebec Street, Cedar Street, Oxford Street, Myrtle Street, and Brattle Street.

On Oxford Street abutting the proposed 89 Elm Street parcel there are two trees in the middle of the sidewalk. Throughout this entire study area there are few fully ADA compliant locations, however at most locations there are ramps in place. The exception to this are the following:

- Oxford Street / Stone Street
- Oxford Street / Myrtle Street

Figure 9 Existing Pedestrian Infrastructure

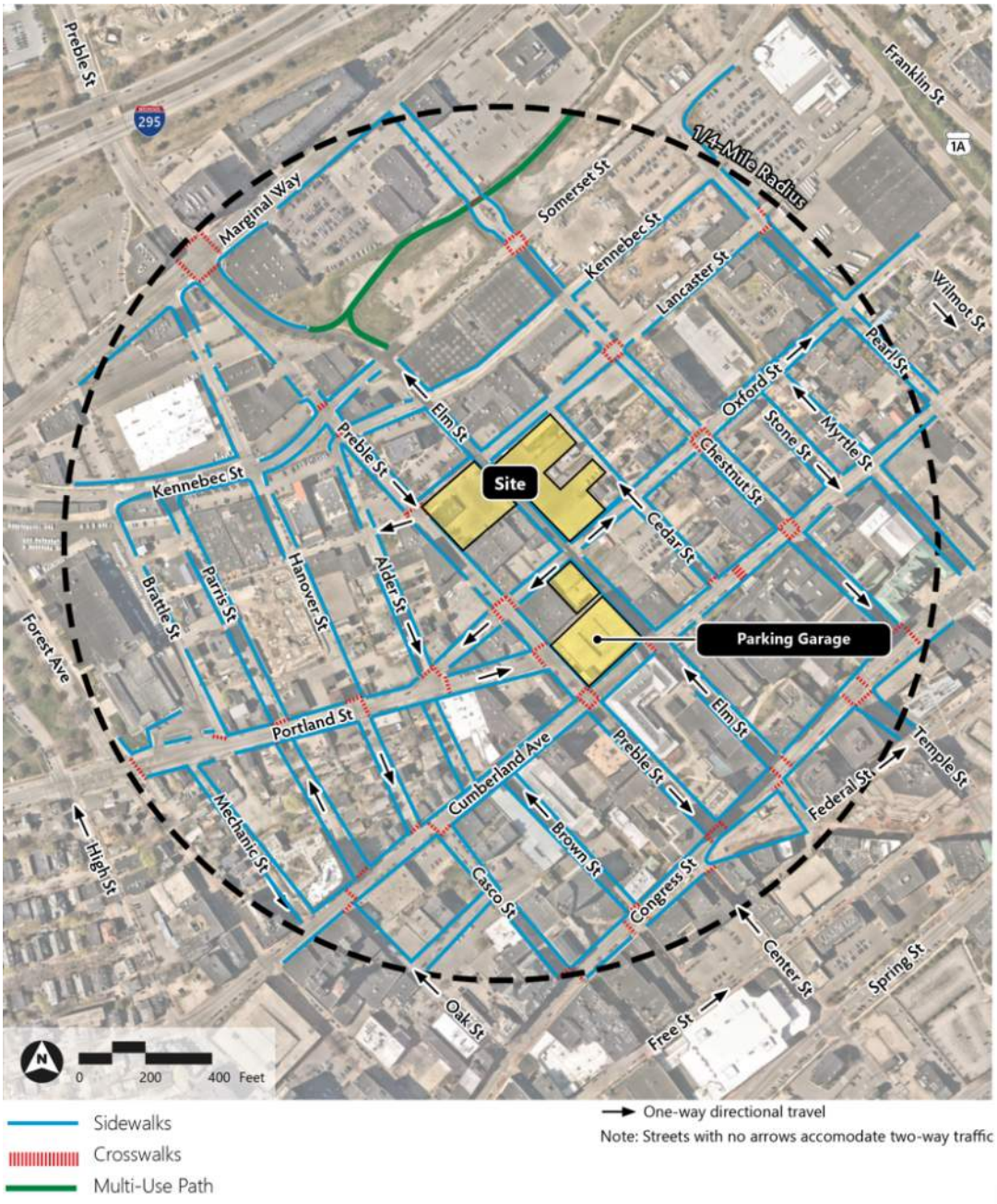
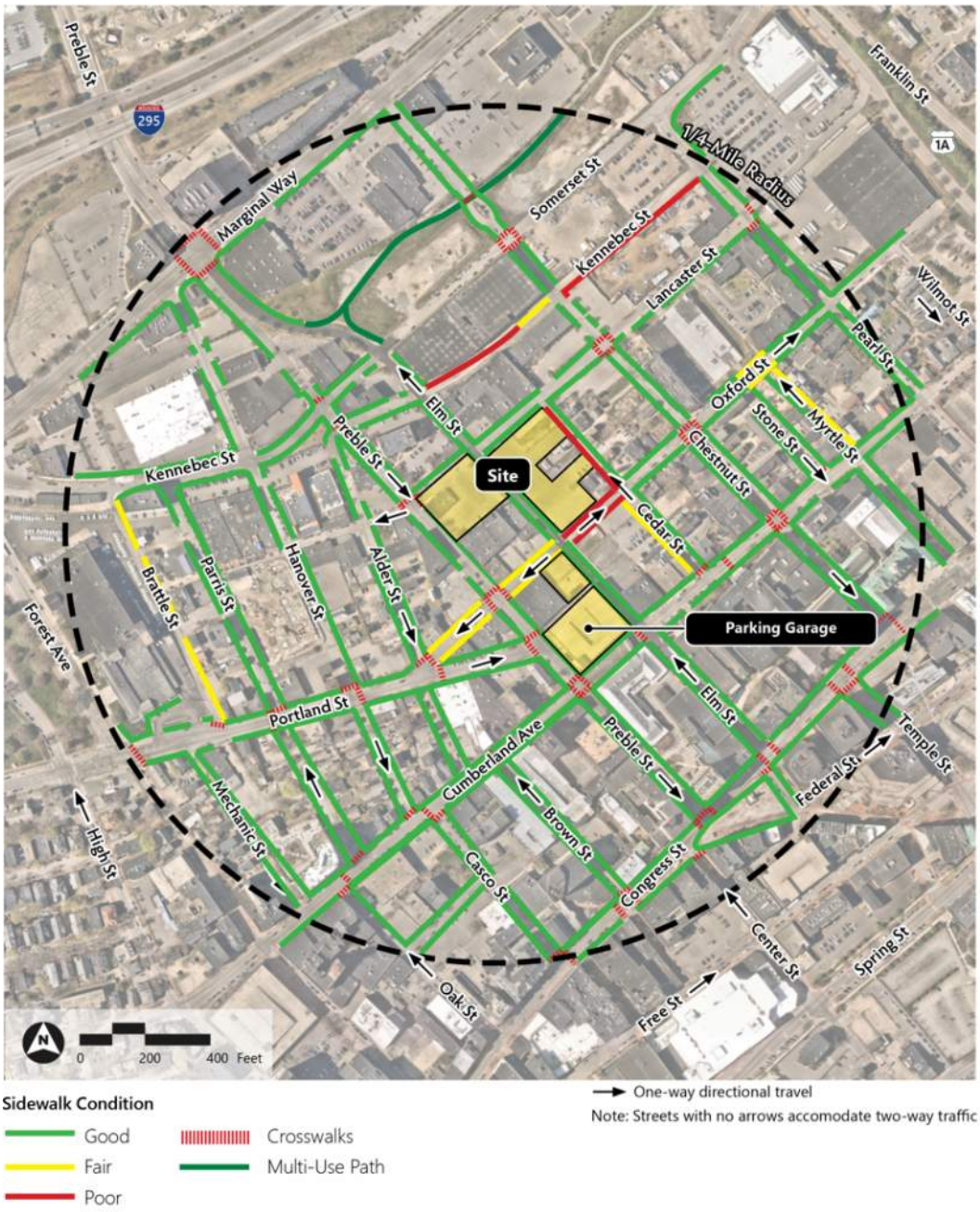


Figure 10 Existing Pedestrian Infrastructure Conditions



It is recommended that sidewalks along Cedar Street adjacent to the proposed 89 Elm Street building be reconstructed to accommodate pedestrians to and from the parking garage, as well as sidewalks on Oxford Street from Portland Street to Chestnut Street (including removing existing trees in sidewalk) prior to the occupancy of this project. These pedestrian improvements will connect an existing poor sidewalk to existing sidewalk that is updated or in good condition making a more walkable neighborhood from the parking garage to each proposed building in this phase. Since pedestrians will be required to walk from the parking garage to their respective building destination, it is recommended that all crosswalks on Preble Street between Lancaster Street and Cumberland Avenue be re-striped with high visibility paint.

11

Capacity / Queue Analysis

Intersection capacity analyses were performed for the study area intersections. Levels of service (LOS) were calculated based on the criteria published in the *2000 Highway Capacity Manual*. Level of service is the term that defines the delay conditions that occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing generally free flowing operating conditions and LOS F representing generally congested conditions. Table 15 summarizes LOS and delay for signalized and unsignalized intersections. Synchro 11 was used to determine the LOS. The initial conditions for the signalized intersections were compared to existing field condition observations during both peak hours. Based on a field review the existing queues observed are reflective of the existing conditions and no calibration is needed. A summary of the field observations can be found in Attachment 7E.

Table 15 Level of Service and Delay Summary

Level of Service	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)
A	≤10.0	≤10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	>80.0	>50.0

Table 16 below summarizes the operation analysis at each unsignalized intersection during the 2026 weekday AM and PM peak hours under No-Build and Build conditions, respectively. As shown, all unsignalized study area intersections are projected to operate at acceptable levels of service during the Build condition with the worst overall level of service projected to be LOS B.

Vehicle queues are reasonable and are accommodated at all study area unsignalized intersections.

Table 16 Capacity Analysis Summary Unsignalized

Intersection	2026 No Build				2026 Build			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Kennebec Street/Somerset Street & Preble Street								
AM Peak Hour								
Preble Street SELT	0.02	1.0	A	1	0.02	0.9	A	1
Preble Street SETR	0.12	0.0	N/A	0	0.14	0.0	N/A	0
Kennebec Street NETR	0.18	11.4	B	16	0.18	11.8	B	17
Somerset Street SWLT	0.07	12.7	B	6	0.07	13.1	B	6
Overall	**--**	**3.5**	**A**	**--**	**--**	**3.3**	**A**	**--**
PM Peak Hour								
Preble Street SELT	0.02	1.8	A	2	0.02	1.6	A	2
Preble Street SETR	0.08	0.0	N/A	0	0.09	0.0	N/A	0
Kennebec Street NETR	0.22	11.6	B	21	0.23	12.0	B	22
Somerset Street SWLT	0.13	12.6	B	11	0.13	13.1	B	12
Overall	**--**	**5.7**	**A**	**--**	**--**	**5.4**	**A**	**--**
Somerset Street & Elm Street								
AM Peak Hour								
Elm Street WBLTR	0.00	0.2	A	0	0.00	0.1	A	0
Somerset Street NELT	0.12	12.2	B	11	0.14	13.2	B	12
Somerset Street SWTR	0.11	11.0	B	10	0.13	11.7	B	11
Overall	**--**	**3.8**	**A**	**--**	**--**	**3.5**	**A**	**--**
PM Peak Hour								
Elm Street WBLTR	0.00	0.1	A	0	0.00	0.1	A	0
Somerset Street NELT	0.41	32.5	D	46	0.45	37.2	E	52
Somerset Street SWTR	0.68	28.6	D	126	0.72	32.3	D	140
Overall	**--**	**11.2**	**B**	**--**	**--**	**12.2**	**B**	**--**
Preble Street & Alder Street/Kennebec Street								
AM Peak Hour								
Alder Street EBTR	0.00	0.0	A	0	0.01	0.0	A	0
Kennebec Street WBLT	0.01	12.1	B	1	0.01	12.6	B	1
Preble Street SEL	0.02	7.3	A	1	0.02	7.3	A	1
Preble Street SETR	0.25	0.0	N/A	0	0.28	0.0	N/A	0
Overall	**--**	**0.5**	**A**	**--**	**--**	**0.5**	**A**	**--**
PM Peak Hour								
Alder Street EBTR	0.01	10.6	B	1	0.01	11.0	B	1
Kennebec Street WBLT	0.03	11.4	B	3	0.04	11.9	B	3
Preble Street SEL	0.01	7.3	A	1	0.01	7.3	A	1

Preble Street SETR	0.19	0.0	N/A	0	0.22	0.0	N/A	0
Overall	**--**	**1.2**	**A**	**--**	**--**	**1.0**	**A**	**--**
Elm Street & Kennebec Street								
AM Peak Hour								
Kennebec Street EBLT	0.03	11.3	B	3	0.04	12.1	B	3
Elm Street NWLTR	0.00	0.1	A	0	0.00	0.1	A	0
Overall	**--**	**0.7**	**A**	**--**	**--**	**0.6**	**A**	**--**
PM Peak Hour								
Kennebec Street EBLT	0.08	15.8	C	6	0.08	16.3	C	7
Elm Street NWLTR	0.01	0.3	A	1	0.01	0.3	A	1
Overall	**--**	**0.9**	**A**	**--**	**--**	**0.9**	**A**	**--**
Lancaster Street & Preble Street								
AM Peak Hour								
SELTR	0.05	1.7	A	4	0.05	1.6	A	4
NETR	0.03	12.5	B	2	0.03	13.0	B	2
SWLT	0.10	13.6	B	8	0.10	14.3	B	9
Overall	**--**	**3.1**	**A**	**--**	**--**	**3.0**	**A**	**--**
PM Peak Hour								
SELTR	0.01	0.8	A	1	0.01	0.7	A	1
NETR	0.01	10.9	B	1	0.01	11.3	B	1
SWLT	0.14	11.7	B	12	0.15	12.3	B	14
Overall	**--**	**3.8**	**A**	**--**	**--**	**3.5**	**A**	**--**
Lancaster Street & Elm Street								
AM Peak Hour								
NWLTR	0.02	0.8	A	1	0.02	0.6	A	1
NELT	0.22	13.7	B	21	0.25	15.3	C	24
SWTR	0.22	11.6	B	21	0.25	12.6	B	24
Overall	**--**	**6.5**	**A**	**--**	**--**	**6.2**	**A**	**--**
PM Peak Hour								
NWLTR	0.01	0.4	A	1	0.01	0.4	A	1
NELT	0.22	20.9	C	21	0.24	22.6	C	23
SWTR	0.35	16.3	C	38	0.37	17.3	C	42
Overall	**--**	**5.4**	**A**	**--**	**--**	**5.5**	**A**	**--**
Oxford Street & Preble Street								
AM Peak Hour								
SETR	0.21	0.0	N/A	0	0.24	0.0	N/A	0
SWLT	0.15	12.8	B	13	0.20	13.8	B	19
Overall	**--**	**2.4**	**A**	**--**	**--**	**2.8**	**A**	**--**
PM Peak Hour								
SETR	0.16	0.0	N/A	0	0.25	0.0	N/A	0
SWLT	0.15	11.9	B	13	0.20	14.1	B	19
Overall	**--**	**3.0**	**A**	**--**	**--**	**2.7**	**A**	**--**
Oxford Street & Elm Street								

AM Peak Hour								
NWLTR	0.04	1.7	A	3	0.05	1.7	A	4
PM Peak Hour								
NWLTR	0.03	1.0	A	3	0.04	1.1	A	3
Preble Street & Portland Street & Site Garage								
AM Peak Hour								
EBLR	0.43	14.1	B	55	0.51	16.1	C	73
SELT	0.01	0.2	A	0	0.04	1.4	A	3
SWL	0.04	22.8	C	3	0.89	101.4	F	159
Overall	**--**	**7.1**	**A**	**--**	**--**	**24.0**	**C**	**--**
PM Peak Hour								
EBLR	0.27	11.1	B	27	0.32	12.0	B	35
SELT	0.00	0.1	A	0	0.04	1.7	A	3
SWL	0.03	15.2	C	3	0.16	20.3	C	14
Overall	**--**	**5.7**	**A**	**--**	**--**	**7.7**	**A**	**--**
Elm Street & Site Garage								
AM Peak Hour								
NWLT	N/A	N/A	N/A	N/A	0.01	0.5	A	1
NEL	N/A	N/A	N/A	N/A	0.19	12.8	B	18
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**3.0**	**A**	**--**
PM Peak Hour								
NWLT	N/A	N/A	N/A	N/A	0.01	0.4	A	1
NEL	N/A	N/A	N/A	N/A	0.12	13.7	B	10
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**1.5**	**A**	**--**

+ Volume to capacity ratio

*Delay expressed in seconds per vehicles

**Level of Service

Queue measured in feet.

#95 percentile volume exceeds capacity, queue may be longer.

Table 17 summarizes the operational analysis at the signalized study area intersections during the 2026 weekday AM and PM peak hours under No Build and Build conditions, respectively. As shown, although each signalized intersection is anticipated to see a change in delay, all signalized study area intersections are not anticipated to decrease in overall level of service. It is important to note that the signal timings were measured during the peak hours in the field. The # symbol in the chart indicates that the volumes for 95th percentile cycle exceeds capacity, however, queuing was not noted to extend into adjacent intersections. The installation of adaptive signal control would enable the intersection to operate at optimal conditions throughout the day.

Table 17 Capacity Analysis Summary Signalized

Intersection	2026 No Build				2026 Build			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Marginal Way & Preble Street/Elm Street/Preble Street Ext								
AM Peak Hour								
Preble Street Ext SEL	0.65	34.9	C	222	0.66	36.3	D	227
Preble Street Ext SETR	0.35	23.3	C	128	0.36	23.9	C	132
Preble/Elm Street NWL	0.41	39.7	D	99	0.53	44.3	D	#146
Preble/Elm Street NWTR	0.47	29.0	C	94	0.52	30.8	C	110
Marginal Way NEL	0.31	39.5	D	59	0.32	41.2	D	60
Marginal Way NETR	0.58	35.3	D	139	0.65	37.6	D	156
Marginal Way SWL	0.35	40.5	D	84	0.43	43.9	D	100
Marginal Way SWT	0.50	31.8	C	189	0.49	32.1	C	193
Marginal Way SWR	0.29	2.6	A	14	0.29	2.5	A	13
Overall	**--**	**28.7**	**C**	**--**	**--**	**30.6**	**C**	**--**
PM Peak Hour								
Preble Street Ext SEL	0.79	49.7	D	#316	0.79	49.9	D	#316
Preble Street Ext SETR	0.34	22.6	C	101	0.37	24.1	C	110
Preble/Elm Street NWL	0.73	52.9	D	#224	0.78	55.6	E	#259
Preble/Elm Street NWTR	0.84	46.6	D	#268	0.85	47.3	D	#278
Marginal Way NEL	0.55	59.6	E	#106	0.55	59.8	E	#106
Marginal Way NETR	0.58	36.2	D	203	0.64	37.9	D	219
Marginal Way SWL	0.41	50.1	D	85	0.49	52.7	D	99
Marginal Way SWT	0.78	44.3	D	317	0.78	44.4	D	317
Marginal Way SWR	0.53	6.4	A	66	0.53	6.4	A	66
Overall	**--**	**38.2**	**D**	**--**	**--**	**39.2**	**D**	**--**
Cumberland Avenue & Preble Street								
AM Peak Hour								
Preble Street SEL	0.55	16.9	B	172	0.55	16.9	B	174
Preble Street SETR	0.47	14.4	B	150	0.53	15.2	B	170
Cumberland Avenue NETR	0.53	16.9	B	132	0.54	17.1	B	133
Cumberland Avenue SWL	0.04	9.5	A	11	0.04	9.6	A	11
Cumberland Avenue SWT	0.19	10.4	B	53	0.19	10.5	B	53
Overall	**--**	**15.4**	**B**	**--**	**--**	**15.6**	**B**	**--**
PM Peak Hour								
Preble Street SEL	0.38	17.0	B	97	0.37	16.7	B	97
Preble Street SETR	0.45	16.1	B	114	0.49	16.4	B	127
Cumberland Avenue NETR	0.48	16.3	B	140	0.49	17.0	B	148
Cumberland Avenue SWL	0.07	7.3	A	14	0.07	7.7	A	14
Cumberland Avenue SWT	0.42	10.1	B	93	0.43	10.6	B	98
Overall	**--**	**14.2**	**B**	**--**	**--**	**14.6**	**B**	**--**

Cumberland Avenue & Elm Street								
AM Peak Hour								
Elm Street NWL	0.03	14.1	B	12	0.03	14.1	B	12
Elm Street NWTR	0.39	16.9	B	81	0.39	16.9	B	81
Cumberland Avenue NEL	0.27	7.7	A	45	0.28	7.7	A	47
Cumberland Avenue NET	0.46	9.3	A	119	0.46	9.3	A	119
Cumberland Avenue SWT	0.24	17.5	B	64	0.24	17.5	B	64
Cumberland Avenue SWR	0.22	3.6	A	18	0.26	4.8	A	24
Overall	**--**	**10.8**	**B**	**--**	**--**	**10.8**	**B**	**--**
PM Peak Hour								
Elm Street NWL	0.09	16.2	B	31	0.09	16.2	B	31
Elm Street NWTR	0.59	22.5	C	162	0.59	22.5	C	162
Cumberland Avenue NEL	0.23	8.9	A	48	0.24	9.0	A	50
Cumberland Avenue NET	0.37	10.2	B	124	0.37	10.1	B	124
Cumberland Avenue SWT	0.54	23.0	C	152	0.54	23.1	C	152
Cumberland Avenue SWR	0.34	5.9	A	40	0.37	5.9	A	42
Overall	**--**	**15.4**	**B**	**--**	**--**	**15.3**	**B**	**--**
Forest Avenue & Park Avenue/Portland Street								
AM Peak Hour								
Park Avenue EBL	0.13	12.4	B	29	0.13	14.3	B	32
Park Avenue EBTR	0.43	14.6	B	120	0.45	16.7	B	138
Portland Street WBL	0.04	19.8	B	15	0.04	21.7	C	16
Portland Street WBTR	0.49	20.6	C	120	0.52	23.2	C	143
Forest Avenue NBLTR	0.25	13.0	B	81	0.27	13.1	B	96
Forest Avenue SBL	0.56	19.1	B	153	0.62	20.9	C	187
Forest Avenue SBT	0.50	16.2	B	176	0.47	15.6	B	183
Forest Avenue SBR	0.03	0.1	A	0	0.03	0.1	A	0
Overall	**--**	**16.5**	**B**	**--**	**--**	**17.7**	**B**	**--**
PM Peak Hour								
Park Avenue EBL	0.12	10.9	B	29	0.12	12.3	B	32
Park Avenue EBTR	0.32	11.9	B	103	0.33	13.3	B	117
Portland Street WBL	0.03	19.4	B	14	0.03	21.2	C	15
Portland Street WBTR	0.57	21.2	C	175	0.59	23.1	C	197
Forest Avenue NBLTR	0.35	16.6	B	109	0.35	16.4	B	117
Forest Avenue SBL	0.55	22.3	C	149	0.60	23.7	C	175
Forest Avenue SBT	0.38	17.2	B	141	0.36	16.7	B	143
Forest Avenue SBR	0.05	0.2	A	0	0.04	0.1	A	0
Overall	**--**	**17.3**	**B**	**--**	**--**	**18.3**	**B**	**--**

+ Volume to capacity ratio

*Delay expressed in seconds per vehicles

**Level of Service

Queue measured in feet.

#95 percentile volume exceeds capacity, queue may be longer.

Oxford Street 2-Way Conversation Analysis

It was requested at the scoping meeting that converting Oxford Street to two-way flow from Elm Street to Portland Street be evaluated. Table 18 summarizes the operational analysis at the following intersections during the 2026 weekday AM and PM peak hours with Oxford Street operating as a 2-way road:

- Portland Street / Oxford Street (Unsignalized)
- Oxford Street / Preble Street (Unsignalized)
- Oxford Street / Elm Street (Unsignalized)
- Cumberland Avenue / Preble Street (Signalized)
- Cumberland Avenue / Elm Street (Signalized)

Since all vehicle trips are oriented towards the garage, no site generated trips are redistributed because this conversion creates additional turns to enter the site if coming from Portland Street. 10% of exiting site trips already were assigned to use Oxford Street to Portland Street, so no additional exiting trips have been redistributed.

The conversion to two way will provide a potential route for the left turning vehicles from Preble Street to Cumberland Avenue to reduce travel time. 25% of those vehicles were estimated to utilize Oxford Street and travel to Pearl Street and connect back to Cumberland Avenue during the AM and PM peak hours. The total number of trips being reassigned are 35 AM and 21 PM trips. Half of the vehicles being reassigned originated from Portland Street traveling straight onto Oxford towards Pearl Street while the other half were traveling southbound on Preble and turning left on Oxford Street towards Pearl Street.

Table 18 Capacity Analysis Summary 2-Way Oxford Street

Intersection	2026 Build				2026 2-Way Oxford			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Portland Street & Oxford Street (Unsignalized)								
AM Peak Hour								
EBLT	N/A	N/A	N/A	N/A	0.02	1.0	A	2
SWLTR	N/A	N/A	N/A	N/A	0.04	8.4	A	3
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**1.7**	**A**	**--**
PM Peak Hour								
EBLT	N/A	N/A	N/A	N/A	0.01	0.8	A	1
SWLTR	N/A	N/A	N/A	N/A	0.05	8.5	A	4
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**2.1**	**A**	**--**
Oxford Street & Preble Street (Unsignalized)								
AM Peak Hour								
SETR	0.24	0.0	N/A	0	0.22	0.0	N/A	0
SWLT	0.20	13.8	B	19	0.19	13.5	B	18
NET	N/A	N/A	N/A	N/A	0.07	12.0	B	5
Overall	**--**	**2.8**	**A**	**--**	**--**	**3.6**	**A**	**--**

PM Peak Hour								
SETR	0.25	0.0	N/A	0	0.24	0.0	N/A	0
SWLT	0.20	14.1	B	19	0.04	12.2	B	3
NET	N/A	N/A	N/A	N/A	0.20	14.0	B	19
Overall	**--**	**2.7**	**A**	**--**	**--**	**3.2**	**A**	**--**
Oxford Street & Elm Street (Unsignalized)								
AM Peak Hour								
NWLTR	0.05	1.7	A	4	0.05	1.8	A	4
NELT	N/A	N/A	N/A	N/A	0.19	16.2	C	17
Overall	**--**	**1.7**	**A**	**--**	**--**	**3.8**	**A**	**--**
PM Peak Hour								
NWLTR	0.04	1.1	A	3	0.04	1.1	A	3
NELT	N/A	N/A	N/A	N/A	0.15	18.7	C	13
Overall	**--**	**1.1**	**A**	**--**	**--**	**2.2**	**A**	**--**
Cumberland Avenue & Preble Street (Signalized)								
AM Peak Hour								
Preble Street SEL	0.55	16.9	B	174	0.42	14.9	B	129
Preble Street SETR	0.53	15.2	B	170	0.54	15.5	B	170
Cumberland Avenue NETR	0.54	17.1	B	133	0.53	16.7	B	133
Cumberland Avenue SWL	0.04	9.6	A	11	0.04	9.3	A	11
Cumberland Avenue SWT	0.19	10.5	B	53	0.19	10.2	B	53
Overall	**--**	**15.6**	**B**	**--**	**--**	**15.0**	**B**	**--**
PM Peak Hour								
Preble Street SEL	0.37	16.7	B	97	0.27	15.7	B	75
Preble Street SETR	0.49	16.4	B	127	0.49	16.4	B	127
Cumberland Avenue NETR	0.49	17.0	B	148	0.49	17.0	B	148
Cumberland Avenue SWL	0.07	7.7	A	14	0.07	7.7	A	14
Cumberland Avenue SWT	0.43	10.6	B	98	0.43	10.6	B	98
Overall	**--**	**14.6**	**B**	**--**	**--**	**14.4**	**B**	**--**
Cumberland Avenue & Elm Street (Signalized)								
AM Peak Hour								
Elm Street NWL	0.03	14.1	B	12	0.03	14.1	B	12
Elm Street NWTR	0.39	16.9	B	81	0.39	17.0	B	81
Cumberland Avenue NEL	0.28	7.7	A	47	0.29	7.8	A	47
Cumberland Avenue NET	0.46	9.3	A	119	0.38	8.5	A	93
Cumberland Avenue SWT	0.24	17.5	B	64	0.25	17.7	B	64
Cumberland Avenue SWR	0.26	4.8	A	24	0.27	4.9	A	24
Overall	**--**	**10.8**	**B**	**--**	**--**	**10.7**	**B**	**--**
PM Peak Hour								
Elm Street NWL	0.09	16.2	B	31	0.09	16.2	B	31
Elm Street NWTR	0.59	22.5	C	162	0.59	22.4	C	162
Cumberland Avenue NEL	0.24	9.0	A	50	0.24	9.0	A	50
Cumberland Avenue NET	0.37	10.1	B	124	0.32	9.6	A	106

Cumberland Avenue SWT	0.54	23.1	C	152	0.54	23.2	C	152
Cumberland Avenue SWR	0.37	5.9	A	42	0.37	5.9	A	42
Overall	**--**	**15.3**	**B**	**--**	**--**	**15.4**	**B**	**--**

As shown, the change to two-way Oxford is not forecasted to change the overall level of service at these intersections, however the Preble Street southeast left onto Cumberland Avenue sees a slight increase in capacity.

Although converting Oxford Street to 2-Way flow does open circulation options, the analysis does not show a significant enough change or improvement to be recommended.

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Crash History

The crash data were obtained from MaineDOT for an expanded area determined by the City of Portland during the project scoping meeting. The study area for reviewing high crash locations (HCLs) is bounded by I-295, Forest Avenue, Franklin Street, and Cumberland Street. It is important to note that the original crash data submitted in Section 2 of the TMP shows data from 2019-2021, the most recent three-year period available during time of submission. There were no HCLs identified during that three-year period. For this study, the data obtained were updated crash data from MaineDOT for the period of 2020-2022, the most recent three-year period now available.

In order to evaluate whether a location qualifies as a High Crash Location (HCL), MaineDOT uses two criteria. 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 indicated 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 were 11 HCLs (8 intersections and 3 segments) identified in the site vicinity. In addition to the HCLs, one non-HCL intersection was identified for further review at the scoping meeting per request of the City of Portland.

Intersections

Node 18523: Marginal Way / Preble Street/Preble Street Extension (Total of 19 Crashes, CFR = .89)

- This intersection was recently reconstructed in 2022 so may have already addressed the 2020-2022 high crash history at that time.
- Marginal Way westbound rear-end (5 crashes): This crash pattern appears to have occurred during the midday and afternoon period. Four of the five crashes occurred during a weekday and four of the five crashes were caused by following too closely. This issue may be due to insufficient clearance times. A countermeasure could include increasing clearance times to allow more vehicles to clear the intersection.

- Preble Street Extension southbound angle (3 crashes): One of the crashes involved a possible injury. Two of the three crashes were caused by a driver running a red light. The countermeasure of increasing clearance times may reduce this crash occurrence as well.

Node 16836: Forest Avenue / Marginal Way/Kennebec Street/State Street (Total of 49 Crashes, CFR = 1.38)

- Marginal Way southwest rear-end (10 crashes): Nine out of the 10 crashes were identified as "follow too close" at this yield movement. It is possible that the yield sign is not visible to motorists due to tree branches blocking it. A countermeasure could include recommending the removal of obstructive tree branches for better line of sight and converting from a yield condition to a stop.
- Forest Avenue southbound through movement rear-end (6 crashes): Three of the six crashes were identified as "follow too close". A countermeasure could include increasing clearance times to allow more vehicles to clear the intersection.
- Forest Avenue southbound sideswipe (6 crashes): Four of the six crashes were identified as "improper turn". The other two crashes failed to keep in lane and disregarded road markings. Two of the crashes resulted in a minor injury and a possible injury. There may not be sufficient space to accommodate queuing and lane changes where the 295 northbound off-ramp enters Forest Avenue as a yield movement which could be contributing to this sideswipe activity. A countermeasure would be to add lane use signs for each lane on the mast arms.
- Forest Avenue southbound rear-end (6 crashes): all six of the crashes were identified as "follow too closely" at this yield movement. Three of the six crashes resulted in possible injury. Increasing clearance time could reduce this crash occurrence as well.

Node 19029: Cumberland Avenue / Forest Avenue (Total of 17 Crashes, CFR = 1.03)

- Cumberland Avenue eastbound through angle collision (7 crashes): Three of the seven crashes at this location were caused by "ran red light" while the other four crashes resulted from various reasons including "fail to yield", "Hit and run" and unknown. Two of the crashes resulted in possible injury while one resulted in minor injury. This issue may be due to insufficient clearance times. A countermeasure could include increasing clearance times to more safely process vehicles through the intersection and adding sun shields to the signal heads for better visibility.
- Forest Avenue southbound through angle collision (3 crashes): These crashes were caused by "ran red light" and "fail to yield". Similarly, it is recommended that the clearance time be increased and adding sun shields to the signal heads for better visibility.

Node 19040: Chestnut Street / Cumberland Avenue (Total of 9 crashes, CFR = 3.13)

- Cumberland Avenue northeast bound rear-end collision (3 crashes): These three crashes were identified as "follow too close" and occurred when pedestrians were crossing. A motorist stopped to yield to a pedestrian and another motorist then rear-ended not stopping in time. This intersection is adjacent to Portland High School which experiences a significant amount of school related pedestrian traffic. Based on review of the area, there is already a high visibility crosswalk pattern on all four crossing legs as well as crossing signage.

Node 19049: Forest Avenue / Park Avenue / Portland Street (Total of 22 crashes, CFR = 1.27)

- Portland Street westbound angle collision (3 crashes): The angled crashes at this location were identified as "improper turn" and "failed to yield". The right-turn lane is missing lane markings as there was a patch job that was not restriped after. A countermeasure would be to add right turn arrow pavement markings and define the bike lane and right-turn travel lane.
- Forest Avenue northbound angle collision (4 crashes): All four of these crashes were identified as "fail to yield". One crash resulted in a minor injury. Although the crash report is not available, based on the diagram it appears that left-turning vehicles traveling southbound on Forest Avenue did not yield to vehicles traveling through on Forest Avenue northbound. Protected phasing strategies for the left-turns on Forest Avenue in the southbound left movement could be explored as a counter measure as well as installing a left turn yield on green sign.

Node 19193: Forest Avenue / 1-295 NB Exit 6B Off Ramp (Total of 32 crashes, CFR = 6.47)

- 1-295NB Exit 6B Off Ramp rear-end collision (31 crashes): Twenty-three of these crashes were identified as "follow too close" while the additional reasons include "fail to yield" or "inattention". Eight of these crashes involved a possible injury. Thirteen of these crashes occurred during the evening peak period and the sunsetting could potentially be a factor. The yield sign is not always visible from the queue due to the tree branches blocking it. The crosswalk striping is also faded. Counter measures could include making the yield sign more visible and restriping the crosswalk with high visible markings.

Node 19197: Franklin Street / 1-295 NB Exit 7 Off Ramp (Total of 25 crashes, CFR = 1.52)

- 1-295 NB Exit 7 Off Ramp rear-end collision (8 crashes): Seven of these crashes are identified as "follow too close" and one is "hit and run".
- I-295 NB Exit 7 Off Ramp angle collision (11crashes): Five of these crashes are identified as "ran red light" while the remaining six were caused by "fail to yield".
- This intersection often experiences spill back from the upstream intersection during peak period conditions.

Node 60342: Forest Avenue / I-295 NB Exit 6A Off Ramp (Total of 16 crashes, CFR = 3.5)

- 1-295NB Exit 6A Ramp Off rear-end collision (13 crashes): Twelve of the crashes at this off ramp were identified as "follow too close".

Node 72190: Chestnut Street / Marginal Way (Total of 12 crashes. CFR = 2.37)

- Chestnut Street northwest bound angle collision (5 crashes): All five of these crashes were identified as "fail to yield". This intersection was recently modified and now includes a stop-bar on the Chestnut Street stop approach, therefore these improvements might help mitigate this pattern of crashes.

Roadway Segments

Node 60346-18999: Marginal Way from Forest Avenue Island to Hanover Street (Total of 8 crashes, CFR = 1.48)

› This section of Marginal Way is one lane in each direction with a shared center left-turn lane. No consistent crash patterns were identified as the crashes were spread out throughout the corridor and were caused by various issues therefore no countermeasures are recommended.

Node 71632-72190: Marginal Way from Preble Street Island to Chestnut Street (Total of 13 crashes, CFR = 2.02)

› No consistent crash patterns were identified as the crashes were spread out throughout the corridor and were caused by various issues therefore no countermeasures are recommended.

Node 72190-71634: Marginal Way from Chestnut Street to Franklin Street Island (Total of 9 crashes, CFR = 1.03)

› Marginal Way northeast bound angle collision (3 crashes): The angle collisions were due to "fail to yield". It is assumed that drivers making a left-turn from the Marginal Way southwest bound direction did not yield to motorists traveling through. The close proximity of two commercial driveways to one another and allowing left-turns in could be a factor for these crashes. No countermeasures are recommended since these are commercial driveways.

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Recommendations

Based on the evaluations completed above, a number of infrastructure investments are recommended in conjunction with the project. Although there are limited capacity impacts, there are pedestrian needs in the study area as well as existing safety concerns to address. It is recommended that these improvements be constructed prior to the occupancy of this project.

Pedestrian Improvements

To improve pedestrian connections throughout the study area, the project will reconstruct the following blocks of sidewalk:

- Oxford Street from Portland Street to Chestnut Street
- Cedar Street from Oxford Street to Lancaster Street

To safety cross residents between the parking garage and their various building destinations, all crosswalks on Preble Street between Lancaster Street and Cumberland Avenue be re-striped with high visibility paint.

Safety Improvements

Infrastructure improvements are recommended to improve safety at study area intersections. Based on the crash history, the following items are proposed:

Forest Avenue / Marginal Way/Kennebec Street/State Street

- Remove obstructive tree branches for better line of sight and convert Marginal Way southwest bound right from a yield condition to a stop.
- Add lane use signs for each approach on the mast arms.
- Increase clearance times to allow more vehicles to clear the intersection.

Cumberland Avenue / Forest Avenue

- Add sun shields to the signal heads for better visibility.

Forest Avenue / Park Avenue / Portland Street

- Add right turn arrow pavement markings and define the bike lane and right-turn travel lane on Portland Street westbound.
- Install a left turn yield on green sign for left turns from Forest Avenue to Portland Street.
- Increase clearance times to allow more vehicles to clear the intersection.

Forest Avenue / Marginal Way/Kennebec Street/State Street

- Remove obstructive tree branches on Marginal Way for better line of sight.
- Add lane use signs for each lane for the Forest Avenue approaches.
- Increase clearance times to allow more vehicles to clear the intersection.

Traffic Signal Timing Evaluation

After the project is occupied, a post-occupancy traffic signal evaluation will be performed at the Marginal Way intersection with Elm Street to confirm adequate operation.

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Summary and Conclusions

The project consists of 215 multi-family housing units, 201 affordable housing units, and 14,000 sf of commercial space comprising of retail, restaurant, and a coffee shop. The project is located at 89 Elm Street, 60 Elm Street, and 196 Lancaster Street. All uses are anticipated to utilize the Portland Public Market Garage, a seven-level, 595-space parking structure. Vehicular access to and from the garage is provided on both Preble Street and Elm Street.

The proposed development program is anticipated to generate 230 and 162 new vehicular trips during the AM and PM peak hours respectively. With these trips distributed onto the adjacent roadway network, the overall level of service is expected to operate at acceptable levels in 2026 during both the no-build and build conditions.

As the project is occupied a post-occupancy traffic signal evaluation will be performed at the study area signalized intersections.

Attachment 7A

Site Location Map

Site Plans

MATCH LINE SHT. 2

LANCASTER STREET EAST (50' WIDE)

N49°39'27"E 199.65'

N49°39'27"E 210.57'

S49°39'27"W 461.02'

N49°39'27"E 218.00'

S49°02'07"W 116.76'

S43°43'01"E 147.93'

196 LANCASTER ST.
196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±
1 STORY CONCRETE

89 ELM ST.
89 ELM STREET LLC
39779/246
4,691 S.F. ±
50 CEDAR ST.

89 ELM STREET LLC
39779/236
38,462 S.F. ±
0.88 ACRES ±

158 LANCASTER ST.
WBP COMMERCIAL LLC
39773/225
14,307 S.F. ±
0.33 ACRES ±

WBP COMMERCIAL LLC
39779/221
3,442 S.F. ±
0.08 ACRES ±
82 CHESTNUT ST.

81 PREBLE ST.
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±
3 STORY CONCRETE

73 ELM ST.
73 ELM STREET LLC
39779/234
14,879 S.F. ±
0.34 ACRES ±

60 ELM ST.
60 ELM STREET LLC
39779/230
11,535 S.F. ±
0.26 ACRES ±

62 ELM ST.
WBP COMMERCIAL LLC
39779/229
14,526 S.F. ±
0.33 ACRES ±
2 STORY BRICK

197 OXFORD ST.
197 OXFORD STREET LLC
39779/243
12,721 S.F. ±
0.30 ACRES ±

78 CHESTNUT ST.

193 OXFORD ST.
197 OXFORD STREET LLC
39779/239
11,550 S.F. ±
0.265 ACRES ±

31 CEDAR ST.
197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

N/F AMELIA A. LABRECK
37970/11

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

TM 26-A-11
N/F ROBERT HYDE
27470/68

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

TM 26-B-7
N/F FRANK E. DIDONATO
DONNA E. COX
24885/320

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

TM 33-M-4
N/F
WBP GARAGE LLC
39746/216
PARKING GARAGE

OWNERS UNKNOWN

PREBLE STREET (56.5' WIDE)

ELM STREET (49.5' WIDE)

CEDAR STREET (33' WIDE)

CHESTNUT STREET (49.5' WIDE)

OXFORD STREET (49.5' WIDE)

PORTLAND ST.

HALL COURT

PASSAGE

CUMBERLAND AVE.

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- EM/GM ELECTRIC/GAS METER
- MB MAILBOX
- SIGN
- PM PARKING METER
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- LIGHT POLE
- GAS VALVE
- DECIDUOUS TREE
- FENCE
- CURB
- OHW OVERHEAD WIRES
- UGE UNDERGROUND POWER
- W WATER LINE
- G GAS LINE
- T TELEPHONE
- SD STORM DRAIN
- SS SANITARY SEWER
- 100 1' CONTOUR
- IPF/IRF IRON PIPE/ROD FOUND
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK / PAGE
- TM TAX MAP–BLOCK–LOT
- CONC. CONCRETE

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 SURVEY HAS NOT PHYSICALLY LOCATION THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

PLAN REFERENCES

ALTA/NSPS LAND TITLE SURVEYS, BAYSIDE I, LLC, BAYSIDE II, LLC, BAYSIDE III, LLC, BAYSIDE IV, LLC, CEDAR ST., LANCASTER ST. EAST, CHESTNUT ST., PREBLE ST. & OXOFRD ST., PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR BUSH-WATSON SEPT. 2022 BY OWEN HASKELL, INC.

GENERAL NOTES

1. *OWNERS OF RECORD: AS NOTED ON PLAN*
2. *BEARINGS ARE BASED ON MAINE STATE GRID WEST ZONE PER COORDINATES ON CONTROL POINTS PROVIDED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT.*
3. *ELEVATIONS BASED ON NGVD 1929. CITY BENCHMARK TBM 307 MDOT DISK "612–(1)–10 1983" IN CONCRETE BASE OF LIGHT POLE AT NORTHEAST CORNER ELM/SOMERSET ELEVATION = 9.02.*
4. *STREET LINES SHOWN ARE BASED ON MONUMENTATION FOUND AND TIES TO BUILDINGS PER SURVEYED BY E.C. JORDAN CO.*
5. *OWNERSHIP OF FENCES AND RETAINING WALLS ALONG PROPERTY LINES HAS NOT BEEN DETERMINED.*

STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

Topographic Survey
Bayside Parcels
Lancaster, Preble, Elm, Cedar, Chestnut and Oxford Streets, Portland, Maine
Made for
Bush-Watson
188 State Street, 3rd Floor, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: RS / JLW	DATE: DEC. 8, 2022	JOB NO. 2022-162 P	
CHECKED BY: RRL	SCALE: 1" = 30'	DRWG. NO. 1	

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	.86 AC
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	6.66 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	5 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	3.85 FT
MINIMUM SIDE YARD SETBACK	N/A	2.91 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT	80'*	< 80 FT

* PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	.86 AC
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	6.66 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.88 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.09 FT
LOT WIDTH	20 FT	89.51 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	–

GENERAL NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.

REFERENCES:

1. PLAN REFERENCE
   1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022

LEGEND:
- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

20 0 20 40
SCALE: 1" = 20'

PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
PROPOSED STREET TREE PER DETAIL AND LA, TYP.
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
EXISTING CURB, CROSSWALK, AND DETECTABLE PAD
PROPOSED PATIO PER LA
ZONE B7
ZONE B3
ZONE R6
ZONING DISTRICT BOUNDARY, TYP.
LANCASTER STREET
PROPOSED REINFORCED CONCRETE SIDEWALK
EXISTING CURB CUT TO REMAIN AND BE MODIFIED
CANOPY ABOVE, TYP.
PROPOSED SEAT WALL PER LA
EXISTING PARKING LOT TO REMAIN
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
56 CEDAR STREET
LOBBY
MECHANICAL ROOM
PROPOSED PROPERTY LINE, TYP.
CURB CUT TO BE CLOSED
TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341
EXISTING LIGHT POLE TO REMAIN, TYP.
MAIL/PACKAGES
BIKE STORAGE
PROPOSED RETAINING WALL AND GUARDRAIL/FENCE PER STRUCTURAL ENGINEER
EX. RETAINING WALL TO REMAIN WITH MODIFICATIONS AS SHOWN
TM 26-A-11
N/F ROBERT HYDE
27470/68
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
SETBACK LINE, TYP.
COMMUNITY ROOM
STORAGE/ LAUNDRY
PR. LOCATION OF 9'X9' PADMOUNT TRANSFORMER
50 CEDAR STREET
EXISTING PARKING AND CURB CUT TO REMAIN
EXISTING HOME TO REMAIN
TM 26-A-8
N/F ALBERT
BRESETTE
7951/275
196 LANCASTER STREET LLC
39779/232
ELM STREET (ONE-WAY)
PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS
PROPOSED WOOD GUARDRAIL PER DETAIL
PR. PAVEMENT
N/F AMELIA A. LABRECK
37970/11
EX. STREET TREES TO REMAIN, TYP.
HALL COURT
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
2ND STORY
12 PARKING STALLS TO BE STRIPED
EXISTING PARKING LOT TO REMAIN
TM 26-B-1
N/F ROBERT HYDE
27470/68
TM 26-B-2,3
N/F ALBERT
BRESETTE
3 STORY CONCRETE
CEDAR STREET (ONE-WAY)
46 CEDAR STREET
PROPOSED DRIVEWAY AND MODIFIED CURB CUT
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±
PR. STAIRS AND RAMP WITH RAILINGS
SEAT WALL OR CURB AND DECORATIVE RAILING AT ELM STREET ENTRY, TYP. OF 3
PROPOSED RESURFACED PARKING LOT
PROPOSED 22' WIDE ACCESS AND UTILITY EASEMENT
PR. LOCATION OF SOLID WASTE
TM 26-B-14
N/F MARY LEE
BENNISON
27956/297
6' SIDEWALK PER DETAIL
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
PR. MULCH AND SHRUBS
TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
RESIDENTIAL
3RD STORY
PR. RETAINING WALL
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C-20
RETAIL SPACE
OXFORD STREET LLC
39779/234
3,679 S.F. ±
0.34 ACRES ±
OXFORD STREET LLC
39779/241
3,674 S.F. ±
2-1/2 STORY WOOD FRAME
1 STORY BRICK
EXISTING LIGHT POLE AND OVERHEAD WIRES TO BE REMOVED AND REROUTED
TEMP. CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL PLAN TO BE DEVELOPED BY CONTRACTOR AND SUBMITTED TO CITY PRIOR TO CONSTRUCTION
EXISTING TREE TO BE REMOVED
OXFORD STREET (ONE-WAY)
ABUTTER'S CURB CUT TO REMAIN
9.34
10.37
R10'
16'
27.32'
5.09'
10.18'
24'
89.51
22'
R15'
10.36'
14.78'
2.91'
0.33'
8.92'
100.00'

PRELIMINARY
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23

DRAWING NAME: SITE PLAN
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: TOM WATSON & CO., LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE USED FOR ANY PROJECT OTHER THAN THAT SPECIFICALLY INTENDED BY ACORN ENGINEERING, INC. AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ENGINEERING, SURVEYING, PLANNING
PO BOX 3472 PORTLAND, MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
10509
LICENSED PROFESSIONAL ENGINEER
2/13/23

DRAWING NO.
C-10

REFERENCES:

1. EXISTING CONDITIONS PROVIDED BY "TOPOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBLE, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE" PREPARED FOR BUSH WATSON DATED DECEMBER 6, 2022 BY OWEN HASKELL, INC.UTILITY INFORMATION OBTAINED FROM PORTLAND WATER DISTRICT MAPPING, UNITIL MAPPING, AND THE CITY OF PORTLAND GIS DATA CATALOG.
2. ADDITIONAL EXISTING INFORMATION FROM CAD FILE PROVIDED BY OWEN HASKELL, INC. OF "BOUNDARY & TOPOGRAPHIC SURVEY AT 117 PREBLE STREET, PORTLAND, MAINE" DATED SEPTEMBER 28, 2015.

SPACE AND BULK STANDARDS

ZONING DISTRICT	DOWNTOWN BUSINESS (B3)	MIXED DEVELOPMENT (B7)	RESIDENTIAL (R6)
MINIMUM LOT AREA	N/A	N/A	VARIES
MINIMUM STREET FRONTAGE	15 FT	N/A	20 FT
MAX FRONT YARD SETBACK	5 FT	10 FT	N/A
MINIMUM FRONT YARD SETBACK	N/A	N/A	5 FT
MINIMUM REAR YARD SETBACK	N/A	N/A	10 FT
MINIMUM SIDE YARD SETBACK	N/A	N/A	5 FT
LOT WIDTH	N/A	N/A	20 FT
MINIMUM LENGTH OF BUILDING WALL AT MAX SETBACK	N/A	75% OF STREET FRONTAGE OR 25% OF BUILDING PERIMETER	N/A
LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	N/A	N/A
FLOOR AREA	NONE, EXCEPT 15,000 SF FOR EACH FLOOR ABOVE 125 FT		
MAXIMUM BUILDING HEIGHT	PER DOWNTOWN AND BAYSIDE OVERLAY MAPS	PER BAYSIDE OVERLAY MAP	45 FT
LOT COVERAGE (MAX)	N/A*	N/A	60%
LANDSCAPED OPEN SPACE RATIO	N/A	N/A	20%
*MAX 25% OF LOT AREA FOR PORTIONS OF STRUCTURES EXCEEDING 125 FEET IN HEIGHT			

LEGEND:

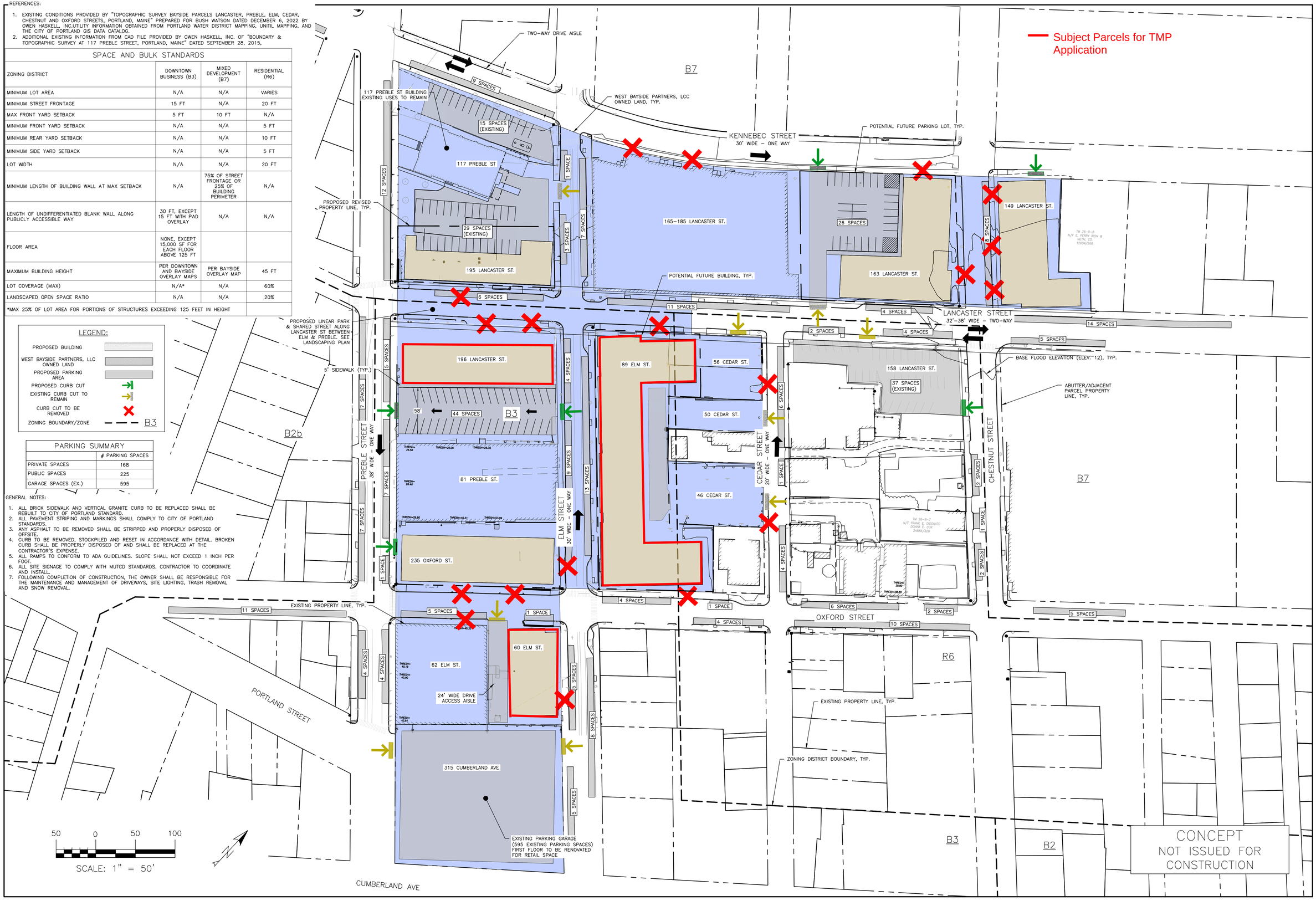
- PROPOSED BUILDING
- WEST BAYSIDE PARTNERS, LLC OWNED LAND
- PROPOSED PARKING AREA
- PROPOSED CURB CUT
- EXISTING CURB CUT TO REMAIN
- CURB CUT TO BE REMOVED
- ZONING BOUNDARY/ZONE — B3

PARKING SUMMARY

	# PARKING SPACES
PRIVATE SPACES	168
PUBLIC SPACES	225
GARAGE SPACES (EX.)	595

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.



ISSUED FOR	BY	DATE
MASTER DEVELOPMENT PLAN	WHS	12/23/22
TMP	WHS	2/2/23

DRAWING NAME: MASTER SITE PLAN

PROJECT NAME: WEST BAYSIDE MASTER DEVELOPMENT PLAN

CLIENT: WEST BAYSIDE PARTNERS, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
CIVIL ENGINEERING
LAND PLANNING
PO BOX 3287 PORTLAND, ME 04104
(207) 775-2655

ALL PLANS SHALL NOT BE MODIFIED WITHOUT THE PRIOR WRITTEN PERMISSION OF ACORN ENGINEERING, INC. AND SHALL BE RETURNED UPON REQUEST. ANY MODIFICATIONS TO THESE PLANS, WHETHER INTENTIONAL OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1093.13_CIVIL
JN:	1093.13
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
WILLIAM H. SAVAGE
11419
2/2/2023
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-10

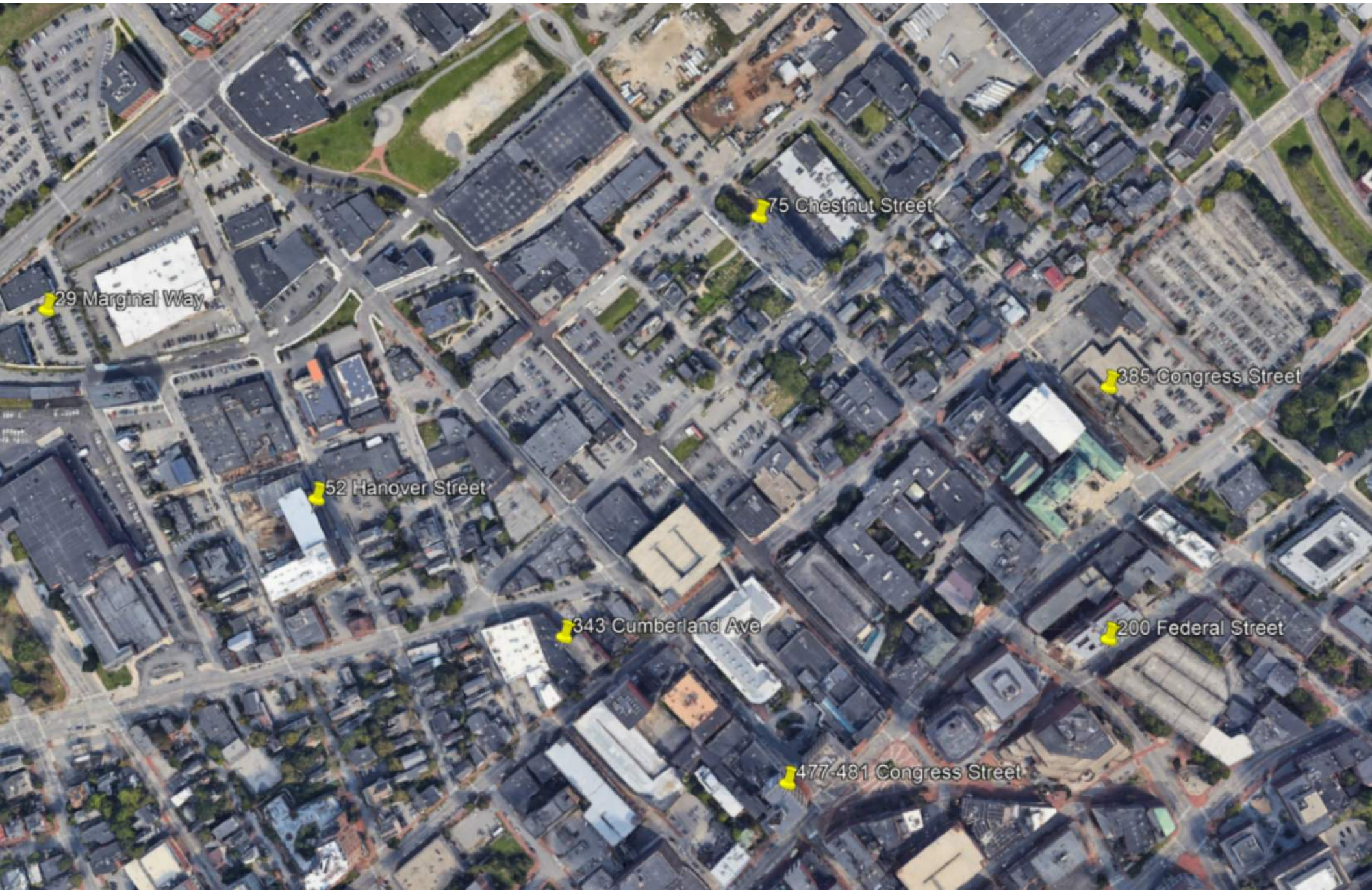

ELEVATION=16.25
BIKE
ZONE B-7
ZONE B-3
RETAIL
1,156 SF
RESIDENTIAL
LOBBY
VEST
PACKAGE
FCC
ELEC
WATER
/ FP
T/D
TRASH
BIKE
STORAGE
VEST
RETAIL
4,521 SF
+17.1
+17.3
+17.9
+35
+21.8
+23.5
+23.5
+23.5
+23.29
+24.28
+24.55
+25.05
20.1
38 90° / 34 75°
PARKING SPACES
269'
ZONE B-2B
ZONE B-3
(50.5' WIDE)
(49.5' WIDE)
STREET
89 ELM STREET LLC
36779/235

60 Elm Street

RELOCATE TRANSFORMER
CURRENT
+30.00
+32.00
+40.31
+53.99
+34.00
+36.00
+36.80
PATIO - 1,098 SF
+36.00
24.57'
18.33'
+LOADING
NEW
+34.80
THRESH= 29.91
THRESH= 30.73
TRASH
EMR
BIKE STORAGE
ELEC
WATER / FP
T/D
+34.80
AMENITY ABOVE
2,070 SF +45.40
RETAIL
3,246 SF
+37.58
RETAIL
3,242 SF
+42.75
RESIDENTIAL LOBBY
2,493 SF
+42.00
VEST
+42.00
235 OXFORD
ELEVATION=35.64
+37.58
+42.75
11.00'
OXFORD STRE
ELEVATION=46.56
+43.00
+45.00
RETAIL
1,953 SF
+45.00
TRASH
+44.00
+44.00
EMR
BIKE STORAGE
62 ELM
+53.75
NEW
T/D
+48.00
60 ELM
VEST
+48.00
RELOCATE TRANSFORMER
ELEC
FCC
EASEMENT 6921/105
RESIDENTIAL LOBBY
2,671 SF
+51.25
WATER / FP
CURRENT
ACCESS PATH TO 66 ELM
5.00'

Attachment 7B

Other Project Locations Map


75 Chestnut Street
29 Marginal Way
385 Congress Street
52 Hanover Street
343 Cumberland Ave
200 Federal Street
477-481 Congress Street

Attachment 7C

Trip Generation Calculations

Site Trip Diagrams

ITE Trip Generation 11th Edition - Proposed

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions				AM PK HR OF ADJACENT STREET TRAFFIC										PM PK HR OF ADJACENT STREET TRAFFIC									
				directional dist.		average				regression		# trips			directional dist.		average				regression		# trips			
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting
Overall Trip Gen																											
221	Multifamily Housing (Mid-Rise)	215	Dwelling Units	23%	77%	30	0.37	0.09	80	0.91	83	Regression	83	19	64	61%	39%	31	0.39	0.08	84	0.91	84	Regression	84	51	33
223	Affordable Housing	201	Dwelling Units	29%	71%	7	0.50	0.39	101	0.73	91	Average	101	29	72	59%	41%	8	0.46	0.28	92	0.67	86	Average	92	54	38
936	Coffee/Donut Shop without Drive-Thrc	2	1000 SF GFA	51%	49%	25	93.08	42.71	186	N/A	N/A	Average	186	95	91	50%	50%	16	32	12.64	65	N/A	N/A	Average	65	33	32
822	Strip Retail Plaza (<40k)	6	1000 SF GFA	60%	40%	5	2.36	0.94	14	0.57	21	Regression	21	12	8	50%	50%	25	6.59	2.94	40	0.56	54	Regression	54	27	27
932	High-Turnover (Sit-Down)	6	1000 SF GFA	55%	45%	37	9.57	11.61	57	N/A	N/A	Average	57	31	26	61%	39%	104	9.05	6.18	54	N/A	N/A	Average	54	33	21
196 Lancaster Only																											
221	Multifamily Housing (Mid-Rise)	130	Dwelling Units	23%	77%								50	12	39	61%	39%								51	31	20
936	Coffee/Donut Shop without Drive-Thrc	2	1000 SF GFA	51%	49%								186	95	91	50%	50%								65	33	32
932	High-Turnover (Sit-Down)	4	1000 SF GFA	55%	45%								38	21	17	61%	39%								36	22	14
89 Elm St Only																											
223	Affordable Housing	201	Dwelling Units	29%	71%								101	29	72	59%	41%								92	54	38
932	High-Turnover (Sit-Down)	2	1000 SF GFA	55%	45%								19	10	9	61%	39%								18	11	7
822	Strip Retail Plaza (<40k)	4	1000 SF GFA	60%	40%								14	8	5	50%	50%								36	18	18
60 Elm St Only																											
221	Multifamily Housing (Mid-Rise)	85	Dwelling Units	23%	77%								33	8	25	61%	39%								33	20	13
822	Strip Retail Plaza (<40k)	2	1000 SF GFA	60%	40%								7	4	3	50%	50%								18	9	9

Based on ITE 11th Edition

	total	entering	exiting
AM Peak Hour Total Site Trips:	448	187	261

	total	entering	exiting
PM Peak Hour Total Site Trips:	349	199	151

Proposed

Trip Generation Summary

Total	Total Peak Hour Site Generated Trips									External Site Generated Vehicle Trips			
Peak Period	Total Unadjusted ITE	Internal	**External**	**Vehicle Trips**	Transit	Bike	Pedestrian	Pass-By	Primary	Total	Pass-By	Diverted	New
Weekday Morning				***55%***	*0%*	*0%*	*45%*						
Enter	187	15	**172**	**95**	0	0	77		95	95			95
Exit	261	15	**246**	**135**	0	0	111		135	135			135
Total	448	30	**418**	**230**	0	0	188		230	230	0	0	230
Weekday Evening													
Enter	199	28	**171**	**94**	0	0	77		94	94			94
Exit	151	28	**123**	**68**	0	0	55		68	68			68
Total	350	56	**294**	**162**	0	0	132		162	162			162

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	7	4	3
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	8	25
Hotel				0		
All Other Land Uses[2]				0		
Total				40	12	28

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	40	12	28
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	40	12	28
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	4	4	1.00	3	3
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	8	8	1.00	25	25
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	5	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	4	4	4	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	8	8	8	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	3	3	3	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	25	25	25	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	18	9	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	20	13
Hotel				0		
All Other Land Uses[2]				0		
Total				51	29	22

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	51	29	22
Internal Capture Percentage	12%	10%	14%
External Vehicle-Trips[3]	45	26	19
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	11%	22%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	10%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	9	9	1.00	9	9
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	20	20	1.00	13	13
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	5	3	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	1	0
Retail	0		0	0	9	0
Restaurant	0	5		0	3	0
Cinema/Entertainment	0	0	0		1	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	8	9	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	18	20	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	7	9	7	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	12	13	12	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	13	8	5
Restaurant	932	2	1k sf	19	10	9
Cinema/Entertainment				0		
Residential	223	201	ea	101	29	72
Hotel				0		
All Other Land Uses[2]				0		
Total				133	47	86

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	133	47	86
Internal Capture Percentage	9%	13%	7%
External Vehicle-Trips[3]	121	41	80
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	25%	40%
Restaurant	30%	11%
Cinema/Entertainment	N/A	N/A
Residential	3%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	8	8	1.00	5	5
Restaurant	1.00	10	10	1.00	9	9
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	29	29	1.00	72	72
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		1	0	1	0
Restaurant	3	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	2	0	0	0
Retail	0		5	0	1	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	1	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	6	8	6	0	0
Restaurant	3	7	10	7	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	28	29	28	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	3	5	3	0	0
Restaurant	1	8	9	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	69	72	69	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	36	18	18
Restaurant	932	2	1k sf	18	11	7
Cinema/Entertainment				0		
Residential	223	201	ea	92	54	38
Hotel				0		
All Other Land Uses[2]				0		
Total				146	83	63

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	5	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	146	83	63
Internal Capture Percentage	22%	19%	25%
External Vehicle-Trips[3]	114	67	47
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	28%	44%
Restaurant	45%	57%
Cinema/Entertainment	N/A	N/A
Residential	11%	11%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	18	18	1.00	18	18
Restaurant	1.00	11	11	1.00	7	7
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	54	54	1.00	38	38
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	1	5	1
Restaurant	0	3		1	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	16	8	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	2	0
Retail	0		3	0	25	0
Restaurant	0	9		0	9	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	2	2	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	5	13	18	13	0	0
Restaurant	5	6	11	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	6	48	54	48	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	8	10	18	10	0	0
Restaurant	4	3	7	3	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	34	38	34	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	6	1K sf	224	116	108
Cinema/Entertainment				0		
Residential	221	130	ea	51	12	39
Hotel				0		
All Other Land Uses[2]				0		
Total				275	128	147

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	8	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	275	128	147
Internal Capture Percentage	7%	7%	6%
External Vehicle-Trips[3]	257	119	138
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	7%	1%
Cinema/Entertainment	N/A	N/A
Residential	8%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	116	116	1.00	108	108
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	12	12	1.00	39	39
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	33	15		0	4	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	8	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	27	0	0	0
Retail	0		58	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	23	0		0
Hotel	0	0	7	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	8	108	116	108	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	11	12	11	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	107	108	107	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	8	31	39	31	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	6	1K sf	102	55	47
Cinema/Entertainment				0		
Residential	221	130	ea	51	31	20
Hotel				0		
All Other Land Uses[2]				0		
Total				153	86	67

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	153	86	67
Internal Capture Percentage	12%	10%	13%
External Vehicle-Trips[3]	135	77	58
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	7%	11%
Cinema/Entertainment	N/A	N/A
Residential	16%	20%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	55	55	1.00	47	47
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	31	31	1.00	20	20
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	1	19		4	8	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	8	4	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	1	0
Retail	0		16	0	14	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	2		1	0
Residential	0	0	8	0		0
Hotel	0	0	3	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	4	51	55	51	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	26	31	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	5	42	47	42	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	16	20	16	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

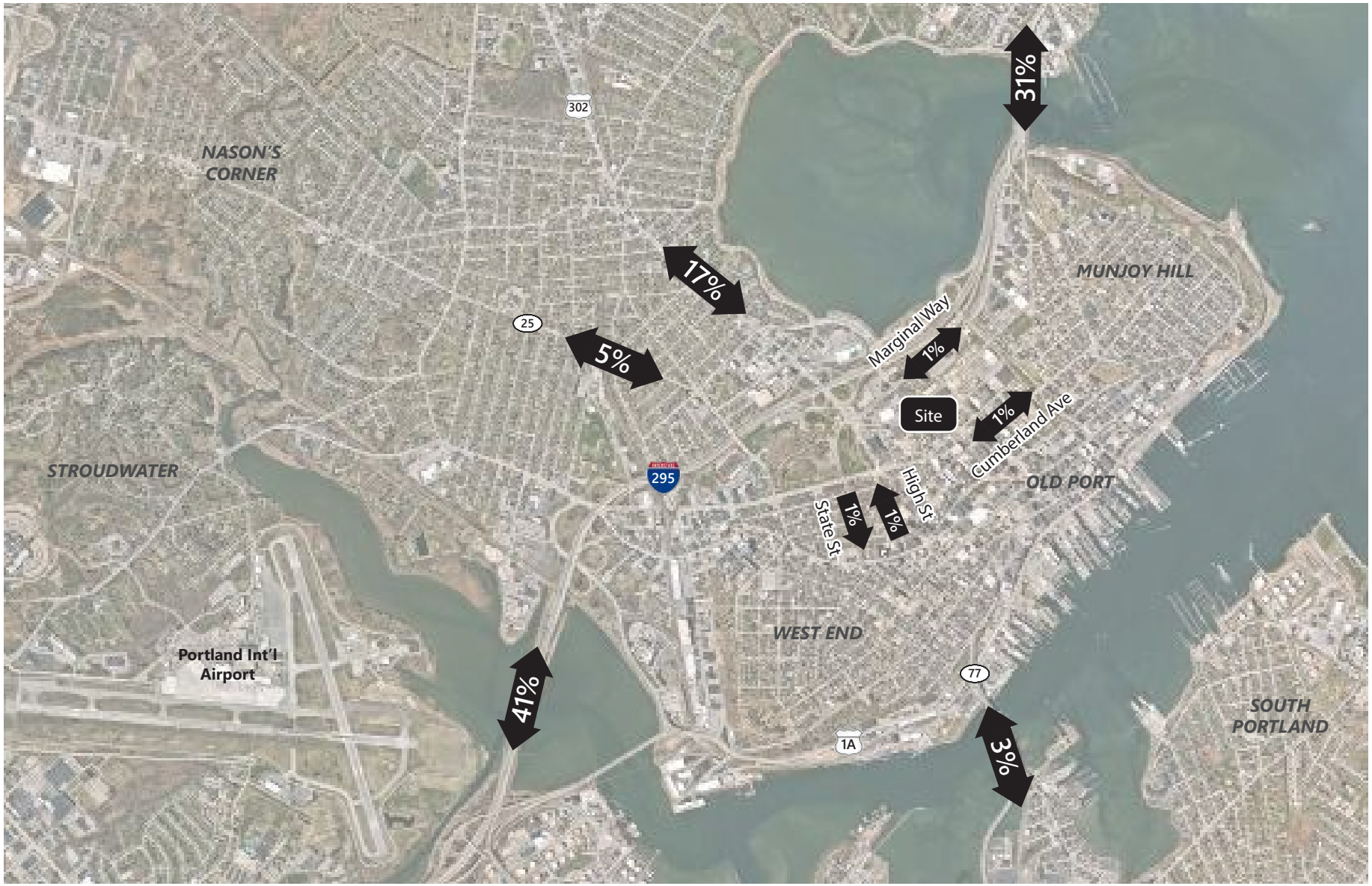
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

	Potential Routes	I-295 points north	I-95 points north	26/100 points north/west	302 points north/west	25 points west	I-295 points south	Marginal Way	State Street points south	High Street Points north	Cumberland Ave	totals
County	Work Destination											
Androscoggin	229	115	114									229
Aroostook	7	7										7
Cumberland	3,084											3084
Baldwin	36						36					36
Bridgton	43		43									43
Brunswick	111	33					78					111
Cape Elizabeth	115						115					115
Casco	60			30	30							60
Chebeague Island	7						7					7
Cumberland	58	58										58
Falmouth	220	220										220
Freeport	133	133										133
Frye Island	0											0
Gorham	145						145					145
Gray	50			50								50
Harpswell	30	30										30
Harrison	0											0
Long Island	19						19					19
Naples	36		36									36
New Gloucester	84	56		28								84
North Yarmouth	28	28										28
Pownal	7		7									7
Raymond	25			18	8							25
Scarborough	224						224					224
Sebago	0											0
Standish	25						25					25
Windham	107			54	53							107
Yarmouth	85	85										85
Cities: Portland	814	41		81	163		366	41	41	41	41	814
Cities: S. Portland	339						226		113			339
Cities: Westbrook	283			94	94	94						283
Franklin	13	13										13
Hancock	26	17	9									26
Kennebec	169	85	84									169
Knox	47	47										47
Lincoln	42	42										42
Oxford	72			50	22							72
Penobscot	40	40										40
Piscataquis	0											0
Sagadahoc	251	251										251
Somerset	57	29	28									57
Waldo	0											0
Washington	13	13										13
York	683						683					683
Sum	4,733	1344	321	405	369	94	1924	41	154	41	41	4733
		28%	7%	9%	8%	2%	41%	1%	3%	1%	1%	100%

Project Traffic Distribution

West Bayside | Portland, Maine

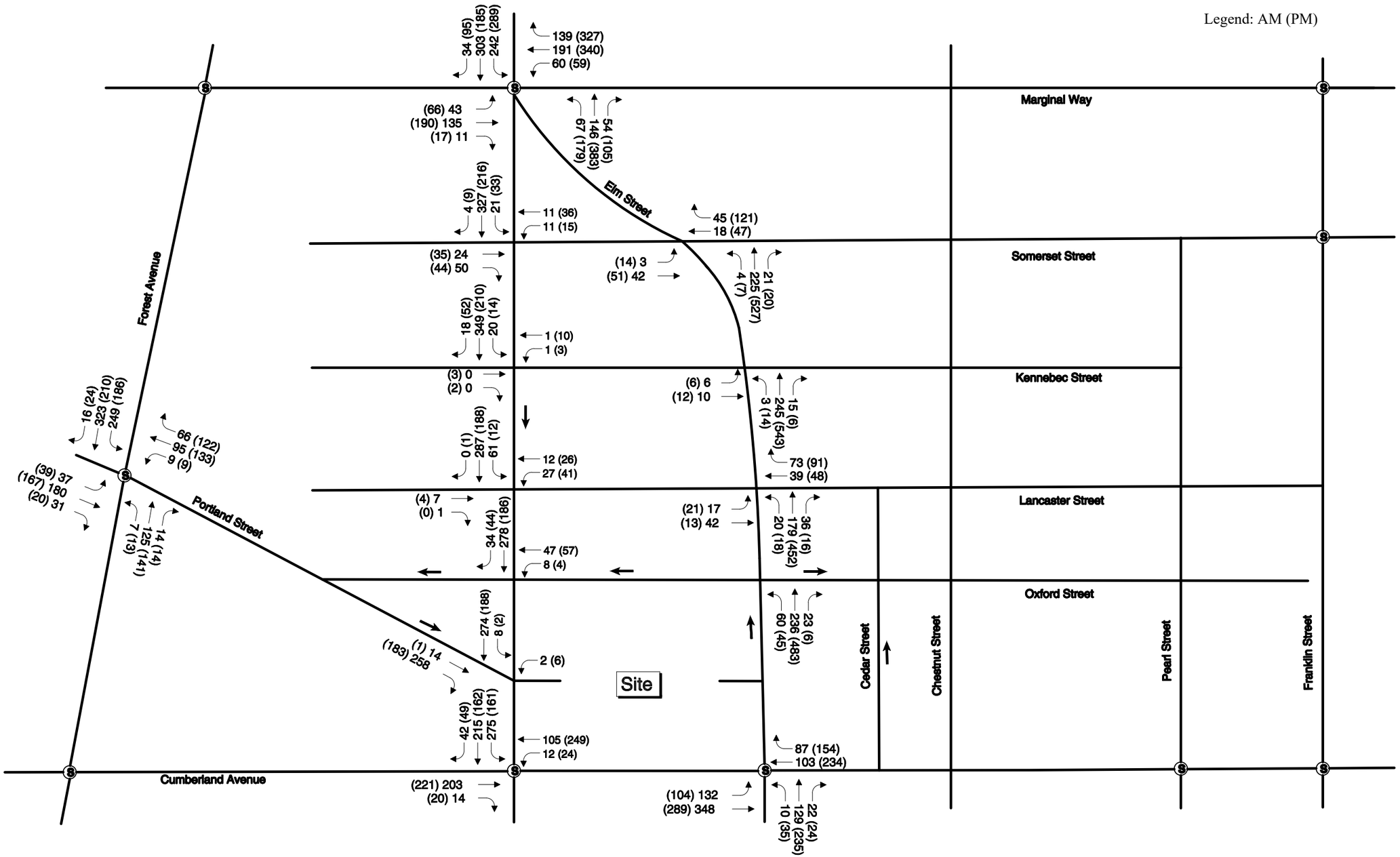


% Project Traffic In/Out

Source: Nearmap Aerial

\\vhb\gbl\proj\Portland\55678.00 West Bayside\Graphics\FIGURES\Transportation Figures - SY working.indd p5 12/23/22

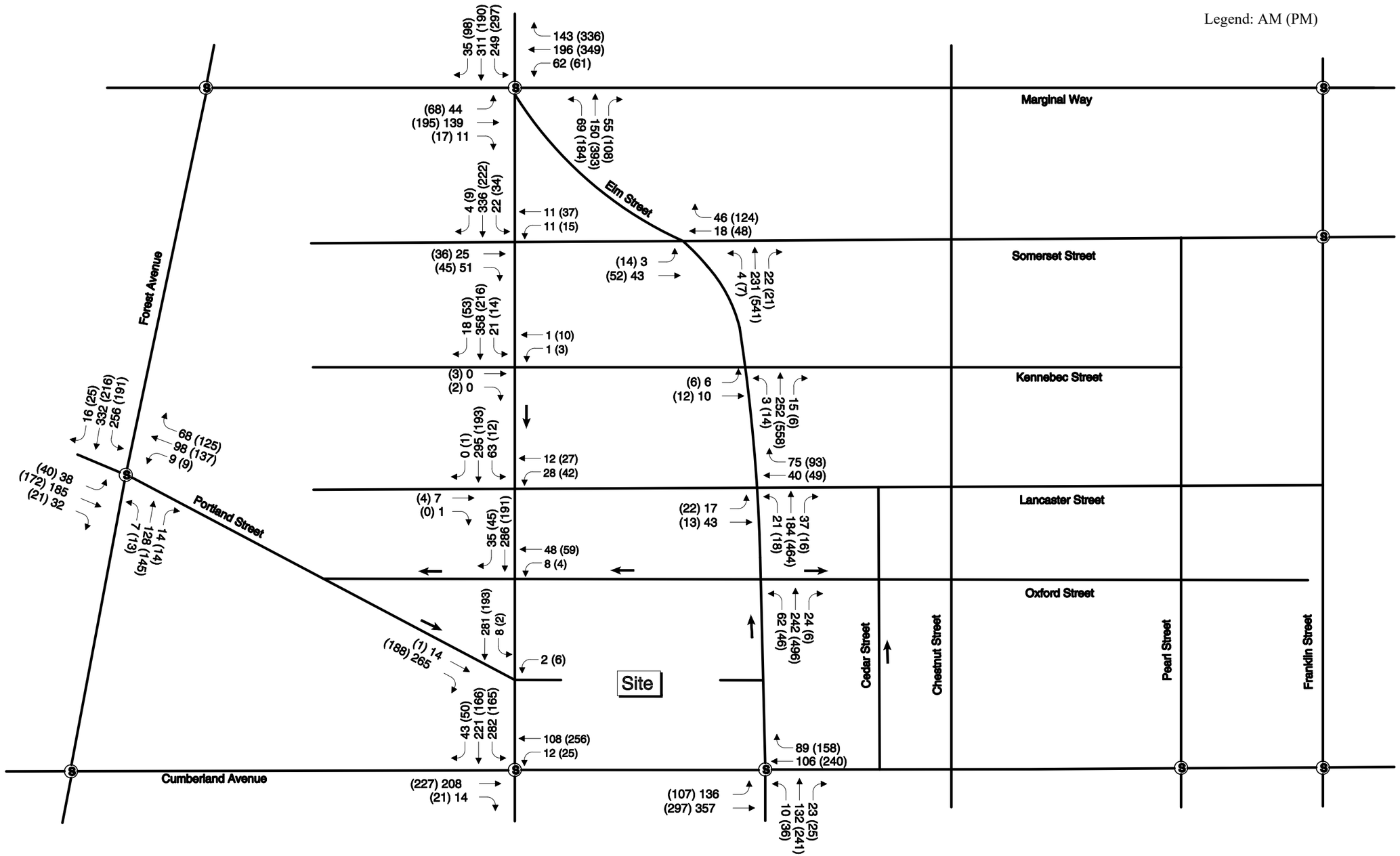
Legend: AM (PM)



Not to Scale

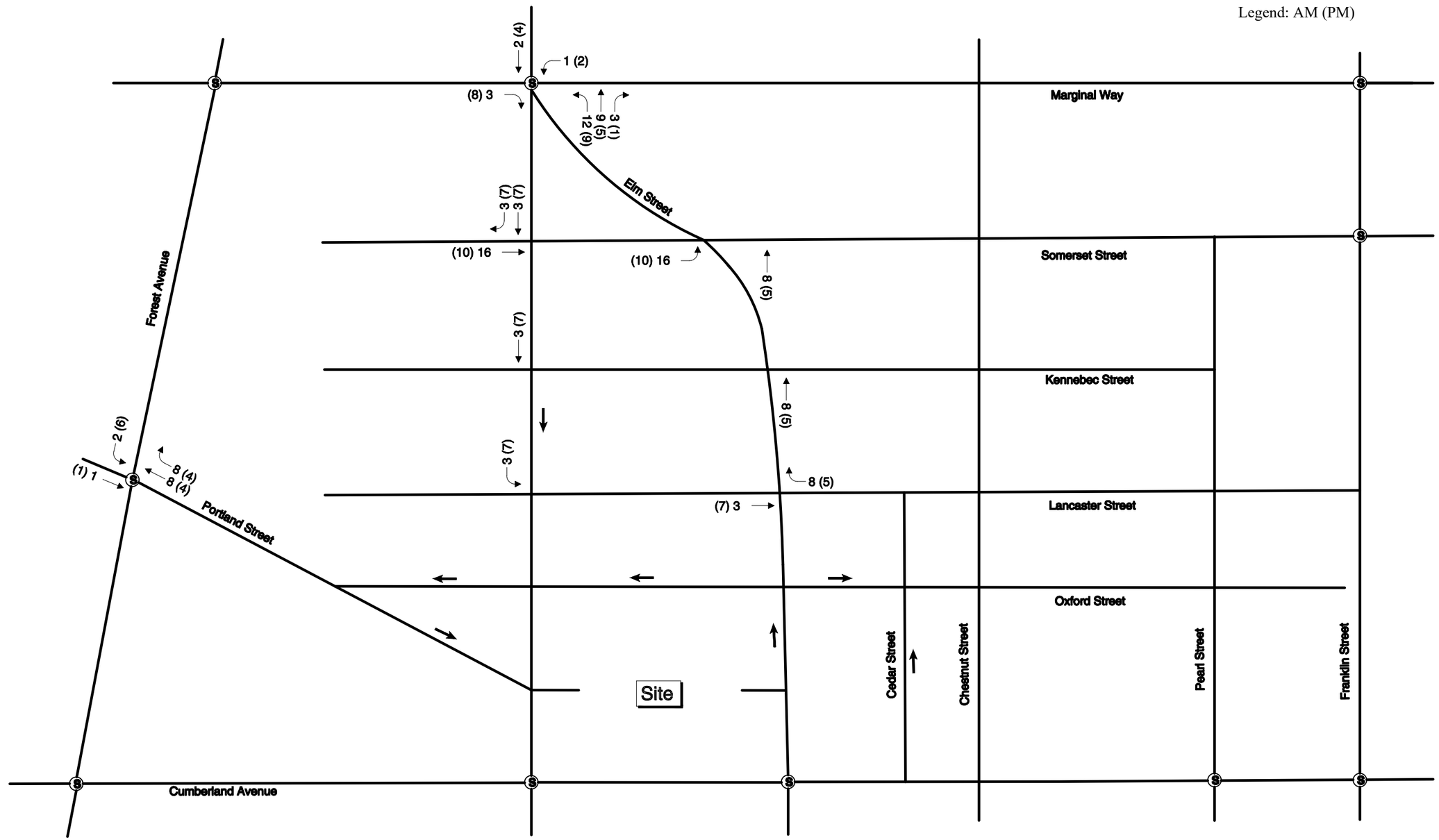
Figure 1
Raw Volumes

Legend: AM (PM)



Not to Scale

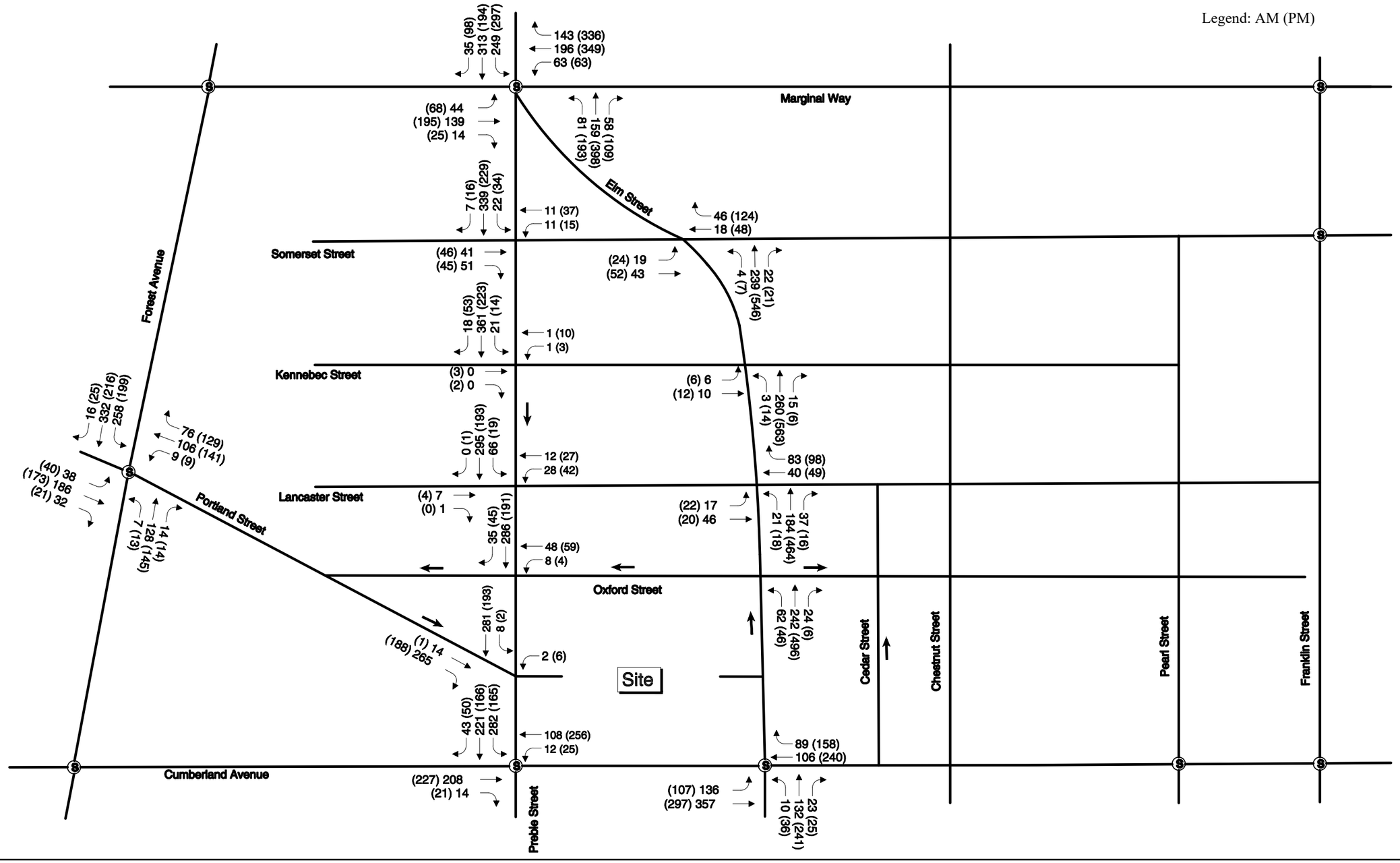
Figure 2
Adjusted Volumes



Not to Scale

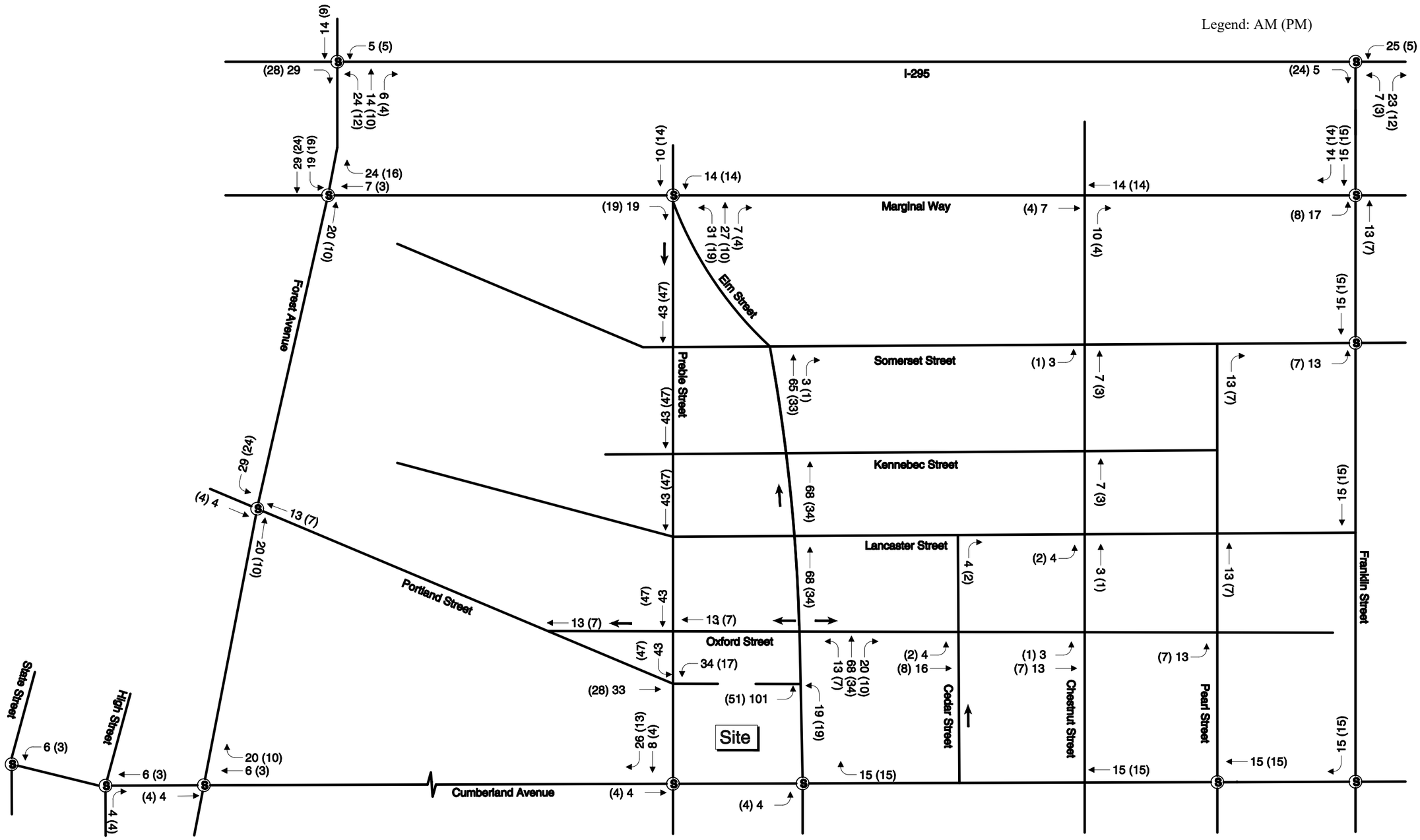
Figure 3
Other Development

Legend: AM (PM)



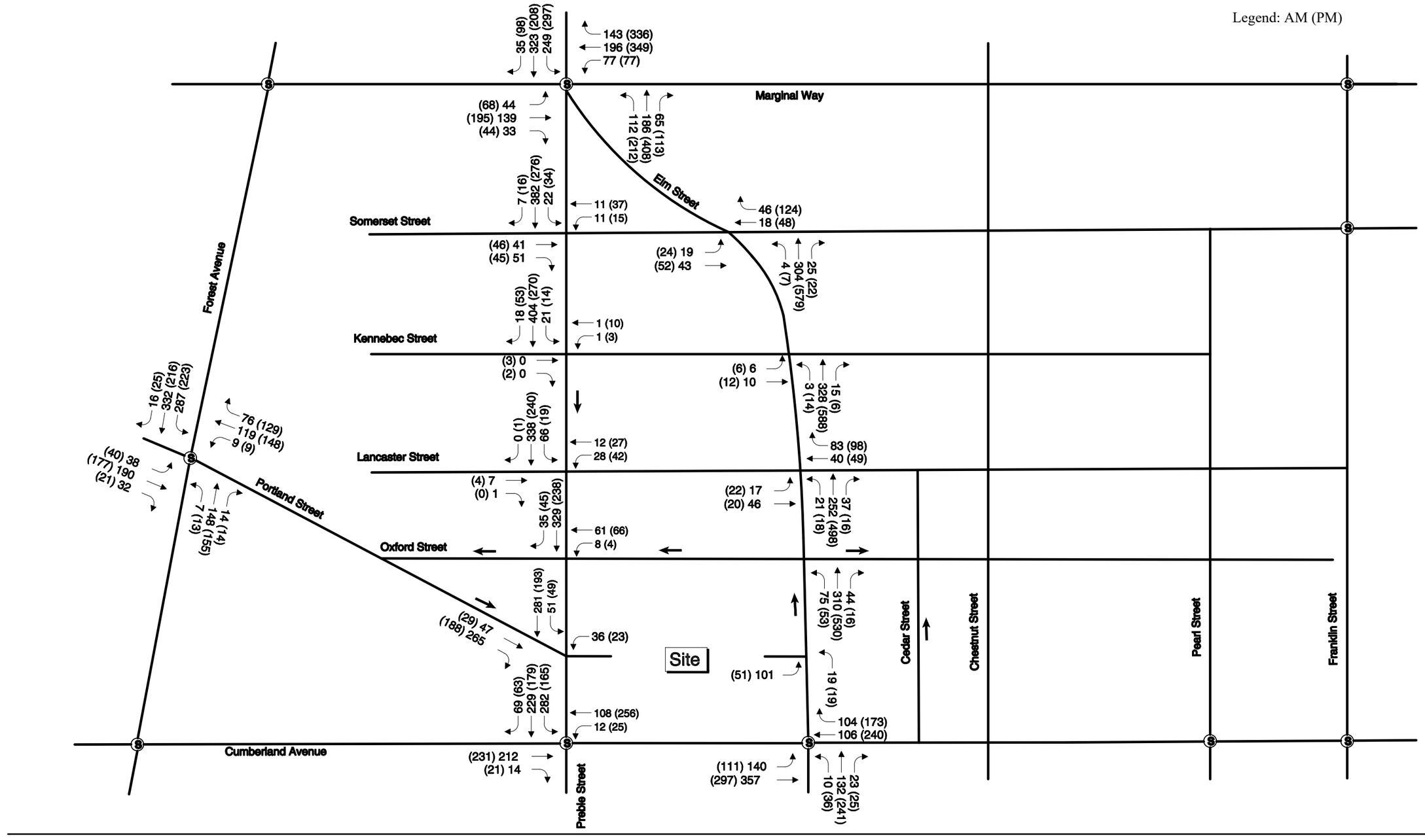
Not to Scale

Figure 4
2026 No-Build Volumes



Not to Scale

Figure 5
Trip Assignment



Not to Scale

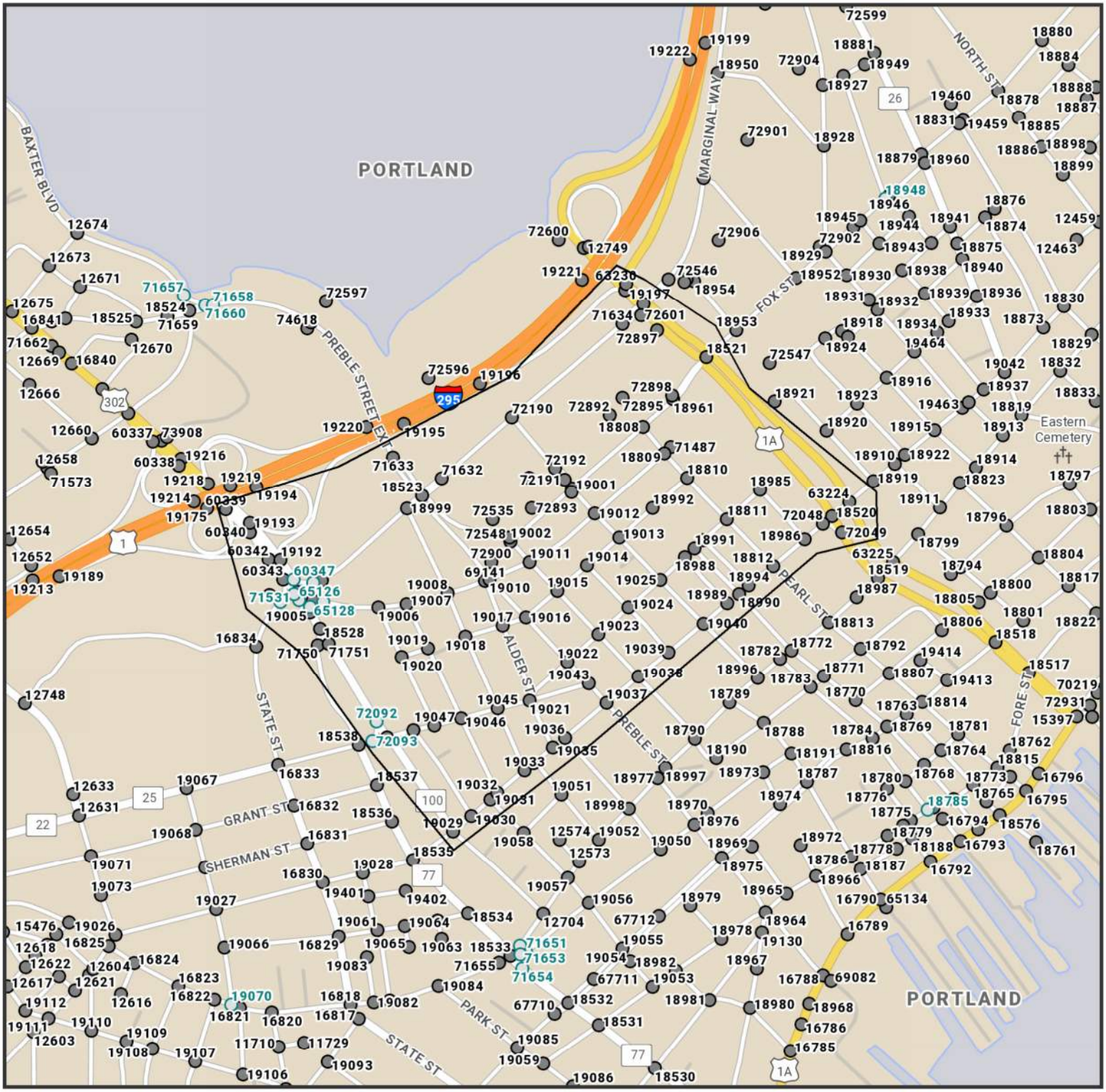
Figure 6
2026 Build Volumes

Attachment 7D

Node Map

Crash Summary

WEST BAYSIDE



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.2 Miles

1 inch = 0.22 miles

Date: 5/9/2023
Time: 7:36:15 AM

LEGEND

LRAP_SEGMENTS_2
- NO VALUE
- AGREEMENT
- RURAL-SA-FC5
- RURAL-SH
- URBAN-STW
- URBAN-TW
- RURAL-SA-FC6
- RURAL-STW
- RURAL-TW
- URBAN-SA
- URBAN-SH
- WCSH

LRAP_SEGMENTS_2
- NO VALUE
- URBAN-STW
- URBAN-TW
- URBAN-SA
- URBAN-SH
- AGREEMENT
- RURAL-SA-FC6
- RURAL-SA-FC5
- RURAL-STW
- RURAL-SH
- RURAL-TW
- WCSH

LRAP_SEGMENTS_2
- NO VALUE
- URBAN-STW
- URBAN-TW
- AGREEMENT
- RURAL-SA-FC5
- URBAN-SA
- URBAN-SH
- RURAL-SA-FC6
- RURAL-STW
- WCSH
- RURAL-SH
- RURAL-TW

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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0100X**	Start Node: **19029**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19193**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0100S**	Start Node: **60339**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **16836**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0100S**	Start Node: **16836**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19005**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3201041**	Start Node: **60340**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **65126**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3200506**	Start Node: **60343**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **16835**	End Offset: **0**	☐ **Exclude Last Node**
Route: **321020S**	Start Node: **16836**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **71531**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3201020**	Start Node: **71750**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18528**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3210401**	Start Node: **71750**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **71751**	End Offset: **0**	☑ **Exclude Last Node**
Route: **321020S**	Start Node: **71531**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **16835**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3210576**	Start Node: **72092**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **72093**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560563**	Start Node: **72093**	Start Offset: **0**	☑ **Exclude First 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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: **19049**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0001A**	Start Node: **63224**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **63230**	End Offset: **0**	☐ **Exclude Last Node**
Route: **001AS**	Start Node: **19197**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19000**	End Offset: **0**	☑ **Exclude Last Node**
Route: **001AS**	Start Node: **19000**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18521**	End Offset: **0**	☑ **Exclude Last Node**
Route: **001AS**	Start Node: **18521**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18520**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3210555**	Start Node: **72048**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **72049**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0561238**	Start Node: **19029**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18520**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0561238**	Start Node: **18520**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **63224**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560477**	Start Node: **16836**	Start Offset: **0**	☑ **Exclude First Node**
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Route: **3210333**	Start Node: **19000**	Start Offset: **0**	☑ **Exclude First Node**
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Route: **3210331**	Start Node: **71632**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18523**	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **3210331**	Start Node: **18523**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18999**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3201880**	Start Node: **60346**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **16836**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3200507**	Start Node: **65129**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **60347**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560414**	Start Node: **18809**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **16836**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3210271**	Start Node: **18809**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **71487**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3201879**	Start Node: **65128**	Start Offset: **0**	☑ **Exclude First Node**
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Route: **0560667**	Start Node: **19002**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18521**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3210335**	Start Node: **18521**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18961**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **18810**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19018**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560560**	Start Node: **19021**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18985**	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0560593**	Start Node: **19049**	Start Offset: **0**	☑ **Exclude First Node**
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Route: **0561200**	Start Node: **19019**	Start Offset: **0**	☑ **Exclude First Node**
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	End Node: **19033**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560008**	Start Node: **69141**	Start Offset: **0**	☑ **Exclude First 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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: **19017**	End Offset: **0**	☑ **Exclude Last Node**
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	End Node: **19035**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560818**	Start Node: **71633**	Start Offset: **0**	☐ **Exclude First Node**
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Route: **0560252**	Start Node: **19038**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19023**	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

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	End Node: **19011**	End Offset: **0**	☑ **Exclude Last Node**
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	End Node: **19002**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560252**	Start Node: **19002**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18523**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560120**	Start Node: **19014**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19024**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560120**	Start Node: **19024**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19039**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560135**	Start Node: **19040**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19025**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560135**	Start Node: **19025**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19013**	End Offset: **0**	☑ **Exclude Last Node**
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	End Node: **19012**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560135**	Start Node: **19012**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19001**	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0560135**	Start Node: **19001**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **72190**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3210625**	Start Node: **72192**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **72191**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560679**	Start Node: **18988**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18989**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560527**	Start Node: **18990**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18991**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560126**	Start Node: **18994**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18995**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560571**	Start Node: **18812**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18811**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560571**	Start Node: **18811**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18810**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560571**	Start Node: **18810**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18809**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560571**	Start Node: **18809**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18808**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560798**	Start Node: **18985**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18986**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes					Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
					K	A	B	C	PD					
19029	0100X - 0	Int of CUMBERLAND AV FOREST AV	9	17	0	0	1	3	13	23.5	4.783	1.18	1.15	1.03
												Statewide Crash Rate:	0.64	
P19049	0100X - 0.14	Int of FOREST AV PARK AV PORTLAND ST	9	22	0	0	2	3	17	22.7	5.074	1.45	1.14	1.27
												Statewide Crash Rate:	0.64	
A72092	0100X - 0.16	Int of CUT FROM FOREST AV FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
71751	0100X - 0.27	Int of FOREST AV RD INV 3210401	2	0	0	0	0	0	0	0.0	2.960	0.00	0.41	0.00
												Statewide Crash Rate:	0.14	
18528	0100X - 0.29	Int of FOREST AV HIGH ST EXT	9	7	0	0	0	0	7	0.0	7.877	0.30	1.04	0.28
												Statewide Crash Rate:	0.64	
19005	0100X - 0.31	Non Int FOREST AV	2	6	0	0	0	1	5	16.7	5.127	0.39	0.35	1.10
												Statewide Crash Rate:	0.14	
A65128	0100X - 0.32	Int of FOREST AV RD INV 3201879	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
P16836	0100X - 0.34	Int of FOREST AV KENNEBEC ST MARGINAL WY STATE S	9	49	0	0	2	11	36	26.5	12.242	1.33	0.97	1.38
												Statewide Crash Rate:	0.64	
A60347	0100X - 0.36	Int of CUT FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
19192	0100X - 0.39	Int of FOREST AV RAMP G ON FROM FOREST AV	2	2	0	0	0	1	1	50.0	7.330	0.09	0.25	0.00
												Statewide Crash Rate:	0.10	
19193	0100X - 0.45	Int of FOREST AV RAMP E OFF TO FOREST AV	2	32	0	0	2	9	21	34.4	6.326	1.69	0.26	6.47
												Statewide Crash Rate:	0.10	
60339	0100S - 10.61	Int of FOREST AV RAMP C ON FROM FOREST AV	2	0	0	0	0	0	0	0.0	5.267	0.00	0.27	0.00
												Statewide Crash Rate:	0.10	
60340	0100S - 10.65	Non-Int FOREST AV	2	0	0	0	0	0	0	0.0	4.464	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
A65126	0100S - 10.75	Non Int FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
60342	3201041 - 0.04	Int of FOREST AV RAMP A OFF TO FOREST AV	2	14	0	0	0	3	11	21.4	4.751	0.98	0.28	3.50
												Statewide Crash Rate:	0.10	
60343	3201041 - 0.07	Int of CUT FOREST AV	2	2	0	0	0	0	2	0.0	4.751	0.14	0.36	0.00
												Statewide Crash Rate:	0.14	
A71531	3201041 - 0.09	Int of FOREST AV STATE ST EXT	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
A16835	3200506 - 0.03	Int of CUT STATE ST EXT	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
71750	3201020 - 0.23	Int of HIGH ST EXT RD INV 3210401	2	0	0	0	0	0	0	0.0	3.318	0.00	0.40	0.00
												Statewide Crash Rate:	0.14	
A72093	3210576 - 0.02	Int of CUT FROM FOREST AV PARK AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
63224	0001A - 12.20	Int of CUMBERLAND AV FRANKLIN ST	9	11	0	1	0	0	10	9.1	5.866	0.63	1.10	0.57
												Statewide Crash Rate:	0.64	
18521	0001A - 12.45	Int of FOX ST FRANKLIN ST	9	24	0	0	3	5	16	33.3	10.518	0.76	0.99	0.77
												Statewide Crash Rate:	0.64	

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
19000	0001A - 12.55	Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY N	9	27	0	1	2	5	19	29.6	12.410	0.73	0.96	0.75
												Statewide Crash Rate:	0.64	
63230	0001A - 12.58	Int of FRANKLIN ST RAMP C ON FROM FRANKLIN ST ART	2	0	0	0	0	0	0	0.0	5.325	0.00	0.27	0.00
												Statewide Crash Rate:	0.10	
19197	001AS - 1.48	Int of FRANKLIN ST RAMP A OFF TO FRANKLIN ST ART	9	25	0	0	2	2	21	16.0	4.771	1.75	1.15	1.52
												Statewide Crash Rate:	0.64	
18520	001AS - 1.85	Int of CUMBERLAND AV FRANKLIN ST	9	8	0	0	0	3	5	37.5	5.703	0.47	1.11	0.42
												Statewide Crash Rate:	0.64	
19030	0561238 - 0.20	Int of CUMBERLAND AV MECHANIC ST	2	3	0	0	0	2	1	66.7	3.146	0.32	0.36	0.00
												Statewide Crash Rate:	0.12	
19031	0561238 - 0.23	Int of CUMBERLAND AV OAK ST	2	4	0	0	1	0	3	25.0	3.824	0.35	0.34	1.03
												Statewide Crash Rate:	0.12	
19032	0561238 - 0.24	Int of CUMBERLAND AV PARRIS ST	2	0	0	0	0	0	0	0.0	3.301	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
19033	0561238 - 0.28	Int of CUMBERLAND AV HANOVER ST	2	2	0	0	0	0	2	0.0	3.312	0.20	0.35	0.00
												Statewide Crash Rate:	0.12	
19034	0561238 - 0.29	Int of CASCO ST CUMBERLAND AV	2	3	0	2	0	0	1	66.7	2.842	0.35	0.37	0.00
												Statewide Crash Rate:	0.12	
19035	0561238 - 0.32	Int of ALDER ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.036	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
19036	0561238 - 0.34	Int of BROWN ST CUMBERLAND AV	2	1	0	0	0	0	1	0.0	2.168	0.15	0.39	0.00
												Statewide Crash Rate:	0.12	
19037	0561238 - 0.41	Int of CUMBERLAND AV PREBLE ST	9	8	0	0	0	1	7	12.5	4.161	0.64	1.18	0.54
												Statewide Crash Rate:	0.64	
19038	0561238 - 0.46	Int of CUMBERLAND AV ELM ST	9	9	0	1	1	1	6	33.3	3.373	0.89	1.24	0.72
												Statewide Crash Rate:	0.64	
19039	0561238 - 0.51	Int of CEDAR ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.252	0.00	0.39	0.00
												Statewide Crash Rate:	0.12	
19040	0561238 - 0.56	Int of CHESTNUT ST CUMBERLAND AV	2	9	0	0	0	1	8	11.1	2.544	1.18	0.38	3.12
												Statewide Crash Rate:	0.12	
18989	0561238 - 0.60	Int of CUMBERLAND AV, STONE ST	2	0	0	0	0	0	0	0.0	2.403	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
18990	0561238 - 0.62	Int of CUMBERLAND AV MYRTLE ST	2	1	0	0	0	0	1	0.0	2.345	0.14	0.39	0.00
												Statewide Crash Rate:	0.12	
18994	0561238 - 0.64	Int of CHAPEL ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.439	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
18812	0561238 - 0.68	Int of CUMBERLAND AV PEARL ST	9	7	0	0	1	0	6	14.3	3.898	0.60	1.20	0.50
												Statewide Crash Rate:	0.64	
18986	0561238 - 0.73	Int of CUMBERLAND AV WILMOT ST	2	0	0	0	0	0	0	0.0	2.384	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
72048	0561238 - 0.76	Int of CUMBERLAND AV RD INV 3210555	2	0	0	0	0	0	0	0.0	1.955	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
60346	0560477 - 0.03	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	2.309	0.00	0.43	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
18999	0560477 - 0.16	Int of HANOVER ST MARGINAL WY	2	2	0	0	0	0	2	0.0	3.265	0.20	0.40	0.00
												Statewide Crash Rate:	0.14	
18523	0560477 - 0.19	Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EX	9	19	0	0	1	3	13	23.5	6.632	0.96	1.08	0.89
												Statewide Crash Rate:	0.64	
71632	0560477 - 0.22	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	4.311	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
72190	0560477 - 0.33	Int of CHESTNUT ST MARGINAL WY	2	12	0	0	1	2	9	25.0	4.658	0.86	0.36	2.37
												Statewide Crash Rate:	0.14	
71634	0560477 - 0.50	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	4.190	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
A65129	3201880 - 0.01	Int of CUT MARGINAL WY	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
18809	0560414 - 0	Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	2.111	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
19012	0560414 - 0.11	Int of CHESTNUT ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	0.869	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
19011	0560414 - 0.21	Int of ELM ST KENNEBEC ST	2	3	0	0	1	1	1	66.7	1.161	0.86	0.51	1.68
												Statewide Crash Rate:	0.14	
19010	0560414 - 0.26	Int of KENNEBEC ST PREBLE ST	2	2	0	0	0	0	2	0.0	1.169	0.57	0.51	1.11
												Statewide Crash Rate:	0.14	
69141	0560414 - 0.27	Int of ALDER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	0.474	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19008	0560414 - 0.32	Int of HANOVER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	1.040	0.00	0.46	0.00
												Statewide Crash Rate:	0.12	
19007	0560414 - 0.37	0509427 POR,KENNEBEC,PARRIS ST.	2	0	0	0	0	0	0	0.0	0.437	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19006	0560414 - 0.40	Int of BRATTLE ST KENNEBEC ST	2	1	0	0	0	0	1	0.0	0.411	0.81	0.52	1.56
												Statewide Crash Rate:	0.12	
A65127	0560414 - 0.47	Int of KENNEBEC ST RD INV 3201879	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
71487	3210271 - 0.01	End of WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	0.611	0.00	0.51	0.00
												Statewide Crash Rate:	0.12	
19002	0560667 - 0	Int of ELM ST SOMERSET ST	2	5	0	0	1	0	4	20.0	1.542	1.08	0.48	2.25
												Statewide Crash Rate:	0.14	
19001	0560667 - 0.10	Int of CHESTNUT ST SOMERSET ST	2	2	0	0	1	0	1	50.0	1.419	0.47	0.44	1.08
												Statewide Crash Rate:	0.12	
18808	0560667 - 0.21	0509228 POR,PEARL,SOMERSET ST	2	2	0	0	0	1	1	50.0	2.877	0.23	0.37	0.00
												Statewide Crash Rate:	0.12	
18961	0560667 - 0.26	Int of FOX ST SOMERSET ST	2	0	0	0	0	0	0	0.0	3.325	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
18810	0560426 - 0	Int of LANCASTER ST PEARL ST	2	4	0	0	2	1	1	75.0	1.456	0.92	0.43	2.12
												Statewide Crash Rate:	0.12	
18992	0560426 - 0.05	Non Int LANCASTER ST	2	0	0	0	0	0	0	0.0	0.414	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	

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
19013	0560426 - 0.10	Int of CHESTNUT ST LANCASTER ST	2	1	0	0	0	0	1	0.0	1.019	0.33	0.47	0.00
												Statewide Crash Rate:	0.12	
19014	0560426 - 0.15	Int of CEDAR ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.644	0.00	0.50	0.00
												Statewide Crash Rate:	0.12	
19015	0560426 - 0.20	Int of ELM ST LANCASTER ST	2	4	0	0	0	1	3	25.0	0.868	1.54	0.55	2.82
												Statewide Crash Rate:	0.14	
19016	0560426 - 0.25	Int of LANCASTER ST PREBLE ST	2	2	0	0	1	0	1	50.0	1.226	0.54	0.51	1.07
												Statewide Crash Rate:	0.14	
19017	0560426 - 0.28	Int of ALDER ST LANCASTER ST	2	1	0	0	0	0	1	0.0	0.314	1.06	0.51	2.09
												Statewide Crash Rate:	0.12	
19018	0560426 - 0.33	Int of HANOVER ST LANCASTER ST	2	1	0	0	0	0	1	0.0	0.387	0.86	0.52	1.66
												Statewide Crash Rate:	0.12	
19022	0560560 - 0.07	Int of OXFORD ST PREBLE ST	2	6	0	0	0	1	5	16.7	1.618	1.24	0.47	2.60
												Statewide Crash Rate:	0.14	
19023	0560560 - 0.12	Int of ELM ST OXFORD ST	2	3	0	0	1	0	2	33.3	1.102	0.91	0.52	1.75
												Statewide Crash Rate:	0.14	
19024	0560560 - 0.17	Int of CEDAR ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.300	0.00	0.50	0.00
												Statewide Crash Rate:	0.12	
19025	0560560 - 0.22	Int of CHESTNUT ST OXFORD ST	2	2	0	0	0	0	2	0.0	0.618	1.08	0.51	2.13
												Statewide Crash Rate:	0.12	
18988	0560560 - 0.26	0509408 POR,STONE,OXFORD ST.	2	1	0	0	0	0	0	0.0	0.189	1.76	0.42	4.15
												Statewide Crash Rate:	0.12	
18991	0560560 - 0.28	Int of MYRTLE ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.105	0.00	0.12	0.00
												Statewide Crash Rate:	0.12	
18995	0560560 - 0.29	Int of CHAPEL ST OXFORD ST	2	1	0	0	0	0	1	0.0	0.190	1.76	0.42	4.14
												Statewide Crash Rate:	0.12	
18811	0560560 - 0.33	0509231 POR,PEARL,OXFORD ST	2	1	0	0	1	0	0	100.0	1.400	0.24	0.44	0.00
												Statewide Crash Rate:	0.12	
18985	0560560 - 0.38	0509405 POR,WILMOT,OXFORD ST.	2	0	0	0	0	0	0	0.0	0.077	0.00	-0.18	0.00
												Statewide Crash Rate:	0.12	
19048	0560593 - 0.03	Int of MECHANIC ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.855	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
19047	0560593 - 0.06	Int of BRATTLE ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.893	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
19046	0560593 - 0.09	Int of PARRIS ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.454	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
19045	0560593 - 0.14	Int of HANOVER ST PORTLAND ST	2	2	0	0	0	1	1	50.0	1.551	0.43	0.43	1.01
												Statewide Crash Rate:	0.12	
19021	0560593 - 0.18	Int of ALDER ST, OXFORD ST, PORTLAND ST	2	2	0	0	0	0	2	0.0	0.844	0.79	0.48	1.63
												Statewide Crash Rate:	0.12	
19043	0560593 - 0.25	Int of PORTLAND ST PREBLE ST	2	1	0	0	1	0	0	100.0	1.987	0.17	0.45	0.00
												Statewide Crash Rate:	0.14	
19020	0560080 - 0.07	Int of BRATTLE ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.265	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	

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
19019	0560565 - 0.06	Int of LANCASTER ST PARRIS ST	2	0	0	0	0	0	0	0.0	0.266	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
71633	0560818 - 0.55	Non Int PREBLE ST EXT	2	2	0	0	0	0	2	0.0	4.172	0.16	0.37	0.00
												Statewide Crash Rate:	0.14	
72191	0560135 - 0.32	Non Int CHESTNUT ST	2	0	0	0	0	0	0	0.0	0.816	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
72192	0560135 - 0.34	Non Int CHESTNUT ST	2	0	0	0	0	0	0	0.0	0.816	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
18809	0560571 - 0.59	Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	2.111	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
18808	0560571 - 0.63	0509228 POR,PEARL,SOMERSET ST	2	2	0	0	0	1	1	50.0	2.877	0.23	0.37	0.00
												Statewide Crash Rate:	0.12	
Study Years:	3.00	**NODE TOTALS:**		377	0	5	28	63	278	25.5	245.891	0.51	0.36	1.43

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
19029	19049	3106838	0 - 0.14	0100X - 0	0.14	2	6	0	0	0	0	5	0.0	0.00351	569.79	421.45	1.35
Int of CUMBERLAND AV FOREST AV				ST RTE 100											Statewide Crash Rate: 155.70		
72092	19049	4339345	0 - 0.02	0100X - 0.14	0.02	2	1	0	0	0	1	0	100.0	0.00060	560.07	636.36	0.00
Int of CUT FROM FOREST AV FOREST AV				ST RTE 100											Statewide Crash Rate: 155.70		
71751	72092	4339344	0 - 0.11	0100X - 0.16	0.11	2	5	0	0	1	2	2	60.0	0.00328	507.84	428.86	1.18
Int of FOREST AV RD INV 3210401				ST RTE 100											Statewide Crash Rate: 155.70		
18528	71751	4312989	0 - 0.02	0100X - 0.27	0.02	2	2	0	0	0	1	1	50.0	0.00059	1137.71	637.91	1.78
Int of FOREST AV HIGH ST EXT				ST RTE 100											Statewide Crash Rate: 155.70		
18528	19005	3129086	0 - 0.02	0100X - 0.29	0.02	2	0	0	0	0	0	0	0.0	0.00124	0.00	638.30	0.00
Int of FOREST AV HIGH ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
65128	19005	3118890	0 - 0.01	0100X - 0.31	0.01	2	0	0	0	0	0	0	0.0	0.00042	0.00	794.94	0.00
Int of FOREST AV RD INV 3201879				ST RTE 100											Statewide Crash Rate: 190.15		
16836	65128	3130295	0 - 0.02	0100X - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00083	0.00	701.61	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
16836	60347	3115194	0 - 0.02	0100X - 0.34	0.02	2	0	0	0	0	0	0	0.0	0.00124	0.00	638.73	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
60347	19192	3943967	0 - 0.02	0100X - 0.36	0.02	2	1	0	0	0	0	1	0.0	0.00147	227.38	612.10	0.00
Int of CUT FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
60347	19192	3943967	0.02 - 0.03	0100X - 0.38	0.01	2	0	0	0	0	0	0	0.0	0.00073	0.00	720.27	0.00
Int of CUT FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
19192	19193	3120357	0 - 0.06	0100X - 0.39	0.06	2	0	0	0	0	0	0	0.0	0.00280	0.00	518.03	0.00
Int of FOREST AV RAMP G ON FROM FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
60339	60340	2074091	0 - 0.04	0100S - 10.61	0.04	2	0	0	0	0	0	0	0.0	0.00179	0.00	582.15	0.00
Int of FOREST AV RAMP C ON FROM FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
60340	16836	3115200	0 - 0.09	0100S - 10.65	0.09	2	3	0	0	0	0	3	0.0	0.00119	840.23	644.58	1.30
Non-Int FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
16836	65126	2783058	0 - 0.01	0100S - 10.74	0.01	2	0	0	0	0	0	0	0.0	0.00007	0.00	191.95	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100S											Statewide Crash Rate: 190.15		
65126	19005	2783059	0 - 0.02	0100S - 10.75	0.02	2	2	0	1	0	0	1	50.0	0.00041	1641.64	797.44	2.06
Non Int FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
60340	60342	3123039	0 - 0.04	3201041 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00126	0.00	636.06	0.00
Non-Int FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		
60342	60343	3123354	0 - 0.03	3201041 - 0.04	0.03	2	1	0	0	0	0	1	0.0	0.00143	233.86	616.43	0.00
Int of FOREST AV RAMP A OFF TO FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		
60343	71531	4047084	0 - 0.02	3201041 - 0.07	0.02	2	0	0	0	0	0	0	0.0	0.00036	0.00	807.10	0.00
Int of CUT FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		

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
71531	65126	4047085	0 - 0.01	3201041 - 0.09	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	794.80	0.00
Int of FOREST AV STATE ST EXT				RD INV 3201041											Statewide Crash Rate: 190.15		
60343	16835	3121818	0 - 0.03	3200506 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00088	0.00	692.34	0.00
Int of CUT FOREST AV				RD INV 3200506											Statewide Crash Rate: 190.15		
71531	16836	4047087	0 - 0.01	321020S - 0	0.01	2	0	0	0	0	0	0	0.0	0.00009	0.00	454.27	0.00
Int of FOREST AV STATE ST EXT				RD INV 321020S											Statewide Crash Rate: 190.15		
18528	71750	4312987	0 - 0.02	3201020 - 0.23	0.02	2	0	0	0	0	0	0	0.0	0.00066	0.00	735.25	0.00
Int of FOREST AV HIGH ST EXT				RD INV 3201020											Statewide Crash Rate: 190.15		
71750	71751	4313006	0 - 0.01	3210401 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00000	0.00	-	0.00
Int of HIGH ST EXT RD INV 3210401				RD INV 3210401											Statewide Crash Rate: 190.15	532633.47	
16835	71531	4047221	0 - 0.02	321020S - 0.01	0.02	2	0	0	0	0	0	0	0.0	0.00017	0.00	782.79	0.00
Int of CUT STATE ST EXT				RD INV 321020S											Statewide Crash Rate: 190.15		
72092	72093	4339351	0 - 0.02	3210576 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00012	0.00	456.97	0.00
Int of CUT FROM FOREST AV FOREST AV				RD INV 3210576											Statewide Crash Rate: 155.70		
72093	19049	4339348	0 - 0.02	0560563 - 0.02	0.02	2	0	0	0	0	0	0	0.0	0.00032	0.00	672.27	0.00
Int of CUT FROM FOREST AV PARK AV				RD INV 05 60563											Statewide Crash Rate: 155.70		
63224	18521	3115975	0 - 0.25	0001A - 12.20	0.25	2	2	0	0	0	1	1	50.0	0.00907	73.50	387.11	0.00
Int of CUMBERLAND AV FRANKLIN ST				US 1A											Statewide Crash Rate: 190.15		
18521	19000	3139409	0 - 0.10	0001A - 12.45	0.10	2	2	0	0	0	0	2	0.0	0.00465	143.48	455.15	0.00
Int of FOX ST FRANKLIN ST				US 1A											Statewide Crash Rate: 190.15		
19000	63230	3139410	0 - 0.03	0001A - 12.55	0.03	2	0	0	0	0	0	0	0.0	0.00160	0.00	282.71	0.00
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				US 1A											Statewide Crash Rate: 71.78		
19000	19197	3117265	0 - 0.03	001AS - 1.48	0.03	2	4	0	0	0	0	4	0.0	0.00143	931.64	288.40	3.23
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				US 1AS											Statewide Crash Rate: 71.78		
18521	19000	3937925	0 - 0.10	001AS - 1.51	0.10	2	1	0	0	0	0	1	0.0	0.00410	81.25	469.71	0.00
Int of FOX ST FRANKLIN ST				US 1AS											Statewide Crash Rate: 190.15		
18520	18521	3106672	0 - 0.24	001AS - 1.61	0.24	2	4	0	0	2	1	1	75.0	0.00802	166.35	398.43	0.00
Int of CUMBERLAND AV FRANKLIN ST				US 1AS											Statewide Crash Rate: 190.15		
72048	72049	4338622	0 - 0.03	3210555 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00011	0.00	385.85	0.00
Int of CUMBERLAND AV RD INV 3210555				RD INV 3210555											Statewide Crash Rate: 155.70		
19029	19030	3121772	0 - 0.03	0561238 - 0.17	0.03	2	0	0	0	0	0	0	0.0	0.00090	0.00	589.02	0.00
Int of CUMBERLAND AV FOREST AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19030	19031	194742	0 - 0.03	0561238 - 0.20	0.03	2	2	0	1	0	0	1	50.0	0.00087	765.82	593.23	1.29
Int of CUMBERLAND AV MECHANIC ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19031	19032	3123724	0 - 0.01	0561238 - 0.23	0.01	2	0	0	0	0	0	0	0.0	0.00033	0.00	672.20	0.00
Int of CUMBERLAND AV OAK ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19032	19033	3131705	0 - 0.04	0561238 - 0.24	0.04	2	4	0	0	0	0	4	0.0	0.00131	1014.15	540.74	1.88
Int of CUMBERLAND AV PARRIS ST				RD INV 05 61238											Statewide Crash Rate: 155.70		

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
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00031	0.00	672.22	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19034	19035	3123316	0 - 0.03	0561238 - 0.29	0.03	2	1	0	0	0	0	0	0.0	0.00060	558.76	636.13	0.00
Int of CASCO ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00040	0.00	667.44	0.00
Int of ALDER ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19036	19037	3106839	0 - 0.07	0561238 - 0.34	0.07	2	0	0	0	0	0	0	0.0	0.00133	0.00	539.64	0.00
Int of BROWN ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0.05	2	0	0	0	0	0	0	0.0	0.00123	0.00	549.67	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19038	19039	3117970	0 - 0.05	0561238 - 0.46	0.05	2	1	0	0	0	0	1	0.0	0.00113	295.69	560.58	0.00
Int of CUMBERLAND AV ELM ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19039	19040	3130050	0 - 0.05	0561238 - 0.51	0.05	2	2	0	0	0	0	2	0.0	0.00112	592.92	560.91	1.06
Int of CEDAR ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
18989	19040	3120761	0 - 0.04	0561238 - 0.56	0.04	2	0	0	0	0	0	0	0.0	0.00096	0.00	581.49	0.00
Int of CUMBERLAND AV, STONE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18989	18990	3120760	0 - 0.02	0561238 - 0.60	0.02	2	0	0	0	0	0	0	0.0	0.00043	0.00	662.56	0.00
Int of CUMBERLAND AV, STONE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18990	18994	3106833	0 - 0.02	0561238 - 0.62	0.02	2	1	0	0	0	0	0	0.0	0.00037	894.98	669.82	1.34
Int of CUMBERLAND AV MYRTLE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18812	18994	3119280	0 - 0.04	0561238 - 0.64	0.04	2	1	0	0	0	0	1	0.0	0.00121	276.37	551.88	0.00
Int of CUMBERLAND AV PEARL ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18812	18986	3122292	0 - 0.05	0561238 - 0.68	0.05	2	4	0	0	0	1	3	25.0	0.00127	1048.35	545.03	1.92
Int of CUMBERLAND AV PEARL ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
72048	18986	4338619	0 - 0.03	0561238 - 0.73	0.03	2	1	0	0	0	0	1	0.0	0.00064	521.26	628.94	0.00
Int of CUMBERLAND AV RD INV 3210555				RD INV 05 61238											Statewide Crash Rate: 155.70		
18520	72048	4338618	0 - 0.01	0561238 - 0.76	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	610.11	0.00
Int of CUMBERLAND AV FRANKLIN ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18520	63224	3118814	0 - 0.03	0561238 - 0.77	0.03	2	0	0	0	0	0	0	0.0	0.00088	0.00	691.25	0.00
Int of CUMBERLAND AV FRANKLIN ST				RD INV 05 61238											Statewide Crash Rate: 190.15		
16836	60346	3115192	0 - 0.03	0560477 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00026	0.00	821.03	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		
60346	18999	3115193	0 - 0.13	0560477 - 0.03	0.13	2	8	0	1	0	0	7	12.5	0.00374	713.19	480.97	1.48
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0.03	2	0	0	0	0	0	0	0.0	0.00035	0.00	810.10	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		
18523	71632	4210637	0 - 0.03	0560477 - 0.19	0.03	2	0	0	0	0	0	0	0.0	0.00065	0.00	738.91	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		

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
71632	72190	4348446	0 - 0.11	0560477 - 0.22	0.11	2	13	0	0	1	3	9	30.8	0.00474	913.87	452.83	2.02
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
72190	71634	4348447	0 - 0.17	0560477 - 0.33	0.17	2	9	0	0	0	2	7	22.2	0.00712	421.15	409.74	1.03
Int of CHESTNUT ST MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
71634	19000	4210710	0 - 0.04	0560477 - 0.50	0.04	2	0	0	0	0	0	0	0.0	0.00084	0.00	699.71	0.00
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
19000	71634	4210711	0 - 0.04	3210333 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00084	0.00	699.71	0.00
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				RD INV 3210333											Statewide Crash Rate: 190.15		
71632	18523	4210644	0 - 0.03	3210331 - 0	0.03	2	1	0	0	0	0	1	0.0	0.00065	515.52	738.91	0.00
Non Int MARGINAL WY				RD INV 3210331											Statewide Crash Rate: 190.15		
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0.02	2	0	0	0	0	0	0	0.0	0.00028	0.00	820.37	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 3210331											Statewide Crash Rate: 190.15		
60346	65129	3123766	0 - 0.01	3201880 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00020	0.00	807.25	0.00
Non Int MARGINAL WY				RD INV 3201880											Statewide Crash Rate: 190.15		
65129	16836	3139747	0 - 0.02	3201880 - 0.01	0.02	2	0	0	0	0	0	0	0.0	0.00017	0.00	783.12	0.00
Int of CUT MARGINAL WY				RD INV 3201880											Statewide Crash Rate: 190.15		
65129	60347	3116433	0 - 0.02	3200507 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00023	0.00	817.93	0.00
Int of CUT MARGINAL WY				RD INV 3200507											Statewide Crash Rate: 190.15		
18809	19012	194411	0 - 0.11	0560414 - 0	0.11	2	2	0	0	0	0	2	0.0	0.00013	4986.31	1440.63	3.46
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 05 60414											Statewide Crash Rate: 334.56		
19011	19012	194707	0 - 0.10	0560414 - 0.11	0.10	2	0	0	0	0	0	0	0.0	0.00014	0.00	1444.18	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19010	19011	194704	0 - 0.05	0560414 - 0.21	0.05	2	0	0	0	0	0	0	0.0	0.00017	0.00	1441.91	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0.01	2	0	0	0	0	0	0	0.0	0.00003	0.00	-363.15	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0.05	2	0	0	0	0	0	0	0.0	0.00020	0.00	1427.76	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19007	19008	194700	0 - 0.05	0560414 - 0.32	0.05	2	0	0	0	0	0	0	0.0	0.00021	0.00	1415.66	0.00
0509427 POR,KENNEBEC,PARRIS ST.				RD INV 05 60414											Statewide Crash Rate: 334.56		
19006	19007	194698	0 - 0.03	0560414 - 0.37	0.03	2	1	0	0	0	0	0	0.0	0.00007	4763.91	1204.71	3.95
Int of BRATTLE ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
65127	19006	5094271	0 - 0.07	0560414 - 0.40	0.07	2	1	0	0	0	0	1	0.0	0.00014	2415.98	1442.52	1.67
Int of KENNEBEC ST RD INV 3201879				RD INV 05 60414											Statewide Crash Rate: 334.56		
16836	65127	2783081	0 - 0.03	0560414 - 0.47	0.03	2	0	0	0	0	0	0	0.0	0.00005	0.00	899.39	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				RD INV 05 60414											Statewide Crash Rate: 334.56		

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
18809	71487	4046366	0 - 0.01	3210271 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00012	0.00	1431.54	0.00
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 3210271											Statewide Crash Rate: 334.56		
65128	65127	3121551	0 - 0.02	3201879 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00000	0.00	-	0.00
Int of FOREST AV RD INV 3201879				RD INV 3201879											Statewide Crash Rate: 334.56	25059.06	
19001	19002	194691	0 - 0.10	0560667 - 0	0.10	2	3	0	0	0	0	2	0.0	0.00039	2565.29	1284.82	2.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18808	19001	194409	0 - 0.11	0560667 - 0.10	0.11	2	2	0	0	0	0	2	0.0	0.00104	642.59	1018.48	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18808	18961	194408	0 - 0.05	0560667 - 0.21	0.05	2	1	0	0	0	0	1	0.0	0.00156	213.18	915.91	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18521	18961	5094284	0 - 0.06	0560667 - 0.26	0.06	2	0	0	0	0	0	0	0.0	0.00106	0.00	1013.64	0.00
Int of FOX ST FRANKLIN ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18521	18961	4210761	0 - 0.06	3210335 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00106	0.00	1013.64	0.00
Int of FOX ST FRANKLIN ST				RD INV 3210335											Statewide Crash Rate: 334.56		
18810	18992	5080416	0 - 0.05	0560426 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00021	1612.08	1420.32	1.14
Int of LANCASTER ST PEARL ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
18992	19013	194682	0 - 0.05	0560426 - 0.05	0.05	2	2	0	0	0	0	2	0.0	0.00021	3224.16	1420.32	2.27
Non Int LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19013	19014	5080418	0 - 0.05	0560426 - 0.10	0.05	2	0	0	0	0	0	0	0.0	0.00025	0.00	1387.23	0.00
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19014	19015	194712	0 - 0.05	0560426 - 0.15	0.05	2	0	0	0	0	0	0	0.0	0.00025	0.00	1391.89	0.00
Int of CEDAR ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0.05	2	0	0	0	0	0	0	0.0	0.00003	0.00	93.77	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19016	19017	194716	0 - 0.03	0560426 - 0.25	0.03	2	0	0	0	0	0	0	0.0	0.00002	0.00	-1712.32	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19017	19018	194718	0 - 0.05	0560426 - 0.28	0.05	2	0	0	0	0	0	0	0.0	0.00001	0.00	-4163.53	0.00
Int of ALDER ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19021	19022	3106837	0 - 0.07	0560560 - 0	0.07	2	0	0	0	0	0	0	0.0	0.00029	0.00	670.61	0.00
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60560											Statewide Crash Rate: 155.70		
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0.05	2	0	0	0	0	0	0	0.0	0.00016	0.00	583.35	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60560											Statewide Crash Rate: 155.70		
19023	19024	194730	0 - 0.05	0560560 - 0.12	0.05	2	0	0	0	0	0	0	0.0	0.00010	0.00	1373.53	0.00
Int of ELM ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
19024	19025	194732	0 - 0.05	0560560 - 0.17	0.05	2	1	0	1	0	0	0	100.0	0.00008	4359.15	1265.87	3.44
Int of CEDAR ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18988	19025	194676	0 - 0.04	0560560 - 0.22	0.04	2	1	0	0	0	0	1	0.0	0.00008	4399.05	1260.12	3.49
0509408 POR,STONE,OXFORD ST.				RD INV 05 60560											Statewide Crash Rate: 334.56		
18988	18991	194675	0 - 0.02	0560560 - 0.26	0.02	2	1	0	0	0	0	1	0.0	0.00001	25367.83	-4844.81	0.00
0509408 POR,STONE,OXFORD ST.				RD INV 05 60560											Statewide Crash Rate: 334.56		

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
18991	18995	194681	0 - 0.01	0560560 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00001	0.00	-7170.63	0.00
Int of MYRTLE ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18811	18995	194416	0 - 0.04	0560560 - 0.29	0.04	2	0	0	0	0	0	0	0.0	0.00008	0.00	1261.35	0.00
0509231 POR,PEARL,OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18811	18985	194415	0 - 0.05	0560560 - 0.33	0.05	2	0	0	0	0	0	0	0.0	0.00003	0.00	-136.44	0.00
0509231 POR,PEARL,OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
19048	19049	3129303	0 - 0.03	0560593 - 0	0.03	2	3	0	0	0	0	3	0.0	0.00074	1347.76	612.37	2.20
Int of MECHANIC ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19047	19048	3106841	0 - 0.03	0560593 - 0.03	0.03	2	1	0	0	0	1	0	100.0	0.00097	343.31	579.62	0.00
Int of BRATTLE ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19046	19047	3129302	0 - 0.03	0560593 - 0.06	0.03	2	2	0	0	0	0	2	0.0	0.00067	989.64	623.30	1.59
Int of PARRIS ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19045	19046	3106840	0 - 0.05	0560593 - 0.09	0.05	2	1	0	0	0	0	1	0.0	0.00096	345.93	580.57	0.00
Int of HANOVER ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19021	19045	3122297	0 - 0.04	0560593 - 0.14	0.04	2	2	0	0	1	0	0	100.0	0.00035	1931.56	671.73	2.88
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19021	19043	3129954	0 - 0.07	0560593 - 0.18	0.07	2	5	0	0	0	1	4	20.0	0.00055	3048.20	644.53	4.73
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19019	19020	194721	0 - 0.03	0561200 - 0	0.03	2	1	0	0	0	0	1	0.0	0.00001	37123.66	-9148.89	0.00
Int of LANCASTER ST PARRIS ST				RD INV 05 61200											Statewide Crash Rate: 334.56		
19030	19048	194743	0 - 0.12	0560496 - 0	0.12	2	2	0	0	0	0	0	0.0	0.00023	2866.42	1401.72	2.04
Int of CUMBERLAND AV MECHANIC ST				RD INV 05 60496											Statewide Crash Rate: 334.56		
19006	19020	5080408	0 - 0.07	0560080 - 0	0.07	2	0	0	0	0	0	0	0.0	0.00014	0.00	1441.92	0.00
Int of BRATTLE ST KENNEBEC ST				RD INV 05 60080											Statewide Crash Rate: 334.56		
19020	19047	5080403	0 - 0.09	0560080 - 0.07	0.09	2	0	0	0	0	0	0	0.0	0.00027	0.00	1369.73	0.00
Int of BRATTLE ST LANCASTER ST				RD INV 05 60080											Statewide Crash Rate: 334.56		
19007	19019	194701	0 - 0.06	0560565 - 0	0.06	2	3	0	0	0	0	2	0.0	0.00013	7765.66	1437.52	5.40
0509427 POR,KENNEBEC,PARRIS ST.				RD INV 05 60565											Statewide Crash Rate: 334.56		
19019	19046	5080404	0 - 0.09	0560565 - 0.06	0.09	2	1	0	0	0	0	1	0.0	0.00026	1284.45	1380.99	0.00
Int of LANCASTER ST PARRIS ST				RD INV 05 60565											Statewide Crash Rate: 334.56		
19032	19046	5080406	0 - 0.10	0560565 - 0.15	0.10	2	1	0	0	0	0	0	0.0	0.00022	1492.23	1408.57	1.06
Int of CUMBERLAND AV PARRIS ST				RD INV 05 60565											Statewide Crash Rate: 334.56		
18999	19008	194689	0 - 0.11	0560345 - 0	0.11	2	1	0	0	0	0	1	0.0	0.00091	365.41	1052.54	0.00
Int of HANOVER ST MARGINAL WY				RD INV 05 60345											Statewide Crash Rate: 334.56		
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0.06	2	0	0	0	0	0	0	0.0	0.00026	0.00	1380.48	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60345											Statewide Crash Rate: 334.56		
19018	19045	5080405	0 - 0.09	0560345 - 0.17	0.09	2	3	0	0	0	1	2	33.3	0.00028	3556.24	1364.10	2.61
Int of HANOVER ST LANCASTER ST				RD INV 05 60345											Statewide Crash Rate: 334.56		
19033	19045	194749	0 - 0.08	0560345 - 0.26	0.08	2	0	0	0	0	0	0	0.0	0.00008	0.00	1256.41	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 60345											Statewide Crash Rate: 334.56		

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
69141	19017	3525695	0 - 0.06	0560008 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00016	0.00	1443.34	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
19017	19021	194719	0 - 0.10	0560008 - 0.06	0.10	2	3	0	0	0	0	3	0.0	0.00013	7631.55	1439.08	5.30
Int of ALDER ST LANCASTER ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
19021	19035	194725	0 - 0.06	0560008 - 0.16	0.06	2	4	0	0	0	0	4	0.0	0.00003	41988.14	-86.53	0.00
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
18523	71633	4210640	0 - 0.06	0560818 - 0.55	0.06	2	1	0	0	0	0	1	0.0	0.00103	322.20	666.66	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60818											Statewide Crash Rate: 190.15		
18523	71633	4210647	0 - 0.06	3210332 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00132	0.00	627.88	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 3210332											Statewide Crash Rate: 190.15		
18523	19010	3940497	0 - 0.13	0560597 - 0	0.13	2	2	0	0	1	0	1	50.0	0.00112	597.87	654.84	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60597											Statewide Crash Rate: 190.15		
19010	19016	3106835	0 - 0.06	0560597 - 0.13	0.06	2	1	0	0	0	0	1	0.0	0.00069	480.00	728.39	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19016	19022	3106836	0 - 0.07	0560597 - 0.19	0.07	2	0	0	0	0	0	0	0.0	0.00091	0.00	687.32	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0.04	2	0	0	0	0	0	0	0.0	0.00048	0.00	778.41	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19037	19043	3124005	0 - 0.03	0560597 - 0.30	0.03	2	1	0	0	0	0	1	0.0	0.00060	559.17	750.54	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19023	19038	3122299	0 - 0.07	0560252 - 0.10	0.07	2	3	0	0	0	0	3	0.0	0.00077	1296.42	712.50	1.82
Int of ELM ST OXFORD ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19015	19023	3123553	0 - 0.07	0560252 - 0.17	0.07	2	0	0	0	0	0	0	0.0	0.00041	0.00	796.03	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19011	19015	3119283	0 - 0.05	0560252 - 0.24	0.05	2	1	0	0	0	0	1	0.0	0.00050	669.78	774.57	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19002	19011	3129301	0 - 0.03	0560252 - 0.29	0.03	2	2	0	0	0	0	2	0.0	0.00040	1649.94	797.93	2.07
Int of ELM ST SOMERSET ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
18523	19002	3106678	0 - 0.12	0560252 - 0.32	0.12	2	1	0	0	0	0	0	0.0	0.00190	175.35	572.86	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60252											Statewide Crash Rate: 190.15		
19014	19024	194713	0 - 0.07	0560120 - 0	0.07	2	1	0	0	0	0	0	0.0	0.00010	3245.35	1396.08	2.32
Int of CEDAR ST LANCASTER ST				RD INV 05 60120											Statewide Crash Rate: 334.56		
19024	19039	5080414	0 - 0.07	0560120 - 0.07	0.07	2	0	0	0	0	0	0	0.0	0.00008	0.00	1261.04	0.00
Int of CEDAR ST OXFORD ST				RD INV 05 60120											Statewide Crash Rate: 334.56		
19025	19040	194734	0 - 0.07	0560135 - 0.09	0.07	2	6	0	0	0	0	5	0.0	0.00031	6379.62	1339.33	4.76
Int of CHESTNUT ST OXFORD ST				RD INV 05 60135											Statewide Crash Rate: 334.56		

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
19013	19025	5080419	0 - 0.07	0560135 - 0.16	0.07	2	3	0	0	0	0	1	0.0	0.00034	2956.11	1320.92	2.24
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19012	19013	194709	0 - 0.04	0560135 - 0.23	0.04	2	1	0	0	0	1	0	100.0	0.00026	1304.63	1384.12	0.00
Int of CHESTNUT ST KENNEBEC ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19001	19012	5080420	0 - 0.04	0560135 - 0.27	0.04	2	0	0	0	0	0	0	0.0	0.00028	0.00	1368.76	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0.01	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72191	72192	4348463	0 - 0.02	0560135 - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Non Int CHESTNUT ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72192	72190	4348464	0 - 0.08	0560135 - 0.34	0.08	2	2	0	0	0	0	2	0.0	0.00065	1021.07	1143.91	0.00
Non Int CHESTNUT ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72192	72191	4348465	0 - 0.02	3210625 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Non Int CHESTNUT ST				RD INV 3210625											Statewide Crash Rate: 334.56		
18988	18989	194674	0 - 0.08	0560679 - 0	0.08	2	1	0	0	0	0	1	0.0	0.00010	3367.41	1385.06	2.43
0509408 POR,STONE,OXFORD ST.				RD INV 05 60679											Statewide Crash Rate: 334.56		
18990	18991	5080412	0 - 0.08	0560527 - 0.09	0.08	2	1	0	0	0	0	1	0.0	0.00003	10668.72	-133.05	0.00
Int of CUMBERLAND AV MYRTLE ST				RD INV 05 60527											Statewide Crash Rate: 334.56		
18994	18995	5080411	0 - 0.08	0560126 - 0	0.08	2	0	0	0	0	0	0	0.0	0.00007	0.00	1182.89	0.00
Int of CHAPEL ST CUMBERLAND AV				RD INV 05 60126											Statewide Crash Rate: 334.56		
18811	18812	194414	0 - 0.08	0560571 - 0.40	0.08	2	3	0	0	0	0	2	0.0	0.00084	1185.00	1073.50	1.10
0509231 POR,PEARL,OXFORD ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18810	18811	194412	0 - 0.07	0560571 - 0.48	0.07	2	0	0	0	0	0	0	0.0	0.00091	0.00	1052.71	0.00
Int of LANCASTER ST PEARL ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18809	18810	194410	0 - 0.04	0560571 - 0.55	0.04	2	0	0	0	0	0	0	0.0	0.00048	0.00	1230.05	0.00
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 05 60571											Statewide Crash Rate: 334.56		
18808	18809	194407	0 - 0.04	0560571 - 0.59	0.04	2	0	0	0	0	0	0	0.0	0.00067	0.00	1135.50	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18985	18986	194672	0 - 0.08	0560798 - 0	0.08	2	4	0	0	1	0	2	33.3	0.00007	18119.88	1240.83	14.60
0509405 POR,WILMOT,OXFORD ST.				RD INV 05 60798											Statewide Crash Rate: 334.56		
Study Years: 3.00				**Section Totals:**	7.75		165	0	4	7	16	121	16.4	0.12123	453.68	257.52	1.76
				Grand Totals:	7.75		542	0	9	35	79	399	22.7	0.12123	1490.26	365.03	4.08

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19029	19049	3106838	0 - 0.14	0100X - 0	6	0	0	0	0	5	2020-3730	02/01/2020	0.03	PD
											2022-10276	03/21/2022	0.04	PD
											2021-19801	08/01/2021	0.05	
											2022-6214	02/21/2022	0.11	PD
											2020-4682	02/10/2020	0.11	PD
											2021-1667	01/22/2021	0.13	PD
72092	19049	4339345	0 - 0.02	0100X - 0.14	1	0	0	0	1	0	2020-9461	04/02/2020	0.15	C
71751	72092	4339344	0 - 0.11	0100X - 0.16	5	0	0	1	2	2	2022-19216	07/09/2022	0.20	PD
											2021-8927	04/11/2021	0.22	B
											2021-26812	10/06/2021	0.24	C
											2022-147	01/04/2022	0.25	C
											2022-32571	11/07/2022	0.25	PD
18528	71751	4312989	0 - 0.02	0100X - 0.27	2	0	0	0	1	1	2021-37365	12/27/2021	0.28	C
											2022-2590	01/16/2022	0.28	PD
18528	19005	3129086	0 - 0.02	0100X - 0.29	0	0	0	0	0	0				
65128	19005	3118890	0 - 0.01	0100X - 0.31	0	0	0	0	0	0				
16836	65128	3130295	0 - 0.02	0100X - 0.32	0	0	0	0	0	0				
16836	60347	3115194	0 - 0.02	0100X - 0.34	0	0	0	0	0	0				
60347	19192	3943967	0.02 - 0.03	0100X - 0.36	0	0	0	0	0	0				
60347	19192	3943967	0 - 0.02	0100X - 0.36	1	0	0	0	0	1	2021-24904	09/17/2021	0.37	PD
19192	19193	3120357	0 - 0.06	0100X - 0.39	0	0	0	0	0	0				
60339	60340	2074091	0 - 0.04	0100S - 10.61	0	0	0	0	0	0				
60340	16836	3115200	0 - 0.09	0100S - 10.65	3	0	0	0	0	3	2021-10785	05/05/2021	10.70	PD
											2021-36152	12/17/2021	10.70	PD
											2020-30920	12/09/2020	10.73	PD
16836	65126	2783058	0 - 0.01	0100S - 10.74	0	0	0	0	0	0				
65126	19005	2783059	0 - 0.02	0100S - 10.75	2	0	1	0	0	1	2021-26947	10/07/2021	10.76	A
											2022-38948	09/19/2022	10.76	PD
60340	60342	3123039	0 - 0.04	3201041 - 0	0	0	0	0	0	0				
60342	60343	3123354	0 - 0.03	3201041 - 0.04	1	0	0	0	0	1	2021-31336	11/12/2021	0.06	PD
60343	71531	4047084	0 - 0.02	3201041 - 0.07	0	0	0	0	0	0				
71531	65126	4047085	0 - 0.01	3201041 - 0.09	0	0	0	0	0	0				
60343	16835	3121818	0 - 0.03	3200506 - 0	0	0	0	0	0	0				
71531	16836	4047087	0 - 0.01	321020S - 0	0	0	0	0	0	0				
18528	71750	4312987	0 - 0.02	3201020 - 0.23	0	0	0	0	0	0				
71750	71751	4313006	0 - 0.01	3210401 - 0	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
16835	71531	4047221	0 - 0.02	321020S - 0.01	0	0	0	0	0	0				
72092	72093	4339351	0 - 0.02	3210576 - 0	0	0	0	0	0	0				
72093	19049	4339348	0 - 0.02	0560563 - 0.02	0	0	0	0	0	0				
63224	18521	3115975	0 - 0.25	0001A - 12.20	2	0	0	0	1	1	2020-1139	01/13/2020	12.36	C
											2022-25279	09/01/2022	12.40	PD
18521	19000	3139409	0 - 0.10	0001A - 12.45	2	0	0	0	0	2	2020-21476	09/04/2020	12.49	PD
											2020-23254	09/29/2020	12.54	PD
19000	63230	3139410	0 - 0.03	0001A - 12.55	0	0	0	0	0	0				
19000	19197	3117265	0 - 0.03	001AS - 1.48	4	0	0	0	0	4	2022-18559	07/01/2022	1.49	PD
											2020-9212	03/30/2020	1.50	PD
											2022-29087	10/12/2022	1.50	PD
											2022-33173	11/12/2022	1.50	PD
18521	19000	3937925	0 - 0.10	001AS - 1.51	1	0	0	0	0	1	2021-17588	07/09/2021	1.52	PD
18520	18521	3106672	0 - 0.24	001AS - 1.61	4	0	0	2	1	1	2022-29644	10/16/2022	1.62	B
											2021-25700	09/25/2021	1.63	PD
											2020-8383	03/19/2020	1.66	C
											2021-14634	06/13/2021	1.83	B
72048	72049	4338622	0 - 0.03	3210555 - 0	0	0	0	0	0	0				
19029	19030	3121772	0 - 0.03	0561238 - 0.17	0	0	0	0	0	0				
19030	19031	194742	0 - 0.03	0561238 - 0.20	2	0	1	0	0	1	2022-1976	01/20/2022	0.22	A
											2022-15401	06/04/2022	0.22	PD
19031	19032	3123724	0 - 0.01	0561238 - 0.23	0	0	0	0	0	0				
19032	19033	3131705	0 - 0.04	0561238 - 0.24	4	0	0	0	0	4	2022-37745	12/16/2022	0.25	PD
											2020-20907	09/02/2020	0.26	PD
											2022-3608	02/02/2022	0.27	PD
											2021-2566	02/01/2021	0.27	PD
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0	0	0	0	0	0				
19034	19035	3123316	0 - 0.03	0561238 - 0.29	1	0	0	0	0	0	2022-13869	05/20/2022	0.30	
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0	0	0	0	0	0				
19036	19037	3106839	0 - 0.07	0561238 - 0.34	0	0	0	0	0	0				
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0	0	0	0	0	0				
19038	19039	3117970	0 - 0.05	0561238 - 0.46	1	0	0	0	0	1	2022-29074	10/12/2022	0.50	PD
19039	19040	3130050	0 - 0.05	0561238 - 0.51	2	0	0	0	0	2	2020-15282	06/26/2020	0.52	PD
											2021-35320	12/13/2021	0.55	PD
18989	19040	3120761	0 - 0.04	0561238 - 0.56	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18989	18990	3120760	0 - 0.02	0561238 - 0.60	0	0	0	0	0	0				
18990	18994	3106833	0 - 0.02	0561238 - 0.62	1	0	0	0	0	0	2022-26146	09/13/2022	0.63	
18812	18994	3119280	0 - 0.04	0561238 - 0.64	1	0	0	0	0	1	2022-37731	10/15/2022	0.65	PD
18812	18986	3122292	0 - 0.05	0561238 - 0.68	4	0	0	0	1	3	2020-3726	01/28/2020	0.70	PD
											2022-8488	03/15/2022	0.70	PD
											2022-2287	01/21/2022	0.72	C
											2022-5187	02/15/2022	0.72	PD
72048	18986	4338619	0 - 0.03	0561238 - 0.73	1	0	0	0	0	1	2022-22558	08/10/2022	0.75	PD
18520	72048	4338618	0 - 0.01	0561238 - 0.76	0	0	0	0	0	0				
18520	63224	3118814	0 - 0.03	0561238 - 0.77	0	0	0	0	0	0				
16836	60346	3115192	0 - 0.03	0560477 - 0	0	0	0	0	0	0				
60346	18999	3115193	0 - 0.13	0560477 - 0.03	8	0	1	0	0	7	2020-17585	07/25/2020	0.04	PD
											2022-30868	10/26/2022	0.04	PD
											2020-17159	07/20/2020	0.06	PD
											2022-35271	11/28/2022	0.06	PD
											2021-25183	09/21/2021	0.10	A
											2021-24650	09/16/2021	0.11	PD
											2022-1136	01/13/2022	0.13	PD
											2021-9593	04/18/2021	0.15	PD
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0	0	0	0	0	0				
18523	71632	4210637	0 - 0.03	0560477 - 0.19	0	0	0	0	0	0				
71632	72190	4348446	0 - 0.11	0560477 - 0.22	13	0	0	1	3	9	2022-38190	12/21/2022	0.23	PD
											2020-14731	06/22/2020	0.24	B
											2021-7076	03/18/2021	0.24	C
											2021-25430	09/23/2021	0.24	C
											2021-25716	09/23/2021	0.26	PD
											2021-24545	09/15/2021	0.29	PD
											2020-18507	08/05/2020	0.30	C
											2021-30499	11/05/2021	0.30	PD
											2020-26950	11/05/2020	0.30	PD
											2021-20285	08/06/2021	0.30	PD
											2020-20822	09/01/2020	0.31	PD
											2022-8207	03/12/2022	0.31	PD
											2020-12382	05/22/2020	0.31	PD

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Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
72190	71634	4348447	0 - 0.17	0560477 - 0.33	9	0	0	0	2	7	2022-17097	06/17/2022	0.34	PD
											2021-7419	03/23/2021	0.38	C
											2022-23014	08/15/2022	0.43	PD
											2020-3966	02/04/2020	0.45	C
											2022-20212	07/19/2022	0.48	PD
											2020-21477	09/09/2020	0.49	PD
											2020-2144	01/17/2020	0.49	PD
											2020-5431	02/15/2020	0.49	PD
											2021-31009	11/11/2021	0.49	PD
71634	19000	4210710	0 - 0.04	0560477 - 0.50	0	0	0	0	0	0				
19000	71634	4210711	0 - 0.04	3210333 - 0	0	0	0	0	0	0				
71632	18523	4210644	0 - 0.03	3210331 - 0	1	0	0	0	0	1	2022-14105	05/17/2022	0.02	PD
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0	0	0	0	0	0				
60346	65129	3123766	0 - 0.01	3201880 - 0	0	0	0	0	0	0				
65129	16836	3139747	0 - 0.02	3201880 - 0.01	0	0	0	0	0	0				
65129	60347	3116433	0 - 0.02	3200507 - 0	0	0	0	0	0	0				
18809	19012	194411	0 - 0.11	0560414 - 0	2	0	0	0	0	2	2022-5251	02/11/2022	0.02	PD
											2022-12400	05/03/2022	0.07	PD
19011	19012	194707	0 - 0.10	0560414 - 0.11	0	0	0	0	0	0				
19010	19011	194704	0 - 0.05	0560414 - 0.21	0	0	0	0	0	0				
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0	0	0	0	0	0				
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0	0	0	0	0	0				
19007	19008	194700	0 - 0.05	0560414 - 0.32	0	0	0	0	0	0				
19006	19007	194698	0 - 0.03	0560414 - 0.37	1	0	0	0	0	0	2020-3275	01/28/2020	0.38	
65127	19006	5094271	0 - 0.07	0560414 - 0.40	1	0	0	0	0	1	2020-19020	08/11/2020	0.46	PD
16836	65127	2783081	0 - 0.03	0560414 - 0.47	0	0	0	0	0	0				
18809	71487	4046366	0 - 0.01	3210271 - 0	0	0	0	0	0	0				
65128	65127	3121551	0 - 0.02	3201879 - 0	0	0	0	0	0	0				
19001	19002	194691	0 - 0.10	0560667 - 0	3	0	0	0	0	2	2022-23271	08/08/2022	0.03	PD
											2022-7518	03/05/2022	0.08	
											2022-31782	11/02/2022	0.09	PD
18808	19001	194409	0 - 0.11	0560667 - 0.10	2	0	0	0	0	2	2021-25358	09/23/2021	0.13	PD
											2021-25178	09/21/2021	0.18	PD
18808	18961	194408	0 - 0.05	0560667 - 0.21	1	0	0	0	0	1	2022-33394	11/15/2022	0.22	PD
18521	18961	5094284	0 - 0.06	0560667 - 0.26	0	0	0	0	0	0				
18521	18961	4210761	0 - 0.06	3210335 - 0	0	0	0	0	0	0				

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Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18810	18992	5080416	0 - 0.05	0560426 - 0	1	0	0	0	0	1	2022-32257	11/04/2022	0.04	PD
18992	19013	194682	0 - 0.05	0560426 - 0.05	2	0	0	0	0	2	2021-22001	08/02/2021	0.08	PD
											2020-83	01/02/2020	0.09	PD
19013	19014	5080418	0 - 0.05	0560426 - 0.10	0	0	0	0	0	0				
19014	19015	194712	0 - 0.05	0560426 - 0.15	0	0	0	0	0	0				
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0	0	0	0	0	0				
19016	19017	194716	0 - 0.03	0560426 - 0.25	0	0	0	0	0	0				
19017	19018	194718	0 - 0.05	0560426 - 0.28	0	0	0	0	0	0				
19021	19022	3106837	0 - 0.07	0560560 - 0	0	0	0	0	0	0				
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0	0	0	0	0	0				
19023	19024	194730	0 - 0.05	0560560 - 0.12	0	0	0	0	0	0				
19024	19025	194732	0 - 0.05	0560560 - 0.17	1	0	1	0	0	0	2022-368	01/06/2022	0.21	A
18988	19025	194676	0 - 0.04	0560560 - 0.22	1	0	0	0	0	1	2020-8116	03/14/2020	0.23	PD
18988	18991	194675	0 - 0.02	0560560 - 0.26	1	0	0	0	0	1	2022-19506	07/12/2022	0.27	PD
18991	18995	194681	0 - 0.01	0560560 - 0.28	0	0	0	0	0	0				
18811	18995	194416	0 - 0.04	0560560 - 0.29	0	0	0	0	0	0				
18811	18985	194415	0 - 0.05	0560560 - 0.33	0	0	0	0	0	0				
19048	19049	3129303	0 - 0.03	0560593 - 0	3	0	0	0	0	3	2022-26881	09/21/2022	0.02	PD
											2022-36567	12/09/2022	0.02	PD
											2021-4171	02/17/2021	0.02	PD
19047	19048	3106841	0 - 0.03	0560593 - 0.03	1	0	0	0	1	0	2021-11095	05/07/2021	0.04	C
19046	19047	3129302	0 - 0.03	0560593 - 0.06	2	0	0	0	0	2	2022-13438	05/13/2022	0.07	PD
											2022-14111	05/21/2022	0.08	PD
19045	19046	3106840	0 - 0.05	0560593 - 0.09	1	0	0	0	0	1	2020-7317	03/04/2020	0.13	PD
19021	19045	3122297	0 - 0.04	0560593 - 0.14	2	0	0	1	0	0	2022-1557	01/01/2022	0.15	
											2021-8970	04/01/2021	0.15	B
19021	19043	3129954	0 - 0.07	0560593 - 0.18	5	0	0	0	1	4	2022-8486	03/15/2022	0.21	PD
											2021-23574	09/06/2021	0.21	PD
											2022-33653	11/11/2022	0.22	PD
											2020-26608	10/22/2020	0.23	C
											2020-19411	08/07/2020	0.23	PD
19019	19020	194721	0 - 0.03	0561200 - 0	1	0	0	0	0	1	2020-19716	08/19/2020	0.01	PD
19030	19048	194743	0 - 0.12	0560496 - 0	2	0	0	0	0	0	2021-14243	06/08/2021	0.02	
											2021-24167	09/12/2021	0.10	
19006	19020	5080408	0 - 0.07	0560080 - 0	0	0	0	0	0	0				

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Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19020	19047	5080403	0 - 0.09	0560080 - 0.07	0	0	0	0	0	0				
19007	19019	194701	0 - 0.06	0560565 - 0	3	0	0	0	0	2	2022-33473	11/15/2022	0.01	PD
											2022-25470	09/07/2022	0.03	PD
											2022-16276	06/11/2022	0.04	
19019	19046	5080404	0 - 0.09	0560565 - 0.06	1	0	0	0	0	1	2021-4030	02/16/2021	0.11	PD
19032	19046	5080406	0 - 0.10	0560565 - 0.15	1	0	0	0	0	0	2021-36164	12/19/2021	0.24	
18999	19008	194689	0 - 0.11	0560345 - 0	1	0	0	0	0	1	2021-8903	04/11/2021	0.06	PD
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0	0	0	0	0	0				
19018	19045	5080405	0 - 0.09	0560345 - 0.17	3	0	0	0	1	2	2020-11372	04/20/2020	0.18	PD
											2020-18215	07/31/2020	0.18	PD
											2021-13760	05/09/2021	0.21	C
19033	19045	194749	0 - 0.08	0560345 - 0.26	0	0	0	0	0	0				
69141	19017	3525695	0 - 0.06	0560008 - 0	0	0	0	0	0	0				
19017	19021	194719	0 - 0.10	0560008 - 0.06	3	0	0	0	0	3	2021-27344	10/09/2021	0.10	PD
											2022-4561	02/09/2022	0.10	PD
											2022-32255	10/26/2022	0.14	PD
19021	19035	194725	0 - 0.06	0560008 - 0.16	4	0	0	0	0	4	2022-24074	08/24/2022	0.18	PD
											2022-36768	12/10/2022	0.20	PD
											2021-33319	11/29/2021	0.21	PD
											2022-5014	02/11/2022	0.21	PD
18523	71633	4210640	0 - 0.06	0560818 - 0.55	1	0	0	0	0	1	2021-22974	08/31/2021	0.58	PD
18523	71633	4210647	0 - 0.06	3210332 - 0	0	0	0	0	0	0				
18523	19010	3940497	0 - 0.13	0560597 - 0	2	0	0	1	0	1	2022-17686	06/25/2022	0.11	B
											2022-1128	01/13/2022	0.11	PD
19010	19016	3106835	0 - 0.06	0560597 - 0.13	1	0	0	0	0	1	2022-9542	03/25/2022	0.14	PD
19016	19022	3106836	0 - 0.07	0560597 - 0.19	0	0	0	0	0	0				
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0	0	0	0	0	0				
19037	19043	3124005	0 - 0.03	0560597 - 0.30	1	0	0	0	0	1	2021-12331	05/21/2021	0.31	PD
19023	19038	3122299	0 - 0.07	0560252 - 0.10	3	0	0	0	0	3	2022-11742	04/15/2022	0.12	PD
											2021-16503	07/01/2021	0.13	PD
											2021-32496	11/18/2021	0.15	PD
19015	19023	3123553	0 - 0.07	0560252 - 0.17	0	0	0	0	0	0				
19011	19015	3119283	0 - 0.05	0560252 - 0.24	1	0	0	0	0	1	2022-19640	07/14/2022	0.26	PD
19002	19011	3129301	0 - 0.03	0560252 - 0.29	2	0	0	0	0	2	2020-29957	12/02/2020	0.30	PD
											2022-21105	07/27/2022	0.30	PD

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Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18523	19002	3106678	0 - 0.12	0560252 - 0.32	1	0	0	0	0	0	2022-37747	12/18/2022	0.35	
19014	19024	194713	0 - 0.07	0560120 - 0	1	0	0	0	0	0	2021-1478	01/03/2021	0.05	
19024	19039	5080414	0 - 0.07	0560120 - 0.07	0	0	0	0	0	0				
19025	19040	194734	0 - 0.07	0560135 - 0.09	6	0	0	0	0	5	2022-8675	02/25/2022	0.10	PD
											2021-6671	03/14/2021	0.10	PD
											2020-20020	08/23/2020	0.10	PD
											2022-10623	04/10/2022	0.11	
											2021-12457	05/24/2021	0.14	PD
											2020-5668	02/19/2020	0.14	PD
19013	19025	5080419	0 - 0.07	0560135 - 0.16	3	0	0	0	0	1	2022-38955	12/02/2022	0.19	
											2020-20337	08/25/2020	0.19	PD
											2022-23254	08/17/2022	0.22	
19012	19013	194709	0 - 0.04	0560135 - 0.23	1	0	0	0	1	0	2020-23199	09/29/2020	0.24	C
19001	19012	5080420	0 - 0.04	0560135 - 0.27	0	0	0	0	0	0				
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0	0	0	0	0	0				
72191	72192	4348463	0 - 0.02	0560135 - 0.32	0	0	0	0	0	0				
72192	72190	4348464	0 - 0.08	0560135 - 0.34	2	0	0	0	0	2	2020-7621	02/21/2020	0.37	PD
											2020-10619	04/25/2020	0.41	PD
72192	72191	4348465	0 - 0.02	3210625 - 0	0	0	0	0	0	0				
18988	18989	194674	0 - 0.08	0560679 - 0	1	0	0	0	0	1	2020-10150	04/15/2020	0.02	PD
18990	18991	5080412	0 - 0.08	0560527 - 0.09	1	0	0	0	0	1	2020-27491	11/10/2020	0.16	PD
18994	18995	5080411	0 - 0.08	0560126 - 0	0	0	0	0	0	0				
18811	18812	194414	0 - 0.08	0560571 - 0.40	3	0	0	0	0	2	2021-4519	02/20/2021	0.41	PD
											2021-33255	11/27/2021	0.42	PD
											2022-35265	11/28/2022	0.44	
18810	18811	194412	0 - 0.07	0560571 - 0.48	0	0	0	0	0	0				
18809	18810	194410	0 - 0.04	0560571 - 0.55	0	0	0	0	0	0				
18808	18809	194407	0 - 0.04	0560571 - 0.59	0	0	0	0	0	0				
18985	18986	194672	0 - 0.08	0560798 - 0	4	0	0	1	0	2	2022-24805	09/01/2022	0.01	
											2021-28110	10/17/2021	0.01	PD
											2021-3886	02/08/2021	0.01	PD
											2020-6900	02/28/2020	0.05	B
				Totals:	165	0	4	7	16	121				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day	PM											
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	1	6	1	0	0	0	0	1	1	4	1	4	4	5	2	3	7	3	5	1	1	1	1	0	0	52
MONDAY	0	2	0	1	0	1	2	3	6	3	4	6	11	5	3	6	9	6	5	3	2	1	0	1	0	80
TUESDAY	1	0	0	0	0	0	1	6	7	4	5	5	9	14	6	12	1	4	5	4	3	1	2	0	0	90
WEDNESDAY	0	0	0	0	1	1	3	3	3	5	5	5	8	8	9	6	6	3	7	0	2	5	2	0	0	82
THURSDAY	0	0	0	0	0	1	2	3	2	2	2	4	7	2	4	5	10	6	3	4	3	0	0	1	0	61
FRIDAY	1	0	0	0	0	2	1	5	2	5	5	4	7	12	7	11	17	7	3	7	2	2	2	1	0	103
SATURDAY	1	2	3	0	0	1	0	2	0	5	5	9	7	5	6	6	3	2	4	2	3	3	1	4	0	74
Totals	4	10	4	1	1	6	9	23	21	28	27	37	53	51	37	49	53	31	32	21	16	13	8	7	0	**542**

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	541
2-(Sport) Utility Vehicle	322
3-Passenger Van	12
4-Cargo Van (10K lbs or Less)	12
5-Pickup	92
6-Motor Home	2
7-School Bus	2
8-Transit Bus	7
9-Motor Coach	1
10-Other Bus	0
11-Motorcycle	2
12-Moped	2
13-Low Speed Vehicle	1
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	3
17-Medium/Heavy Trucks (More than 10,000 lbs)	18
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	18

Unit Type	Total
23-Bicyclist	16
24-Witness	65
25-Other	38
26-Construction	1
27-Farm Vehicle	1
Total	**1156**

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	90	363	19	4	0	0	476
Ran Off Roadway	12	0	0	0	0	0	12
Failed to Yield Right-of-Way	94	16	1	0	0	0	111
Ran Red Light	31	1	0	0	0	0	32
Ran Stop Sign	3	0	0	0	0	0	3
Disregarded Other Traffic Sign	6	1	0	0	0	0	7
Disregarded Other Road Markings	2	0	0	0	0	0	2
Exceeded Posted Speed Limit	1	0	0	0	0	0	1
Drove Too Fast For Conditions	7	1	0	0	0	0	8
Improper Turn	30	6	0	0	0	0	36
Improper Backing	19	0	0	0	0	0	19
Improper Passing	6	2	0	0	0	0	8
Wrong Way	1	0	0	0	0	0	1
Followed Too Closely	111	16	0	0	0	0	127
Failed to Keep in Proper Lane	34	7	0	0	0	0	41
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	6	1	0	0	0	0	7
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	5	0	0	0	0	0	5
Over-Correcting/Over-Steering	8	1	0	0	0	0	9
Other Contributing Action	26	0	0	0	0	0	26
Unknown	6	7	0	0	0	0	13
Total	**498**	**422**	**20**	**4**	**0**	**0**	**944**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	461	416	19	4	0	29	929
Physically Impaired	1	0	0	0	0	0	1
Emotional(Depressed, Angry, Disturbed, etc.)	5	1	0	0	0	1	7
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	3	0	0	0	0	0	3
Under the Influence of Medications/Drugs/Alcohol	15	1	0	0	0	3	19
Other	4	3	0	0	0	1	8
Total	**490**	**421**	**19**	**4**	**0**	**34**	**968**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	1	0	0	0	0	1
10-14	0	0	0	0	0	0
15-19	58	0	0	0	0	58
20-24	113	0	0	0	0	113
25-29	124	0	0	0	0	124
30-39	199	0	0	0	0	199
40-49	140	0	0	0	0	140
50-59	147	0	0	0	0	147
60-69	106	0	0	0	0	106
70-79	58	0	0	0	0	58
80-Over	21	0	0	0	0	21
Unknown	90	16	0	18	0	124
Total	**1057**	**16**	**0**	**18**	**0**	**1091**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	3
2-Fire / Explosion	0	39-Unknown	7
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**1015**
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	8		
10-Pedalcycle	4		
11-Railway Vehicle - Train, Engine	1		
12-Animal	0		
13-Motor Vehicle in Transport	917		
14-Parked Motor Vehicle	64		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	3		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	2		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	4		
33-Traffic Sign Support	1		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	9	10
B	35	38
C	79	102
PD	399	0
Total	**522**	**150**

Road Character

Road Grade	Total
1-Level	418
2-On Grade	104
3-Top of Hill	5
4-Bottom of Hill	13
5-Other	2
Total	**542**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	240
2-Traffic Signals (Flashing)	8
3-Advisory/Warning Sign	5
4-Stop Signs - All Approaches	11
5-Stop Signs - Other	57
6-Yield Sign	50
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	1
13-None	166
14-Other	4
Total	**542**

Light

Light Condition	Total
1-Daylight	402
2-Dawn	3
3-Dusk	13
4-Dark - Lighted	114
5-Dark - Not Lighted	5
6-Dark - Unknown Lighting	1
7-Unknown	4
Total	**542**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	15	6	25	46
FEBRUARY	16	15	21	52
MARCH	11	10	12	33
APRIL	4	15	14	33
MAY	8	20	13	41
JUNE	9	11	18	38
JULY	11	17	16	44
AUGUST	18	19	18	55
SEPTEMBER	18	27	17	62
OCTOBER	7	17	23	47
NOVEMBER	9	19	25	53
DECEMBER	8	13	17	38
Total	**134**	**189**	**219**	**542**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	102	0	92	96	14	12	0	1	5	0	0	0	0	0	322
Head-on - Sideswipe	6	0	1	0	0	1	0	0	0	0	0	0	0	0	8
Intersection Movement	0	0	33	78	4	29	0	0	0	0	0	0	0	0	144
Pedestrians	4	0	1	9	0	2	0	0	0	0	0	0	0	0	16
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	11	1	6	7	1	2	0	0	1	3	1	0	0	0	33
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	2	0	3	10	0	2	0	0	0	0	0	0	0	0	17
Other	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**126**	**1**	**136**	**201**	**19**	**48**	**0**	**1**	**6**	**3**	**1**	**0**	**0**	**0**	**542**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	72	2	1	0	0	0	1	1	0	0	6	83
Dark - Not Lighted	4	0	0	0	0	0	0	0	0	0	0	4
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	296	2	0	0	0	0	0	3	0	0	11	312
Dusk	8	1	0	0	0	0	0	0	0	0	1	10
Unknown	1	0	0	0	0	0	0	0	0	0	0	1
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	3	3
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	1	0	0	0	0	0	0	0	0	0	0	1
Dawn	1	0	0	0	0	0	0	0	0	0	1	2
Daylight	44	0	0	0	0	0	1	0	0	0	9	54
Dusk	2	0	0	0	0	0	0	0	0	0	0	2
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	1	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	1	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	2	0	0	2
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	19	19
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	1	1
Daylight	0	0	0	0	0	0	0	0	0	0	29	29
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	3	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	1	0	0	0	0	0	0	0	0	1	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	5	0	0	0	5
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	2	0	0	1	3
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	1	0	0	0	1
TOTAL	**430**	**6**	**1**	**0**	**0**	**0**	**2**	**13**	**4**	**0**	**86**	**542**

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

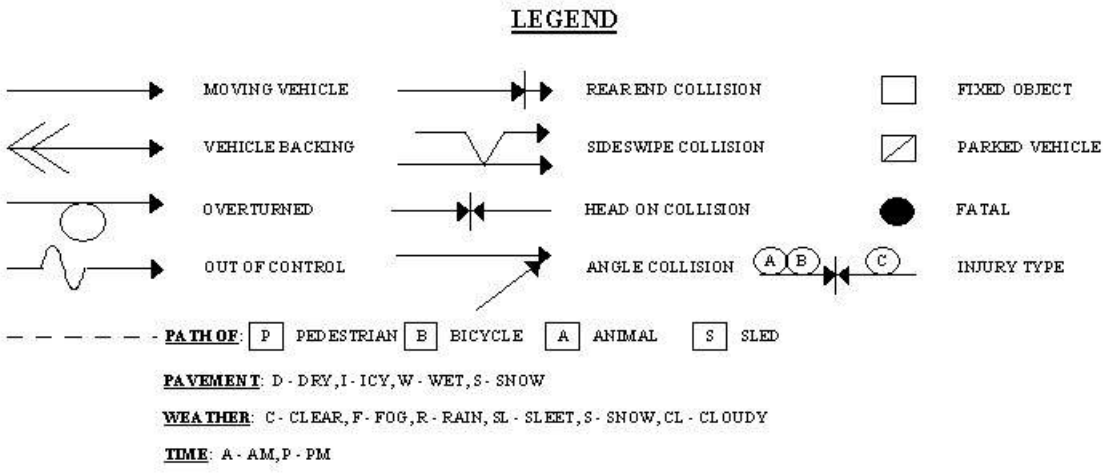
LOW NODE: **16836** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

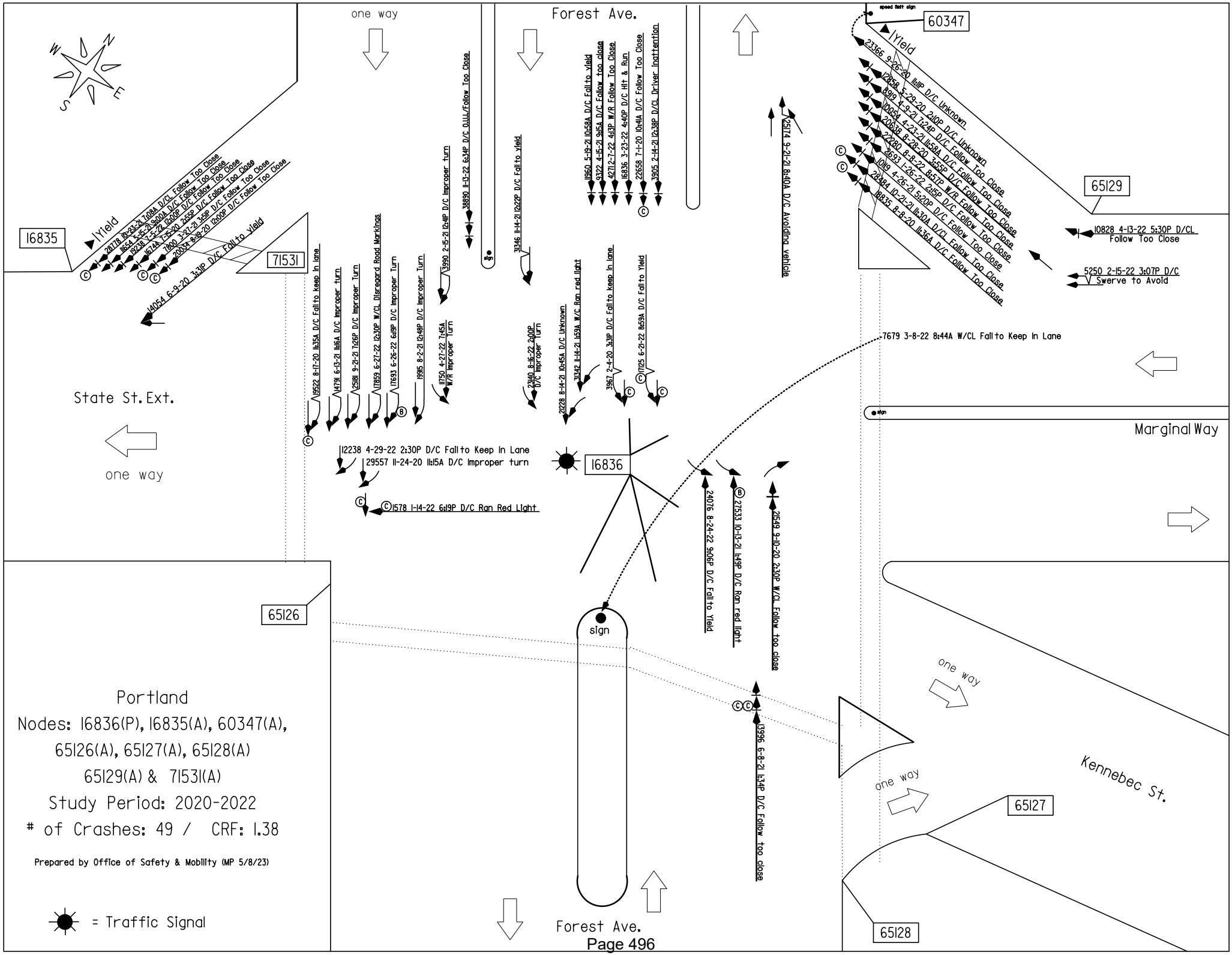
DESCRIPTION: **Int Forest Ave/Marginal Way/Kennebec St/State St**

RTE # / RD #: **0100S** DATE DRAWN: **5/8/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.33** CRF: **1.38** % INJURY: **26.5** TOTAL CRASHES: **49**





Portland

Nodes: 16836(P), 16835(A), 60347(A),
65126(A), 65127(A), 65128(A)
65129(A) & 71531(A)

Study Period: 2020-2022

# of Crashes: 49 / CRF: 1.38

Prepared by Office of Safety & Mobility (MP 5/8/23)

= Traffic Signal

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

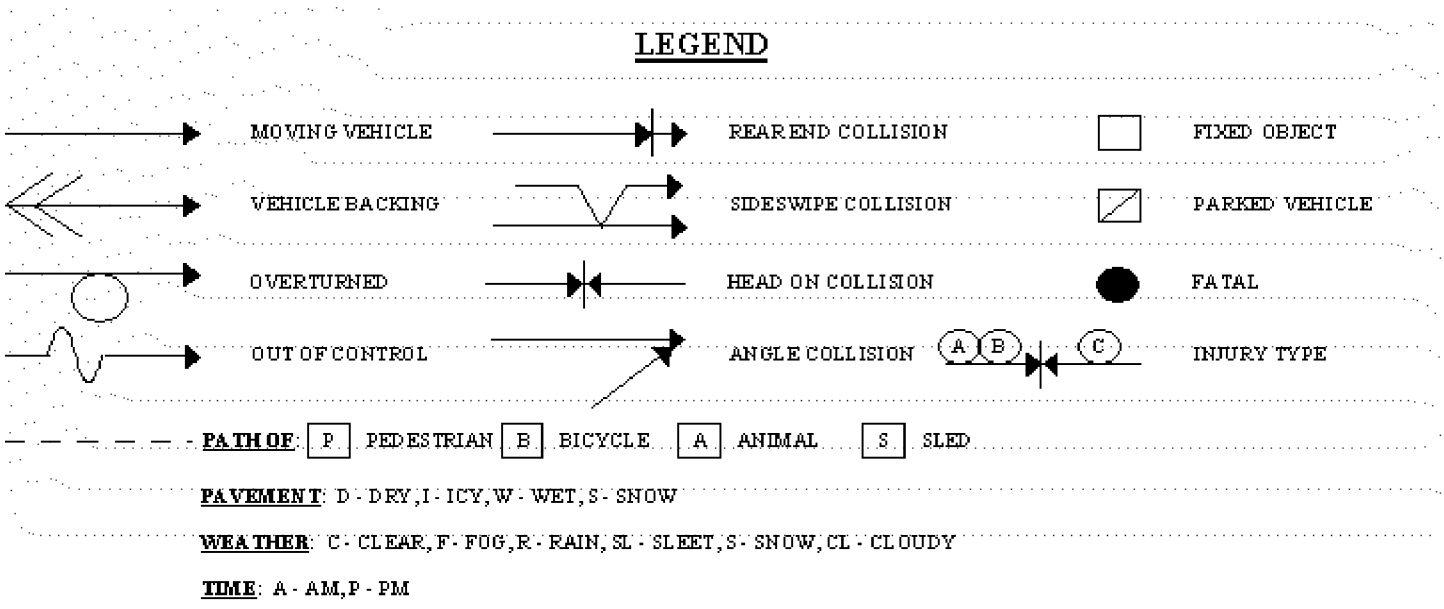
LOW NODE: **18523** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

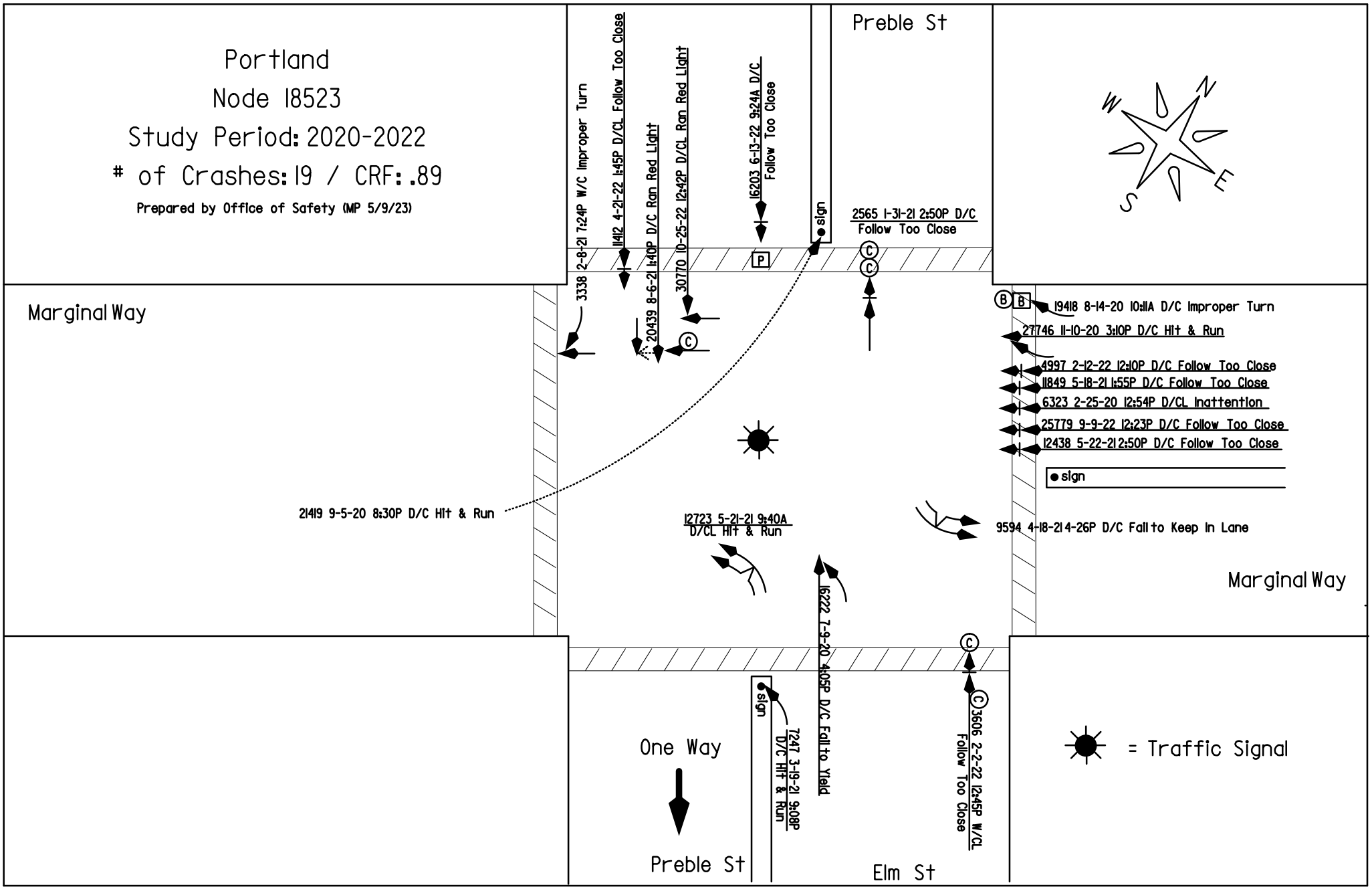
DESCRIPTION: **Int of Marginal Way/Preble St/Preble St Ext**

RTE # / RD #: **0560252** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.95** CRF: **0.89** % INJURY: **21.1** TOTAL CRASHES: **19**




Portland
Node 18523
Study Period: 2020-2022
# of Crashes: 19 / CRF: .89
Prepared by Office of Safety (MP 5/9/23)
Preble St
Marginal Way
2-8-21 7:24P W/C Improper Turn
11412 4-21-22 1:45P D/CL Follow Too Close
30770 10-25-22 12:42P D/CL Ran Red Light
16203 6-13-22 9:24A D/C Follow Too Close
sign
2565 1-31-21 2:50P D/C Follow Too Close
3338
20439 8-6-21 1:40P D/C Ran Red Light
19418 8-14-20 10:11A D/C Improper Turn
27746 11-10-20 3:10P D/C Hit & Run
4997 2-12-22 12:10P D/C Follow Too Close
11849 5-18-21 1:55P D/C Follow Too Close
6323 2-25-20 12:54P D/CL Inattention
25779 9-9-22 12:23P D/C Follow Too Close
12438 5-22-21 2:50P D/C Follow Too Close
sign
21419 9-5-20 8:30P D/C Hit & Run
12723 5-21-21 9:40A D/CL Hit & Run
9594 4-18-21 4:26P D/C Fail to Keep In Lane
Marginal Way
16222 7-9-20 4:05P D/C Fail to Yield
sign
7247 3-19-21 9:08P D/C Hit & Run
3606 2-2-22 12:45P W/CL Follow Too Close
One Way
Preble St
Elm St
= Traffic Signal

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

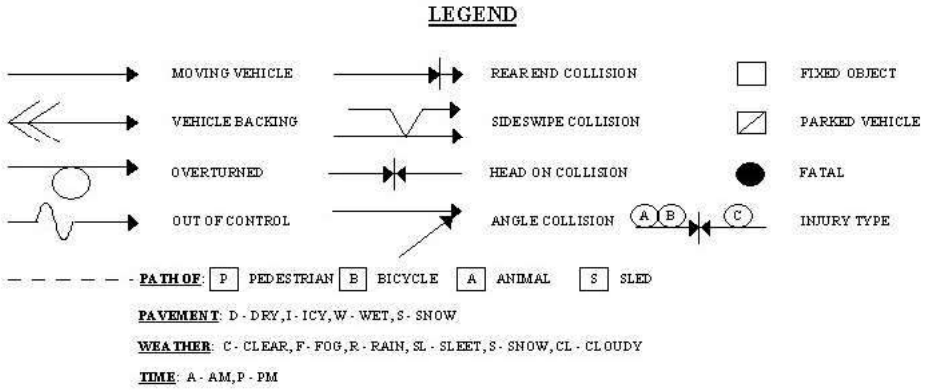
LOW NODE: **19029** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

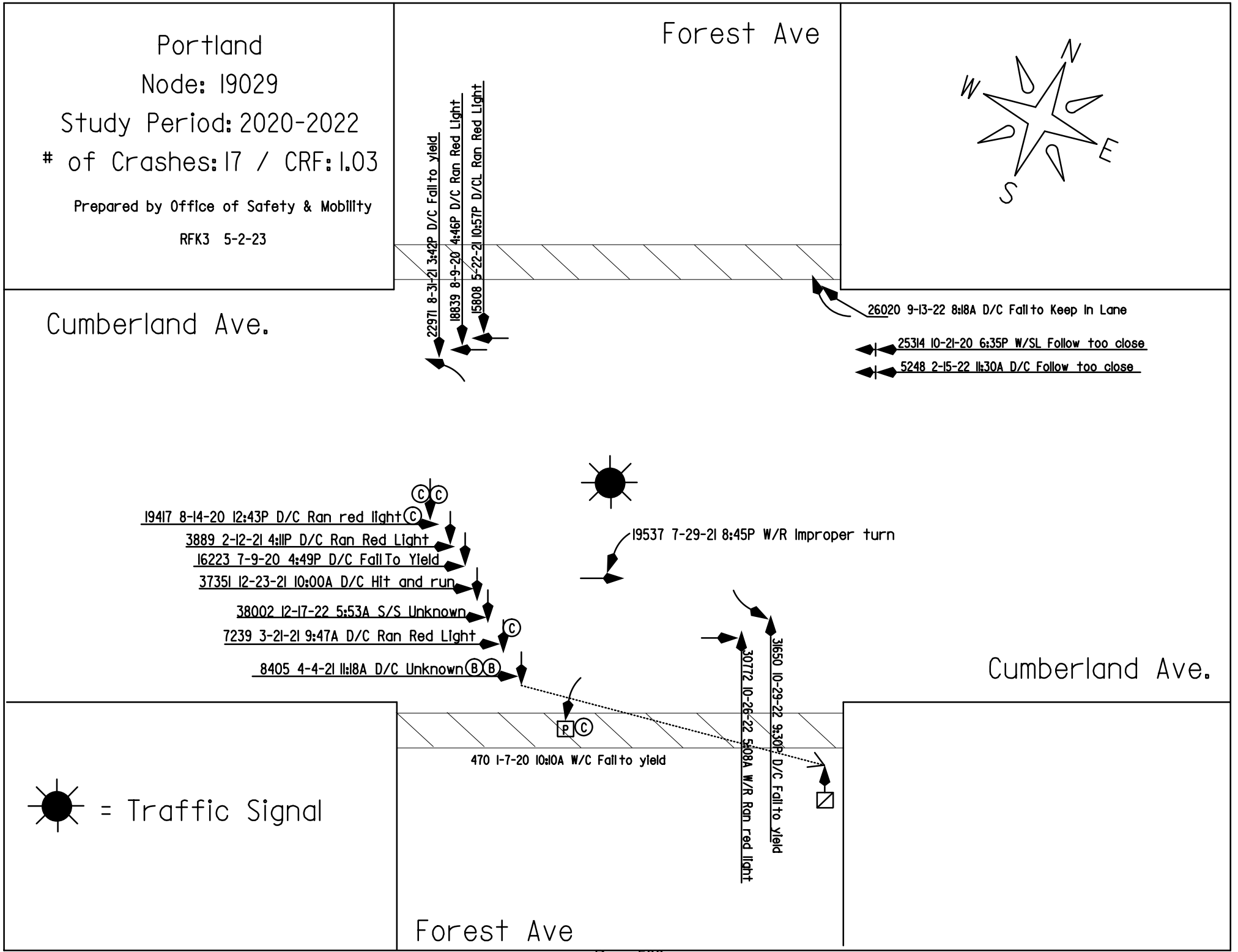
DESCRIPTION: **Int of Cumberland Ave and Forest Ave**

RTE # / RD #: **0100X** DATE DRAWN: **5/2/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.18** CRF: **1.03** % INJURY: **23.5** TOTAL CRASHES: **17**




Portland
Node: 19029
Study Period: 2020-2022
# of Crashes: 17 / CRF: 1.03
Prepared by Office of Safety & Mobility
RFK3 5-2-23
Forest Ave
N
W
E
S
22971 8-31-21 3:42P D/C Fail to yield
18839 8-9-20 4:46P D/C Ran Red Light
15808 5-22-21 10:57P D/CL Ran Red Light
26020 9-13-22 8:18A D/C Fail to Keep In Lane
25314 10-21-20 6:35P W/SL Follow too close
5248 2-15-22 11:30A D/C Follow too close
Cumberland Ave.
19417 8-14-20 12:43P D/C Ran red light
3889 2-12-21 4:11P D/C Ran Red Light
16223 7-9-20 4:49P D/C Fail To Yield
37351 12-23-21 10:00A D/C Hit and run
38002 12-17-22 5:53A S/S Unknown
7239 3-21-21 9:47A D/C Ran Red Light
8405 4-4-21 11:18A D/C Unknown
19537 7-29-21 8:45P W/R Improper turn
31650 10-29-22 9:30P D/C Fail to yield
30772 10-26-22 5:08A W/R Ran red light
Cumberland Ave.
470 1-7-20 10:10A W/C Fail to yield
= Traffic Signal
Forest Ave

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

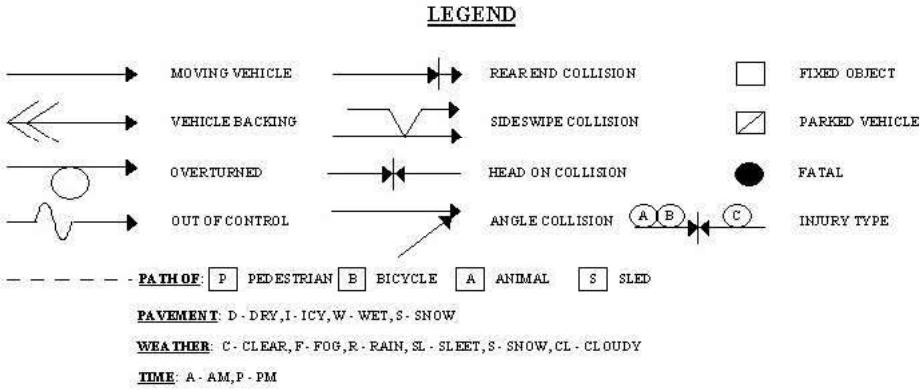
LOW NODE: **19040** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

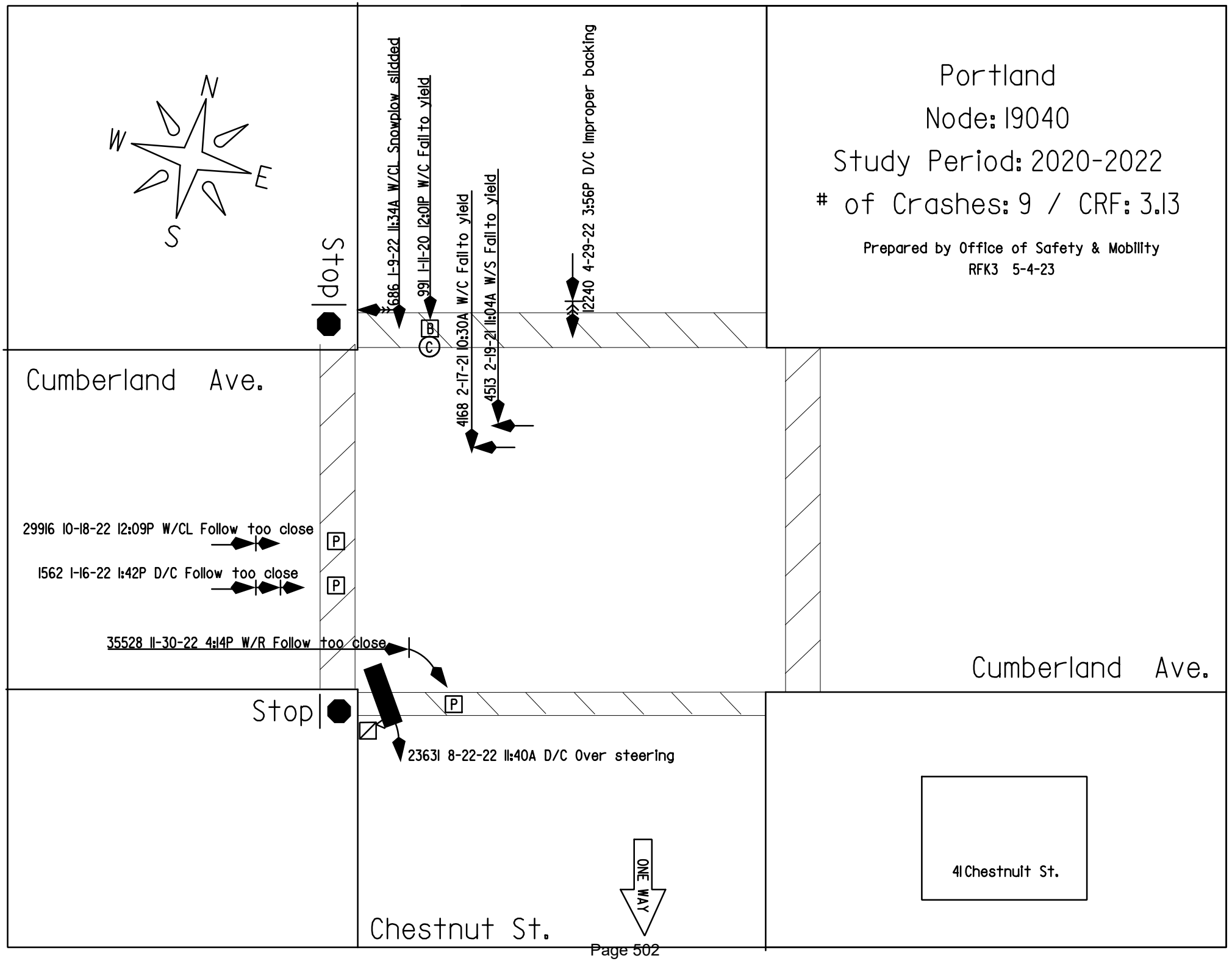
DESCRIPTION: **Int of Chestnut St and Cumberland Ave**

RTE # / RD #: **0560135** DATE DRAWN: **5/4/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.18** CRF: **3.13** % INJURY: **11.1** TOTAL CRASHES: **9**




Portland
Node: 19040
Study Period: 2020-2022
# of Crashes: 9 / CRF: 3.13
Prepared by Office of Safety & Mobility
RFK3 5-4-23
N
W
E
S
Stop
Cumberland Ave.
9686 1-9-22 11:34A W/CL Snowplow slidded
9911 1-11-20 12:01P W/C Fail to yield
4168 2-17-21 10:30A W/C Fail to yield
4513 2-19-21 11:04A W/S Fail to yield
12240 4-29-22 3:56P D/C Improper backing
29916 10-18-22 12:09P W/CL Follow too close
1562 1-16-22 1:42P D/C Follow too close
35528 11-30-22 4:14P W/R Follow too close
Cumberland Ave.
Stop
23631 8-22-22 11:40A D/C Over steering
41 Chestnut St.
ONE WAY
Chestnut St.

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

LOW NODE: **19049** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

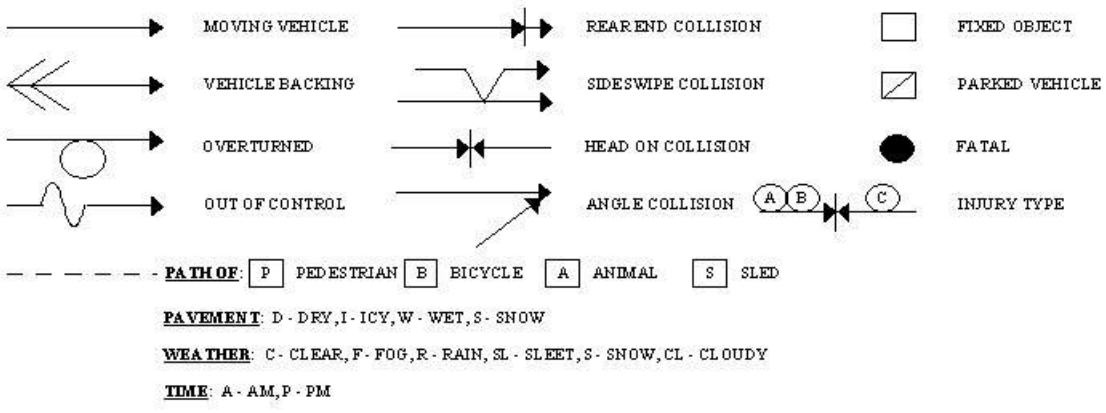
DESCRIPTION: **Int Forest Ave & Park Ave/Portland St**

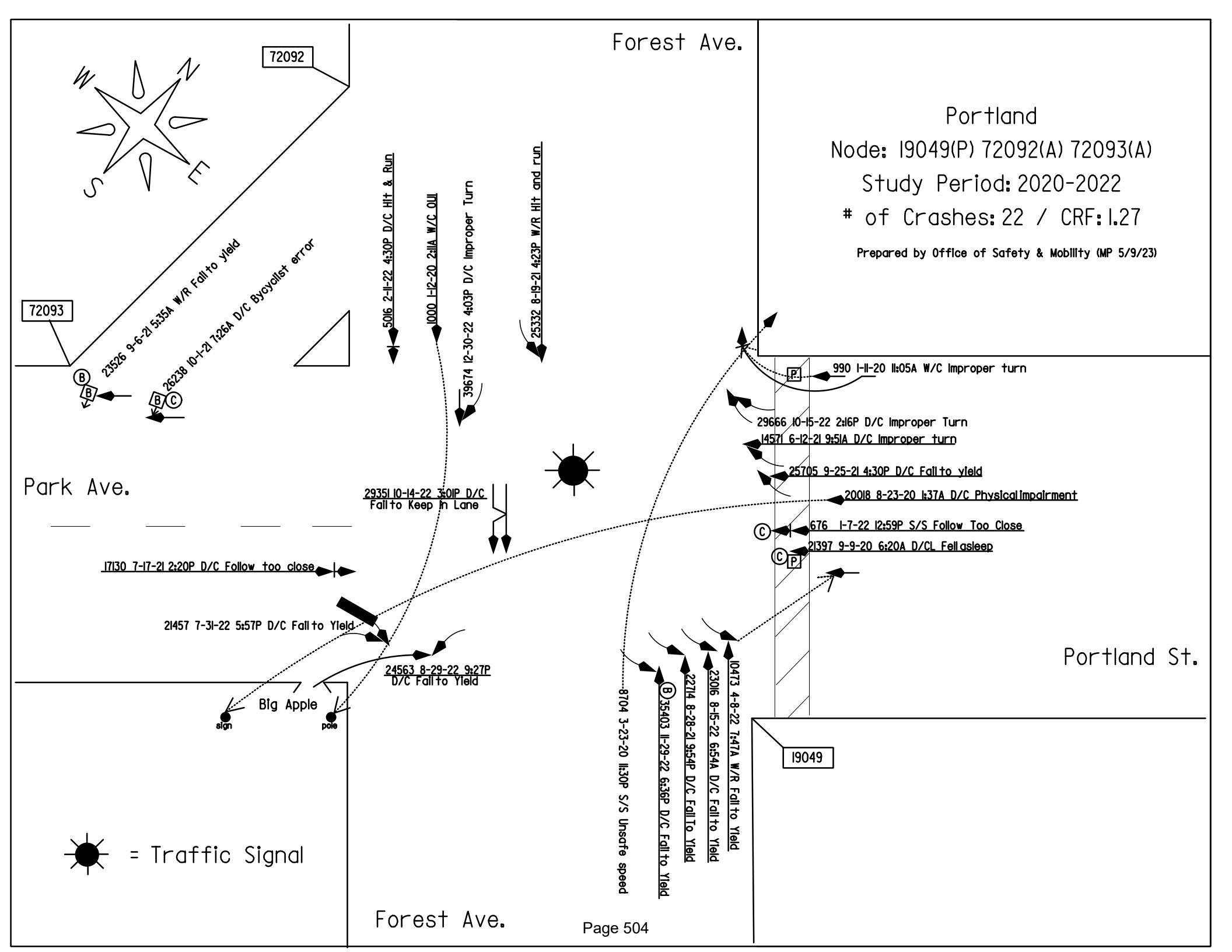
RTE # / RD #: **0100X** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.45** CRF: **1.27** % INJURY: **22.7** TOTAL CRASHES: **22**

LEGEND




Forest Ave.
72092
72093
Portland
Node: 19049(P) 72092(A) 72093(A)
Study Period: 2020-2022
# of Crashes: 22 / CRF: 1.27
Prepared by Office of Safety & Mobility (MP 5/9/23)
23526 9-6-21 5:35A W/R Fail to yield
26238 10-1-21 7:26A D/C Bycyclist error
5016 2-11-22 4:30P D/C Hit & Run
1000 1-12-20 2:11A W/C OUI
39674 12-30-22 4:03P D/C Improper Turn
25332 8-19-21 4:23P W/R Hit and run
990 1-11-20 11:05A W/C Improper turn
29666 10-15-22 2:16P D/C Improper Turn
14571 6-12-21 9:51A D/C Improper turn
25705 9-25-21 4:30P D/C Fail to yield
20018 8-23-20 1:37A D/C Physical Impairment
676 1-7-22 12:59P S/S Follow Too Close
21397 9-9-20 6:20A D/CL Fell asleep
Park Ave.
29351 10-14-22 3:01P D/C Fail to Keep in Lane
17130 7-17-21 2:20P D/C Follow too close
21457 7-31-22 5:57P D/C Fail to Yield
24563 8-29-22 9:27P D/C Fail to Yield
Big Apple
sign
pole
Portland St.
19049
8704 3-23-20 11:30P S/S Unsafe speed
35403 11-29-22 6:36P D/C Fail to Yield
22714 8-28-21 9:54P D/C Fail To Yield
23016 8-15-22 6:54A D/C Fail to Yield
10473 4-8-22 7:47A W/R Fail to Yield
= Traffic Signal
Forest Ave.

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

LOW NODE: **19193** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

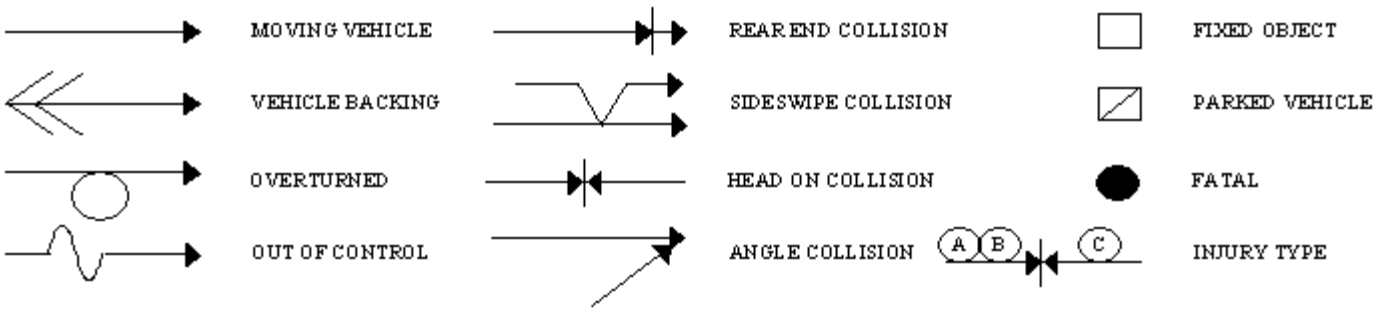
DESCRIPTION: **Int Forest Ave & I-295NB Exit 6B Ramp Off**

RTE # / RD #: **0100X** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.69** CRF: **6.47** % INJURY: **34.4** TOTAL CRASHES: **32**

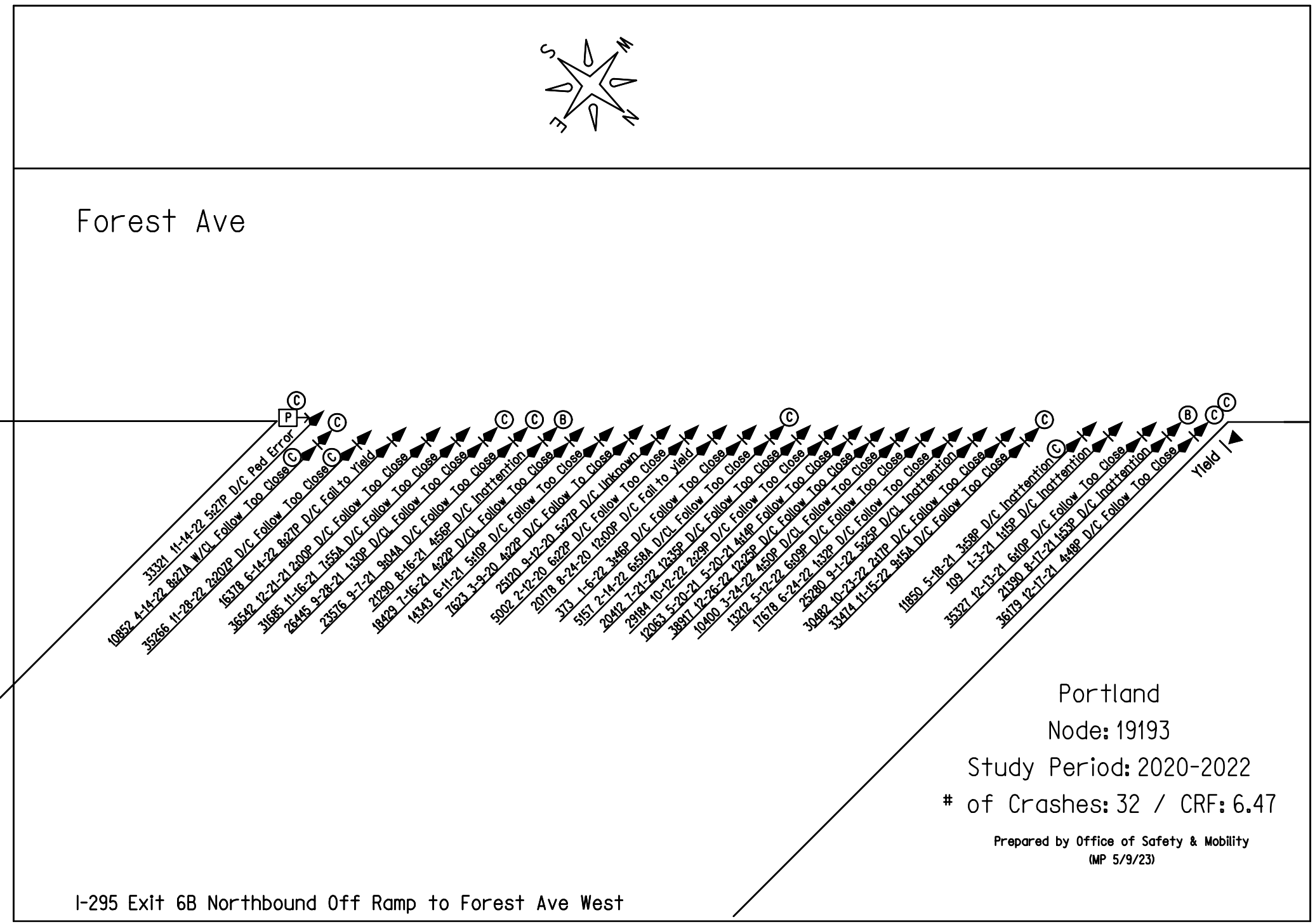
LEGEND



PAVEMENT: D - DRY, I - ICY, W - WET, S - SNOW

WEATHER: C - CLEAR, F - FOG, R - RAIN, SL - SLEET, S - SNOW, CL - CLOUDY

TIME: A - AM, P - PM


Forest Ave
33321 11-14-22 5:27P D/C Ped Error
10852 4-14-22 8:27A W/CL Follow Too Close
35266 11-28-22 2:20?P D/C Follow Too Close
16378 6-14-22 8:27P D/C Fail to Yield
36542 12-21-21 2:00P D/C Follow Too Close
31685 11-16-21 7:55A D/C Follow Too Close
26445 9-28-21 1:30P D/CL Follow Too Close
23576 9-7-21 9:04A D/C Follow Too Close
21290 8-16-21 4:56P D/C Inattention
18429 7-16-21 4:22P D/CL Follow Too Close
14343 6-11-21 5:10P D/C Follow Too Close
7623 3-9-20 4:22P D/C Follow To Close
5002 2-12-20 6:22P D/C Follow Too Close
25120 9-12-20 5:27P D/C Unknown
20178 8-24-20 12:00P D/C Follow Too Close
373 1-6-22 3:46P D/C Fail to yield
5157 2-14-22 6:58A D/CL Follow Too Close
20412 7-21-22 12:35P D/C Follow Too Close
29184 10-12-22 2:29P D/C Follow Too Close
12063 5-20-21 5:20-21 4:14P Follow Too Close
38917 12-26-22 12:25P D/C Follow Too Close
10400 3-24-22 4:50P D/CL Follow Too Close
13212 5-12-22 6:09P D/C Follow Too Close
17678 6-24-22 1:32P D/C Follow Too Close
25280 9-1-22 5:25P D/CL Inattention
30482 10-23-22 2:17P D/C Follow Too Close
33474 11-15-22 9:15A D/C Follow Too Close
11850 5-18-21 3:58P D/C Inattention
109 1-3-21 1:15P D/C Inattention
35327 12-13-21 6:10P D/C Follow Too Close
21390 8-17-21 1:53P D/C Inattention
36179 12-17-21 4:48P D/C Follow Too Close
Yield
Portland
Node: 19193
Study Period: 2020-2022
# of Crashes: 32 / CRF: 6.47
Prepared by Office of Safety & Mobility
(MP 5/9/23)
I-295 Exit 6B Northbound Off Ramp to Forest Ave West

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

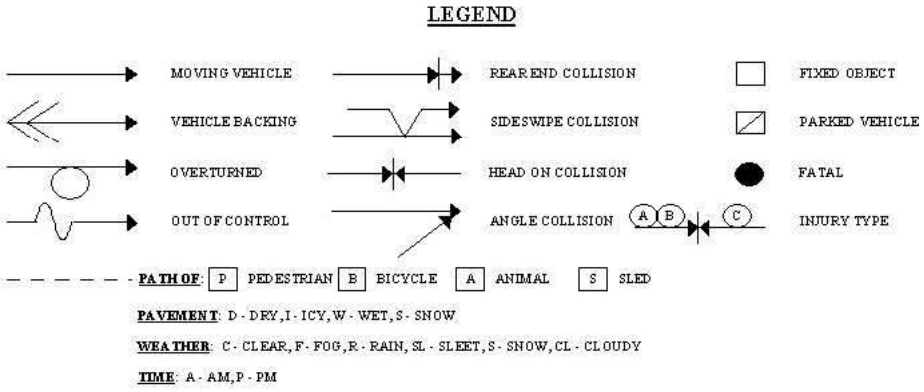
LOW NODE: **19197** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

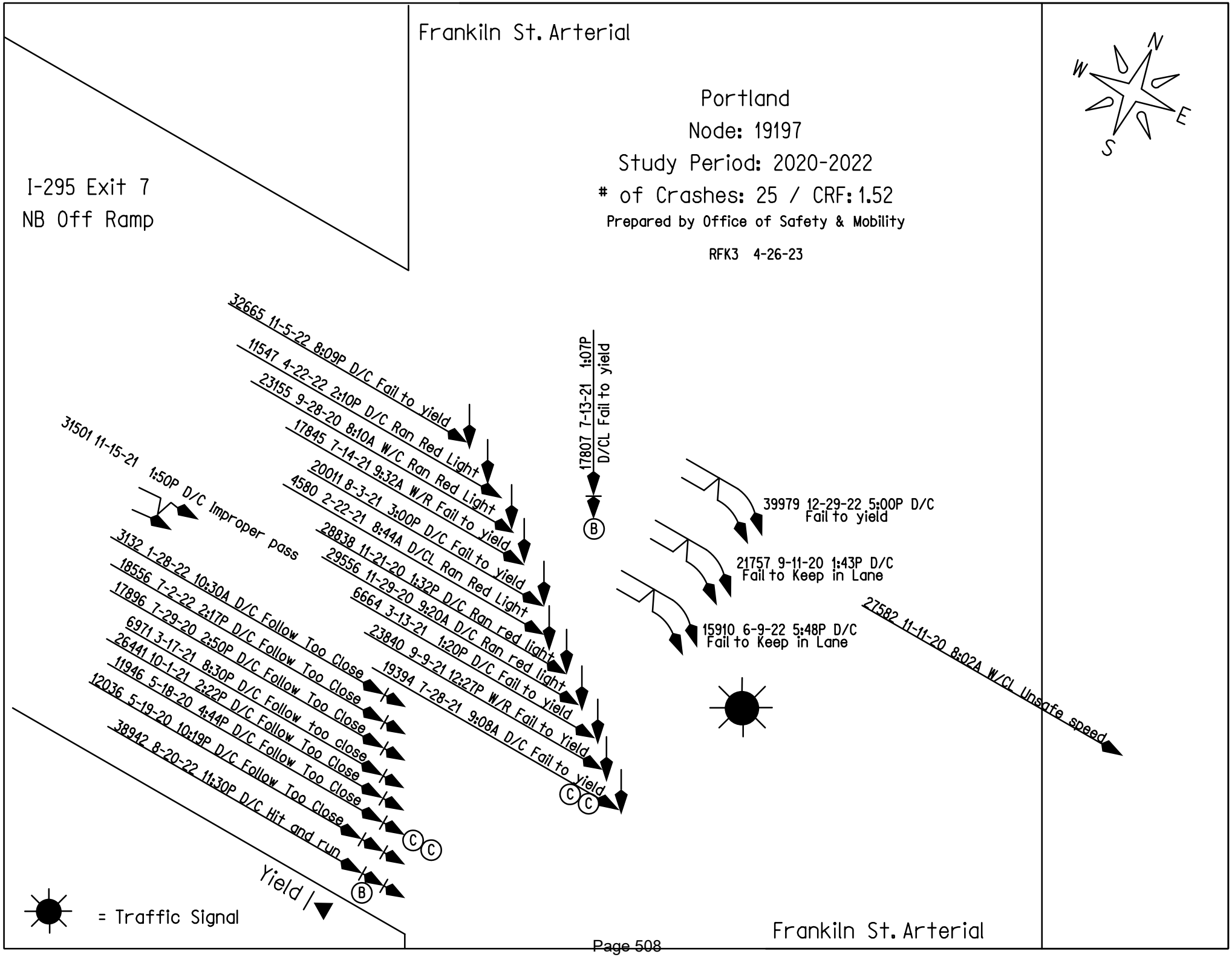
DESCRIPTION: **Int of Franklin St and I-295 NB Exit 7 Off Ramp**

RTE # / RD #: **001AS** DATE DRAWN: **4/26/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.75** CRF: **1.52** % INJURY: **16** TOTAL CRASHES: **25**




Frankiln St. Arterial
Portland
Node: 19197
Study Period: 2020-2022
# of Crashes: 25 / CRF: 1.52
Prepared by Office of Safety & Mobility
RFK3 4-26-23
I-295 Exit 7
NB Off Ramp
N
W
E
S
32665 11-5-22 8:09P D/C Fail to yield
11547 4-22-22 2:10P D/C Ran Red Light
23155 9-28-20 8:10A W/C Ran Red Light
17845 7-14-21 9:32A W/R Fail to yield
20011 8-3-21 3:00P D/C Fail to yield
4580 2-22-21 8:44A D/CL Ran Red Light
28838 11-21-20 1:32P D/C Ran red light
29556 11-29-20 9:20A D/C Ran red light
6664 3-13-21 1:20P D/C Fail to yield
23840 9-9-21 12:27P W/R Fail to Yield
19394 7-28-21 9:08A D/C Fail to yield
C
C
17807 7-13-21 1:07P
D/CL Fail to yield
B
39979 12-29-22 5:00P D/C
Fail to yield
21757 9-11-20 1:43P D/C
Fail to Keep in Lane
15910 6-9-22 5:48P D/C
Fail to Keep in Lane
27582 11-11-20 8:02A W/CL Unsafe speed
31501 11-15-21 1:50P D/C Improper pass
3132 1-28-22 10:30A D/C Follow Too Close
18556 7-2-22 2:17P D/C Follow Too Close
17896 7-29-20 2:50P D/C Follow too close
6971 3-17-21 8:30P D/C Follow Too Close
26441 10-1-21 2:22P D/C Follow Too Close
11946 5-18-20 4:44P D/C Follow Too Close
12036 5-19-20 10:19P D/C Follow Too Close
38942 8-20-22 11:30P D/C Hit and run
C
C
B
Yield
= Traffic Signal
Frankiln St. Arterial

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

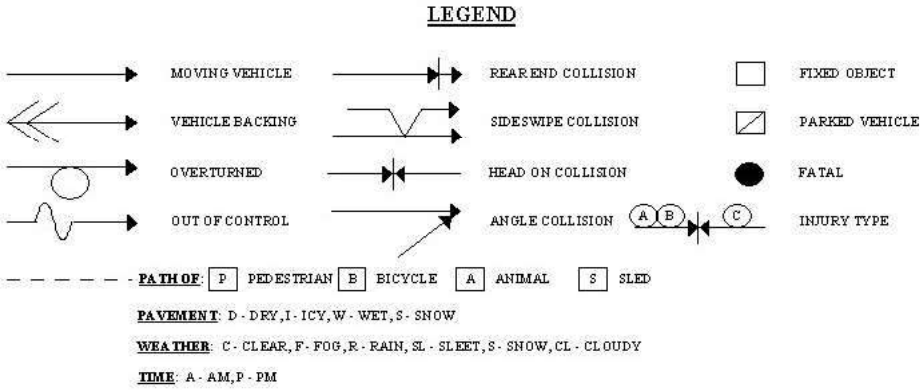
LOW NODE: **60342** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Int of Forest Ave I-295 NB Exit 6A Off Ramp**

RTE # / RD #: **05A1001** DATE DRAWN: **4/27/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.98** CRF: **3.5** % INJURY: **21.4** TOTAL CRASHES: **14**



Portland

Node: 60342

Study Period: 2020-2022

# of Crashes: 14 / CRF: 3.50

Prepared by Office of Safety & Mobility

RFK3 4-27-23



Forest Ave.

sign

6306 2-25-22 7:32A S/S Unsafe speed

31318 11-12-21 4:58P W/R Follow Too Close

19052 7-24-21 11:55A D/C Fail to yield

1333 1-18-21 1:02P D/C Follow Too Close

569 1-8-20 11:44A W/C Follow Too Close

28277 10-4-22 5:44P D/C Fail to yield

25694 9-24-21 4:46P D/C Follow Too Close

24924 9-17-21 10:43A D/C Follow Too Close

14341 5-25-22 8:17A D/C Follow Too Close

19633 7-14-22 8:58A D/C Follow too close

4024 2-5-22 6:38P SL/C Follow Too Close

13566 6-8-20 4:05P D/C Follow Too Close

23154 9-28-20 12:03P D/CL Follow Too Close

25449 10-21-20 6:30P W/R Follow Too Close

Yield

I-295 NB Exit 6A Off Ramp to Forest Ave

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

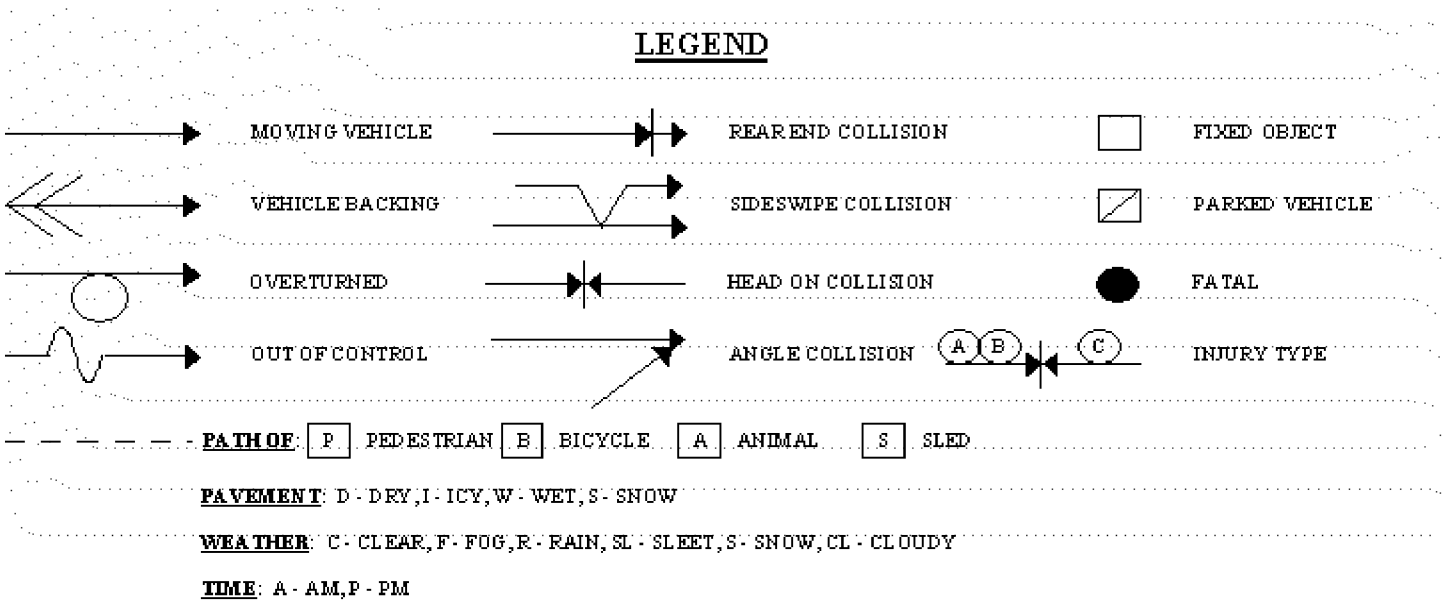
LOW NODE: **60346** HIGH NODE: **18999** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Marginal Way from Forest Ave Island to Hanover St**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **713.19** CRF: **1.48** % INJURY: **12.5** TOTAL CRASHES: **8**



Portland

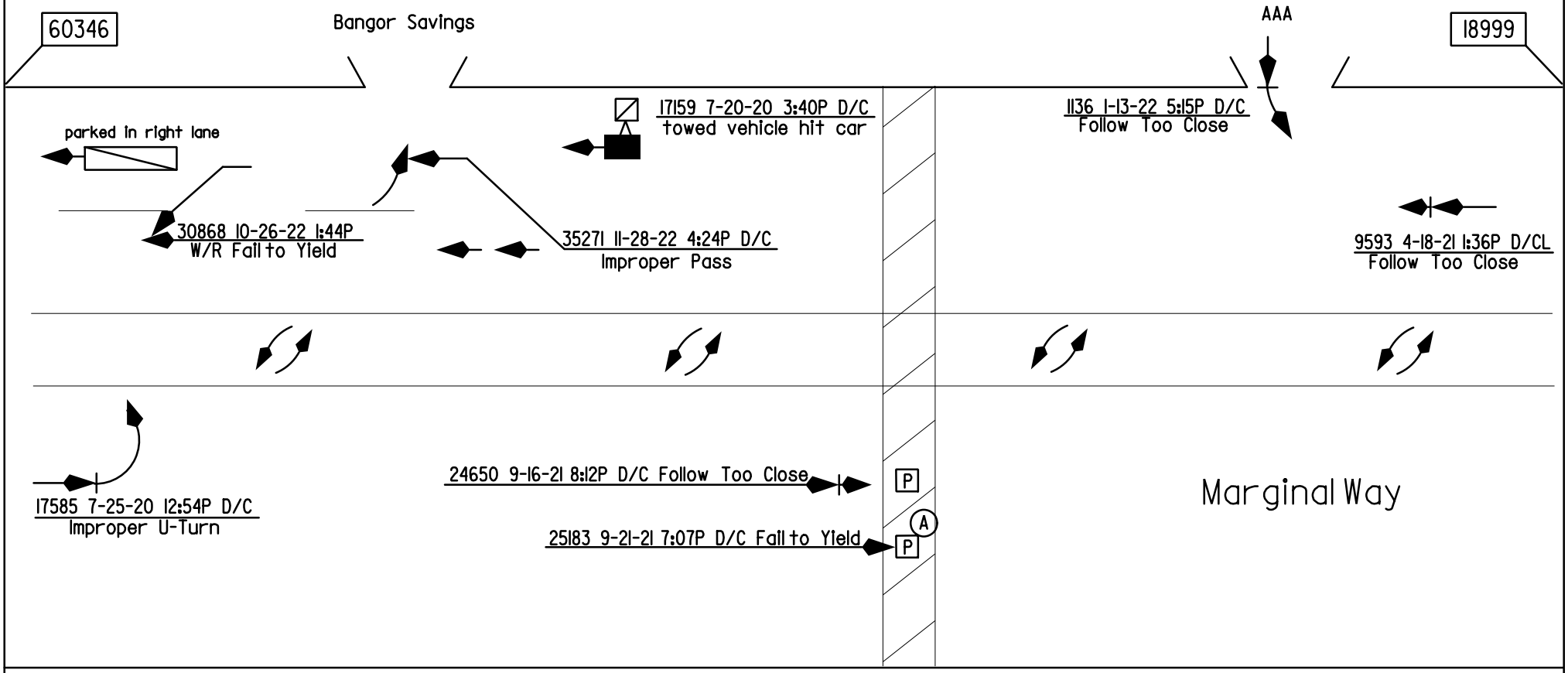
Link: 60346-18999

Element: 3115193

Study Period: 2020-2022

of Crashes: 8 / CRF: 1.48

Prepared by Office of Safety & Mobility (MP 5/10/23)



H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

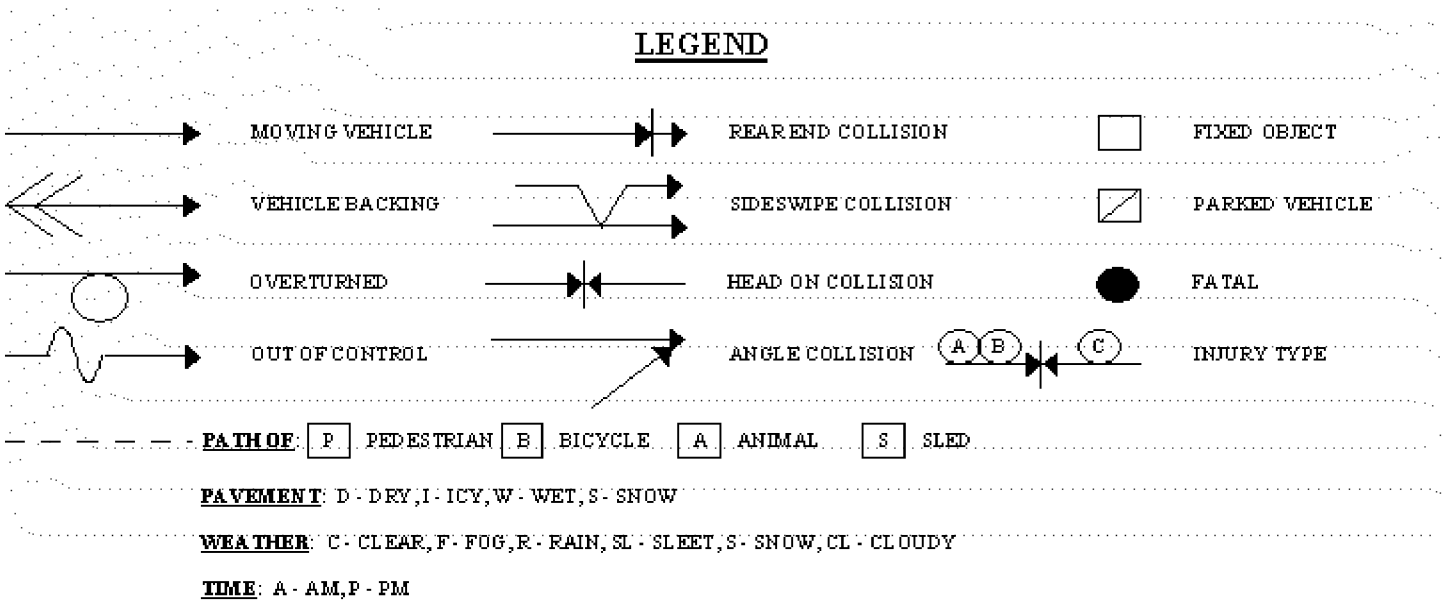
LOW NODE: **71632** HIGH NODE: **72190** REGION: **1** U/R: **URBAN**

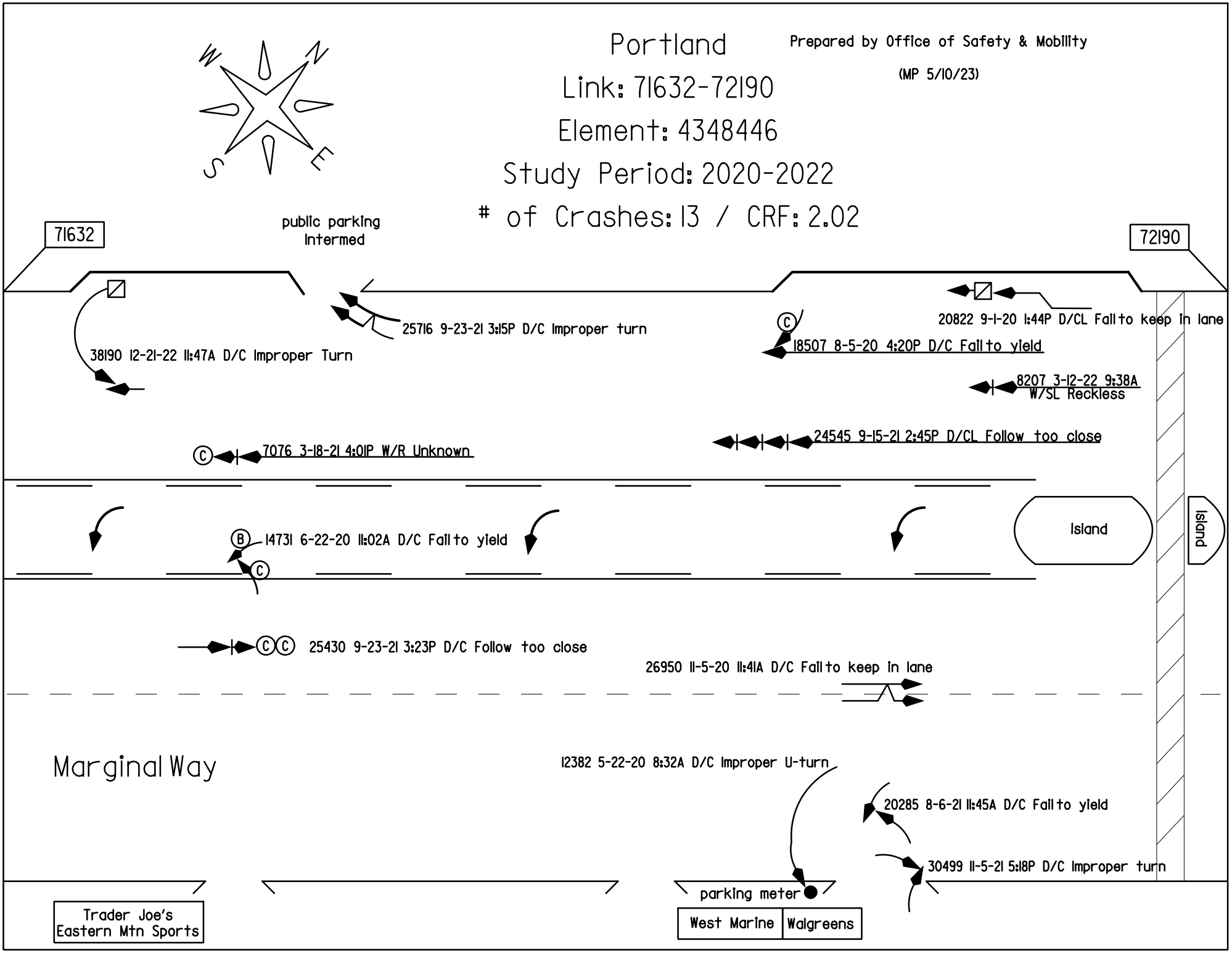
DESCRIPTION: **Marginal Way from Preble St Island to Chestnut St**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **913.87** CRF: **2.02** % INJURY: **30.8** TOTAL CRASHES: **13**




Portland
Prepared by Office of Safety & Mobility
(MP 5/10/23)
Link: 71632-72190
Element: 4348446
Study Period: 2020-2022
# of Crashes: 13 / CRF: 2.02
71632
public parking
intermed
72190
25716 9-23-21 3:15P D/C Improper turn
38190 12-21-22 11:47A D/C Improper Turn
20822 9-1-20 1:44P D/CL Fail to keep in lane
18507 8-5-20 4:20P D/C Fail to yield
8207 3-12-22 9:38A
W/SL Reckless
24545 9-15-21 2:45P D/CL Follow too close
7076 3-18-21 4:01P W/R Unknown
Island
Island
14731 6-22-20 11:02A D/C Fail to yield
25430 9-23-21 3:23P D/C Follow too close
26950 11-5-20 11:41A D/C Fail to keep in lane
Marginal Way
12382 5-22-20 8:32A D/C Improper U-turn
20285 8-6-21 11:45A D/C Fail to yield
30499 11-5-21 5:18P D/C Improper turn
parking meter
Trader Joe's
Eastern Mtn Sports
West Marine
Walgreens

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

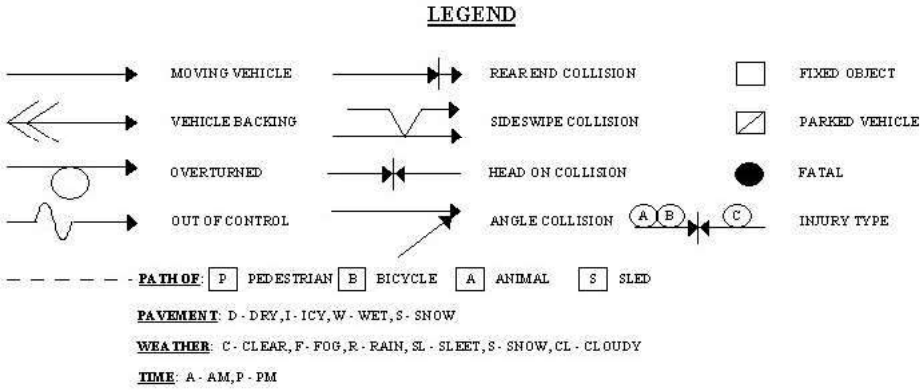
LOW NODE: **72190** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

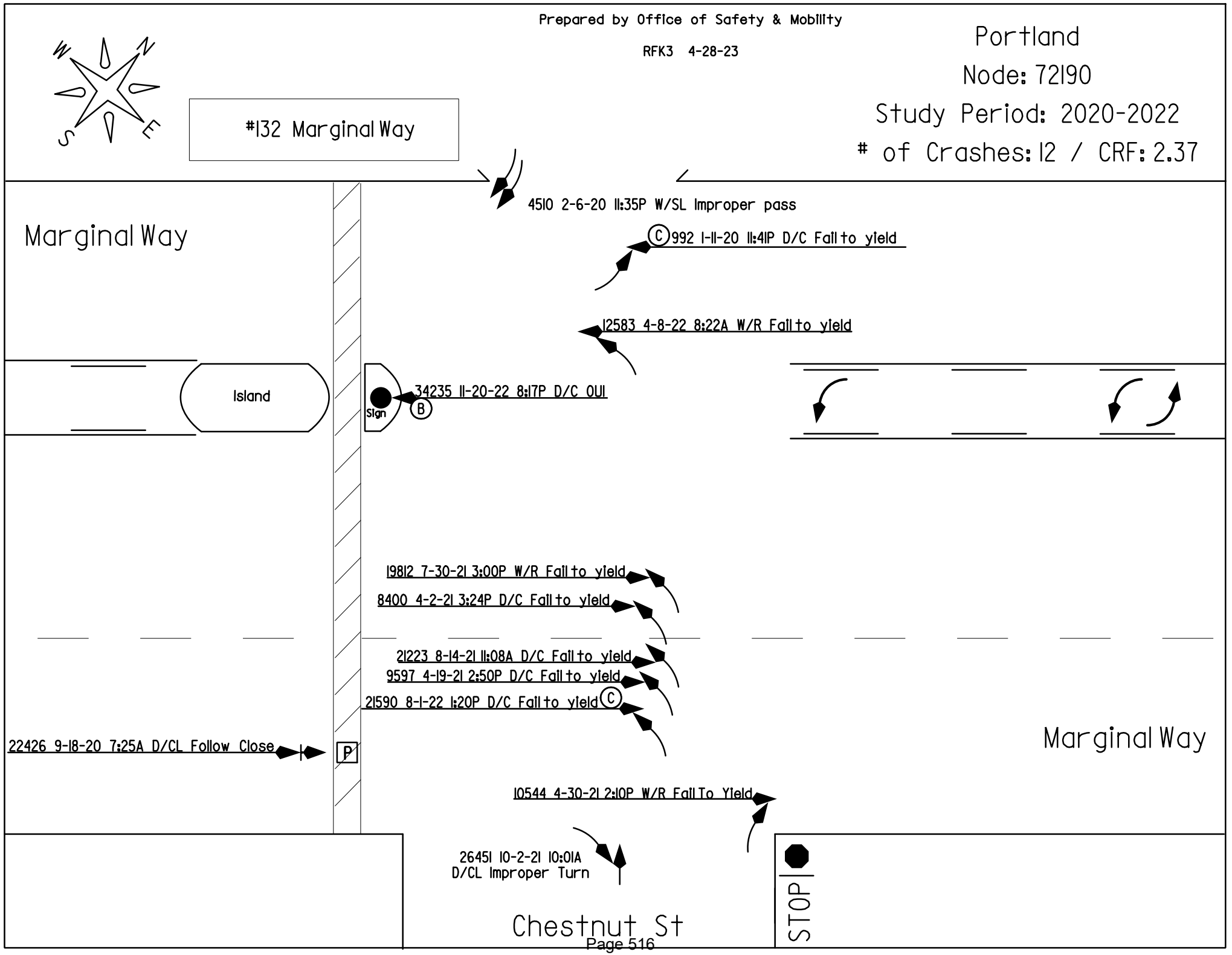
DESCRIPTION: **Int of Chestnut St and Marginal Way**

RTE # / RD #: **0560135** DATE DRAWN: **4/28/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.86** CRF: **2.37** % INJURY: **25** TOTAL CRASHES: **12**




Prepared by Office of Safety & Mobility
RFK3 4-28-23
Portland
Node: 72190
Study Period: 2020-2022
# of Crashes: 12 / CRF: 2.37
#132 Marginal Way
Marginal Way
4510 2-6-20 11:35P W/SL Improper pass
C 992 1-11-20 11:41P D/C Fail to yield
12583 4-8-22 8:22A W/R Fail to yield
Island
Sign
B 34235 11-20-22 8:17P D/C OUI
19812 7-30-21 3:00P W/R Fail to yield
8400 4-2-21 3:24P D/C Fail to yield
21223 8-14-21 11:08A D/C Fail to yield
9597 4-19-21 2:50P D/C Fail to yield
21590 8-1-22 1:20P D/C Fail to yield C
22426 9-18-20 7:25A D/CL Follow Close
P
Marginal Way
10544 4-30-21 2:10P W/R Fail To Yield
26451 10-2-21 10:01A
D/CL Improper Turn
Chestnut St
STOP

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

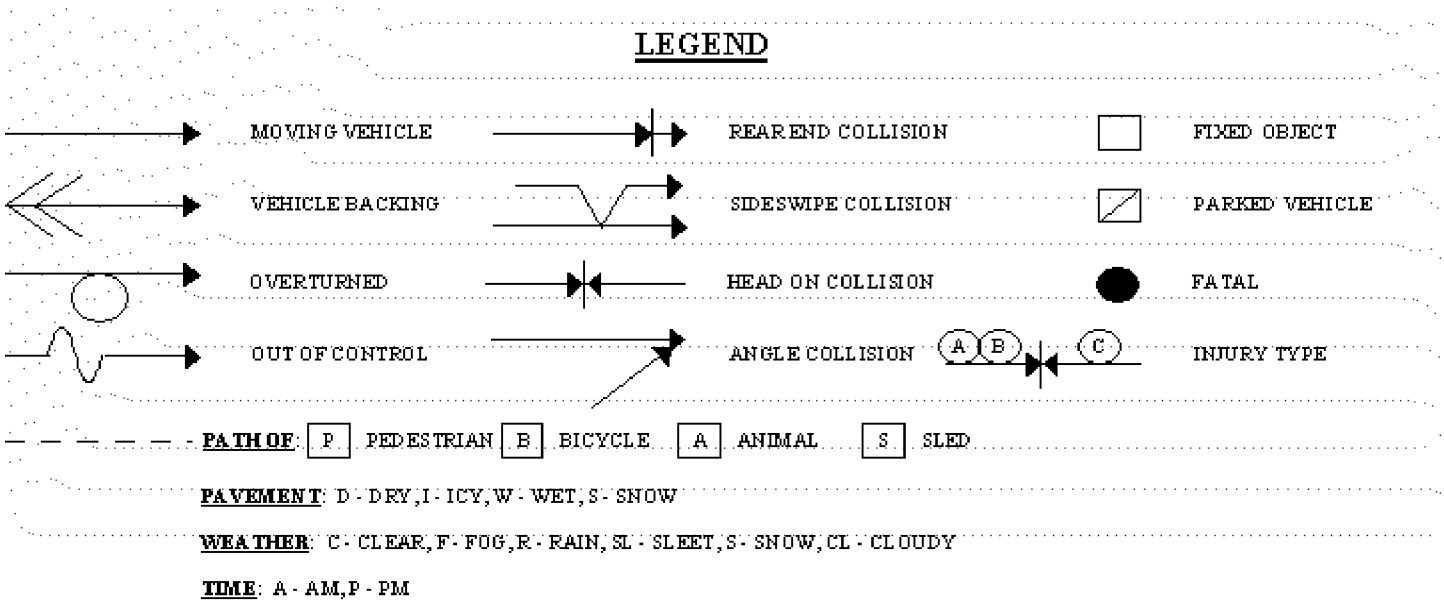
LOW NODE: **72190** HIGH NODE: **71634** REGION: **1** U/R: **URBAN**

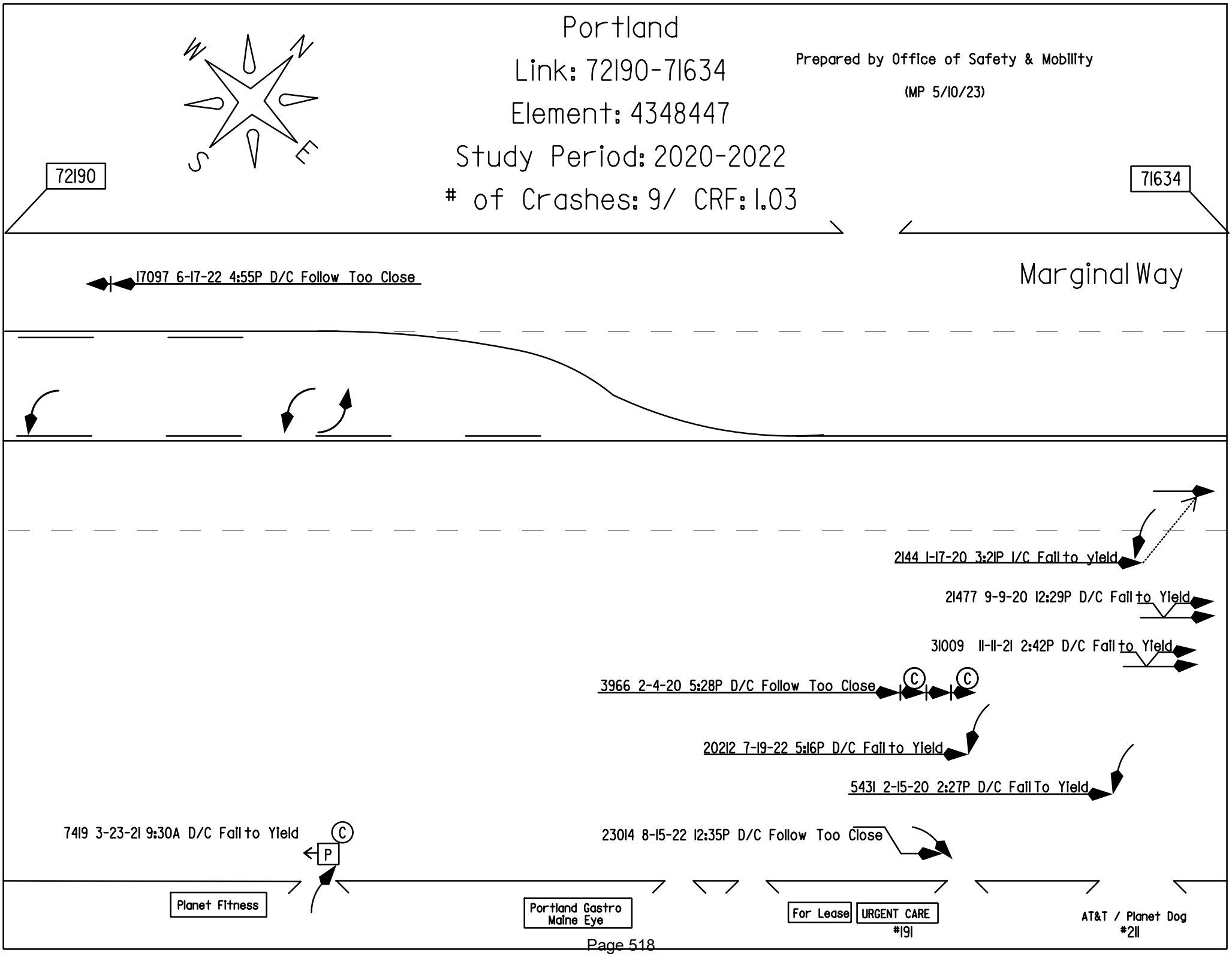
DESCRIPTION: **Marginal Wy from Chestnut St to Franklin St Island**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **421.15** CRF: **1.03** % INJURY: **22.2** TOTAL CRASHES: **9**




Portland
Link: 72190-71634
Element: 4348447
Study Period: 2020-2022
# of Crashes: 9/ CRF: 1.03
Prepared by Office of Safety & Mobility
(MP 5/10/23)
72190
71634
Marginal Way
17097 6-17-22 4:55P D/C Follow Too Close
2144 1-17-20 3:21P I/C Fail to yield
21477 9-9-20 12:29P D/C Fail to Yield
31009 11-11-21 2:42P D/C Fail to Yield
3966 2-4-20 5:28P D/C Follow Too Close
C
C
20212 7-19-22 5:16P D/C Fail to Yield
5431 2-15-20 2:27P D/C Fail To Yield
7419 3-23-21 9:30A D/C Fail to Yield
C
P
23014 8-15-22 12:35P D/C Follow Too Close
Planet Fitness
Portland Gastro
Maine Eye
For Lease
URGENT CARE
#191
AT&T / Planet Dog
#211

Attachment 7E

Capacity Analysis Results

Intersection	Lane	Observed AM - Vehicles (Feet)	AM Per Synchro	Observed PM - Vehicles (Feet)	PM Per Synchro
Marginal Way & Preble Street/Elm Street/Preble Street Ext	Preble Street Ext SEL	12 vehicles (300ft)	9 vehicles (225ft)	14 vehicles (350ft)	13 vehicles (325ft)
	Preble Street Ext SETR	8 vehicles (200ft)	5 vehicles (125ft)	9 vehicles (225ft)	4 vehicles (100ft)
	Preble/Elm Street NWL	4 vehicles (100ft)	4 vehicles (100ft)	7 vehicles (175ft)	9 vehicles (225ft)
	Preble/Elm Street NWTR	5 vehicles (125ft)	4 vehicles (100ft)	12 vehicles (300ft)	11 vehicles (275ft)
	Marginal Way NEL	1 vehicle (25ft)	2 vehicles (50ft)	3 vehicles (75ft)	4 vehicles (100ft)
	Marginal Way NETR	6 vehicles (150ft)	6 vehicles (150ft)	5 vehicles (125ft)	8 vehicles (200ft)
	Marginal Way SWL	2 vehicles (50ft)	3 vehicles (75ft)	2 vehicles (50ft)	3 vehicles (75ft)
	Marginal Way SWT	7 vehicles (175ft)	8 vehicles (200ft)	14 vehicles (350ft)	13 vehicles (325ft)
	Marginal Way SWR	2 vehicles (50ft)	1 vehicle (25ft)	3 vehicles (75ft)	3 vehicles (75ft)
Cumberland Avenue & Preble Street	Preble Street SEL	5 vehicles (125ft)	7 vehicles (175ft)	3 vehicles (75ft)	4 vehicles (100ft)
	Preble Street SETR	8 vehicles (200ft)	6 vehicles (150ft)	6 vehicles (150ft)	5 vehicles (125ft)
	Cumberland Avenue NETR	5 vehicles (125ft)	5 vehicles (125ft)	4 vehicles (100ft)	6 vehicles (150ft)
	Cumberland Avenue SWL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Cumberland Avenue SWT	2 vehicles (50ft)	2 vehicles (50ft)	6 vehicles (150ft)	4 vehicles (100ft)
Cumberland Avenue & Elm Street	Elm Street NWL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Elm Street NWTR	4 vehicles (100ft)	3 vehicles (75ft)	9 vehicles (225ft)	7 vehicles (175ft)
	Cumberland Avenue NEL	2 vehicles (50ft)	2 vehicles (50ft)	1 vehicle (25ft)	2 vehicles (50ft)
	Cumberland Avenue NET	6 vehicles (150ft)	5 vehicles (125ft)	5 vehicles (125ft)	5 vehicles (125ft)
	Cumberland Avenue SWT	3 vehicles (75ft)	3 vehicles (75ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Cumberland Avenue SWR	1 vehicle (25ft)	1 vehicle (25ft)	2 vehicles (50ft)	2 vehicles (50ft)
Forest Avenue & Park Avenue / Portland Street	Park Avenue EBL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Park Avenue EBTR	4 vehicles (100ft)	5 vehicles (125ft)	6 vehicles (150ft)	4 vehicles (100ft)
	Portland Street WBL	1 vehicle (25ft)	1 vehicle (25ft)	2 vehicles (50ft)	1 vehicle (25ft)
	Portland Street WBTR	4 vehicles (100ft)	5 vehicles (125ft)	6 vehicles (150ft)	7 vehicles (175ft)
	Forest Avenue NBLTR	3 vehicles (75ft)	3 vehicles (75ft)	6 vehicles (150ft)	4 vehicles (100ft)
	Forest Avenue SBL	4 vehicles (100ft)	6 vehicles (150ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Forest Avenue SBT	6 vehicles (150ft)	7 vehicles (175ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Forest Avenue SBR	1 vehicle (25ft)	0 vehicles (0ft)	1 vehicle (25ft)	0 vehicles (0ft)

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	22	339	7	0	0	0	0	41	51	11	11	0
Future Volume (Veh/h)	22	339	7	0	0	0	0	41	51	11	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.77	0.77	0.77	0.61	0.61	0.61
Hourly flow rate (vph)	26	399	8	0	0	0	0	53	66	18	18	0
Pedestrians					10						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	4			407			464	459	214	358	463	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			323			382	377	123	272	381	4
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.7	6.9	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.2	3.3
p0 queue free %	98			100			100	90	92	97	96	100
cM capacity (veh/h)	1625			1195			515	530	876	520	490	1080

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	226	208	119	36
Volume Left	26	0	0	18
Volume Right	0	8	66	0
cSH	1625	1700	679	504
Volume to Capacity	0.02	0.12	0.18	0.07
Queue Length 95th (ft)	1	0	16	6
Control Delay (s)	1.0	0.0	11.4	12.7
Lane LOS	A		B	B
Approach Delay (s)	0.5		11.4	12.7
Approach LOS			B	B

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	24.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	239	22	19	43	0	0	18	46
Future Volume (Veh/h)	0	0	0	4	239	22	19	43	0	0	18	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.87	0.87	0.87	0.83	0.83	0.83
Hourly flow rate (vph)	0	0	0	5	278	26	22	49	0	0	22	55
Pedestrians		22										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	304			0			389	314	0	326	301	313
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			0			389	314	0	326	301	313
tC, single (s)	4.1			4.6			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	100			100			96	92	100	100	96	92
cM capacity (veh/h)	1257			1358			513	603	1091	591	603	716

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	309	71	77
Volume Left	5	22	0
Volume Right	26	0	55
cSH	1358	572	679
Volume to Capacity	0.00	0.12	0.11
Queue Length 95th (ft)	0	11	10
Control Delay (s)	0.2	12.2	11.0
Lane LOS	A	B	B
Approach Delay (s)	0.2	12.2	11.0
Approach LOS		B	B

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1	1	0	21	361	18	0	0	0
Future Volume (Veh/h)	0	0	0	1	1	0	21	361	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2	2	0	24	406	20	0	0	0
Pedestrians					9						8	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90					0.90		
vC, conflicting volume	465	473	424	471	483	9	9			426		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	355	364	309	361	375	9	9			312		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	100	100	100	100	98			100		
cM capacity (veh/h)	534	501	665	526	494	1069	1572			1129		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	0	4	24	426
Volume Left	0	2	24	0
Volume Right	0	0	0	20
cSH	1700	509	1572	1700
Volume to Capacity	0.00	0.01	0.02	0.25
Queue Length 95th (ft)	0	1	1	0
Control Delay (s)	0.0	12.1	7.3	0.0
Lane LOS	A	B	A	
Approach Delay (s)	0.0	12.1	0.4	
Approach LOS	A	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	10	0	0	0	0	0	0	0	3	260	15
Future Volume (Veh/h)	6	10	0	0	0	0	0	0	0	3	260	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	8	12	0	0	0	0	0	0	0	4	310	18
Pedestrians		2						1				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	330	338	2	333	329	320	328			2		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	338	2	333	329	320	328			2		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	100	100	100	100			100		
cM capacity (veh/h)	624	568	1086	608	587	721	1232			1631		

Direction, Lane #	EB 1	NW 1
Volume Total	20	332
Volume Left	8	4
Volume Right	0	18
cSH	589	1631
Volume to Capacity	0.03	0.00
Queue Length 95th (ft)	3	0
Control Delay (s)	11.3	0.1
Lane LOS	B	A
Approach Delay (s)	11.3	0.1
Approach LOS	B	

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	295	1	0	0	0	0	7	1	28	12	0
Future Volume (Veh/h)	66	295	1	0	0	0	0	7	1	28	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.56	0.56	0.56	0.90	0.90	0.90
Hourly flow rate (vph)	74	331	1	0	0	0	0	12	2	31	13	0
Pedestrians					11						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	5			332			486	484	342	504	485	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			259			422	421	270	441	421	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	95			100			100	97	100	93	97	100
cM capacity (veh/h)	1622			1229			483	471	728	456	471	1079

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	406	14	44
Volume Left	74	0	31
Volume Right	1	2	0
cSH	1622	496	460
Volume to Capacity	0.05	0.03	0.10
Queue Length 95th (ft)	4	2	8
Control Delay (s)	1.7	12.5	13.6
Lane LOS	A	B	B
Approach Delay (s)	1.7	12.5	13.6
Approach LOS		B	B

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	34.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	21	184	37	17	46	0	0	40	83
Future Volume (Veh/h)	0	0	0	21	184	37	17	46	0	0	40	83
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.55	0.55	0.55	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	25	216	44	31	84	0	0	50	104
Pedestrians		29						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	260			8			454	318	8	330	296	267
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	260			8			454	318	8	330	296	267
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			98			92	86	100	100	92	86
cM capacity (veh/h)	1304			1581			410	588	1072	549	604	760

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	285	115	154
Volume Left	25	31	0
Volume Right	44	0	104
cSH	1581	526	701
Volume to Capacity	0.02	0.22	0.22
Queue Length 95th (ft)	1	21	21
Control Delay (s)	0.8	13.7	11.6
Lane LOS	A	B	B
Approach Delay (s)	0.8	13.7	11.6
Approach LOS		B	B

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	286	35	0	0	0	0	0	0	8	48	0
Future Volume (Veh/h)	0	286	35	0	0	0	0	0	0	8	48	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	321	39	0	0	0	0	0	0	12	71	0
Pedestrians					40			15				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			375			391	356	396	380	375	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			375			391	356	396	380	375	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	100	100	98	87	100
cM capacity (veh/h)	1636			1183			511	570	654	581	539	1091

Direction, Lane #	SE 1	SW 1
Volume Total	360	83
Volume Left	0	12
Volume Right	39	0
cSH	1700	545
Volume to Capacity	0.21	0.15
Queue Length 95th (ft)	0	13
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	27.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	62	242	24	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	62	242	24	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	67	260	26	0	0	0	0	0	0
Pedestrians								27				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	286			27			434	447	27	407	434	273
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	286			27			434	447	27	407	434	273
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	100	100	100	100	100
cM capacity (veh/h)	1276			1524			514	484	1048	536	492	766

Direction, Lane #	NW 1
Volume Total	353
Volume Left	67
Volume Right	26
cSH	1524
Volume to Capacity	0.04
Queue Length 95th (ft)	3
Control Delay (s)	1.7
Lane LOS	A
Approach Delay (s)	1.7
Approach LOS	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	14	265	8	281	0	0	0	0	2	0
Future Volume (Veh/h)	14	265	8	281	0	0	0	0	2	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.93	0.93	0.88	0.88	0.88	0.92	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	15	285	9	319	0	0	0	0	8	0
Pedestrians				33			20		19	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		2	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	356	339	19			319			668	356
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	356	339	19			319			668	356
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	97	59	99			100			96	100
cM capacity (veh/h)	559	703	1582			1241			210	559

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	300	328	8
Volume Left	0	9	8
Volume Right	285	0	0
cSH	694	1582	210
Volume to Capacity	0.43	0.01	0.04
Queue Length 95th (ft)	55	0	3
Control Delay (s)	14.1	0.2	22.8
Lane LOS	B	A	C
Approach Delay (s)	14.1	0.2	22.8
Approach LOS	B		C

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

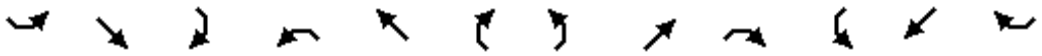


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	NW 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

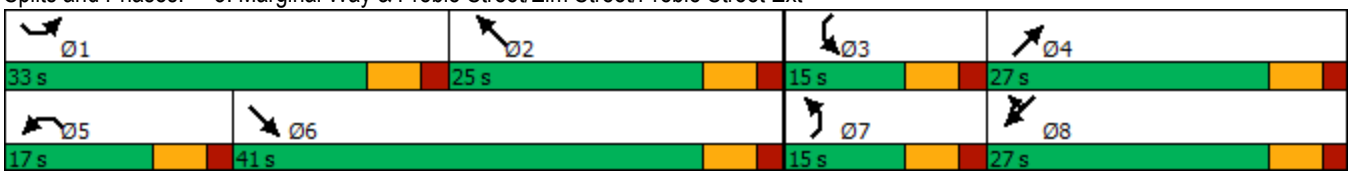
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	249	313	35	81	159	58	44	139	14	63	196	143
Future Volume (vph)	249	313	35	81	159	58	44	139	14	63	196	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.96			0.99			0.97		
Frt		0.985			0.960			0.987				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3493	0	1752	3282	0	1805	1840	0	1770	1845	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1743	3493	0	1678	3282	0	1780	1840	0	1725	1845	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			46			4				229
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	11			23			10			18		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.72	0.72	0.72	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	3%	4%	10%	0%	1%	11%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	274	344	38	91	179	65	61	193	19	71	220	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	382	0	91	244	0	61	212	0	71	220	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



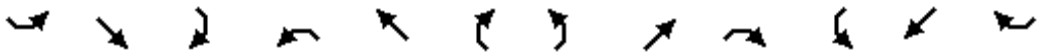
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	33.0	41.0		17.0	25.0		15.0	27.0		15.0	27.0	27.0
Total Split (%)	33.0%	41.0%		17.0%	25.0%		15.0%	27.0%		15.0%	27.0%	27.0%
Maximum Green (s)	27.0	35.0		11.0	19.0		9.0	21.0		9.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	16.8	22.0		9.1	10.3		7.9	14.1		8.1	17.0	17.0
Actuated g/C Ratio	0.24	0.31		0.13	0.14		0.11	0.20		0.11	0.24	0.24
v/c Ratio	0.65	0.35		0.41	0.47		0.31	0.58		0.35	0.50	0.29
Control Delay	34.9	23.3		39.7	29.0		39.5	35.3		40.5	31.8	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.9	23.3		39.7	29.0		39.5	35.3		40.5	31.8	2.6
LOS	C	C		D	C		D	D		D	C	A
Approach Delay		28.1			31.9			36.3			22.7	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	113	75		39	44		26	87		30	92	0
Queue Length 95th (ft)	222	128		99	94		59	139		84	189	14
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	734	1866		293	981		246	590		242	609	681
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.37	0.20		0.31	0.25		0.25	0.36		0.29	0.36	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 71.2			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



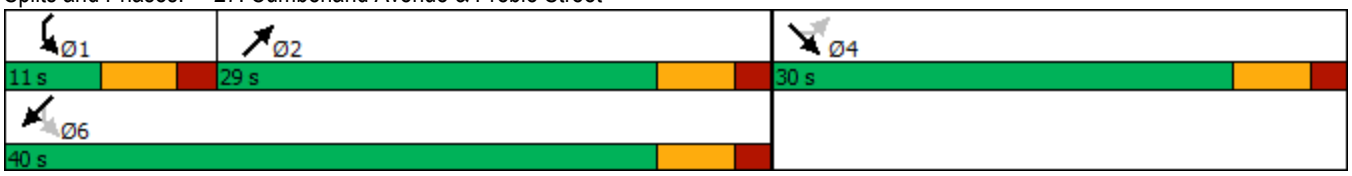
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	282	221	43	0	0	0	0	208	14	12	108	0
Future Volume (vph)	282	221	43	0	0	0	0	208	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.976						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1795	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.374		
Satd. Flow (perm)	1658	1795	0	0	0	0	0	1825	0	647	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	303	238	46	0	0	0	0	285	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	303	284	0	0	0	0	0	304	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



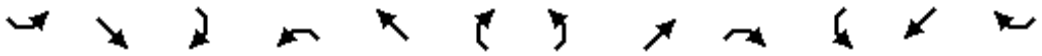
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.7	13.7						12.8		14.1	14.1	
Actuated g/C Ratio	0.33	0.33						0.31		0.34	0.34	
v/c Ratio	0.55	0.47						0.53		0.04	0.19	
Control Delay	16.9	14.4						16.9		9.5	10.4	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.9	14.4						16.9		9.5	10.4	
LOS	B	B						B		A	B	
Approach Delay		15.7						16.9			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	45	38						45		2	16	
Queue Length 95th (ft)	172	150						132		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1072	1167						1133		360	1571	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.28	0.24						0.27		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 41.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	136	357	0	0	106	89
Future Volume (vph)	0	0	0	10	132	23	136	357	0	0	106	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.434					
Satd. Flow (perm)	0	0	0	1422	1688	0	785	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	168	441	0	0	120	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	168	441	0	0	120	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

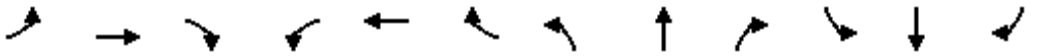


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.3	10.3		20.3	20.3			10.6	10.6
Actuated g/C Ratio				0.26	0.26		0.51	0.51			0.27	0.27
v/c Ratio				0.03	0.39		0.27	0.46			0.24	0.22
Control Delay				14.1	16.9		7.7	9.2			17.5	3.6
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	16.9		7.7	9.3			17.5	3.6
LOS				B	B		A	A			B	A
Approach Delay					16.8			8.8			11.1	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	62			26	0
Queue Length 95th (ft)				12	81		45	119			64	18
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				814	972		652	1580			1143	863
Starvation Cap Reductn				0	0		0	270			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.26	0.34			0.10	0.12

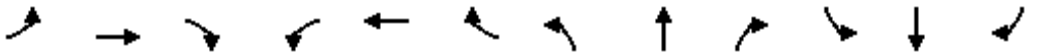
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





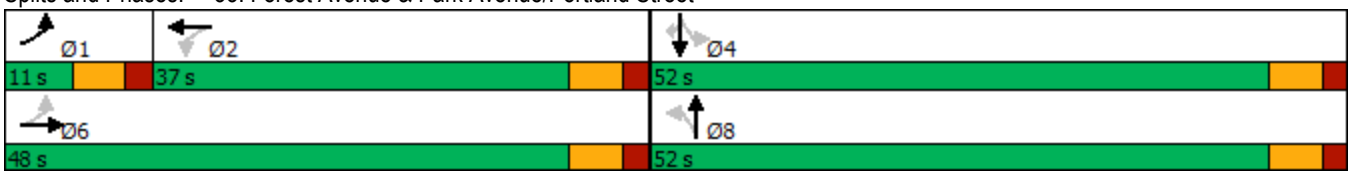
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	186	32	9	106	76	7	128	14	258	332	16
Future Volume (vph)	38	186	32	9	106	76	7	128	14	258	332	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.97				1.00		0.93		
Frt		0.978			0.937			0.987				0.850
Flt Protected	0.950			0.950				0.998		0.950		
Satd. Flow (prot)	1752	1776	0	1805	1656	0	0	1828	0	1752	1845	1524
Flt Permitted	0.424			0.588				0.978		0.748		
Satd. Flow (perm)	776	1776	0	1086	1656	0	0	1789	0	1287	1845	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			38			7				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	5			15			24			33		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.87	0.87	0.87	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	20%	0%	5%	11%	0%	2%	7%	3%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	238	41	11	128	92	8	147	16	269	346	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	279	0	11	220	0	0	171	0	269	346	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	11.0	48.0		37.0	37.0		52.0	52.0		52.0	52.0	52.0
Total Split (%)	11.0%	48.0%		37.0%	37.0%		52.0%	52.0%		52.0%	52.0%	52.0%
Maximum Green (s)	5.0	42.0		31.0	31.0		46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	18.3	18.3		12.9	12.9			18.9		18.9	18.9	18.9
Actuated g/C Ratio	0.36	0.36		0.25	0.25			0.37		0.37	0.37	0.37
v/c Ratio	0.13	0.43		0.04	0.49			0.25		0.56	0.50	0.03
Control Delay	12.4	14.6		19.8	20.6			13.0		19.1	16.2	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	12.4	14.6		19.8	20.6			13.0		19.1	16.2	0.1
LOS	B	B		B	C			B		B	B	A
Approach Delay		14.3			20.5			13.0			17.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	8	52		3	49			36		68	85	0
Queue Length 95th (ft)	29	120		15	120			81		153	176	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	388	1441		730	1126			1520		1093	1566	1309
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.13	0.19		0.02	0.20			0.11		0.25	0.22	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 50.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Avenue & Park Avenue/Portland Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	34	229	16	0	0	0	0	46	45	15	37	0
Future Volume (Veh/h)	34	229	16	0	0	0	0	46	45	15	37	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.92	0.92	0.92	0.60	0.60	0.60	0.75	0.75	0.75
Hourly flow rate (vph)	35	234	16	0	0	0	0	77	75	20	49	0
Pedestrians					19						9	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked												
vC, conflicting volume	9			250			336	321	144	328	329	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			250			336	321	144	328	329	9
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	87	92	96	91	100
cM capacity (veh/h)	1610			1313			547	581	884	483	575	1067

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	152	133	152	69
Volume Left	35	0	0	20
Volume Right	0	16	75	0
cSH	1610	1700	699	545
Volume to Capacity	0.02	0.08	0.22	0.13
Queue Length 95th (ft)	2	0	21	11
Control Delay (s)	1.8	0.0	11.6	12.6
Lane LOS	A		B	B
Approach Delay (s)	1.0		11.6	12.6
Approach LOS			B	B

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	546	21	24	52	0	0	48	124
Future Volume (Veh/h)	0	0	0	7	546	21	24	52	0	0	48	124
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.86	0.86	0.86	0.56	0.56	0.56
Hourly flow rate (vph)	0	0	0	8	620	24	28	60	0	0	86	221
Pedestrians		11										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	644			0			923	660	0	678	648	643
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	644			0			923	660	0	678	648	643
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			75	84	100	100	78	54
cM capacity (veh/h)	941			1636			112	384	1091	323	390	477

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	652	88	307
Volume Left	8	28	0
Volume Right	24	0	221
cSH	1636	217	449
Volume to Capacity	0.00	0.41	0.68
Queue Length 95th (ft)	0	46	126
Control Delay (s)	0.1	32.5	28.6
Lane LOS	A	D	D
Approach Delay (s)	0.1	32.5	28.6
Approach LOS		D	D

Intersection Summary				
Average Delay	11.2			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	3	2	3	10	0	14	223	53	0	0	0
Future Volume (Veh/h)	0	3	2	3	10	0	14	223	53	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.65	0.65	0.65	0.86	0.86	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	3	5	15	0	16	259	62	0	0	0
Pedestrians					8						15	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98					0.98		
vC, conflicting volume	330	330	305	319	361	8	8			321		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	309	309	284	298	341	8	8			300		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	97	100	99			100		
cM capacity (veh/h)	615	587	747	627	564	1072	1613			1239		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	7	20	16	321
Volume Left	0	5	16	0
Volume Right	3	0	0	62
cSH	647	579	1613	1700
Volume to Capacity	0.01	0.03	0.01	0.19
Queue Length 95th (ft)	1	3	1	0
Control Delay (s)	10.6	11.4	7.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.6	11.4	0.3	
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	28.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	12	0	0	0	0	0	0	0	14	563	6
Future Volume (Veh/h)	6	12	0	0	0	0	0	0	0	14	563	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Hourly flow rate (vph)	9	19	0	0	0	0	0	0	0	16	640	7
Pedestrians		8						3				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	686	687	8	685	684	646	647			8		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	687	8	685	684	646	647			8		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	95	100	100	100	100	100			99		
cM capacity (veh/h)	356	366	1072	343	365	471	939			1613		

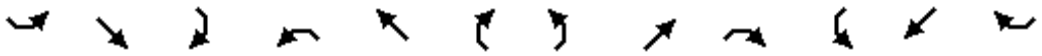
Direction, Lane #	EB 1	NW 1
Volume Total	28	663
Volume Left	9	16
Volume Right	0	7
cSH	363	1613
Volume to Capacity	0.08	0.01
Queue Length 95th (ft)	6	1
Control Delay (s)	15.8	0.3
Lane LOS	C	A
Approach Delay (s)	15.8	0.3
Approach LOS	C	

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	19	193	1	0	0	0	0	4	0	42	27	0
Future Volume (Veh/h)	19	193	1	0	0	0	0	4	0	42	27	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.63	0.63	0.63	0.77	0.77	0.77
Hourly flow rate (vph)	22	219	1	0	0	0	0	6	0	55	35	0
Pedestrians					16						12	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked												
vC, conflicting volume	12			220			281	276	236	294	276	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	12			220			281	276	236	294	276	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	99	100	91	94	100
cM capacity (veh/h)	1602			1349			634	619	808	637	619	1062

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	242	6	90
Volume Left	22	0	55
Volume Right	1	0	0
cSH	1602	619	630
Volume to Capacity	0.01	0.01	0.14
Queue Length 95th (ft)	1	1	12
Control Delay (s)	0.8	10.9	11.7
Lane LOS	A	B	B
Approach Delay (s)	0.8	10.9	11.7
Approach LOS		B	B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	18	464	16	22	20	0	0	49	98
Future Volume (Veh/h)	0	0	0	18	464	16	22	20	0	0	49	98
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.65	0.65	0.65	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	21	533	18	34	31	0	0	56	113
Pedestrians		10						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	551			8			743	601	8	600	592	552
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	551			8			743	601	8	600	592	552
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			85	92	100	100	86	79
cM capacity (veh/h)	1019			1613			230	408	1072	386	413	533

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	572	65	169
Volume Left	21	34	0
Volume Right	18	0	113
cSH	1613	291	486
Volume to Capacity	0.01	0.22	0.35
Queue Length 95th (ft)	1	21	38
Control Delay (s)	0.4	20.9	16.3
Lane LOS	A	C	C
Approach Delay (s)	0.4	20.9	16.3
Approach LOS		C	C

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	191	45	0	0	0	0	0	0	4	59	0
Future Volume (Veh/h)	0	191	45	0	0	0	0	0	0	4	59	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	217	51	0	0	0	0	0	0	6	84	0
Pedestrians					37			26				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			294			310	268	306	280	294	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			294			310	268	306	280	294	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	100	100	99	86	100
cM capacity (veh/h)	1636			1268			574	638	734	651	607	1091

Direction, Lane #	SE 1	SW 1
Volume Total	268	90
Volume Left	0	6
Volume Right	51	0
cSH	1700	610
Volume to Capacity	0.16	0.15
Queue Length 95th (ft)	0	13
Control Delay (s)	0.0	11.9
Lane LOS		B
Approach Delay (s)	0.0	11.9
Approach LOS		B

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	23.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	46	496	6	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	46	496	6	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	53	577	7	0	0	0	0	0	0
Pedestrians								19				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	584			19			706	709	19	686	706	580
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	584			19			706	709	19	686	706	580
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	100	100	100	100	100
cM capacity (veh/h)	991			1541			342	347	1059	352	348	514

Direction, Lane #	NW 1
Volume Total	637
Volume Left	53
Volume Right	7
cSH	1541
Volume to Capacity	0.03
Queue Length 95th (ft)	3
Control Delay (s)	1.0
Lane LOS	A
Approach Delay (s)	1.0
Approach LOS	

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	1	188	2	193	0	0	0	0	6	0
Future Volume (Veh/h)	1	188	2	193	0	0	0	0	6	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	1	211	2	219	0	0	0	0	12	0
Pedestrians				27			24		13	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		1	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	236	243	13			219			472	236
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	236	243	13			219			472	236
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	100	74	100			100			97	100
cM capacity (veh/h)	659	801	1599			1350			364	659

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	212	221	12
Volume Left	0	2	12
Volume Right	211	0	0
cSH	800	1599	364
Volume to Capacity	0.27	0.00	0.03
Queue Length 95th (ft)	27	0	3
Control Delay (s)	11.1	0.1	15.2
Lane LOS	B	A	C
Approach Delay (s)	11.1	0.1	15.2
Approach LOS	B		C

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	35.3%	ICU Level of Service	A	
Analysis Period (min)	15			

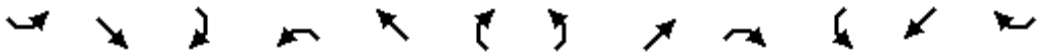


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	NW 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	297	194	98	193	398	109	68	195	25	63	349	336
Future Volume (vph)	297	194	98	193	398	109	68	195	25	63	349	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.93			0.98			0.98		
Frt		0.950			0.968			0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3351	0	1787	3426	0	1805	1839	0	1805	1881	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1755	3351	0	1664	3426	0	1775	1839	0	1760	1881	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			30			6				357
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	13			34			15			19		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	1%	2%	2%	0%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	316	206	104	224	463	127	80	229	29	67	371	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	316	310	0	224	590	0	80	258	0	67	371	357
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



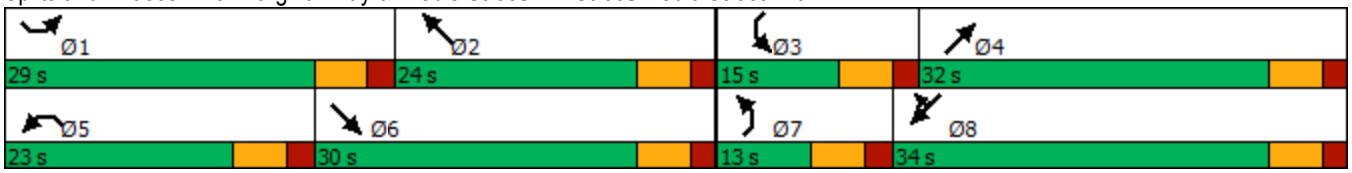
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	29.0	30.0		23.0	24.0		13.0	32.0		15.0	34.0	34.0
Total Split (%)	29.0%	30.0%		23.0%	24.0%		13.0%	32.0%		15.0%	34.0%	34.0%
Maximum Green (s)	23.0	24.0		17.0	18.0		7.0	26.0		9.0	28.0	28.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	19.7	22.2		15.0	17.5		7.1	21.1		8.0	22.3	22.3
Actuated g/C Ratio	0.22	0.25		0.17	0.20		0.08	0.24		0.09	0.25	0.25
v/c Ratio	0.79	0.34		0.73	0.84		0.55	0.58		0.41	0.78	0.53
Control Delay	49.7	22.6		52.9	46.6		59.6	36.2		50.1	44.3	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.7	22.6		52.9	46.6		59.6	36.2		50.1	44.3	6.4
LOS	D	C		D	D		E	D		D	D	A
Approach Delay		36.3			48.3			41.8			27.8	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	181	59		131	178		48	137		39	210	0
Queue Length 95th (ft)	#316	101		#224	#268		#106	203		85	317	66
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	490	1018		362	759		150	574		193	628	771
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.64	0.30		0.62	0.78		0.53	0.45		0.35	0.59	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

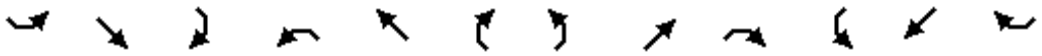
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



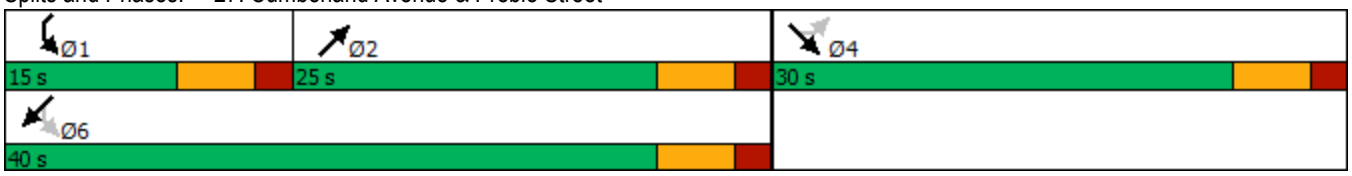
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	165	166	50	0	0	0	0	227	21	25	256	0
Future Volume (vph)	165	166	50	0	0	0	0	227	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.965						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1792	0	0	0	0	0	1858	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1792	0	0	0	0	0	1858	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						7				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	172	173	52	0	0	0	0	249	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	225	0	0	0	0	0	272	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



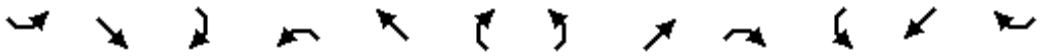
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	10.7	10.7						12.1		15.7	15.7	
Actuated g/C Ratio	0.27	0.27						0.30		0.39	0.39	
v/c Ratio	0.38	0.45						0.48		0.07	0.42	
Control Delay	17.0	16.1						16.3		7.3	10.1	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	17.0	16.1						16.3		7.3	10.2	
LOS	B	B						B		A	B	
Approach Delay		16.5						16.3			9.9	
Approach LOS		B						B			A	
Queue Length 50th (ft)	22	26						33		3	40	
Queue Length 95th (ft)	97	114						140		14	93	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1142	1219						997		548	1587	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.15	0.18						0.27		0.05	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



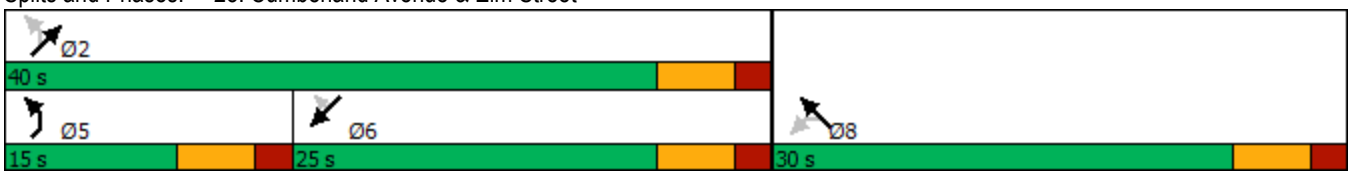
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	107	297	0	0	240	158
Future Volume (vph)	0	0	0	36	241	25	107	297	0	0	240	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.398					
Satd. Flow (perm)	0	0	0	1716	1808	0	719	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							170
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	118	326	0	0	258	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	118	326	0	0	258	170
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

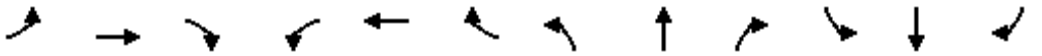


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.2	23.2			12.8	12.8
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.26	0.26
v/c Ratio				0.09	0.59		0.23	0.37			0.54	0.34
Control Delay				16.2	22.5		8.9	10.0			23.0	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.5		8.9	10.2			23.0	5.9
LOS				B	C		A	B			C	A
Approach Delay					21.7			9.8			16.2	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		17	53			71	0
Queue Length 95th (ft)				31	162		48	124			152	40
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				907	959		552	1321			787	707
Starvation Cap Reductn				0	0		0	415			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.21	0.36			0.33	0.24

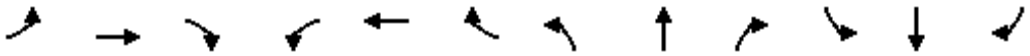
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





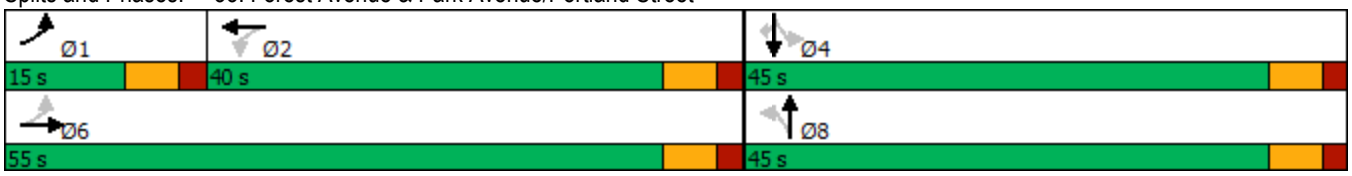
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	173	21	9	141	129	13	145	14	199	216	25
Future Volume (vph)	40	173	21	9	141	129	13	145	14	199	216	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.95				0.99		0.94		
Frt		0.984			0.928			0.989				0.850
Flt Protected	0.950			0.950				0.996		0.950		
Satd. Flow (prot)	1736	1837	0	1805	1705	0	0	1856	0	1787	1863	1615
Flt Permitted	0.374			0.613				0.965		0.678		
Satd. Flow (perm)	674	1837	0	1101	1705	0	0	1785	0	1199	1863	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			50			5				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	11			27			52			34		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.81	0.81	0.81	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	1%	8%	0%	2%	5%	0%	1%	0%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	208	25	9	148	136	16	179	17	221	240	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	233	0	9	284	0	0	212	0	221	240	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	15.0	55.0		40.0	40.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	15.0%	55.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	9.0	49.0		34.0	34.0		39.0	39.0		39.0	39.0	39.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	20.5	20.5		14.2	14.2			17.5		17.5	17.5	17.5
Actuated g/C Ratio	0.39	0.39		0.27	0.27			0.34		0.34	0.34	0.34
v/c Ratio	0.12	0.32		0.03	0.57			0.35		0.55	0.38	0.05
Control Delay	10.9	11.9		19.4	21.2			16.6		22.3	17.2	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	10.9	11.9		19.4	21.2			16.6		22.3	17.2	0.2
LOS	B	B		B	C			B		C	B	A
Approach Delay		11.7			21.1			16.6			18.5	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	8	41		2	67			52		60	61	0
Queue Length 95th (ft)	29	103		14	175			109		149	141	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	489	1563		784	1229			1355		909	1413	1248
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.10	0.15		0.01	0.23			0.16		0.24	0.17	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 52.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Avenue & Park Avenue/Portland Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	22	382	7	0	0	0	0	41	51	11	11	0
Future Volume (Veh/h)	22	382	7	0	0	0	0	41	51	11	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.77	0.77	0.77	0.61	0.61	0.61
Hourly flow rate (vph)	26	449	8	0	0	0	0	53	66	18	18	0
Pedestrians					10						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	4			457			514	509	238	383	513	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			362			421	416	135	285	420	4
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.7	6.9	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.2	3.3
p0 queue free %	98			100			100	89	92	96	96	100
cM capacity (veh/h)	1625			1150			480	501	857	503	462	1080

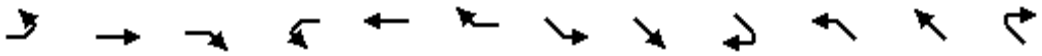
Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	250	232	119	36
Volume Left	26	0	0	18
Volume Right	0	8	66	0
cSH	1625	1700	651	482
Volume to Capacity	0.02	0.14	0.18	0.07
Queue Length 95th (ft)	1	0	17	6
Control Delay (s)	0.9	0.0	11.8	13.1
Lane LOS	A		B	B
Approach Delay (s)	0.5		11.8	13.1
Approach LOS			B	B

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	26.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	304	29	19	43	0	0	18	46
Future Volume (Veh/h)	0	0	0	4	304	29	19	43	0	0	18	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.87	0.87	0.87	0.83	0.83	0.83
Hourly flow rate (vph)	0	0	0	5	353	34	22	49	0	0	22	55
Pedestrians		22										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	387			0			468	397	0	404	380	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			0			468	397	0	404	380	392
tC, single (s)	4.1			4.6			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	100			100			95	91	100	100	96	91
cM capacity (veh/h)	1171			1358			450	542	1091	520	544	646

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	392	71	77
Volume Left	5	22	0
Volume Right	34	0	55
cSH	1358	509	613
Volume to Capacity	0.00	0.14	0.13
Queue Length 95th (ft)	0	12	11
Control Delay (s)	0.1	13.2	11.7
Lane LOS	A	B	B
Approach Delay (s)	0.1	13.2	11.7
Approach LOS		B	B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1	1	0	21	404	18	0	0	0
Future Volume (Veh/h)	0	0	0	1	1	0	21	404	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2	2	0	24	454	20	0	0	0
Pedestrians					9						8	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90					0.90		
vC, conflicting volume	513	521	472	519	531	9	9			474		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	399	408	354	406	420	9	9			356		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	100	100	100	100	98			100		
cM capacity (veh/h)	496	469	623	488	462	1069	1572			1079		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	0	4	24	474
Volume Left	0	2	24	0
Volume Right	0	0	0	20
cSH	1700	475	1572	1700
Volume to Capacity	0.01	0.01	0.02	0.28
Queue Length 95th (ft)	0	1	1	0
Control Delay (s)	0.0	12.6	7.3	0.0
Lane LOS	A	B	A	
Approach Delay (s)	0.0	12.6	0.4	
Approach LOS	A	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	34.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	10	0	0	0	0	0	0	0	3	332	15
Future Volume (Veh/h)	6	10	0	0	0	0	0	0	0	3	332	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	8	12	0	0	0	0	0	0	0	4	395	18
Pedestrians								1				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	413	421	0	418	412	405	413			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	413	421	0	418	412	405	413			0		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	100	100	100	100			100		
cM capacity (veh/h)	552	511	1091	535	529	646	1146			1636		

Direction, Lane #	EB 1	NW 1
Volume Total	20	417
Volume Left	8	4
Volume Right	0	18
cSH	526	1636
Volume to Capacity	0.04	0.00
Queue Length 95th (ft)	3	0
Control Delay (s)	12.1	0.1
Lane LOS	B	A
Approach Delay (s)	12.1	0.1
Approach LOS	B	

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	28.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	338	0	0	0	0	0	7	1	28	12	0
Future Volume (Veh/h)	66	338	0	0	0	0	0	7	1	28	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.56	0.56	0.56	0.90	0.90	0.90
Hourly flow rate (vph)	74	380	0	0	0	0	0	12	2	31	13	0
Pedestrians					11						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	5			380			534	533	391	552	533	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			294			460	459	306	479	459	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	95			100			100	97	100	93	97	100
cM capacity (veh/h)	1622			1177			449	443	686	424	443	1079

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	454	14	44
Volume Left	74	0	31
Volume Right	0	2	0
cSH	1622	466	429
Volume to Capacity	0.05	0.03	0.10
Queue Length 95th (ft)	4	2	9
Control Delay (s)	1.6	13.0	14.3
Lane LOS	A	B	B
Approach Delay (s)	1.6	13.0	14.3
Approach LOS		B	B

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	21	256	37	17	46	0	0	40	83
Future Volume (Veh/h)	0	0	0	21	256	37	17	46	0	0	40	83
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.55	0.55	0.55	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	25	301	44	31	84	0	0	50	104
Pedestrians		29						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	345			8			539	403	8	415	381	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	345			8			539	403	8	415	381	352
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			98			91	84	100	100	91	85
cM capacity (veh/h)	1214			1581			350	527	1072	475	542	680

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	370	115	154
Volume Left	25	31	0
Volume Right	44	0	104
cSH	1581	464	628
Volume to Capacity	0.02	0.25	0.25
Queue Length 95th (ft)	1	24	24
Control Delay (s)	0.6	15.3	12.6
Lane LOS	A	C	B
Approach Delay (s)	0.6	15.3	12.6
Approach LOS		C	B

Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	329	35	0	0	0	0	0	0	8	61	0
Future Volume (Veh/h)	0	329	35	0	0	0	0	0	0	8	61	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	370	39	0	0	0	0	0	0	12	90	0
Pedestrians					40			15				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			424			450	404	444	430	424	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			424			450	404	444	430	424	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	100	100	98	82	100
cM capacity (veh/h)	1636			1135			449	535	614	539	505	1091

Direction, Lane #	SE 1	SW 1
Volume Total	409	102
Volume Left	0	12
Volume Right	39	0
cSH	1700	509
Volume to Capacity	0.24	0.20
Queue Length 95th (ft)	0	19
Control Delay (s)	0.0	13.8
Lane LOS		B
Approach Delay (s)	0.0	13.8
Approach LOS		B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	314	40	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	75	314	40	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	81	338	43	0	0	0	0	0	0
Pedestrians								27				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	381			27			548	570	27	522	548	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			27			548	570	27	522	548	360
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	100	100	100	100	100
cM capacity (veh/h)	1177			1524			429	408	1048	447	420	685

Direction, Lane #	NW 1
Volume Total	462
Volume Left	81
Volume Right	43
cSH	1524
Volume to Capacity	0.05
Queue Length 95th (ft)	4
Control Delay (s)	1.7
Lane LOS	A
Approach Delay (s)	1.7
Approach LOS	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	47	265	51	281	0	0	0	0	36	0
Future Volume (Veh/h)	47	265	51	281	0	0	0	0	36	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.93	0.93	0.88	0.88	0.88	0.92	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	51	285	58	319	0	0	0	0	144	0
Pedestrians				33			20		19	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		2	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	454	339	19			319			784	454
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	454	339	19			319			784	454
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	89	59	96			100			11	100
cM capacity (veh/h)	478	703	1582			1241			161	478

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	336	377	144
Volume Left	0	58	144
Volume Right	285	0	0
cSH	656	1582	161
Volume to Capacity	0.51	0.04	0.89
Queue Length 95th (ft)	73	3	159
Control Delay (s)	16.1	1.4	101.4
Lane LOS	C	A	F
Approach Delay (s)	16.1	1.4	101.4
Approach LOS	C		F

Intersection Summary			
Average Delay	24.0		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

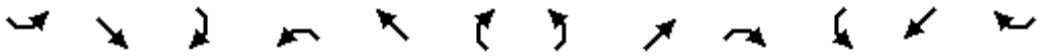


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	19	376	101	0
Future Volume (Veh/h)	0	0	19	376	101	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	21	409	110	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked					0.95	
vC, conflicting volume			0		451	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		392	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		81	100
cM capacity (veh/h)			1623		572	1085

Direction, Lane #	NW 1	NE 1
Volume Total	430	110
Volume Left	21	110
Volume Right	0	0
cSH	1623	572
Volume to Capacity	0.01	0.19
Queue Length 95th (ft)	1	18
Control Delay (s)	0.5	12.8
Lane LOS	A	B
Approach Delay (s)	0.5	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	249	323	35	112	186	65	44	139	33	77	196	143
Future Volume (vph)	249	323	35	112	186	65	44	139	33	77	196	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.96			0.99			0.98		
Frt		0.985			0.961			0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3493	0	1752	3287	0	1805	1792	0	1770	1845	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1746	3493	0	1679	3287	0	1780	1792	0	1727	1845	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			43			11				229
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	11			23			10			18		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.72	0.72	0.72	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	3%	4%	10%	0%	1%	11%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	274	355	38	126	209	73	61	193	46	87	220	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	393	0	126	282	0	61	239	0	87	220	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	33.0	41.0		17.0	25.0		15.0	27.0		15.0	27.0	27.0
Total Split (%)	33.0%	41.0%		17.0%	25.0%		15.0%	27.0%		15.0%	27.0%	27.0%
Maximum Green (s)	27.0	35.0		11.0	19.0		9.0	21.0		9.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	17.2	23.0		10.1	11.4		7.9	14.9		8.4	18.0	18.0
Actuated g/C Ratio	0.23	0.31		0.14	0.15		0.11	0.20		0.11	0.24	0.24
v/c Ratio	0.66	0.36		0.53	0.52		0.32	0.65		0.43	0.49	0.29
Control Delay	36.3	23.9		44.3	30.8		41.2	37.6		43.9	32.1	2.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	36.3	23.9		44.3	30.8		41.2	37.6		43.9	32.1	2.5
LOS	D	C		D	C		D	D		D	C	A
Approach Delay		29.0			35.0			38.3			24.1	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	120	83		56	56		27	101		39	95	0
Queue Length 95th (ft)	227	132		#146	110		60	156		100	193	13
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	710	1805		283	950		239	561		234	598	673
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.39	0.22		0.45	0.30		0.26	0.43		0.37	0.37	0.24

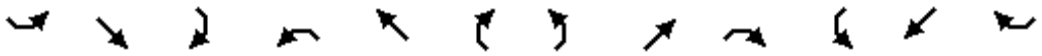
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 73.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

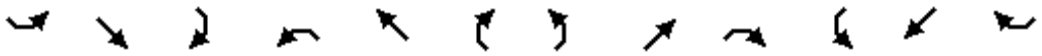
Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext





Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	282	229	69	0	0	0	0	212	14	12	108	0
Future Volume (vph)	282	229	69	0	0	0	0	212	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.965						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1766	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.369		
Satd. Flow (perm)	1658	1766	0	0	0	0	0	1825	0	639	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	303	246	74	0	0	0	0	290	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	303	320	0	0	0	0	0	309	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



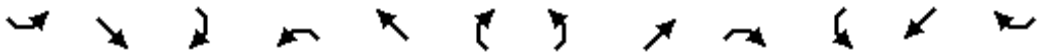
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.9	13.9						13.0		14.3	14.3	
Actuated g/C Ratio	0.33	0.33						0.31		0.34	0.34	
v/c Ratio	0.55	0.53						0.54		0.04	0.19	
Control Delay	16.9	15.2						17.1		9.6	10.5	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.9	15.2						17.1		9.6	10.5	
LOS	B	B						B		A	B	
Approach Delay		16.0						17.1			10.4	
Approach LOS		B						B			B	
Queue Length 50th (ft)	46	44						49		2	17	
Queue Length 95th (ft)	174	170						133		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1062	1140						1123		358	1556	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.29	0.28						0.28		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 41.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	140	357	0	0	106	104
Future Volume (vph)	0	0	0	10	132	23	140	357	0	0	106	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.434					
Satd. Flow (perm)	0	0	0	1422	1688	0	785	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	173	441	0	0	120	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	173	441	0	0	120	118
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

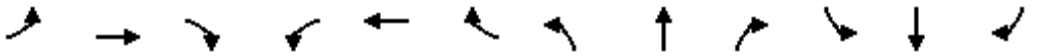


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.3	10.3		20.3	20.3			10.6	10.6
Actuated g/C Ratio				0.26	0.26		0.52	0.52			0.27	0.27
v/c Ratio				0.03	0.39		0.28	0.46			0.24	0.26
Control Delay				14.1	16.9		7.7	9.2			17.5	4.8
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	16.9		7.7	9.3			17.5	4.8
LOS				B	B		A	A			B	A
Approach Delay					16.7			8.8			11.2	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	62			26	0
Queue Length 95th (ft)				12	81		47	119			64	24
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				814	972		655	1580			1143	863
Starvation Cap Reductn				0	0		0	270			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.26	0.34			0.10	0.14

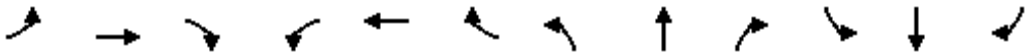
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





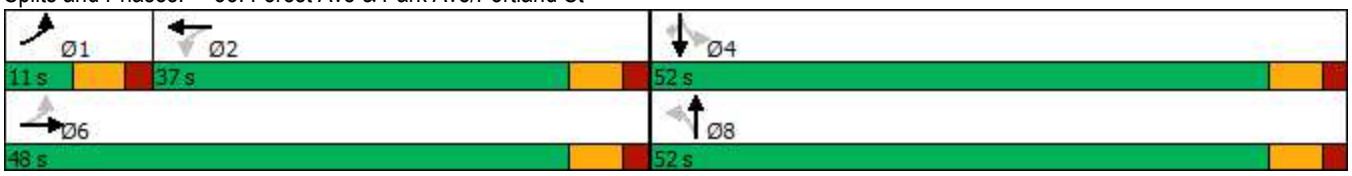
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	190	32	9	119	76	7	148	14	287	332	16
Future Volume (vph)	38	190	32	9	119	76	7	148	14	287	332	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.97				1.00		0.94		
Frt		0.978			0.941			0.989				0.850
Flt Protected	0.950			0.950				0.998		0.950		
Satd. Flow (prot)	1752	1777	0	1805	1666	0	0	1833	0	1752	1845	1524
Flt Permitted	0.417			0.585				0.982		0.700		
Satd. Flow (perm)	764	1777	0	1080	1666	0	0	1801	0	1209	1845	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			34			6				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	5			15			24			33		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.87	0.87	0.87	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	20%	0%	5%	11%	0%	2%	7%	3%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	244	41	11	143	92	8	170	16	299	346	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	285	0	11	235	0	0	194	0	299	346	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	11.0	48.0		37.0	37.0		52.0	52.0		52.0	52.0	52.0
Total Split (%)	11.0%	48.0%		37.0%	37.0%		52.0%	52.0%		52.0%	52.0%	52.0%
Maximum Green (s)	5.0	42.0		31.0	31.0		46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	19.5	19.5		14.1	14.1			22.3		22.3	22.3	22.3
Actuated g/C Ratio	0.35	0.35		0.25	0.25			0.40		0.40	0.40	0.40
v/c Ratio	0.13	0.45		0.04	0.52			0.27		0.62	0.47	0.03
Control Delay	14.3	16.7		21.7	23.2			13.1		20.9	15.6	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	14.3	16.7		21.7	23.2			13.1		20.9	15.6	0.1
LOS	B	B		C	C			B		C	B	A
Approach Delay		16.3			23.1			13.1			17.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	10	63		3	62			44		83	89	0
Queue Length 95th (ft)	32	138		16	143			96		187	183	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	370	1373		683	1066			1454		975	1489	1249
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.13	0.21		0.02	0.22			0.13		0.31	0.23	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 55.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Ave & Park Ave/Portland St



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	34	276	16	0	0	0	0	46	45	15	37	0
Future Volume (Veh/h)	34	276	16	0	0	0	0	46	45	15	37	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.92	0.92	0.92	0.60	0.60	0.60	0.75	0.75	0.75
Hourly flow rate (vph)	35	282	16	0	0	0	0	77	75	20	49	0
Pedestrians					19						9	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked												
vC, conflicting volume	9			298			384	369	168	352	377	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			298			384	369	168	352	377	9
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	86	91	96	91	100
cM capacity (veh/h)	1610			1260			503	547	853	460	541	1067

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	176	157	152	69
Volume Left	35	0	0	20
Volume Right	0	16	75	0
cSH	1610	1700	664	515
Volume to Capacity	0.02	0.09	0.23	0.13
Queue Length 95th (ft)	2	0	22	12
Control Delay (s)	1.6	0.0	12.0	13.1
Lane LOS	A		B	B
Approach Delay (s)	0.8		12.0	13.1
Approach LOS			B	B

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	25.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	579	24	24	52	0	0	48	124
Future Volume (Veh/h)	0	0	0	7	579	24	24	52	0	0	48	124
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.86	0.86	0.86	0.56	0.56	0.56
Hourly flow rate (vph)	0	0	0	8	658	27	28	60	0	0	86	221
Pedestrians		11										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	685			0			962	701	0	718	688	682
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			0			962	701	0	718	688	682
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			72	83	100	100	77	51
cM capacity (veh/h)	908			1636			99	364	1091	302	370	453

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	693	88	307
Volume Left	8	28	0
Volume Right	27	0	221
cSH	1636	197	426
Volume to Capacity	0.00	0.45	0.72
Queue Length 95th (ft)	0	52	140
Control Delay (s)	0.1	37.2	32.3
Lane LOS	A	E	D
Approach Delay (s)	0.1	37.2	32.3
Approach LOS		E	D

Intersection Summary			
Average Delay	12.2		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	3	2	3	10	0	14	270	53	0	0	0
Future Volume (Veh/h)	0	3	2	3	10	0	14	270	53	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.65	0.65	0.65	0.86	0.86	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	3	5	15	0	16	314	62	0	0	0
Pedestrians					8						15	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96					0.96		
vC, conflicting volume	384	385	360	374	416	8	8			376		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342	343	317	331	375	8	8			333		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	97	100	99			100		
cM capacity (veh/h)	573	552	702	585	529	1072	1613			1181		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	7	20	16	376
Volume Left	0	5	16	0
Volume Right	3	0	0	62
cSH	607	542	1613	1700
Volume to Capacity	0.01	0.04	0.01	0.22
Queue Length 95th (ft)	1	3	1	0
Control Delay (s)	11.0	11.9	7.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	11.9	0.3	
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	31.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	12	0	0	0	0	0	0	0	14	590	6
Future Volume (Veh/h)	6	12	0	0	0	0	0	0	0	14	590	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Hourly flow rate (vph)	9	19	0	0	0	0	0	0	0	16	670	7
Pedestrians		8						3				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	716	717	8	715	714	676	677			8		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	716	717	8	715	714	676	677			8		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	95	100	100	100	100	100			99		
cM capacity (veh/h)	340	352	1072	327	351	453	915			1613		

Direction, Lane #	EB 1	NW 1
Volume Total	28	693
Volume Left	9	16
Volume Right	0	7
cSH	348	1613
Volume to Capacity	0.08	0.01
Queue Length 95th (ft)	7	1
Control Delay (s)	16.3	0.3
Lane LOS	C	A
Approach Delay (s)	16.3	0.3
Approach LOS	C	

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	19	240	1	0	0	0	0	4	0	42	27	0
Future Volume (Veh/h)	19	240	1	0	0	0	0	4	0	42	27	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.63	0.63	0.63	0.77	0.77	0.77
Hourly flow rate (vph)	22	273	1	0	0	0	0	6	0	55	35	0
Pedestrians					16						12	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked												
vC, conflicting volume	12			274			335	330	290	348	330	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	12			274			335	330	290	348	330	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	99	100	91	94	100
cM capacity (veh/h)	1602			1289			582	578	754	587	578	1062

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	296	6	90
Volume Left	22	0	55
Volume Right	1	0	0
cSH	1602	578	583
Volume to Capacity	0.01	0.01	0.15
Queue Length 95th (ft)	1	1	14
Control Delay (s)	0.7	11.3	12.3
Lane LOS	A	B	B
Approach Delay (s)	0.7	11.3	12.3
Approach LOS		B	B

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	18	500	16	22	20	0	0	49	98
Future Volume (Veh/h)	0	0	0	18	500	16	22	20	0	0	49	98
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.65	0.65	0.65	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	21	575	18	34	31	0	0	56	113
Pedestrians		10						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	593			8			785	643	8	642	634	594
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593			8			785	643	8	642	634	594
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			84	92	100	100	86	78
cM capacity (veh/h)	983			1613			211	386	1072	361	391	505

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	614	65	169
Volume Left	21	34	0
Volume Right	18	0	113
cSH	1613	269	460
Volume to Capacity	0.01	0.24	0.37
Queue Length 95th (ft)	1	23	42
Control Delay (s)	0.4	22.6	17.3
Lane LOS	A	C	C
Approach Delay (s)	0.4	22.6	17.3
Approach LOS		C	C

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	328	45	0	0	0	0	0	0	4	66	0
Future Volume (Veh/h)	0	328	45	0	0	0	0	0	0	4	66	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	373	51	0	0	0	0	0	0	6	94	0
Pedestrians					37			26				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			450			472	424	462	436	450	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			450			472	424	462	436	450	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	100	100	99	81	100
cM capacity (veh/h)	1636			1110			429	521	600	512	496	1091

Direction, Lane #	SE 1	SW 1
Volume Total	424	100
Volume Left	0	6
Volume Right	51	0
cSH	1700	497
Volume to Capacity	0.25	0.20
Queue Length 95th (ft)	0	19
Control Delay (s)	0.0	14.1
Lane LOS		B
Approach Delay (s)	0.0	14.1
Approach LOS		B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	30.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	53	532	14	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	53	532	14	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	62	619	16	0	0	0	0	0	0
Pedestrians								19				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	635			19			770	778	19	751	770	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536			19			686	695	19	665	686	527
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	100	100	100	100	100
cM capacity (veh/h)	926			1541			314	315	1059	325	319	494

Direction, Lane #	NW 1
Volume Total	697
Volume Left	62
Volume Right	16
cSH	1541
Volume to Capacity	0.04
Queue Length 95th (ft)	3
Control Delay (s)	1.1
Lane LOS	A
Approach Delay (s)	1.1
Approach LOS	

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	29	188	49	193	0	0	0	0	23	0
Future Volume (Veh/h)	29	188	49	193	0	0	0	0	23	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	33	211	56	219	0	0	0	0	46	0
Pedestrians				27			24		13	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		1	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	344	243	13			219			596	344
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	344	243	13			219			596	344
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	94	74	96			100			84	100
cM capacity (veh/h)	555	801	1599			1350			280	555

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	244	275	46
Volume Left	0	56	46
Volume Right	211	0	0
cSH	755	1599	280
Volume to Capacity	0.32	0.04	0.16
Queue Length 95th (ft)	35	3	14
Control Delay (s)	12.0	1.7	20.3
Lane LOS	B	A	C
Approach Delay (s)	12.0	1.7	20.3
Approach LOS	B		C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

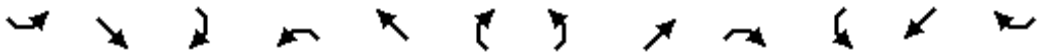


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	19	525	51	0
Future Volume (Veh/h)	0	0	19	525	51	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	21	571	55	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked					0.87	
vC, conflicting volume			0		613	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		479	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		88	100
cM capacity (veh/h)			1623		468	1085

Direction, Lane #	NW 1	NE 1
Volume Total	592	55
Volume Left	21	55
Volume Right	0	0
cSH	1623	468
Volume to Capacity	0.01	0.12
Queue Length 95th (ft)	1	10
Control Delay (s)	0.4	13.7
Lane LOS	A	B
Approach Delay (s)	0.4	13.7
Approach LOS		B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	297	208	98	212	408	113	68	195	44	77	349	336
Future Volume (vph)	297	208	98	212	408	113	68	195	44	77	349	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.93			0.98			0.98		
Frt		0.952			0.968			0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3357	0	1787	3426	0	1805	1812	0	1805	1881	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1756	3357	0	1666	3426	0	1775	1812	0	1761	1881	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74			31			11				357
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	13			34			15			19		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	1%	2%	2%	0%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	316	221	104	247	474	131	80	229	52	82	371	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	316	325	0	247	605	0	80	281	0	82	371	357
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



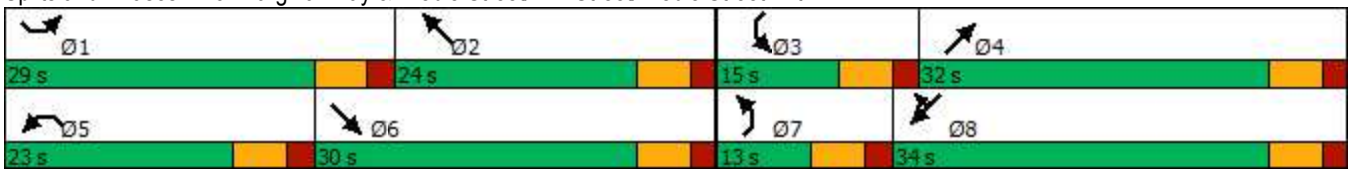
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	29.0	30.0		23.0	24.0		13.0	32.0		15.0	34.0	34.0
Total Split (%)	29.0%	30.0%		23.0%	24.0%		13.0%	32.0%		15.0%	34.0%	34.0%
Maximum Green (s)	23.0	24.0		17.0	18.0		7.0	26.0		9.0	28.0	28.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	19.7	21.7		15.7	17.8		7.1	21.0		8.3	22.2	22.2
Actuated g/C Ratio	0.22	0.25		0.18	0.20		0.08	0.24		0.09	0.25	0.25
v/c Ratio	0.79	0.37		0.78	0.85		0.55	0.64		0.49	0.78	0.53
Control Delay	49.9	24.1		55.6	47.3		59.8	37.9		52.7	44.4	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.9	24.1		55.6	47.3		59.8	37.9		52.7	44.4	6.4
LOS	D	C		E	D		E	D		D	D	A
Approach Delay		36.9			49.7			42.7			28.5	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	181	66		146	183		48	149		49	210	0
Queue Length 95th (ft)	#316	110		#259	#278		#106	219		99	317	66
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	488	1009		360	756		150	567		193	625	769
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.32		0.69	0.80		0.53	0.50		0.42	0.59	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 88.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

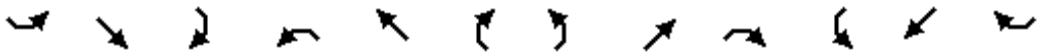
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	165	179	63	0	0	0	0	231	21	25	256	0
Future Volume (vph)	165	179	63	0	0	0	0	231	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.961						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1786	0	0	0	0	0	1859	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1786	0	0	0	0	0	1859	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28						6				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	172	186	66	0	0	0	0	254	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	252	0	0	0	0	0	277	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



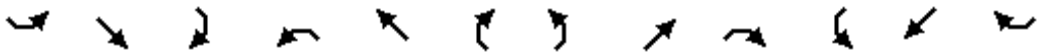
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	11.3	11.3						12.3		15.9	15.9	
Actuated g/C Ratio	0.28	0.28						0.30		0.39	0.39	
v/c Ratio	0.37	0.49						0.49		0.07	0.43	
Control Delay	16.7	16.4						17.0		7.7	10.6	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.7	16.4						17.0		7.7	10.6	
LOS	B	B						B		A	B	
Approach Delay		16.5						17.0			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	22	30						35		3	41	
Queue Length 95th (ft)	97	127						148		14	98	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1120	1194						979		540	1573	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.15	0.21						0.28		0.06	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



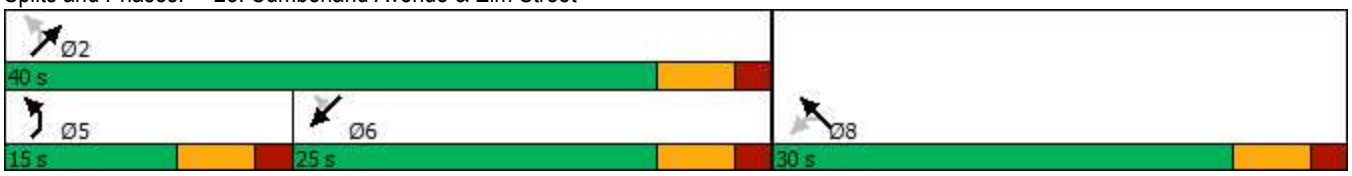
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	111	297	0	0	240	173
Future Volume (vph)	0	0	0	36	241	25	111	297	0	0	240	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.398					
Satd. Flow (perm)	0	0	0	1716	1808	0	719	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							186
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	122	326	0	0	258	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	122	326	0	0	258	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

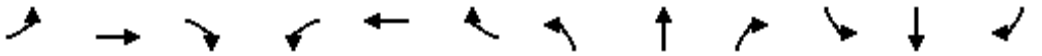


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.3	23.3			12.8	12.8
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.25	0.25
v/c Ratio				0.09	0.59		0.24	0.37			0.54	0.37
Control Delay				16.2	22.5		9.0	9.9			23.1	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.5		9.0	10.1			23.1	5.9
LOS				B	C		A	B			C	A
Approach Delay					21.7			9.8			15.9	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		18	53			71	0
Queue Length 95th (ft)				31	162		50	124			152	42
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				906	958		552	1320			786	716
Starvation Cap Reductn				0	0		0	417			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.22	0.36			0.33	0.26

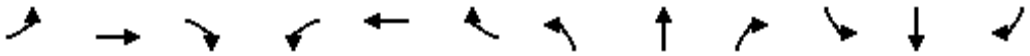
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





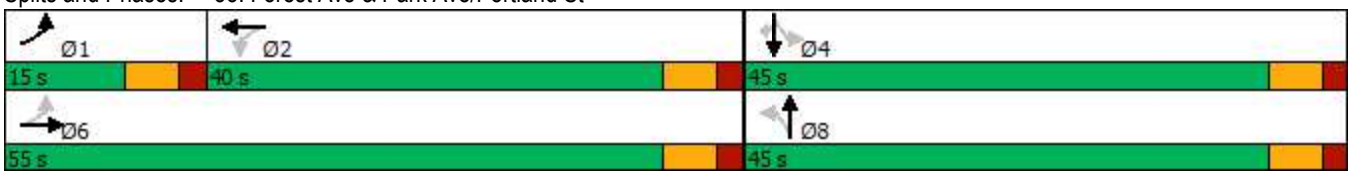
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	177	21	9	148	129	13	155	14	223	216	25
Future Volume (vph)	40	177	21	9	148	129	13	155	14	223	216	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.95				0.99		0.94		
Frt		0.984			0.930			0.990				0.850
Flt Protected	0.950			0.950				0.996		0.950		
Satd. Flow (prot)	1736	1838	0	1805	1709	0	0	1858	0	1787	1863	1615
Flt Permitted	0.361			0.611				0.969		0.653		
Satd. Flow (perm)	651	1838	0	1098	1709	0	0	1795	0	1157	1863	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			48			5				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	11			27			52			34		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.81	0.81	0.81	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	1%	8%	0%	2%	5%	0%	1%	0%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	213	25	9	156	136	16	191	17	248	240	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	238	0	9	292	0	0	224	0	248	240	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	15.0	55.0		40.0	40.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	15.0%	55.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	9.0	49.0		34.0	34.0		39.0	39.0		39.0	39.0	39.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	21.5	21.5		15.2	15.2			20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.39	0.39		0.27	0.27			0.36		0.36	0.36	0.36
v/c Ratio	0.12	0.33		0.03	0.59			0.35		0.60	0.36	0.04
Control Delay	12.3	13.3		21.2	23.1			16.4		23.7	16.7	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	12.3	13.3		21.2	23.1			16.4		23.7	16.7	0.1
LOS	B	B		C	C			B		C	B	A
Approach Delay		13.1			23.0			16.4			19.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	9	47		2	75			57		73	63	0
Queue Length 95th (ft)	32	117		15	197			117		175	143	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	466	1508		756	1193			1319		849	1367	1211
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.10	0.16		0.01	0.24			0.17		0.29	0.18	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 55.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Ave & Park Ave/Portland St



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	294	35	0	0	0	0	35	0	8	61	0
Future Volume (Veh/h)	0	294	35	0	0	0	0	35	0	8	61	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	330	39	0	0	0	0	38	0	12	90	0
Pedestrians					40			15				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			384			410	364	404	408	384	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			384			410	364	404	408	384	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	93	100	98	83	100
cM capacity (veh/h)	1636			1158			468	556	637	522	525	1091

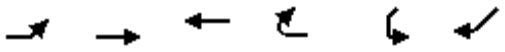
Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	369	38	102
Volume Left	0	0	12
Volume Right	39	0	0
cSH	1700	556	525
Volume to Capacity	0.22	0.07	0.19
Queue Length 95th (ft)	0	5	18
Control Delay (s)	0.0	12.0	13.5
Lane LOS		B	B
Approach Delay (s)	0.0	12.0	13.5
Approach LOS		B	B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	314	40	0	70	0	0	0	0
Future Volume (Veh/h)	0	0	0	75	314	40	0	70	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	81	338	43	0	76	0	0	0	0
Pedestrians								27				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								3				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	381			27			548	570	27	560	548	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			27			548	570	27	560	548	360
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	81	100	100	100	100
cM capacity (veh/h)	1177			1485			409	397	1022	353	409	685

Direction, Lane #	NW 1	NE 1
Volume Total	462	76
Volume Left	81	0
Volume Right	43	0
cSH	1485	397
Volume to Capacity	0.05	0.19
Queue Length 95th (ft)	4	17
Control Delay (s)	1.8	16.2
Lane LOS	A	C
Approach Delay (s)	1.8	16.2
Approach LOS		C

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	33.5%	ICU Level of Service	A	
Analysis Period (min)	15			

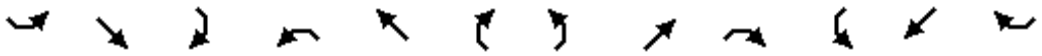


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	35	277	0	0	0	35
Future Volume (Veh/h)	35	277	0	0	0	35
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	301	0	0	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		894				
pX, platoon unblocked						
vC, conflicting volume	0				377	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				377	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	96
cM capacity (veh/h)	1623				610	1085

Direction, Lane #	EB 1	SW 1
Volume Total	339	38
Volume Left	38	0
Volume Right	0	38
cSH	1623	1085
Volume to Capacity	0.02	0.04
Queue Length 95th (ft)	2	3
Control Delay (s)	1.0	8.4
Lane LOS	A	A
Approach Delay (s)	1.0	8.4
Approach LOS		A

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

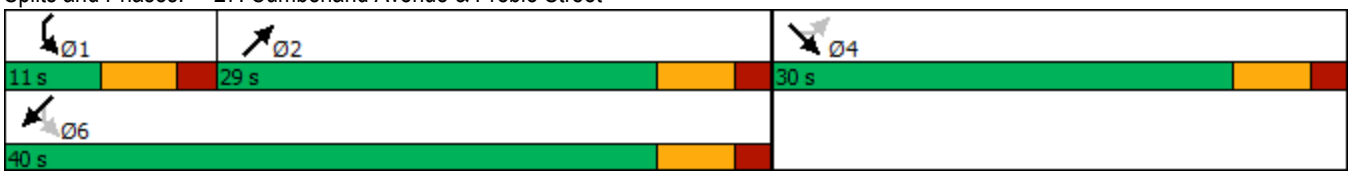
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	212	229	69	0	0	0	0	212	14	12	108	0
Future Volume (vph)	212	229	69	0	0	0	0	212	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.965						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1766	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.372		
Satd. Flow (perm)	1658	1766	0	0	0	0	0	1825	0	644	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	228	246	74	0	0	0	0	290	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	320	0	0	0	0	0	309	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



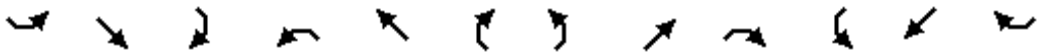
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.2	13.2						12.8		14.1	14.1	
Actuated g/C Ratio	0.32	0.32						0.31		0.35	0.35	
v/c Ratio	0.42	0.54						0.53		0.04	0.19	
Control Delay	14.9	15.5						16.7		9.3	10.2	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	14.9	15.5						16.7		9.3	10.2	
LOS	B	B						B		A	B	
Approach Delay		15.3						16.7			10.1	
Approach LOS		B						B			B	
Queue Length 50th (ft)	32	43						45		2	16	
Queue Length 95th (ft)	129	170						133		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1086	1166						1148		363	1583	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.21	0.27						0.27		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	140	287	0	0	106	104
Future Volume (vph)	0	0	0	10	132	23	140	287	0	0	106	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.425					
Satd. Flow (perm)	0	0	0	1422	1688	0	769	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	173	354	0	0	120	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	173	354	0	0	120	118
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.2	10.2		19.8	19.8			10.0	10.0
Actuated g/C Ratio				0.26	0.26		0.50	0.50			0.25	0.25
v/c Ratio				0.03	0.39		0.29	0.38			0.25	0.27
Control Delay				14.1	17.0		7.8	8.4			17.7	4.9
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	17.0		7.8	8.5			17.7	4.9
LOS				B	B		A	A			B	A
Approach Delay					16.9			8.2			11.4	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	47			26	0
Queue Length 95th (ft)				12	81		47	93			64	24
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				813	971		634	1578			1142	862
Starvation Cap Reductn				0	0		0	290			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.27	0.27			0.11	0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	307	45	0	0	0	0	21	0	4	66	0
Future Volume (Veh/h)	0	307	45	0	0	0	0	21	0	4	66	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	349	51	0	0	0	0	23	0	6	94	0
Pedestrians					37			26				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			426			448	400	438	423	426	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			426			448	400	438	423	426	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	96	100	99	81	100
cM capacity (veh/h)	1636			1105			427	525	604	495	499	1091

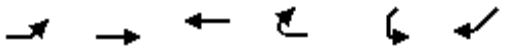
Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	400	23	100
Volume Left	0	0	6
Volume Right	51	0	0
cSH	1700	525	499
Volume to Capacity	0.24	0.04	0.20
Queue Length 95th (ft)	0	3	19
Control Delay (s)	0.0	12.2	14.0
Lane LOS		B	B
Approach Delay (s)	0.0	12.2	14.0
Approach LOS		B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	32.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	53	532	14	0	42	0	0	0	0
Future Volume (Veh/h)	0	0	0	53	532	14	0	42	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	62	619	16	0	46	0	0	0	0
Pedestrians								19				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	635			19			770	778	19	774	770	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536			19			687	696	19	691	687	527
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	85	100	100	100	100
cM capacity (veh/h)	926			1513			304	309	1040	273	313	494

Direction, Lane #	NW 1	NE 1
Volume Total	697	46
Volume Left	62	0
Volume Right	16	0
cSH	1513	309
Volume to Capacity	0.04	0.15
Queue Length 95th (ft)	3	13
Control Delay (s)	1.1	18.7
Lane LOS	A	C
Approach Delay (s)	1.1	18.7
Approach LOS		C

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

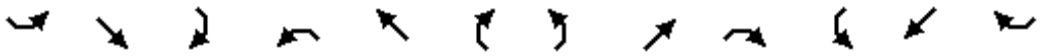


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	21	196	0	0	0	45
Future Volume (Veh/h)	21	196	0	0	0	45
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	213	0	0	0	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		894				
pX, platoon unblocked						
vC, conflicting volume	0				259	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				259	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	95
cM capacity (veh/h)	1623				719	1085

Direction, Lane #	EB 1	SW 1
Volume Total	236	49
Volume Left	23	0
Volume Right	0	49
cSH	1623	1085
Volume to Capacity	0.01	0.05
Queue Length 95th (ft)	1	4
Control Delay (s)	0.8	8.5
Lane LOS	A	A
Approach Delay (s)	0.8	8.5
Approach LOS		A

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

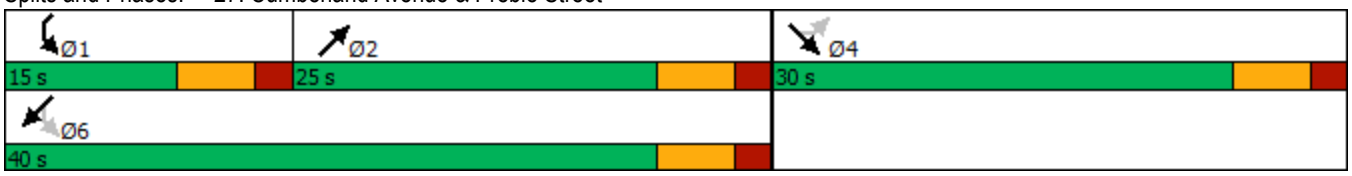
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	123	179	63	0	0	0	0	231	21	25	256	0
Future Volume (vph)	123	179	63	0	0	0	0	231	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.961						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1786	0	0	0	0	0	1859	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1786	0	0	0	0	0	1859	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28						6				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	128	186	66	0	0	0	0	254	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	252	0	0	0	0	0	277	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



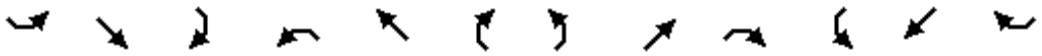
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	11.3	11.3						12.3		15.9	15.9	
Actuated g/C Ratio	0.28	0.28						0.30		0.39	0.39	
v/c Ratio	0.27	0.49						0.49		0.07	0.43	
Control Delay	15.7	16.4						17.0		7.7	10.6	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	15.7	16.4						17.0		7.7	10.6	
LOS	B	B						B		A	B	
Approach Delay		16.2						17.0			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	16	30						35		3	41	
Queue Length 95th (ft)	75	127						148		14	98	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1120	1194						979		540	1573	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.11	0.21						0.28		0.06	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



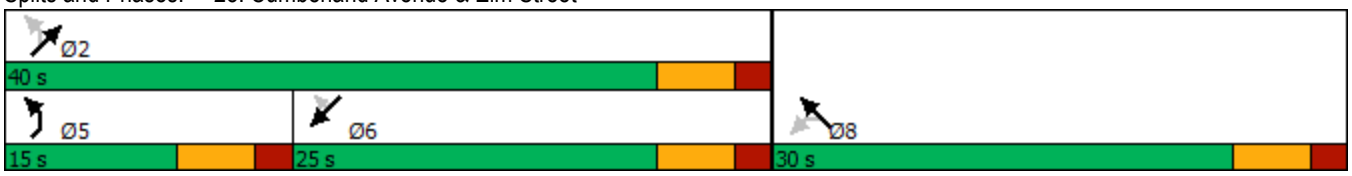
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	111	255	0	0	240	173
Future Volume (vph)	0	0	0	36	241	25	111	255	0	0	240	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.396					
Satd. Flow (perm)	0	0	0	1716	1808	0	716	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							186
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	122	280	0	0	258	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	122	280	0	0	258	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.1	23.1			12.6	12.6
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.25	0.25
v/c Ratio				0.09	0.59		0.24	0.32			0.54	0.37
Control Delay				16.2	22.4		9.0	9.5			23.2	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.4		9.0	9.6			23.2	5.9
LOS				B	C		A	A			C	A
Approach Delay					21.7			9.5			16.0	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		18	44			71	0
Queue Length 95th (ft)				31	162		50	106			152	42
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				911	964		554	1319			791	719
Starvation Cap Reductn				0	0		0	432			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.22	0.32			0.33	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street



CITY OF PORTLAND
Planning & Urban Development Department

MAJOR SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST
Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes in the left-hand column.

**** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW ****

At the time of application submission, please contact the Department of Public Works regarding E-911 addressing for your project.

GENERAL APPLICATION DOCUMENTS	
Yes NA	**Project Description** ● Cover letter with detailed project description
Yes NA	**Completed Checklist** (this document)
Yes NA	**Evidence of Right, Title, and Interest** ● Deeds, leases, or purchase and sales agreements
Yes NA	**Evidence of State or Federal Approvals** ● Permits or letters of non-jurisdiction, if applicable
Yes NA	**Zoning Assessment** (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
Yes NA	**Site Plan Standards Assessment** (see Section 14.6 of the land use code) ● Summary of project compliance with site plan standards of the land use code
Yes NA	**Summary of Existing and/or Proposed Easements or Covenants, applicable.** ● Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
Yes NA	**Waiver Requests** (see Waiver Table) ● Written request for waiver describing request and compliance with applicable waiver standards
Yes NA	**Financial Capability** ● Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA	**Technical Capability** ● Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR 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	
Yes **NA**	**Impact on Surrounding Street Systems (14-14.6.1(A))** ● Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes **NA**	**Access and Circulation (14-14.6.1(B))** Identify and describe the following: ● Site access and internal circulation, including ADA access ● Drive-up features, if applicable ● Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable ● Sidewalks and condition along street frontages and internal walkways ● Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes **NA**	**Public Transit (14-14.6.1(C)), if applicable** Identify and describe the following: ● Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes **NA**	**Off-Street Parking (14-14.6.1(D)), if applicable** Identify and describe the following: ● Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code ● Curb cut separation and parking layout (Technical Manual, Section 1) ● Construction details for bicycle racks ● Management plan for snow storage and removal
Yes **NA**	**Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable** ● Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL	
Yes NA	**Preservation of Significant Natural Features (14-14.6.2(A)), if applicable** Identify and describe the following: ● High and moderate value waterfowl and wading habitat ● Aquifers (for Casco Bay Islands) ● Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) ● Proposed preservation areas and protection measures ● Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes NA	**Landscape Preservation (14-14.6.2(B))** Identify and describe the following: ● Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) ● Measures to protect existing vegetation during construction
Yes NA	**Site Landscaping and Buffers (14-14.6.2(C))** Identify and describe the following: ● Overall landscaping approach and consistency with standards ● The use of screening and buffering of service areas and between non-residential and residential uses ● Existing Heritage or Feature Trees on site and measures to preserve ● Compliance with street tree requirements
Yes NA	**Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))** Identify and describe the following: ● Erosion and sedimentation control plan and measures ● Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable ● Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY	
Yes NA	**Consistency with City Master Plans (14-14.6.3(A))** ● Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA	**Public Safety and Fire Prevention (14-14.6.3(B))** Identify and describe the following: ● Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) ● Emergency vehicle access ● Consistency with public safety standards (Technical Manual, Section 3)
Yes NA	**Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9)** Identify and describe the following: ● Electrical services, including providing underground services ● Existing and proposed connections for public utilities and required public utility upgrades ● Sewer line connections
SITE DESIGN	
Yes NA	**Massing, Ventilations and Wind Impact (14-14.6.4(A))** Identify and describe the following: ● Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable ● Bulk, location, or height impacts on adjoining structures
Yes NA	**Shadows (14-14.6.4(B)), if applicable** ● Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA	**Snow and Ice Loading (14-14.6.4(C))** ● Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA	**View Corridors (14-14.6.4(D)), if applicable** ● Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes NA	**Historic Resources (14-14.6.4(E)), if applicable** Identify and describe the following: ● The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district ● Compliance with standards for preservation and documentation of archaeological resources

Yes **NA**	**Exterior Lighting (14-14.6.4(F))** ● Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes **NA**	**Noise and Vibration (14-14.6.4(G))** ● Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes **NA**	**Signage and Wayfinding (14-14.6.4(H)), if applicable** ● Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs ● Provide drawings of all commercial and directional signage on site
Yes **NA**	**Zone-Related Design Standards (14-14.6.4(I))** ● Address any applicable design review standards by zone, including compliance with Design Manual

MAJOR SITE PLAN
DRAWINGS CHECKLIST

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

All drawings must be submitted in a 24 x 36 sheet size.

BOUNDARY SURVEY (stamped by a Maine Licensed Surveyor and drawn as per Technical Manual Sec. 13)

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

All sheets – Include a title block with project title and the following information:

- Project street address
- Name and address of property owner & applicant
- Licensed design professional, incl firm that produced plans
- North arrow
- Date of preparation and revision history block
- Tax parcel (chart, block, and lot) number

Existing Conditions Plan with the following:

- Existing structures, with distance from primary building façade(s) to the property line
- Approximate location of structures on abutting properties
- All streets and intersections adjacent to the site
- Existing driveways, pedestrian ways, and bicycle infrastructure, including dimensions and materials
- Existing public transit infrastructure
- Existing vehicle & bicycle parking areas
- Existing utilities on site and within adjacent rights-of-way
- Existing grades (two-foot contours preferred)
- Location of water courses, wetlands, and vegetation, or other significant natural features
- Existing soil conditions and location of test pits and borings
- Zoning boundary lines, including overlays
- Location of all existing easements and rights-of-way

Proposed Site Plan with the following:

- Proposed structures, including distance from primary building façade(s) to property lines
- Ground floor area, and finished floor elevations for all buildings
- Any proposed geometric modifications to streets and intersections adjacent to site
- Location, dimensions and materials of all 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, including turning templates
- Proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications
- Location of all snow storage areas
- Exterior lighting (please see Technical Manual Sec. 12 for photometrics requirements)

- Location of fire hydrants
- Location of solid waste management receptacles
- Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable
- Location of proposed easements and rights-of-way, including dimensions
- Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed

UTILITY PLAN including:

- Proposed electrical infrastructure
- Location, sizing and directional flows of all proposed sewer and stormwater infrastructure
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- Proposed grades
- Proposed stormwater management measures meeting Technical Manual (Section 5) standards
- Any proposed alteration of a watercourse or wetlands
- Any groundwater protection measures
- Proposed buffers and preservation measures for wetlands or significant natural features

LANDSCAPE PLAN including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping, screening, and street trees, including caliper widths for trees
- Planting schedule, including street trees

ARCHITECTURAL PLANS AND RENDERINGS including:

- Exterior building elevations, color renderings, illustrations of all sides
- Axonometric and street-level views for structures greater than three stories in height
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

CONSTRUCTION MANAGEMENT PLAN including:

- Specifics on traffic control, sidewalk sheds, and pedestrian rerouting
- Include a drawing and written narrative

OTHER

- Details and cross-sections, as necessary

C. Right, Title & Interest

See attached quitclaim deed for the project property.

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE II, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **89 ELM STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside II, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE II, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside II, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 2)

A CERTAIN LOT OR PARCEL OF LAND, WITH THE IMPROVEMENTS THEREON SITUATED ON THE NORTHEASTERLY SIDELINE OF ELM STREET, THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET EAST AND THE SOUTHWESTERLY SIDELINE OF CEDAR STREET AND IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE AS SHOWN ON A PLAN TITLED "LAND DIVISION PLAN BAYSIDE II, LLC" MADE FOR RECORD OWNER BAYSIDE II, LLC BY OWEN HASKELL, INC. DATED SEPTEMBER 14, 2022, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET EAST AND THE NORTHEASTERLY SIDELINE OF ELM STREET;

THENCE, N 49° 39' 27" E ALONG SAID SIDELINE OF LANCASTER STREET EAST 210.57 FEET TO THE SOUTHWESTERLY SIDELINE OF CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG SAID SIDELINE OF CEDAR STREET 40.00 FEET TO THE NORTHEASTERLY CORNER OF LAND NOW OR FORMERLY OF BAYSIDE IV, LLC AS DESCRIBED IN DEED BOOK 35293, PAGE 78;

THENCE, THE FOLLOWING COURSES AND DISTANCES ALONG SAID BAYSIDE IV, LLC LAND:

S 49° 39' 26" W A DISTANCE OF 117.00 FEET;

S 42° 13' 00" E A DISTANCE OF 39.96 FEET;

N 49° 39' 26" E A DISTANCE OF 117.89 FEET TO THE SOUTHWESTERLY SIDELINE OF SAID CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG THE SIDELINE OF CEDAR STREET 39.34 FEET TO THE NORTHERLY CORNER OF LAND NOW OR FORMERLY OF AMELIA A. LABRECK AS DESCRIBED IN DEED BOOK 37970, PAGE 11;

THENCE, BY THE FOLLOWING COURSES AND DISTANCES ALONG SAID LABRECK LAND:

S 48° 42' 12" W A DISTANCE OF 118.73 FEET;
S 42° 13' 00" E A DISTANCE OF 40.00 FEET;

N 48° 41' 30" E A DISTANCE OF 119.62 FEET TO THE SIDELINE OF SAID CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG THE SIDELINE OF CEDAR STREET 80.62 FEET TO THE NORTHERLY CORNER OF LAND NOW OR FORMERLY OF DAVID B. NOWLIN AS DESCRIBED IN DEED BOOK 25148, PAGE 336;

THENCE, S 48° 41' 30" W ALONG SAID NOWLIN LAND 63.30 FEET;

THENCE, THE FOLLOWING COURSES AND DISTANCES THROUGH THE LAND OF THE GRANTOR:

S 49°53'31" W A DISTANCE OF 55.81 FEET;

N 43°54'25" W A DISTANCE OF 31.26 FEET;

S 46°08'15" W A DISTANCE OF 90.10 FEET TO THE NORTHEASTERLY SIDELINE OF SAID ELM STREET;

THENCE, N 43°45'13" W ALONG THE SIDELINE OF ELM STREET 215.15 FEET TO THE POINT OF BEGINNING, CONTAINING 38,462 S.F. OR 0.88 ACRES, MORE OR LESS.

BEARINGS ARE REFERENCED TO CITY GRID.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 2 CONVEYED TO BAYSIDE II, LLC BY QUITCLAIM DEED OF OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 15298, PAGE 144.

Received
Recorded Register of Deeds
Oct 13,2022 02:30:55P
Cumberland County
Jessica M. Spaulding

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) B-3

All Projects:

	Required	Proposed
Lot Size	N/A	28,082 SF
Area Per Dwelling Unit	None	
Minimum Street Frontage	15'	132'
Front Yard Minimum	None	7.6'
Front Yard Maximum	5'	18'
Rear Yard	None	0.3'
Yard Right	None	2.88'
Yard Left	None	2.88'
Side Street Setback	None	
Step Back	None	
Maximum Lot Coverage	None*	
Minimum Lot Coverage	N/A	
Maximum Height	80**	< 80'
Open Space	N/A	
Maximum Impervious Area	100%	
Pavement Setback	None	
Floor Area Ratio	None	
Off Street Parking Spaces	None***	
Loading Bays	N/A	
Other 1	30'****	<30'
Other 2		
Other 3		

Total Lot Size: 35,282 SF (.81 AC)

*Max 25% of lot area for portions of structures exceeding 125 feet in height

**See Bayside Height Overlay Map

***See Section S, Parking Study

****Max length of undifferentiated blank wall along publicly accessible way

ZONING ANALYSIS Relevant Zone(s) R-6

All Projects:

	Required	Proposed
Lot Size	2,000 SF	7,185 SF
Area Per Dwelling Unit	725 SF	1,960 SF
Minimum Street Frontage	20'	132'
Front Yard Minimum	5'	14.40'
Front Yard Maximum	N/A	
Rear Yard	10'	10.40'
Yard Right	5'	11.50'
Yard Left	5'	11.50'
Side Street Setback	N/A	
Step Back	35'*	35'
Maximum Lot Coverage	60%	40%
Minimum Lot Coverage	N/A	
Maximum Height	45'	<45'
Open Space	20%	38%
Maximum Impervious Area	100%	
Pavement Setback	None	
Floor Area Ratio	None	
Off Street Parking Spaces	None**	
Loading Bays	N/A	
Other 1	20'***	>20'
Other 2		
Other 3		

Total Lot Size: 35,282 SF (.81 AC)

*Additional 5' setback above 35'

**See Section S, Parking Study

***Lot width

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) B-3

All Projects:

	Required	Proposed
Lot Size	N/A	28,082 SF
Area Per Dwelling Unit	None	
Minimum Street Frontage	15'	132'
Front Yard Minimum	None	7.6'
Front Yard Maximum	5'	18'
Rear Yard	None	0.3'
Yard Right	None	2.88'
Yard Left	None	2.88'
Side Street Setback	None	
Step Back	None	
Maximum Lot Coverage	None*	
Minimum Lot Coverage	N/A	
Maximum Height	80**	< 80'
Open Space	N/A	
Maximum Impervious Area	100%	
Pavement Setback	None	
Floor Area Ratio	None	
Off Street Parking Spaces	None***	
Loading Bays	N/A	
Other 1	30'****	<30'
Other 2		
Other 3		

Total Lot Size: 35,282 SF (.81 AC)

*Max 25% of lot area for portions of structures exceeding 125 feet in height

**See Bayside Height Overlay Map and Table 18-C for affordability bonus

***See Section S, Parking Study

****Max length of undifferentiated blank wall along publicly accessible way

ZONING ANALYSIS Relevant Zone(s) R-6

All Projects:

	Required	Proposed
Lot Size	2,000 SF	7,185 SF
Area Per Dwelling Unit	725 SF	1,960 SF
Minimum Street Frontage	20'	132'
Front Yard Minimum	5'	14.40'
Front Yard Maximum	N/A	
Rear Yard	10'	10.40'
Yard Right	5'	11.50'
Yard Left	5'	11.50'
Side Street Setback	N/A	
Step Back	35'*	35'
Maximum Lot Coverage	60%	40%
Minimum Lot Coverage	N/A	
Maximum Height	45'	<45'
Open Space	20%	38%
Maximum Impervious Area	100%	
Pavement Setback	None	
Floor Area Ratio	None	
Off Street Parking Spaces	None**	
Loading Bays	N/A	
Other 1	20'***	>20'
Other 2		
Other 3		

Total Lot Size: 35,282 SF (.81 AC)

*Additional 5' setback above 35'

**See Section S, Parking Study

***Lot width

E. Summary of Written Easements

Existing easements:

Existing easement information as provided on the plan titled "Topographic Survey" prepared and identified by Owen Haskell, Inc. last revised 3/29/23.

- CMP Easement within the property Book/Page 4811/70.

Proposed Easements:

The developer is the owner of Map 33 Lots 6, 9, and 18 within the block. The lots lines are to be adjusted per the owner's discretion, coordination of easements will be under a mutual agreement and determined by the property owner. The proposed building is to be addressed 89 Elm Street. The adjacent parcel address is to be determined. Proposed lot numbers are to be determined.

Easements granted from adjacent parcels to 89 Elm parcel:

- Access Easement for 89 Elm to be accessed from the existing 46 Cedar Street curb cut & drive lane on adjacent parcel.
- Stormwater Utility Access & Maintenance easement for access & maintaining stormwater infrastructure which serves the 89 Elm building and parcel and is located on the adjacent parcel. Stormwater which is to be conveyed through 89 Elm parcel.
- Drainage Easement for Stormwater which will be conveyed from the 89 Elm Parcel through the adjacent parcel.

Easements granted from 89 Elm parcel to adjacent parcel:

- Drainage Easement for stormwater which will be conveyed from adjacent parcel through 89 Elm parcel.

Form 1199
Rev. 4/80

70

EASEMENT DEED

41-1(3252)

16942

Arrow Realty, a Maine corporation organized and existing by law and having a place of business at 85 Preble Street of Portland, Cumberland County, Maine for consideration given, grant to CENTRAL MAINE POWER COMPANY, a Maine corporation having its principal office at Edison Drive, Augusta, Maine 04336, and New England Telephone and Telegraph Company, a New York corporation, having its principal place of business at 185 Franklin Street, Boston, Massachusetts 02107 with warranty covenants, the right and easement to erect, bury, maintain, repair, rebuild, operate and patrol electric transmission, distribution and communication wires and/or cables, consisting of suitable and sufficient poles with wires strung upon and extending between the same and/or underground cables buried under the surface, together with all necessary fixtures and appurtenances, over, across and/or under the surface of my land in the ~~Town~~/City of Portland, Cumberland County, Maine, the location of said wires and/or underground cables to be as follows:

extending in a southeasterly direction from pole #24 Lancaster Street to proposed pole #24.1.

This location crosses a portion of the premises conveyed to the Grantor(s) by deed of _____, dated _____, 19___, recorded in the _____ County Registry of Deeds in Book _____, Page _____. Together with the right to cut down, keep trimmed, and eliminate the growth of those trees and branches using formulations registered by the Environmental Protection Agency, as the Grantee believes may interfere with the operation and maintenance of its wires and/or cables; the right to restrict the construction of buildings or structures within _____ feet of its wires and/or cables; the right to keep the surface of the ground above said underground cables and other electrical equipment free from structures and growth which, in the judgement of the Grantee, would interfere with or endanger the proper operation or maintenance of said underground cables; and the right to enter upon the Grantor's premises for any and all of the foregoing purposes.

Arrow Realty has caused this instrument to be signed and sealed by Thomas Cardente, its President, hereunto duly authorized

WITNESS his hand(s) and seal(s) this 7th day of May, 1981.

Signed, Sealed and Delivered
in the presence of

Kenneth S. Colby

ARROW REALTY
By: Thomas Cardente
Its President Pres.

STATE OF MAINE Cumberland ss. May 7, 1981

Personally appeared the above-named Thomas Cardente and acknowledged this instrument to be his free act and deed, before me,

Kenneth S. Colby
Justice of the Peace
~~Notary Public~~

STATE OF MAINE

CUMBERLAND, ss. Received at 8 H 30 M A M on JUN 30 1981 REGISTRY OF DEEDS and recorded in Book 4811 Page 70 Attest

Leah S. Tibbetts DEPUTY Register

F. Waivers

No waivers are proposed for the project.

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' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 1.10.3	"The minimum two-way drive aisle width is 24 feet"	Requesting waiver to widen the existing two-way drive aisle from 16 feet to 22 feet.	Proposed expansion to existing un-conforming drive aisle. Pavement extension is to the maximum extent feasible and is outside of the project parcel.
Section 25-138. Excavation in Reconstructed Streets.	Section 25-138. "Any Excavations into such streets shall be subject to moratorium restoration requirements as set forth in 23 M.R.S.A. § 3351-A as may be amended from time to time." 23 M.R.S.A. § 3351-A " relay the full width of the road surface on both sides of the cut for a distance of 20 feet from the furthest outside edges of the cut. If that repair overlaps the edge of a repair from a previous opening, the municipality may require the permittee to relay the full width of the road to the furthest edge of that previous repair. The municipality may prescribe the depth and method of restoring the pavement based upon the class of the street, except that in no case may the depth of the restored pavement be less than 1 1/2 inches. "	Any ancillary work associated with the intersection improvements and Lancaster corridor utility mains do not incur moratorium fees associated with the 89 Elm St. Redevelopment. Specifically, the Applicant proposes to make pavement repairs as shown on Sheet C-03 of the plans. Previous City interpretations of moratorium regulations suggest that the entire frontage of Elm Street may need to be repaved which appears unnecessary and intrusive. If the interpretation holds that the entire frontage of Elm would need to be milled/filled due to disturbance on both ends, the Applicant would respectfully request the right to repeal the proposal to include a curb bumpout at the Oxford Street corner, thereby drastically reducing the moratorium area. If the pavement repairs are permitted to occur as shown on Sheet C-03, the Applicant can commit to the Oxford curb bumpout as designed.	The purpose of the reconstruction within the ROW is to provide a sewer connection to the building. This connection location was in response to DPW request to limit connections within Lancaster Street. (DPW Meeting 3/20/23). Additionally, minimal curb work will be required to improve the pedestrian condition at this corner. At the Oxford intersection, public improvements are proposed in the way of a curb bumpout. Given the large stretch of Elm Street that will be untouched, the affordability restrictions associated with this project, and the traffic interruptions caused by mill/fill operations, it does not appear to be necessary to require pavement restoration for the entire stretch of Elm Street. We are requesting a waiver from the Director of Public Works as part of this Application in an effort to come to an agreed upon limit of work prior to construction and as part of the Planning process.

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' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 1.10.3	"The minimum two-way drive aisle width is 24 feet"	Requesting waiver to widen the existing two-way drive aisle from 16 feet to 22 feet.	Proposed expansion to existing un-conforming drive aisle. Pavement extension is to the maximum extent feasible and is outside of the project parcel.
Section 25-138. Excavation in Reconstructed Streets.	Section 25-138. "Any Excavations into such streets shall be subject to moratorium restoration requirements as set forth in 23 M.R.S.A. § 3351-A as may be amended from time to time." 23 M.R.S.A. § 3351-A " relay the full width of the road surface on both sides of the cut for a distance of 20 feet from the furthest outside edges of the cut. If that repair overlaps the edge of a repair from a previous opening, the municipality may require the permittee to relay the full width of the road to the furthest edge of that previous repair. The municipality may prescribe the depth and method of restoring the pavement based upon the class of the street, except that in no case may the depth of the restored pavement be less than 1 1/2 inches. "	Any ancillary work associated with the intersection improvements and Lancaster corridor utility mains do not incur moratorium fees associated with the 89 Elm St. Redevelopment. Specifically, the Applicant proposes to make pavement repairs as shown on Sheet C-03 of the plans. Previous City interpretations of moratorium regulations suggest that the entire frontage of Elm Street may need to be repaved which appears unnecessary and intrusive. If the interpretation holds that the entire frontage of Elm would need to be milled/filled due to disturbance on both ends, the Applicant would respectfully request the right to repeal the proposal to include a curb bumpout at the Oxford Street corner, thereby drastically reducing the moratorium area. If the pavement repairs are permitted to occur as shown on Sheet C-03, the Applicant can commit to the Oxford curb bumpout as designed.	The purpose of the reconstruction within the ROW is to provide a sewer connection to the building. This connection location was in response to DPW request to limit connections within Lancaster Street. (DPW Meeting 3/20/23). Additionally, minimal curb work will be required to improve the pedestrian condition at this corner. At the Oxford intersection, public improvements are proposed in the way of a curb bumpout. Given the large stretch of Elm Street that will be untouched, the affordability restrictions associated with this project, and the traffic interruptions caused by mill/fill operations, it does not appear to be necessary to require pavement restoration for the entire stretch of Elm Street. We are requesting a waiver from the Director of Public Works as part of this Application in an effort to come to an agreed upon limit of work prior to construction and as part of the Planning process.

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' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 1.6.1 - Appendix A	Sidewalks shall be brick, concrete or hot mix asphalt. The City Sidewalk Materials Policy (Appendix 1)	Development is requesting a combination of Brick and Concrete sidewalk with raised granite tree wells.	Both of the materials intented to be utilized are approved in various areas around the city. The proposed design aligns with the West Bayside MDP plans and will provide a continuous and uniform sidewalk upon completion of the Master Development Plan.
....	....	....	....

F. Waivers: 89 Elm Street

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' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 1.10.3	"The minimum two-way drive aisle width is 24 feet"	Requesting waiver to widen the existing two-way drive aisle from 16 feet to 22 feet.	Proposed expansion to existing un-conforming drive aisle. Pavement extension is to the maximum extent feasible and is outside of the project parcel.
Section 1.6.1 - Appendix A	Sidewalks shall be brick, concrete or hot mix asphalt. The City Sidewalk Materials Policy (Appendix 1)	Development is requesting a combination of Brick and Concrete sidewalk with raised granite tree wells.	Both of the materials intented to be utilized are approved in various areas around the city. The proposed design aligns with the West Bayside MDP plans and will provide a continuous and uniform sidewalk upon completion of the Master Development Plan.

F. Off-site Waivers: 50 Cedar Street

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' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 1.5.1 Driveway Design	Number of Driveways: - Minor Driveway (<10 residential spaces): 1 - Other Driveways: 2 Drive aisle - Required 24' Driveway Separation from intersections: - 35 feet along local roads (from edge of Cedar Street ROW to center of driveway)	Number of Driveways: - 4 under Site Control by Applicant Drive Aisle - 50 Cedar Street (Existing driveway and 4 ADA parking stalls to remain): 18.20' Driveway Separation from intersections: - 89 Elm Street: 72.10' - 50 Cedar Street 29.40'	The existing 50 Cedar curb cut along Lancaster Street will remain untouched, along with 4 of the existing ADA parking spaces. The curb cuts associated with the development are proposed to support trash, service, and emergency vehicles and are to be built in accordance with the Portland Technical Manual.
....			

G. Financial Capacity

Please find attached the status of good standing from the Secretary of State and letter from the Applicant's bank.

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: Tue Mar 28 2023 16:20:19. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
89 ELM STREET LLC	20237398DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
09/14/2022	N/A	MAINE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

HAWLEY R. STRAIT
C/O BERNSTEIN SHUR, PO BOX 9729
PORTLAND, ME 04104 5029

New Search

Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
Additional Addresses	Plain Copy	Certified copy
Certificate of Existence (more info)	Short Form without amendments ($30.00)	Long Form with amendments ($30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

Get Acrobat Reader

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site, please contact the Division of Corporations, UCC & Commissions Reporting and Information

Gorham Savings Bank

December 22, 2022

To Whom it May Concern,

I am writing regarding the future development of the Bayside parcels recently acquired by Portland-based developer Tom Watson & Co. Gorham Savings has enjoyed a long and productive relationship with this firm. Having partnered with them on several occasions and having closely reviewed the financials of both the company and key principals, it is clear that the group has the capacity and experience for a development of this nature.

Several recent projects that the company has led give a sense of the group's strength and abilities from both a financial and development perspective:

- Construction is currently underway on a 171-unit apartment property at 52 Hanover Street, a few blocks away from the subject development. The deal was financed through a participation of Maine and regional banks.
- Right next door to 52 Hanover, is the firm's 82 Hanover development. Acquired in 2018 from the city, the team repurposed a former Public Works building into 40,000 SF of retail, restaurant and office space. 82 Hanover has become a thriving hub of the Bayside community. The project is financed with a Maine-based bank.
- In 2019 the team purchased a multifamily property at 132 Marginal way. Following the acquisition, the property was converted from 100-quad units to 196 traditional apartment units. The project is financed with a Maine-based bank.
- In Biddeford, construction is nearing completion on a 96-unit historic tax credit conversion of a former mill building. This building is the first phase in a campus-style development along Gooch Street that will combine rental housing, for-sale condos and commercial space. The project is financed with a Maine-based bank.
- In Wilmington, North Carolina, Tom Watson & Co recently acquired a 219-unit multifamily property. The property was acquired with financing from a national bridge lending program with plans to refinance the property into agency financing upon completion of the improvement plan.

These and many other projects make up the firm's long list of strong projects. Tom Watson & Co has access to a wide array of debt funding sources and a deep list of loyal investors who are eager to participate in future projects.

Please reach out with any further questions.

Best,

Nick Weightman SVP
Commercial Banking | Gorham Savings Bank

H. Technical Capacity

Port Property is the largest apartment manager in the city and Tom Watson & Co. has completed several development projects within Downtown, East End, Longfellow, Oakdale, West Bayside/Parkside, and West End. The apartment homes in Port Property's portfolio consist of modern infill mixed use buildings and historic buildings. The modern infill mixed use buildings have re-activated underserved areas of the city with vibrancy. These historic buildings have been renovated with modern amenities but retain much of their unique historic charm. Portland gives residents plenty to see and do with its walkable downtown, chic restaurants, boutique shopping, and waterfront activities. Convenient living in Maine's largest city has resulted in Port Property apartments to be a perfect living location. Some examples include:

- 341 Cumberland Ave – The Earl
- 638 Congress St – The Lafayette
- 117 Preble St – Schlotterbeck & Foss
- 82 Hanover St– Hanover Works
- 132 Marginal Way – The Linden
- 52 Hanover St – The Armature

Acorn Engineering, Inc. has successfully permitted and provided civil/site engineering for over 20 Level II/III & Major Site Plan projects in Portland over the past 5 years. Some examples include:

- Munjoy Heights
- 70 Anderson St.
- 89 Anderson St. – East Bayside Lofts
- 667 Congress St – The Hiawatha
- 82 Hanover St – Hanover Works
- 132 Marginal Way – The Linden
- 52 Hanover St – The Armature

Ryan Senatore Architecture has designed several important multifamily residential projects in Southern and Central Maine, including the nine-story, steel framed high-rise apartment building known as the Hiawatha, the residential high-rise building at 200 Federal Street, and many more. RSA's residential clients include private developers as well as public housing authorities, and completed projects include both new construction and adaptive reuse of existing historic structures.

I. Conformity with Land Use Ordinance

OVERVIEW

The proposed residential building with ground level retail has been designed to conform to City standards where possible, as well as improve upon existing non-conformities. This project conforms with the applicable standards of Portland's Land Use Ordinance Section 14.6.1-4 as demonstrated in the following narrative.

14.6.1 Transportation Standards

A. Impact on Surrounding Street Systems:

a. The project will not create any significant hazard to safety on the surrounding street network. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. A Traffic Movement Permit Application has been filed for the project under a separate cover. There is an ongoing dialogue regarding TMP scoping with Tom Errico of TY Lin & Jerimiah Bartlett, City Transportation Engineer.

b. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. The development does not intend to substantially increase congestion on the surrounding streets.

B. Access and Circulation:

1) In general

a. The development will provide safe access and internal circulation for both pedestrians, vehicles and emergency vehicles as seen on the Site Plan and in accordance with the Technical Manual.

b. Continuous internal walkways will be provided and will connect to the proposed sidewalks along Elm, Lancaster, Cedar, and Oxford Streets.

c. Vehicular access to the site will be curbside along Elm, Lancaster, and Oxford Street, and through the existing curb cut at 46 Cedar Street. The site vehicular access been modeled using AutoCAD 2020 Vehicle Tracking software to confirm that the trash truck (25 foot long Hino 268AJ+Wayne Royal GT12 Refuse Truck) can access and egress the property. That is the largest proposed design vehicle to service the property through the Cedar Street entrance.

2) Loading and Servicing:

The building will be encompassed by Oxford, Elm, and Lancaster Street. The internal pavement within the development is to be accessed from the existing 46 Cedar Curb cut over a proposed access easement. It is proposed that the majority of service vehicles use this space for delivery purposes in lieu of circulating through the site and minimizing loading on public streets.

Loading zones with 30 minute parking spaces will be provided on Lancaster Street to serve the retail spaces and along Elm Street to serve the residential uses.

3) Curbs and Sidewalks:

a. The development proposes curbing and sidewalks along all frontages and are to be installed in accordance with the City's Technical Manual.

b. There are existing sidewalks along all abutting Streets. Any curbing or sidewalk disturbed during construction is to be repaired and rebuilt as necessary in conformance with City standards.

c. Not applicable

d. Not applicable

C. Public Transit Access:

1) The proposed development is along Elm Street which is classified as a minor arterial roadway and is currently public transit route. In addition, there are existing transit shelters within a quarter of a mile radius. Therefore, providing a transit shelter for the proposed development is not necessary. As part of the Transit Together Plan, Route 8 service along Elm St will be relocated. Coordination with METRO is ongoing as part of the West Bayside Master Development Plan and future stops will be assessed based on usage from proposed developments.

2) Not applicable.

3) Not applicable.

D. Parking:

1) Vehicular Parking

a. The parking requirements for the project will be determined by the planning board. A TDM Plan has been prepared for this project and in included as part of this Site Plan Application

b. Not applicable

c. Not applicable

d. There are no proposed parking spaces as part of this development.

2) Location and Required Number of Bicycle Parking Spaces:

a. A minimum of 41 bicycle spaces are required while 60 bicycle spaces are proposed for the 201 residential units. Please refer to the Site Plan and Architectural Floor Plans for more information.

b. Not applicable

3) Snow Storage:

a. Please refer to the site plan for the proposed locations designated for snow storage. The Owner will be responsible for managing snow at their discretion and/or coordinating snow removal from the site when necessary.

b. Snow storage areas will not encroach on parking, walkways, or stormwater management systems.

4) Electric Vehicle (EV) charging

a. Not applicable.

E. Transportation Demand Management (TDM):

1) A Transportation Demand Management (TDM) plan is provided as part of the site plan application. Please refer to the included TDM.

2) The plan will comply with the transportation systems and street design standards of the technical manual.

14.6.2 Environmental Quality Standards

A. Preservation of Significant Natural Features:

1. The site does not consist of any significant natural features. There are no known endangered species or plants existing on the site.

2. Not applicable

3. Not applicable

B. Landscape Preservation:

1) The site will not disturb any significant natural features.

2) There is no vegetation on site.

3) There are no existing trees on site

4) A waiver is not requested.

5) Not applicable.

C. Site Landscaping and Buffers

1) The development is not subject to zoning setbacks within the B3 zone. Within the R6 zone, shade trees or plantings will be installed per the City of Portland Technical Manual standards.

2) Buffers

a. The solid waste locations will be located adjacent to the building near the proposed paved access way and is to be screened from view of public sidewalks and adjacent streets.

b. Not applicable

c. The existing buffers are to remain or be replanted along all residential abutters.

3) Parking Landscaping

a. Not applicable

b. Not applicable.

c. Not applicable.

4) Street Trees

a. Street trees along the property frontage will be provided per the standards of the technical manual. Raised planters will be provided to allow for adequate storage volume of trees. Raised planters will be located offset from proposed parking spaces to avoid conflicts with door swings. Spacing is about 25'-25 feet along frontages, with some variation to avoid conflicts with proposed and existing utilities. If below overhead power lines then specific trees will be

proposed whose mature height will not interfere with the power lines.

b. Not applicable.

D. Water Quality, Stormwater Management and Erosion Control:

a. The site drainage will not be directed to flow or create ponding onto adjacent lots. The runoff created from the site will be collected, attenuated, and released at a rate that does not exceed the existing condition.

b. Provisions are in place to ensure stormwater from the development will not exceed the pre-development flows. Per guidance from the Department of Public Works (DPW), the 1" storm will not exceed a discharge rate of 0.1 CFS.

c. Coordination with DPW is in progress to confirm the capacity of the City's separated sewer and ensure the proposed development will not create any downstream problems. The project anticipates detaining the higher of a 1" storm, or the sanitary sewer flows, per guidance from DPW.

d. A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including the basic standards of MEDEP Chapter 500. Please refer to sections J and K, the Erosion & Sedimentation Control and Stormwater Management Plans, respectively, for more information.

e. The development is not anticipated to pose a contamination risk to groundwater during or after construction. The development proposes adequate and sanitary disposal of sewage in accordance with Section 2 of the Technical Manual. The project will be serviced by a public wastewater system.

14.6.3 Public Infrastructure and Community Safety Standards

A. Consistency with City Master Plans:

4. The project has been designed to be consistent with the proposed Master Development Plan, City's Zoning Ordinance, Design Manual, and off-site infrastructure. Please refer to the Master Development Plan application for additional information.

5. The site plan is to include necessary easements, rights, and improvements to all connections to the off premise public infrastructure.

B. Public Safety and Fire Prevention:

1. Public Safety Design

a. The site has been designed to enhance the security of the public and private areas on site to reduce the potential for crime.

b. Adequate authorized access has been provided within the proposed 20' wide access lane off Cedar Street.

c. This area will promote natural surveillance and access control.

2. Emergency access has been provided. Fire trucks will be able to access 3 sides of the building and an ambulance will be able to access all 4 sides.

C . Public Utilities

1. Requests for Ability to Serve letters have been sent to the respective companies. Responses are forthcoming.

2. The electrical service will be wired underground via a new pad-mounted transformer as shown on the Utility Plan.

3. The new sewer and stormwater infrastructure will meet the provisions of the Technical Manual and the comments received from DPW as part of the Master Development Plan

4. The project will be served by connection to the public sewer system within Lancaster Street. The stormwater management system is designed to meet the standards of Chapter 500.

5. A space allocated for solid waste storage can be seen on the Site Plan (C-10). The solid waste containers will be fully enclosed and screened from the public view.

16.4.4 Site Design Standards

A. Massing, Ventilation and Wind Impact:

a. Please refer to Section O, Architectural Design Narrative.

B. Shadows:

A shadow study is to be completed by Ryan Senatore Architecture and is to be in accordance with the Shadow Standards in the technical manual, as requested as part of the West Bayside Master Development Plan. The study is underway and will be forwarded to the city upon completion.

C. Snow and Ice Loading:

The structure will not distribute snow and ice onto adjacent properties.

D. View Corridors:

Not applicable.

E. 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 designated landmarks, historic district, or historic landscape district.

c. It is our understanding that there are no known archaeological resources that exist on the site.

F. Exterior Lighting:

a. Site Lighting.

i. Exterior lighting will be designed to meet the requirements set forth in the Technical Manual and not to negatively impact the abutting properties.

ii. Lighting has been designed to not adversely impact the abutting residential properties. Shielding shall be implemented when necessary.

b. Architectural and Specialty Lighting.

i. No architectural and Specialty lighting is proposed, at this time.

ii. No up-lighting is proposed, at this time.

c. Street lighting has been proposed in accordance with the City Technical Manual and is to include the required peninsula decorative lighting.

G. Noise and Vibration:

a. All proposed heating, ventilation and air conditioning equipment, and emergency generators are to meet the applicable state and federal emissions requirements as defined by the Architect. They are to be located within the interior of the site or the top of the building and will also be screened when necessary.

H. 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. Signage will complement the subject building and its immediate context.

iii. Signage will only be related to vehicular access.

iv. Signage will be facing downwardly to avoid glare and light spillover to towards the sky.

v. No proposed signs will be located along rooftops.

b. 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. Design Standards.

a. The Architect has designed the project to meet the standards set forth the two zoning districts of B3 Downtown Business zone and R6 Residential, as well as the City of Portland Design Manual. Please refer to the Architectural Plans.

I. Conformity with Land Use Ordinance

OVERVIEW

The proposed residential building with ground level retail has been designed to conform to City standards where possible, as well as improve upon existing non-conformities. This project conforms with the applicable standards of Portland's Land Use Ordinance Section 14.6.1-4 as demonstrated in the following narrative.

14.6.1 Transportation Standards

A. Impact on Surrounding Street Systems:

a. The project will not create any significant hazard to safety on the surrounding street network. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. A Traffic Movement Permit Application has been filed for the project under a separate cover. There is an ongoing dialogue regarding TMP scoping with Tom Errico of TY Lin & Jerimiah Bartlett, City Transportation Engineer.

b. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. The development does not intend to substantially increase congestion on the surrounding streets.

B. Access and Circulation:

1) In general

a. The development will provide safe access and internal circulation for both pedestrians, vehicles and emergency vehicles as seen on the Site Plan and in accordance with the Technical Manual.

b. Continuous internal walkways will be provided and will connect to the proposed sidewalks along Elm, Lancaster, Cedar, and Oxford Streets.

c. Vehicular access to the site will be curbside along Elm, Lancaster, and Oxford Street, and through the existing curb cut at 46 Cedar Street. The site vehicular access been modeled using AutoCAD 2020 Vehicle Tracking software to confirm that the trash truck (25 foot long Hino 268AJ+Wayne Royal GT12 Refuse Truck) can access and egress the property. That is the largest proposed design vehicle to service the property through the Cedar Street entrance.

2) Loading and Servicing:

The building will be encompassed by Oxford, Elm, and Lancaster Street. The internal pavement within the development is to be accessed from the existing 46 Cedar Curb cut over a proposed access easement. It is proposed that the majority of service vehicles use this space for delivery purposes in lieu of circulating through the site and minimizing loading on public streets.

Loading zones with 30 minute parking spaces will be provided on Lancaster Street to serve the retail spaces and along Elm Street to serve move in and move outs for the residential uses.

3) Curbs and Sidewalks:

a. The development proposes curbing and sidewalks along all frontages and are to be installed in accordance with the City's Technical Manual.

b. There are existing sidewalks along all abutting Streets. Any curbing or sidewalk disturbed during construction is to be repaired and rebuilt as necessary in conformance with City standards.

c. Not applicable

d. Not applicable

C. Public Transit Access:

1) The proposed development is along Elm Street which is classified as a minor arterial roadway and is currently public transit route. In addition, there are existing transit shelters within a quarter of a mile radius. Therefore, providing a transit shelter for the proposed development is not necessary. As part of the Transit Together Plan, Route 8 service along Elm St will be relocated. Coordination with METRO is ongoing as part of the West Bayside Master Development Plan and future stops will be assessed based on usage from proposed developments.

2) Not applicable.

3) Not applicable.

D. Parking:

1) Vehicular Parking

a. The parking requirements for the project will be determined by the planning board. A TDM Plan has been prepared for this project and in included as part of this Site Plan Application

b. Not applicable

c. Not applicable

d. There are no proposed parking spaces as part of this development.

2) Location and Required Number of Bicycle Parking Spaces:

a. A minimum of 41 bicycle spaces are required while 60 bicycle spaces are proposed for the 201 residential units. Please refer to the Site Plan and Architectural Floor Plans for more information.

b. Not applicable

3) Snow Storage:

a. Please refer to the site plan for the proposed locations designated for snow storage. The Owner will be responsible for managing snow at their discretion and/or coordinating snow removal from the site when necessary.

b. Snow storage areas will not encroach on parking, walkways, or stormwater management systems.

4) Electric Vehicle (EV) charging

a. Not applicable.

E. Transportation Demand Management (TDM):

1) A Transportation Demand Management (TDM) plan is provided as part of the site plan application. Please refer to the included TDM.

2) The plan will comply with the transportation systems and street design standards of the technical manual.

14.6.2 Environmental Quality Standards

A. Preservation of Significant Natural Features:

1. The site does not consist of any significant natural features. There are no known endangered species or plants existing on the site.

2. Not applicable

3. Not applicable

B. Landscape Preservation:

1) The site will not disturb any significant natural features.

2) There is no vegetation on site.

3) There are no existing trees on site

4) A waiver is not requested.

5) Not applicable.

C. Site Landscaping and Buffers

1) The development is not subject to zoning setbacks within the B3 zone. Within the R6 zone, shade trees or plantings will be installed per the City of Portland Technical Manual standards.

2) Buffers

a. The solid waste locations will be located adjacent to the building near the proposed paved access way and is to be screened from view of public sidewalks and adjacent streets.

b. Not applicable

c. The existing buffers are to remain or be replanted along all residential abutters.

3) Parking Landscaping

a. Not applicable

b. Not applicable.

c. Not applicable.

4) Street Trees

a. Approximately 20 street trees are proposed along the 89 Elm Street property frontage and will be provided per the standards of the technical manual. It is proposed to use the silva cell street tree system to provide a suitable soil volume and space to support tree root growth. Spacing is approximately 30-35 feet along frontages, with some variation to avoid conflicts with proposed and existing utilities. In areas where trees are located below overhead power lines,

specific trees will be proposed where the mature tree height will not interfere with the power lines.
A meeting was held with the Public Works Forestry Division on March 23, 2023 to begin to coordinate the street tree plan.

b. Not applicable.

D. Water Quality, Stormwater Management and Erosion Control:

a. The site drainage will not be directed to flow or create ponding onto adjacent lots. The runoff created from the site will be collected, attenuated, and released at a rate that does not exceed the existing condition.

b. Provisions are in place to ensure stormwater from the development will not exceed the pre-development flows. Per guidance from the Department of Public Works (DPW), the 1" storm will not exceed a discharge rate of 0.1 CFS.

c. Coordination with DPW is in progress to confirm the capacity of the City's separated sewer and ensure the proposed development will not create any downstream problems. The project anticipates detaining the higher of a 1" storm, or the sanitary sewer flows, per guidance from DPW.

d. A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including the basic standards of MEDEP Chapter 500. Please refer to sections J and K, the Erosion & Sedimentation Control and Stormwater Management Plans, respectively, for more information.

e. The development is not anticipated to pose a contamination risk to groundwater during or after construction. The development proposes adequate and sanitary disposal of sewage in accordance with Section 2 of the Technical Manual. The project will be serviced by a public wastewater system.

14.6.3 Public Infrastructure and Community Safety Standards

A. Consistency with City Master Plans:

4. The project has been designed to be consistent with the proposed Master Development Plan, City's Zoning Ordinance, Design Manual, and off-site infrastructure. Please refer to the Master Development Plan application for additional information.

5. The site plan is to include necessary easements, rights, and improvements to all connections to the off premise public infrastructure.

B. Public Safety and Fire Prevention:

1. Public Safety Design

    a. The site has been designed to enhance the security of the public and private areas on site to reduce the potential for crime.

    b. Adequate authorized access has been provided within the proposed 20' wide access lane off Cedar Street.

    c. This area will promote natural surveillance and access control.

2. Emergency access has been provided. Fire trucks will be able to access 3 sides of the building and an ambulance will be able to access all 4 sides.

C . Public Utilities

1. Requests for Ability to Serve letters have been sent to the respective companies. Responses are forthcoming.

2. The electrical service will be wired underground via a new pad-mounted transformer as shown on the Utility Plan.

3. The new sewer and stormwater infrastructure will meet the provisions of the Technical Manual and the comments received from DPW as part of the Master Development Plan

4. The project will be served by connection to the public sewer system within Lancaster Street. The stormwater management system is designed to meet the standards of Chapter 500.

5. A space allocated for solid waste storage can be seen on the Site Plan (C-10). The solid waste containers will be fully enclosed and screened from the public view. Per City Staff requests, collection of solid waste shall not occur between the hours of 11:00pm and 6:00am.

16.4.4 Site Design Standards

A. Massing, Ventilation and Wind Impact:

a. Please refer to Section O, Architectural Design Narrative.

B. Shadows:

The project vicinity does not include any existing publicly accessible open space. Therefore, per the technical manual, a shadow study is not required. Per request, a shadow study analysis was completed by Ryan Senatore Architecture.

C. Snow and Ice Loading:

The structure will not distribute snow and ice onto adjacent properties.

D. View Corridors:

Not applicable.

E. 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 designated landmarks, historic district, or historic landscape district.

c. It is our understanding that there are no known archaeological resources that exist on the site.

F. Exterior Lighting:

a. Site Lighting.

i. Exterior lighting will be designed to meet the requirements set forth in the Technical Manual and not to negatively impact the abutting properties.

ii. Lighting has been designed to not adversely impact the abutting residential properties. Shielding shall be implemented when necessary.

b. Architectural and Specialty Lighting.

i. No architectural and Specialty lighting is proposed, at this time.

ii. No up-lighting is proposed, at this time.

c. Street lighting has been proposed in accordance with the City Technical Manual and is to include the required peninsula decorative lighting.

G. Noise and Vibration:

a. All proposed heating, ventilation and air conditioning equipment, and emergency generators are to meet the applicable state and federal emissions requirements as defined by the Architect. They are to be located within the interior of the site or the top of the building and will also be screened when necessary.

H. 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. Signage will complement the subject building and its immediate context.

   iii. Signage will only be related to vehicular access.

   iv. Signage will be facing downwardly to avoid glare and light spillover to towards the sky.

   v. No proposed signs will be located along rooftops.

b. 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. Design Standards.

a. The Architect has designed the project to meet the standards set forth the two zoning districts of B3 Downtown Business zone and R6 Residential, as well as the City of Portland Design Manual. Please refer to the Architectural Plans.

I. Conformity with Land Use Ordinance

OVERVIEW

The proposed residential building with ground level retail has been designed to conform to City standards where possible, as well as improve upon existing non-conformities. This project conforms with the applicable standards of Portland's Land Use Ordinance Section 14.6.1-4 as demonstrated in the following narrative.

14.6.1 Transportation Standards

A. Impact on Surrounding Street Systems:

a. The project will not create any significant hazard to safety on the surrounding street network. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. A Traffic Movement Permit Application has been filed for the project under a separate cover. There is an ongoing dialogue regarding TMP scoping with Tom Errico of TY Lin & Jerimiah Bartlett, City Transportation Engineer.

b. According to the City of Portland Federal Street Classification map, the site is located along Elm Street which is a minor arterial and Lancaster Street, Cedar Street, and Oxford Street all three classified as local roads. The development does not intend to substantially increase congestion on the surrounding streets.

B. Access and Circulation:

1) In general

a. The development will provide safe access and internal circulation for both pedestrians, vehicles and emergency vehicles as seen on the Site Plan and in accordance with the Technical Manual.

b. Continuous internal walkways will be provided and will connect to the proposed sidewalks along Elm, Lancaster, Cedar, and Oxford Streets.

c. Vehicular access to the site will be curbside along Elm, Lancaster, and Oxford Street, and emergency access is provided through the proposed reconstructed existing curb cut at 50 Cedar Street. The site vehicular access been modeled using AutoCAD 2020 Vehicle Tracking software to confirm that the truck (29 foot long Hino 268AJ+Wayne Royal GT12 Refuse Truck) can access and egress the property dumpster enclosure.

2) Loading and Servicing:

The building will be encompassed by Oxford, Elm, and Lancaster Street. The internal pavement within the development is to be accessed from the existing 50 Cedar Curb cut over a proposed access easement. It is proposed that the majority of service vehicles use the public frontage for delivery purposes.

Loading zones with 30 minute parking spaces will be provided on Lancaster Street to serve the retail spaces and along Elm Street to serve move in and move outs for the residential uses.

3) Curbs and Sidewalks:

a. The development proposes curbing and sidewalks along all frontages and are to be installed in accordance with the City's Technical Manual.

b. There are existing sidewalks along all abutting Streets. Any curbing or sidewalk disturbed during construction is to be repaired and rebuilt as necessary in conformance with City standards.

c. Not applicable

d. Not applicable

C. Public Transit Access:

1) The proposed development is along Elm Street which is classified as a minor arterial roadway and is currently public transit route. In addition, there are existing transit shelters within a quarter of a mile radius. Therefore, providing a transit shelter for the proposed development is not necessary. As part of the Transit Together Plan, Route 8 service along Elm St will be relocated. Coordination with METRO is ongoing as part of the West Bayside Master Development Plan and future stops will be assessed based on usage from proposed developments.

2) Not applicable.

3) Not applicable.

D. Parking:

1) Vehicular Parking

a. The final parking requirement for the project will be determined by the planning board. A TDM Plan has been prepared for this project and is included as part of this Site Plan Application. The TDM consultant believes that, given the project's location, the decoupling of parking costs from rents, and the robust measures proposed in this TDM plan, the parking generation of this project

can be accommodated in nearby lots and overnight on-street parking with limited negative impacts.

b. Not applicable

c. Not applicable

d. There are no proposed parking spaces as part of this development.

2) Location and Required Number of Bicycle Parking Spaces:

a. A minimum of 41 bicycle spaces are required for the proposed 201 residential unit development. There are currently 81 spaces proposed within the building. Please refer to the Site Plan, Landscape plan, and Architectural Floor Plans for more information on proposed bike storage locations. Signage is to be provided in accordance with the technical manual.

b. Not applicable

3) Snow Storage:

a. Please refer to the site plan for the proposed locations designated for snow storage. The Owner will be responsible for managing snow at their discretion and/or coordinating snow removal from the site when necessary.

b. Snow storage areas will not encroach on parking, walkways, or stormwater management systems.

4) Electric Vehicle (EV) charging

a. Not applicable.

E. Transportation Demand Management (TDM):

1) A Transportation Demand Management (TDM) plan is provided as part of the site plan application. Please refer to the included TDM.

2) The plan will comply with the transportation systems and street design standards of the technical manual.

14.6.2 Environmental Quality Standards

A. Preservation of Significant Natural Features:

1. The site does not consist of any significant natural features. There are no known endangered species or plants existing on the site.

2. Not applicable

3. Not applicable

B. Landscape Preservation:

1) The site will not disturb any significant natural features.

2) There is no vegetation on site.

3) There are no existing trees on site

4) A waiver is not requested.

5) Not applicable.

C. Site Landscaping and Buffers

1) The development is not subject to zoning setbacks within the B3 zone. Within the R6 zone, shade trees or plantings will be installed per the City of Portland Technical Manual standards.

2) Buffers

a. The solid waste locations will be located adjacent to the building near the proposed paved access way and is to be screened from view of public sidewalks and adjacent streets.

b. Not applicable

c. The existing buffers are to remain or be replanted along all residential abutters.

3) Parking Landscaping

a. Not applicable

b. Not applicable.

c. Not applicable.

4) Street Trees

a. Approximately 21 street trees are proposed along the 89 Elm Street property

frontage and will be provided per the standards of the technical manual. It is proposed to use the silva cell street tree system to provide a suitable soil volume and space to support tree root growth. Spacing is approximately 25-35 feet along frontages, with some variation to avoid conflicts with proposed and existing utilities. The development proposed two street tress to be planted off Cedar Street as a condition of occupancy for 89 Elm Street, unless a site plan is submitted for 50 Cedar Street in which case landscaping will be addressed as part of the site plan. In areas where trees are located below overhead power lines, specific trees will be proposed where the mature tree height will not interfere with the power lines.

b. Not applicable.

D. Water Quality, Stormwater Management and Erosion Control:

a. The site drainage will not be directed to flow or create ponding onto adjacent lots. The runoff created from the site will be collected, attenuated, and released at a rate that does not exceed the existing condition.

b. Provisions are in place to ensure stormwater from the development will not exceed the pre-development flows. Per guidance from the Department of Public Works (DPW), the 1" storm will not exceed a discharge rate of 0.1 CFS.

c. Coordination with DPW is in progress to confirm the capacity of the City's separated sewer and ensure the proposed development will not create any downstream problems. The project anticipates detaining the higher of a 1" storm, or the sanitary sewer flows, per guidance from DPW.

d. A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including the basic standards of MEDEP Chapter 500. Please refer to sections J and K, the Erosion & Sedimentation Control and Stormwater Management Plans, respectively, for more information.

e. The development is not anticipated to pose a contamination risk to groundwater during or after construction. The development proposes adequate and sanitary disposal of sewage in accordance with Section 2 of the Technical Manual. The project will be serviced by a public wastewater system.

14.6.3 Public Infrastructure and Community Safety Standards

A. Consistency with City Master Plans:

4. The project has been designed to be consistent with the proposed Master Development Plan, City's Zoning Ordinance, Design Manual, and off-site

infrastructure. Please refer to the Master Development Plan application for additional information.

5. The site plan is to include necessary easements, rights, and improvements to all connections to the off premise public infrastructure.

B. Public Safety and Fire Prevention:

1. Public Safety Design

   a. The site has been designed to enhance the security of the public and private areas on site to reduce the potential for crime.

   b. Fire department vehicle access is provided on three (3) sides of the building within the Public frontage. In addition, the site has potential ambulance access through the access drive aisle provided from Cedar Street.

   c. This area will promote natural surveillance and access control.

2. Emergency access has been provided. Fire trucks will be able to access 3 sides of the building and an ambulance will be able to access all 4 sides.

C . Public Utilities

1. Requests for Ability to Serve letters have been sent to the respective companies. Responses are forthcoming.

2. The electrical service will be wired underground via a new pad-mounted transformer as shown on the Utility Plan.

3. The new sewer and stormwater infrastructure will meet the provisions of the Technical Manual and the comments received from DPW as part of the Master Development Plan

4. The project will be served by connection to the public sewer system within Lancaster Street. The stormwater management system is designed to meet the standards of Chapter 500.

5. A space allocated for solid waste storage can be seen on the Site Plan (C-10). The solid waste containers will be fully enclosed and screened from the public view. Per City Staff requests, collection of solid waste shall not occur between the hours of 11:00pm and 6:00am.

16.4.4 Site Design Standards

A. Massing, Ventilation and Wind Impact:

a. Please refer to Section O, Architectural Design Narrative.
b. The team agrees with the city Staff comments dated 6/26/23, "the combination of building setbacks, recessed building planes, and other architectural elements, such as canopies and atriums assist to reduce wind impacts."

B. Shadows:

The project vicinity does not include any existing publicly accessible open space. Therefore, per the technical manual, a shadow study is not required. Per request, a shadow study analysis was completed by Ryan Senatore Architecture, dated 5/4/23, and submitted to the city as part of the West Bayside Master Development Plan.

C. Snow and Ice Loading:

The structure will not distribute snow and ice onto adjacent properties. Please refer to the Plans and documents prepared by Ryan Senatore Architecture. Any projections into the public ROW will require license by the City of Portland.

D. View Corridors:

Not applicable.

E. 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 designated landmarks, historic district, or historic landscape district.

c. It is our understanding that there are no known archaeological resources that exist on the site.

F. Exterior Lighting:

a. Site Lighting.

   i. Exterior lighting will be designed to meet the requirements set forth in the Technical Manual and not to negatively impact the abutting properties.

   ii. Lighting has been designed to not adversely impact the abutting residential properties. Shielding shall be implemented when necessary.

b. Architectural and Specialty Lighting.

i. No architectural and Specialty lighting is proposed, at this time.

ii. No up-lighting is proposed, at this time.

c. Street lighting has been proposed in accordance with the City Technical Manual and is to include the required peninsula decorative lighting.

G. Noise and Vibration:

a. All proposed heating, ventilation and air conditioning equipment, and emergency generators are to meet the applicable state and federal emissions requirements as defined by the Architect. They are to be located within the interior of the site or the top of the building and will also be screened when necessary.

H. 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. Signage will complement the subject building and its immediate context.

iii. Signage will only be related to vehicular access.

iv. Signage will be facing downwardly to avoid glare and light spillover to towards the sky.

v. No proposed signs will be located along rooftops.

b. 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. Design Standards.

a. The Architect has designed the project to meet the standards set forth the two zoning districts of B3 Downtown Business zone and R6 Residential, as well as the City of Portland Design Manual. Please refer to the Architectural Plans.

ACORN ENGINEERING, INC.

J. STORMWATER MANAGEMENT REPORT

Prepared For:

89 Elm Street LLC
188 State Street, 3rd Floor
Portland, Maine 04104

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



April 2023

INTRODUCTION

Acorn Engineering, Inc. has been retained by 89 Elm LLC, to provide civil engineering services for the proposed development at 89 Elm Street in Portland, Maine. The property consists of approximately 0.81 acres of land to be transformed into an 8-story building primarily for affordable residential use with retail and restaurant space on the first floor. The project will reside at Map, Book Lot (033 H006001) whose lot line will be adjusted to encompass the entire development. Parcels 033 H018001 and 033 H009001 will be merged into one parcel whose area will remain outside the building footprint.

A stormwater analysis was prepared to address the effects of the proposed development on both the quantity and quality of stormwater runoff. The purpose of this report is to demonstrate that the project will meet and exceed the requirements set forth by Maine DEP Chapter 500 Basic, General, and Flooding Standards and the following requirements from the City of Portland (the City):

- City of Portland Land Use Ordinance Article 14.6.2.D.
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management.
- City of Portland Code of Ordinances Chapter 32 – Post-Construction Stormwater Management

EXISTING CONDITIONS

The project site is bordered by Elm, Lancaster, Cedar, and Oxford Streets. A boundary plan has been prepared by Owen Haskell Inc., dated December 8th, 2022, last revised March 29th, 2023. Summit Geoengineering Services (SGS) conducted a geotechnical investigation for the site concluded on March 24th, 2023.

The project is located in the Bayside Height Overlay Zone and is within the B3 Downtown Business and R6 Residential zoning districts. It is our understanding that there are no natural resources on site and that the development is not within an urban impaired stream watershed.

The site is currently comprised of a medium to high use surface parking lot with slopes ranging up to 9% from Oxford Street down to the Elm Street and Lancaster Street intersection, draining into the City's Combined Sewer System. No formal stormwater treatment or detention presently resides onsite.

PROPOSED DEVELOPMENT

The proposed development intends to transform the existing parking lot into a multistory primarily residential building with retail space on the ground floor. The site will feature interconnecting sidewalks and pavement for ease of drive up and drop off access to the first, second, and third floor, utilizing a stepped story approach to limit land disturbance and blend into the existing topography.

The site was designed with the intent to minimize the total area of impervious surface on the site and overall reducing both the volume and rate of runoff leaving the site. The stormwater collection, treatment, and distribution systems on site have been designed to contain and detain runoff generated from the proposed development as well as upgradient area that may run onto the site as described in this report.

In part of this project and the Master Development Plan (MDP), it is proposed to extend the City's MS4 System from Preble Street to the frontage of 89 Elm Street. Discussion with DPW of the extension and request for the current capacity analysis is in progress.

The development will be served by the Portland Water District, CMP, Spectrum, Consolidated Communications, and municipal sewer and storm systems. Utility mains and services have been coordinated with each respective utility company.

GENERAL STANDARDS – WATER QUALITY

All treatment BMPs proposed as part of this development have been designed to utilize StormFilter cartridges as a filter meeting the requirements of the General Standards (Section 4.B) of the Chapter 500 by CONTECH Engineered Solutions LLC, Approved by the Maine DEP March 13th, 2015.

The StormFilter system proposed will provide further storage and release of a water quality volume through R-Tank subsurface chamber system. The StormFilters are proposed to provide treatment generated from the roof. As it is not anticipated that oils and grease will be entering the StormFilter Cartridges the CONTECH provides various options of filter media for the targeted pollutant removal. Please refer to the Post Development Watershed Map in Attachment B for reference on the proposed area to be treated.

Treatment Area

Based on the approval letter by the MDEP they recommend using 7 cartridges per acre of impervious being treated. The project proposes to treat 0.39 acres of impervious surface

within the Storm Filter Cartridges. See *Table 1* below for the comparison of the City's recommended cartridges with what is proposed in part of this project.

Table 1 – StormFilter Cartridge Sizing			
	1-Year Peak Flow (cfs)	Required Cartridges	Provided Cartridges
StormFilter Cartridges	0.63	3	4

As represented in *Tables 1 and 2*, the site is in accordance with Chapter 500, General Standard rules and the MDEP approval letter for StormFilter treatment.

The proposed treatment of impervious and developed areas are as follows:

Table 2 –Treatment Area					
	Existing Area (SF)	Proposed Area (SF)	Net Change (SF)	Proposed Area with Treatment (SF)	% Overall, Area Treated
Impervious Area	31,308	30,712	-596	17,072	56%
Developed Area	35,282	35,282	0	17,072	48%
*Developed area includes impervious area, landscaped, or unvegetated area in accordance with MDEP.					

FLOODING STANDARD – WATER QUANTITY

The proposed project was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25-year storm events were used. The corresponding rainfall amounts for these storms are 3.10", 4.60", and 5.80" respectively. Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. to round to the nearest whole number. However due to the small size of the project and the minimal existing flows, the stormwater runoff shall be rounded to the nearest tenth of a cubic feet per second (cfs).

Per the City comments received in part of the MDP, it is requested that we provide storage on site for the greater volume out of the following: either the sanitary flows generated from the proposed development or the equivalent runoff from 1" of rainfall over the entire developed area. The proposed flows generated for the 89 Elm Street development are as follows in *Table 3* Below.

Table 3: Required Detention Volume		
1" of rainfall over the entire redeveloped area:	19,143 GPD	2,559 cubic-feet
Projected 24 hour daily sanitary flows:	27,620 GPD	3,692 cubic-feet

Based on this comparison, the proposed development intends to store the greater volume; 3,692 cubic-feet. Detention on site is accomplished utilizing R-Tank subsurface chambers. The chambers have been sized to provide 3,693 cubic feet of available storage. The system was sized to meet the City's request and to drain between 24 to 48 hours.

The maximum permissible stormwater outflow rate into the City's system during the design storm event is to be less than or equal to 0.1 CFS per acre of watershed area draining to the detention system, per request of Portland DPW. The R-Tank system proposed is sized to provide for 0.865 acres of area draining to the R-Tank system and 0.873 acres of impervious draining to the point of interest. The site has been designed to detain and release stormwater runoff equal to 0.1 CFS off the site for the entire development during the design storm event. Please refer to the attached HydroCAD report for more information.

Pre and Post Development Subcatchments:

Time of Concentration (Tc)

The times of concentration for subcatchments in both the pre and post conditions were calculated by entering the flow path with the associated ground cover and slopes. HydroCAD then calculated the Tc's and incorporated the total Tc for each subcatchment into the model. When the calculated Tc was less than six minutes (0.1 hours), a direct entry of six minutes was used as advised by the TR-55 model.

Curve Number (CN)

Within the pre-development model, the vegetated areas were considered fair grass, and impervious areas consisted of connected pavement.

The post development landscaped areas were given a good rating for new landscaped or loam/seeded areas and fair rating for the vegetated areas to remain. Refer to the attached pre and post development maps provides a visual representation of the land covers from the pre and post conditions.

Pre and Post Development Calculations:

Pre and Post development conditions will maintain the same general topography and will drain to the same point of interest at the Elm Street and Lancaster Street intersection. Overall, the proposed development proposed to decrease the impervious area within the property line and in the overall developed area. *Table 2*, Treatment area above provides a breakdown of the existing and proposed impervious area within the property line and total developed. *Table 6* below provides the comparison of the pre and post development peak flows for 2, 10, 25, 50, and 100-yr storm events.

Table 4 – Pre-Development Peak Stormwater Flows

Drainage Area	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)	50-Year Storm Event (cfs)	100-Year Storm Event (cfs)
POI #1	2.7	4.2	5.4	7.0	7.7

Table 5 – Post-Development Peak Stormwater Flows

Drainage Area	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)	50-Year Storm Event (cfs)	100-Year Storm Event (cfs)
POI #1	2.3	4.0	4.6	5.4	5.84
POI # 2	0.0	0.1	0.1	0.1	0.1

Table 6 – Comparison of Peak Flows

Drainage Area	2-Year Storm Event (cfs)		10-Year Storm Event (cfs)		25-Year Storm Event (cfs)		50-Year Storm Event (cfs)		100-Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
POI #99*	2.7	2.3	4.2	4.0	5.4	4.7	7.0	5.5	7.7	6.0

*POI #99 is represented in the Post Development HydroCAD and is located at the Elm St. and Lancaster St. intersection and is the primary drainage point for the development for both pre and post conditions.

As shown in *Table 6,* the net impact of the post development peak flows will be below the predevelopment levels. A post-development watershed map developed for this project can be viewed in Attachment B, and a copy of the HydroCAD calculations is included within Attachment C of this report.

SOILS

Onsite soil information has been derived from the following resources:

- Soil Conservation Service Medium Intensity Soil Survey for York County
- Summit GeoEngineering Services, Geotechnical Report, dated February 2023

The site consists of soils within hydrological groups A, which have been inputted into HydroCAD accordingly. Soil borings and test pits were conducted by Summit GeoEngineering to further assess the conditions on site. In accordance with Maine Best Management Practices (BMP). The USDA soil report and geotechnical report were submitted as part of this submission.

CONCLUSION

The proposed development was designed to meet the requirements set forth in Chapter 500 Basic, General, and Flooding Standards and the following requirements from the City of Portland (the City). The site was designed with the intent to minimize the total area of impervious surface on the site and overall reducing both the volume and rate of runoff leaving the site.

Stormwater quality is proposed to be treated via StormFilter Cartridges to treat 48% of the proposed development and 56% of the proposed impervious area. Water quantity control was through R- tank Subsurface storage chambers and was designed to store 3,693 cubic-feet provided in *Table 3* of runoff per the City's requests. Overall, the development will be reducing the flow rate leaving the parcel into the City's combined sewer system from the pre to post development conditions. This is achieved through the extension of the MS4 system within Lancaster Street in combination with the use of subsurface storage systems to detain runoff onsite prior to discharging into the public system.

Please find the following attachments for more information on the stormwater analysis in addition to the proposed construction and maintenance plan for the development.

ATTACHMENTS

Attachment A: Pre-Development Watershed Map
Attachment B: Post-Development Watershed Map
Attachment C: HydroCAD Calculations
Attachment D: Soil Survey
Attachment E: Geotechnical Report prepared by Summit Geoengineering Services
Attachment F: Post-Construction Stormwater Inspection & Maintenance Plan

SECTION J

STORMWATER MANAGMENT REPORT

Attachment A: Pre Development Watershed Map

NOTE:

REFER TO STORMWATER REPORT FOR MORE INFORMATION

1 — SUBCATCHMENT NUMBER

SUBCATCHMENT EXTENTS

POI #1 — POINT OF INTEREST (POI)

POI #1

LANCASTER STREET

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±

ELM STREET

CEDAR STREET

1

N/F AMELIA A. LABRECK
37970/11

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

TM 26-A-11
N/F ROBERT HYDE
27470/68

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

HALL COURT

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

OXFORD STREET

20 0 20 40

SCALE: 1" = 20'

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

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ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23
SITE PLAN	SJL	4/3/23

DRAWING NAME: PRE-DEVELOPMENT MAP

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC
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(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED
PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.

PRE

SECTION J

STORMWATER MANAGMENT REPORT

Attachment B: Post Development Watershed Map

NOTE:

REFER TO STORMWATER REPORT FOR MORE INFORMATION

(1) SUBCATCHMENT NUMBER

SUBCATCHMENT EXTENTS

POI #1 POINT OF INTEREST (POI)

WATER QUALITY VOLUME:
STORMFILTER VAULT
4 CARTRIDGES
27"–CARTRIDGE FILTER

TREATMENT AREA: 17,410 SF
DESIGN FLOW RATE: 0.68 CFS
CARTRIDGE FLOW RATE: 1.67 GPM/FT2

WATER QUANTITY VOLUME:
R–TANK SUBSURFACE CHAMBERS
25 ROWS
9 CHAMBERS PER ROW
21.11' X 34.81' X 5.45'

AVAILABLE STORAGE VOLUME: 3,693 CUBIC–FEET
DRAINAGE AREA: 37,675 SF

AREA WITH TREATMENT

DRAINAGE AREA TO BE STORED IN R–TANKS

DRAINAGE AREA OUTSIDE OF PROPERTY LINE TO BE STORED IN R–TANKS

TREATMENT				
IMPERVIOUS AREA TO BE TREATED (SF)	17,410			
	EXISTING (SF)	PROPOSED (SF)	NET (SF)	% OVERALL TO BE TREATED
IMPERVIOUS AREA	31,308	30,712	–596	56%
DEVELOPED AREA	35,282	35,282	0	48%

POI #1

POI #2

LANCASTER STREET (TWO–WAY)

ELM STREET (ONE–WAY)

CEDAR STREET (ONE–WAY)

OXFORD STREET (ONE–WAY)

HALL COURT

50 CEDAR STREET

PROPOSED R–TANK CHAMBERS

PROPOSED STORMFILTER VAULT

PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS

RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
LOBBY
MECHANICAL ROOM
BIKE STORAGE
MAIL/PACKAGES
COMMUNITY ROOM
STORAGE/ LAUNDRY
2ND STORY
RESIDENTIAL
3RD STORY
RETAIL SPACE
UGE
T

1.1
1.2
1.3
1
2

4.15'

20 0 20 40

SCALE: 1" = 20'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

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ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: POST DEVELOPMENT WATERSHED MAP

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
PROFESSIONAL ENGINEER
LICENSED
4/3/23

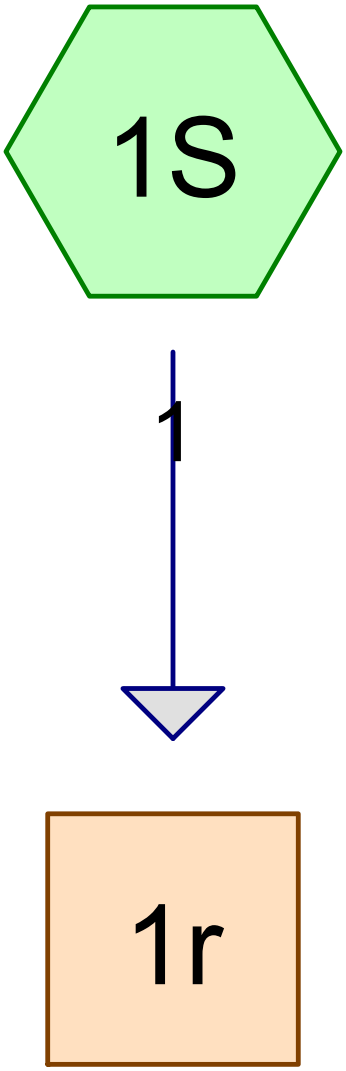
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SECTION J

STORMWATER MANAGMENT REPORT

Attachment C: Pre Development HydroCAD



Elm/ Lancaster Street

Subcat Reach Pond Link

Routing Diagram for 1192.2_PRE_4.3.23
Prepared by HP Inc., Printed 4/4/2023
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.097	49	50-75% Grass cover, Fair, HSG A (1S)
0.003	96	Gravel surface, HSG A (1S)
0.897	98	Paved parking, HSG A (1S)
0.996	**93**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.996	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.996		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.097	0.000	0.000	0.000	0.000	0.097	50-75% Grass cover, Fair	1S
0.003	0.000	0.000	0.000	0.000	0.003	Gravel surface	1S
0.897	0.000	0.000	0.000	0.000	0.897	Paved parking	1S
0.996	**0.000**	**0.000**	**0.000**	**0.000**	**0.996**	**TOTAL AREA**	

Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1 Runoff Area=43,407 sf 89.98% Impervious Runoff Depth=2.35"
Tc=6.0 min CN=93 Runoff=2.66 cfs 0.195 af

Reach 1r: Elm/ Lancaster Street Inflow=2.66 cfs 0.195 af
Outflow=2.66 cfs 0.195 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.195 af Average Runoff Depth = 2.35"
10.02% Pervious = 0.100 ac 89.98% Impervious = 0.897 ac

Summary for Subcatchment 1S: 1

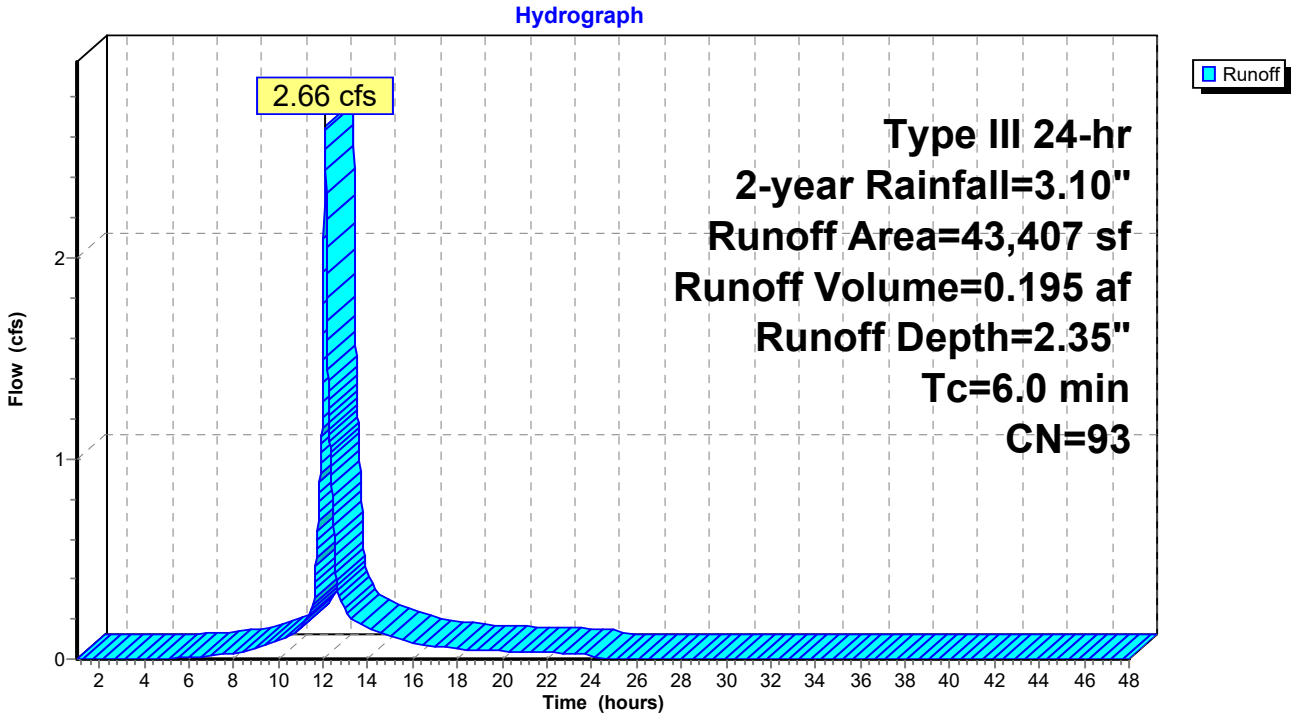
Runoff = 2.66 cfs @ 12.09 hrs, Volume= 0.195 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
125	96	Gravel surface, HSG A
39,059	98	Paved parking, HSG A
4,223	49	50-75% Grass cover, Fair, HSG A
43,407	93	Weighted Average
4,348		10.02% Pervious Area
39,059		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: 1

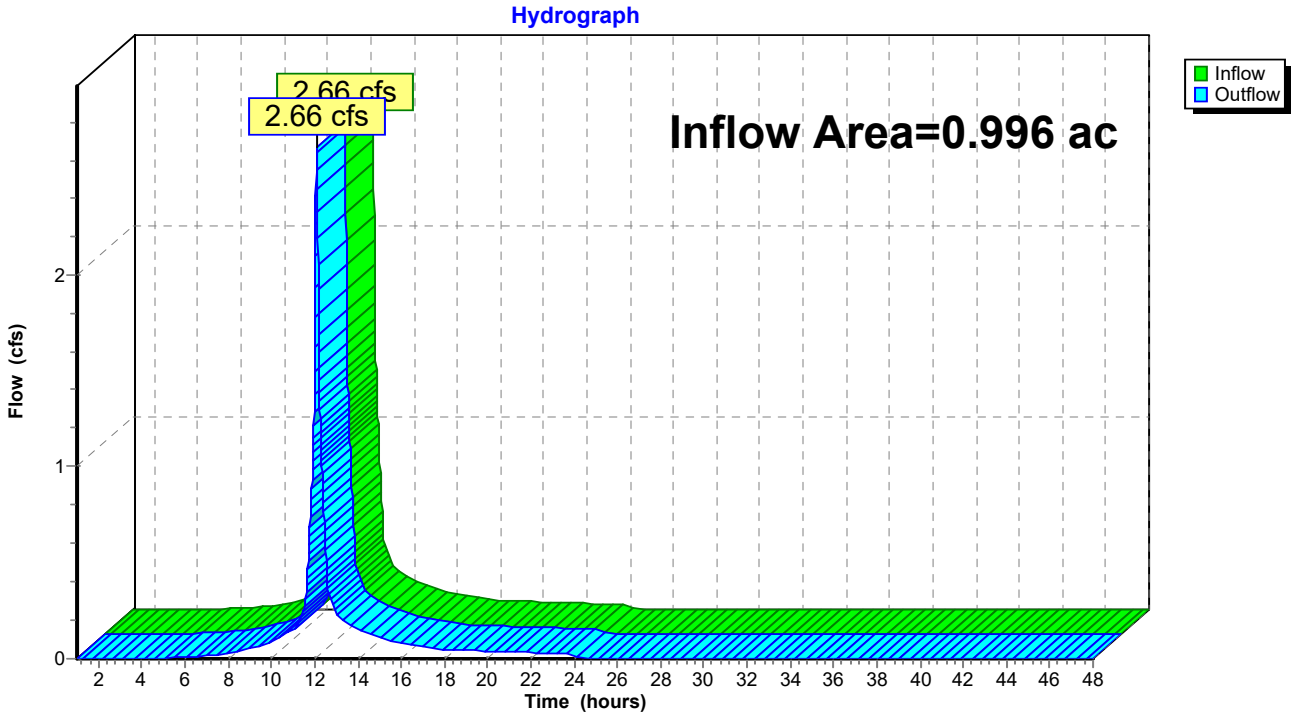


Summary for Reach 1r: Elm/ Lancaster Street

Inflow Area = 0.996 ac, 89.98% Impervious, Inflow Depth = 2.35" for 2-year event
Inflow = 2.66 cfs @ 12.09 hrs, Volume= 0.195 af
Outflow = 2.66 cfs @ 12.09 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

Reach 1r: Elm/ Lancaster Street



Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1 Runoff Area=43,407 sf 89.98% Impervious Runoff Depth=3.81"
Tc=6.0 min CN=93 Runoff=4.20 cfs 0.316 af

Reach 1r: Elm/ Lancaster Street Inflow=4.20 cfs 0.316 af
Outflow=4.20 cfs 0.316 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.316 af Average Runoff Depth = 3.81"
10.02% Pervious = 0.100 ac 89.98% Impervious = 0.897 ac

Summary for Subcatchment 1S: 1

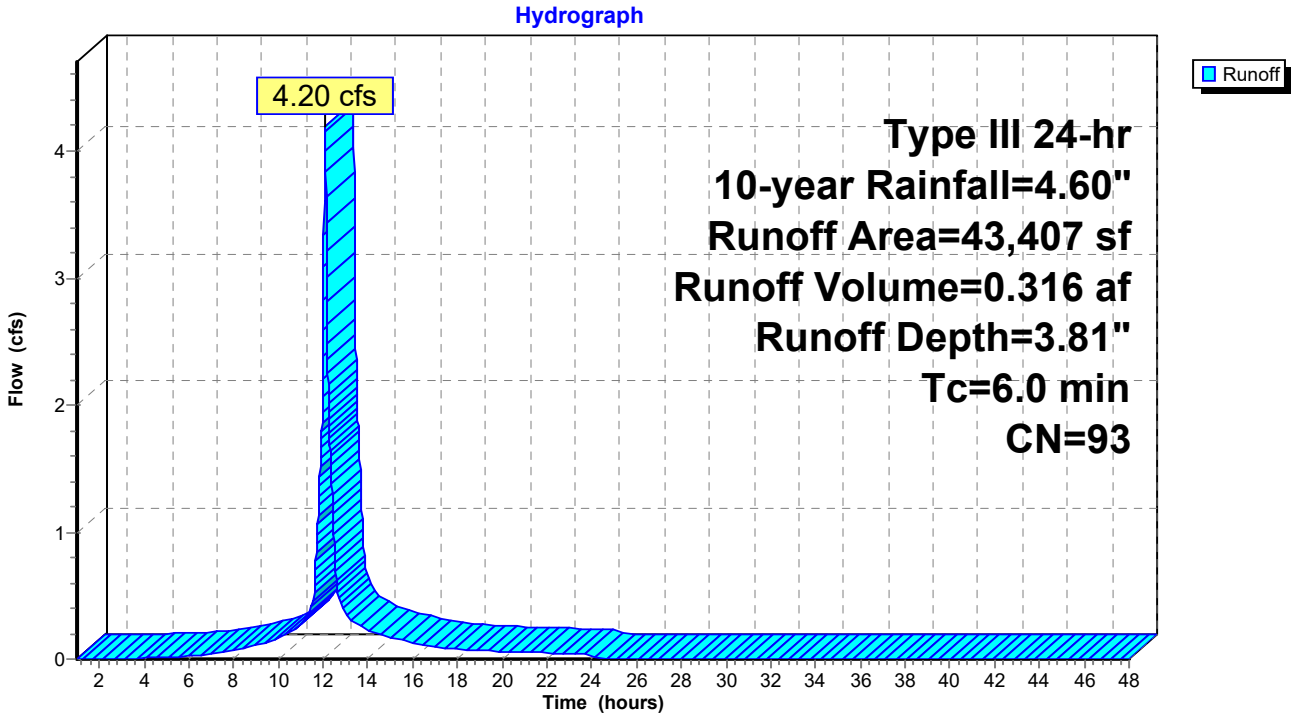
Runoff = 4.20 cfs @ 12.08 hrs, Volume= 0.316 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
125	96	Gravel surface, HSG A
39,059	98	Paved parking, HSG A
4,223	49	50-75% Grass cover, Fair, HSG A
43,407	93	Weighted Average
4,348		10.02% Pervious Area
39,059		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: 1

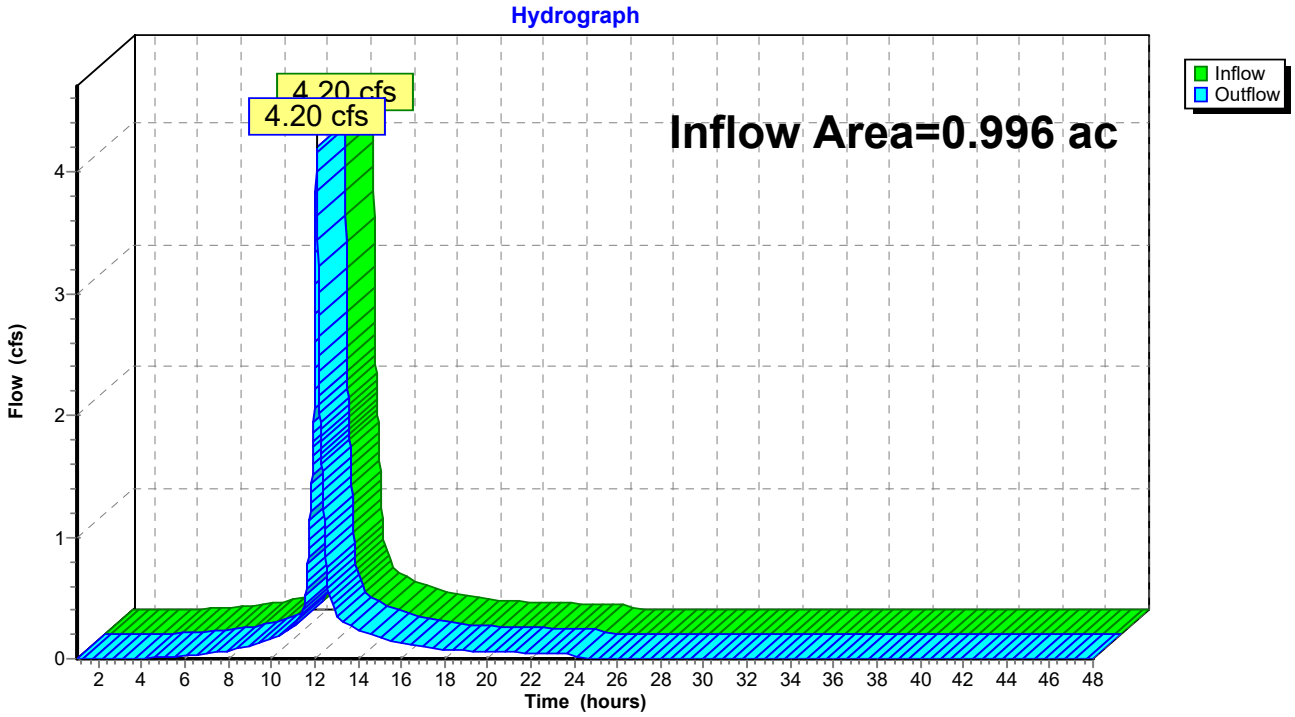


Summary for Reach 1r: Elm/ Lancaster Street

Inflow Area = 0.996 ac, 89.98% Impervious, Inflow Depth = 3.81" for 10-year event
Inflow = 4.20 cfs @ 12.08 hrs, Volume= 0.316 af
Outflow = 4.20 cfs @ 12.08 hrs, Volume= 0.316 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

Reach 1r: Elm/ Lancaster Street



Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: 1 Runoff Area=43,407 sf 89.98% Impervious Runoff Depth=4.99"
Tc=6.0 min CN=93 Runoff=5.42 cfs 0.414 af

Reach 1r: Elm/ Lancaster Street Inflow=5.42 cfs 0.414 af
Outflow=5.42 cfs 0.414 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.414 af Average Runoff Depth = 4.99"
10.02% Pervious = 0.100 ac 89.98% Impervious = 0.897 ac

Summary for Subcatchment 1S: 1

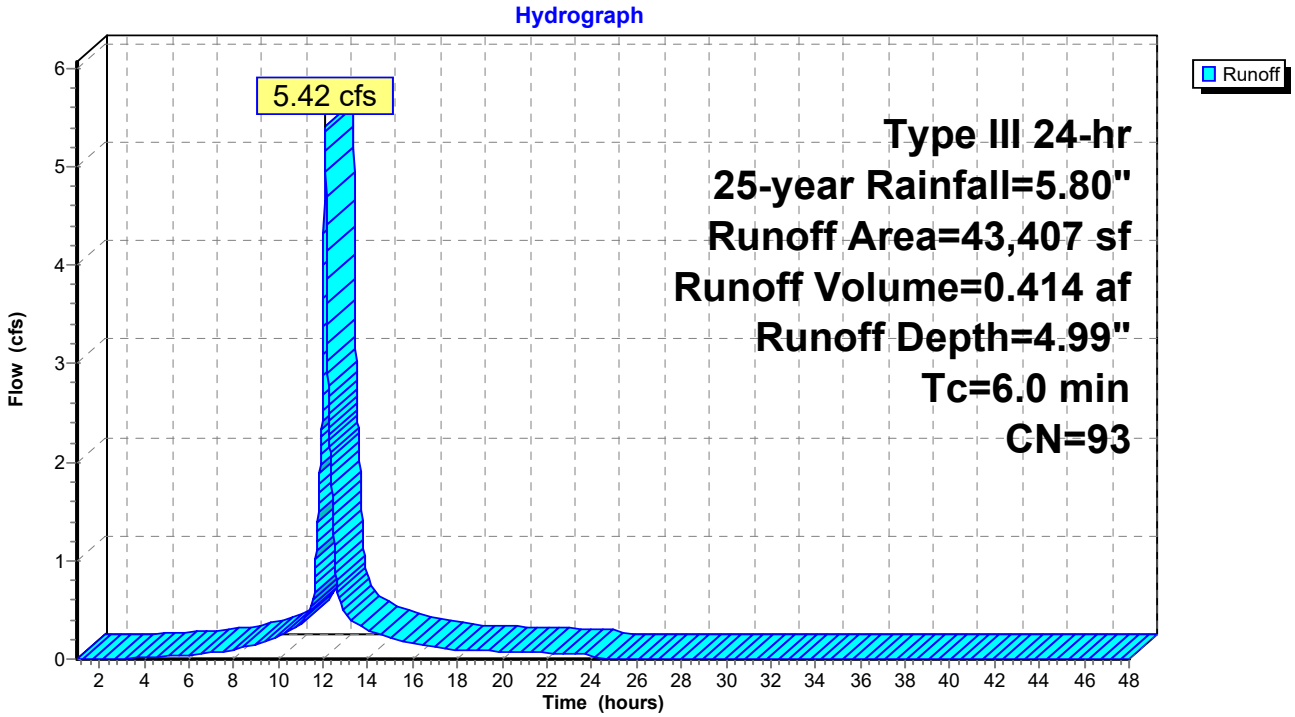
Runoff = 5.42 cfs @ 12.08 hrs, Volume= 0.414 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
125	96	Gravel surface, HSG A
39,059	98	Paved parking, HSG A
4,223	49	50-75% Grass cover, Fair, HSG A
43,407	93	Weighted Average
4,348		10.02% Pervious Area
39,059		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: 1

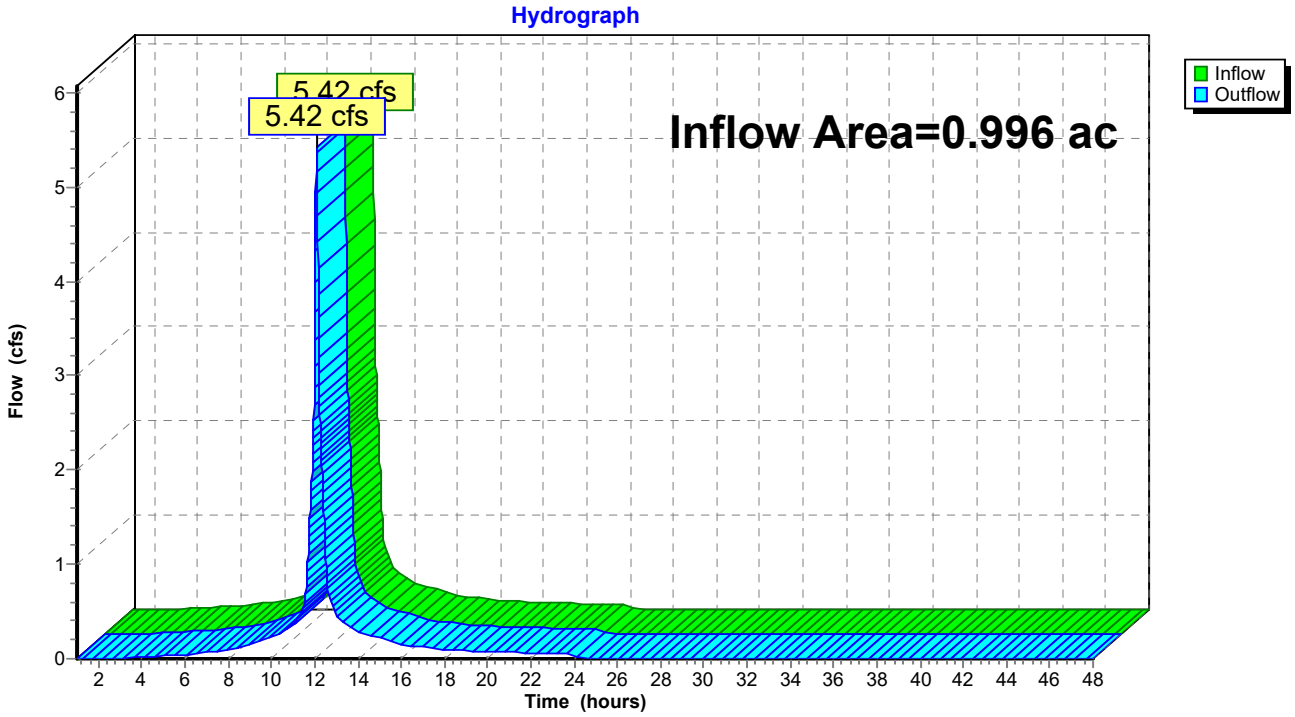


Summary for Reach 1r: Elm/ Lancaster Street

Inflow Area = 0.996 ac, 89.98% Impervious, Inflow Depth = 4.99" for 25-year event
Inflow = 5.42 cfs @ 12.08 hrs, Volume= 0.414 af
Outflow = 5.42 cfs @ 12.08 hrs, Volume= 0.414 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

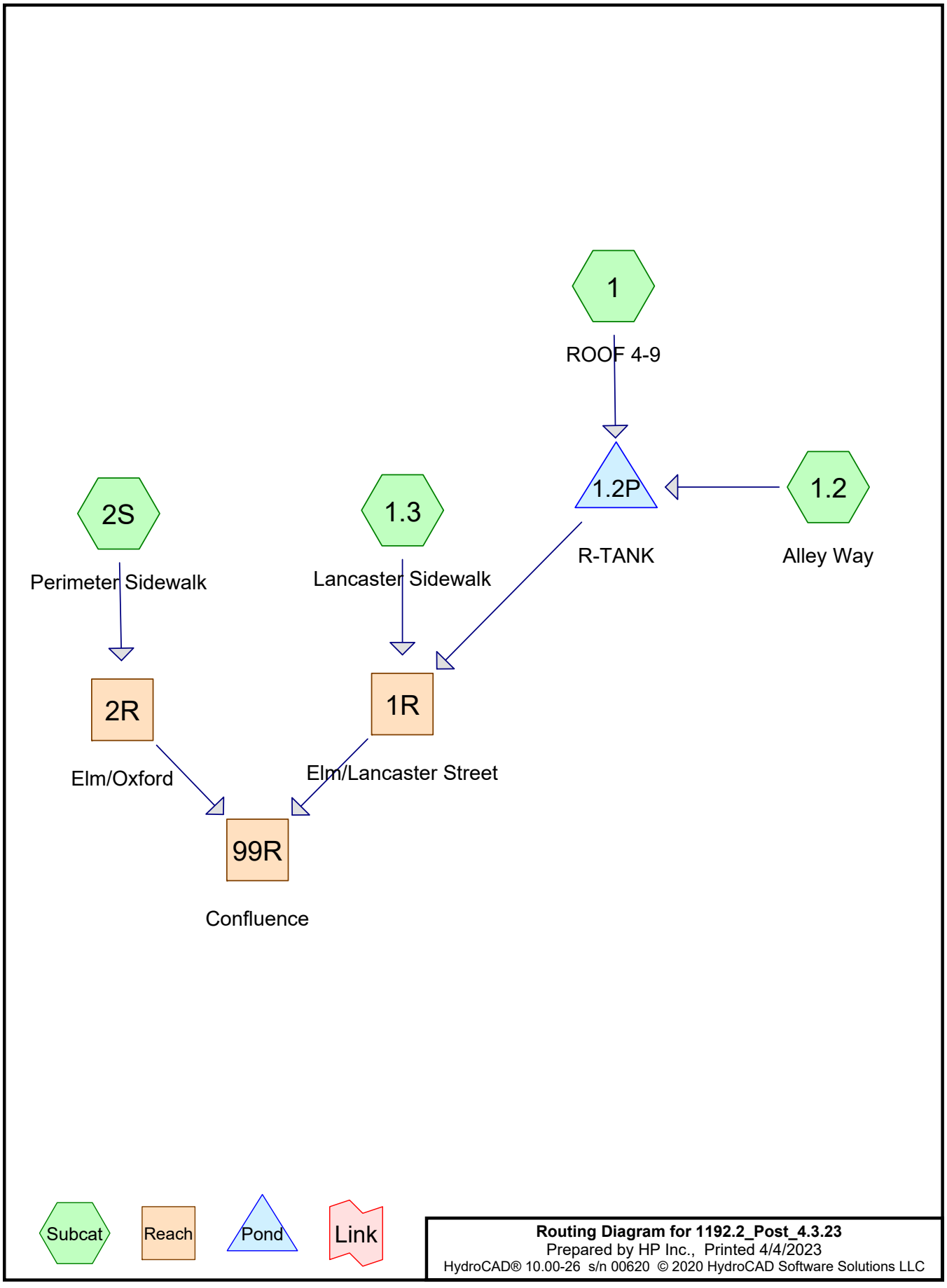
Reach 1r: Elm/ Lancaster Street



SECTION J

STORMWATER MANAGMENT REPORT

Attachment C: Post Development HydroCAD


1
ROOF 4-9
1.2P
R-TANK
1.2
Alley Way
2S
Perimeter Sidewalk
1.3
Lancaster Sidewalk
2R
Elm/Oxford
1R
Elm/Lancaster Street
99R
Confluence
Subcat
Reach
Pond
Link
Routing Diagram for 1192.2_Post_4.3.23
Prepared by HP Inc., Printed 4/4/2023
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.107	49	50-75% Grass cover, Fair, HSG A (1.2, 1.3, 2S)
0.015	96	Gravel surface, HSG A (1.2)
0.297	98	Paved parking, HSG A (1.2, 1.3)
0.566	98	Roofs, HSG A (1, 1.2)
0.010	98	Unconnected pavement, HSG A (2S)
0.996	**93**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.996	HSG A	1, 1.2, 1.3, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.996		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.107	0.000	0.000	0.000	0.000	0.107	50-75% Grass cover, Fair	1.2, 1.3, 2S
0.015	0.000	0.000	0.000	0.000	0.015	Gravel surface	1.2
0.297	0.000	0.000	0.000	0.000	0.297	Paved parking	1.2, 1.3
0.566	0.000	0.000	0.000	0.000	0.566	Roofs	1, 1.2
0.010	0.000	0.000	0.000	0.000	0.010	Unconnected pavement	2S
0.996	**0.000**	**0.000**	**0.000**	**0.000**	**0.996**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1.2P	19.05	18.85	40.0	0.0050	0.010	10.0	0.0	0.0

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: ROOF 4-9 Runoff Area=17,072 sf 100.00% Impervious Runoff Depth=1.48"
Tc=6.0 min CN=98 Runoff=0.63 cfs 0.048 af

Subcatchment 1.2: Alley Way Runoff Area=20,598 sf 83.36% Impervious Runoff Depth=0.91"
Tc=6.0 min CN=91 Runoff=0.50 cfs 0.036 af

Subcatchment 1.3: Lancaster Sidewalk Runoff Area=4,798 sf 70.38% Impervious Runoff Depth=0.50"
Tc=6.0 min CN=83 Runoff=0.06 cfs 0.005 af

Subcatchment 2S: Perimeter Sidewalk Runoff Area=934 sf 47.22% Impervious Runoff Depth=0.18"
Tc=6.0 min CN=72 Runoff=0.00 cfs 0.000 af

Reach 1R: Elm/Lancaster Street Inflow=0.09 cfs 0.089 af
Outflow=0.09 cfs 0.089 af

Reach 2R: Elm/Oxford Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 99R: Confluence Inflow=0.10 cfs 0.089 af
Outflow=0.10 cfs 0.089 af

Pond 1.2P: R-TANK Peak Elev=22.45' Storage=2,173 cf Inflow=1.13 cfs 0.084 af
Outflow=0.05 cfs 0.084 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.089 af Average Runoff Depth = 1.07"
12.31% Pervious = 0.123 ac 87.69% Impervious = 0.874 ac

Summary for Subcatchment 1: ROOF 4-9

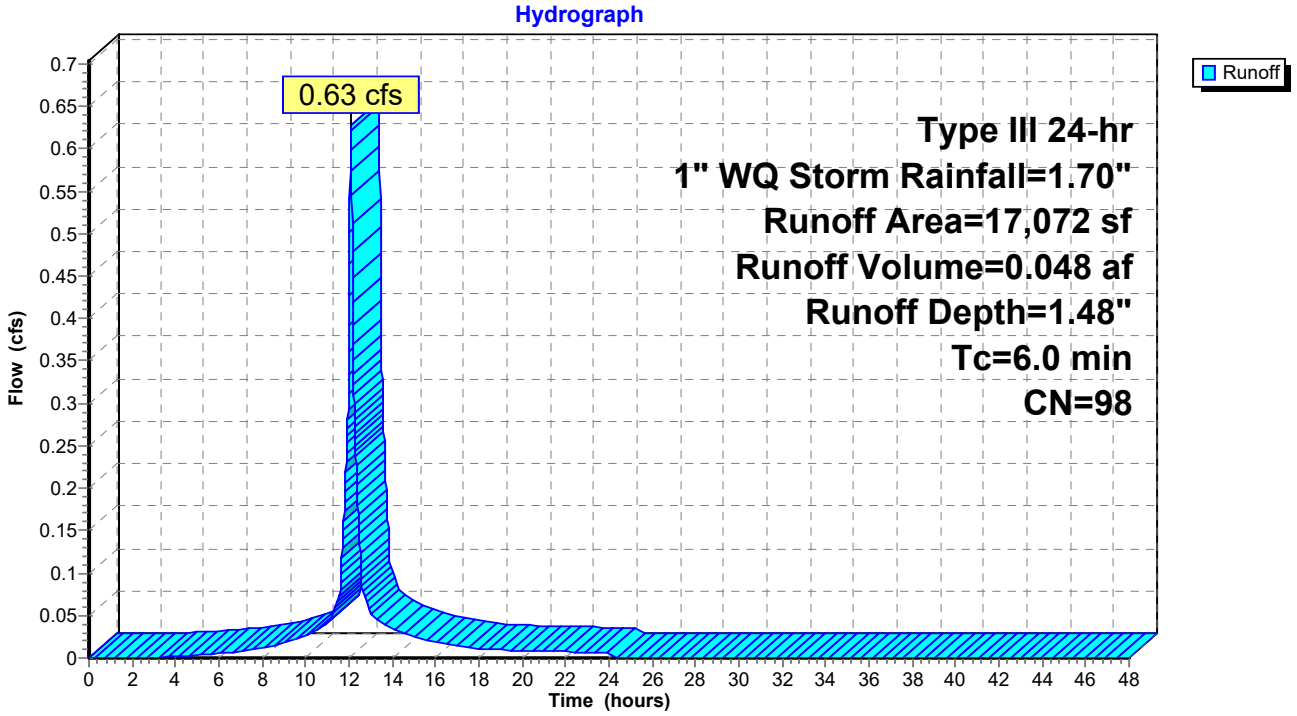
Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.048 af, Depth= 1.48"

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 1" WQ Storm Rainfall=1.70"

Area (sf)	CN	Description
17,072	98	Roofs, HSG A
17,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: ROOF 4-9



Hydrograph for Subcatchment 1: ROOF 4-9

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.70	1.48	0.00
0.50	0.01	0.00	0.00	27.00	1.70	1.48	0.00
1.00	0.02	0.00	0.00	27.50	1.70	1.48	0.00
1.50	0.03	0.00	0.00	28.00	1.70	1.48	0.00
2.00	0.03	0.00	0.00	28.50	1.70	1.48	0.00
2.50	0.04	0.00	0.00	29.00	1.70	1.48	0.00
3.00	0.05	0.00	0.00	29.50	1.70	1.48	0.00
3.50	0.06	0.00	0.00	30.00	1.70	1.48	0.00
4.00	0.07	0.00	0.00	30.50	1.70	1.48	0.00
4.50	0.08	0.01	0.00	31.00	1.70	1.48	0.00
5.00	0.10	0.01	0.00	31.50	1.70	1.48	0.00
5.50	0.11	0.02	0.00	32.00	1.70	1.48	0.00
6.00	0.12	0.02	0.01	32.50	1.70	1.48	0.00
6.50	0.14	0.03	0.01	33.00	1.70	1.48	0.00
7.00	0.15	0.04	0.01	33.50	1.70	1.48	0.00
7.50	0.17	0.05	0.01	34.00	1.70	1.48	0.00
8.00	0.19	0.07	0.01	34.50	1.70	1.48	0.00
8.50	0.22	0.08	0.01	35.00	1.70	1.48	0.00
9.00	0.25	0.10	0.02	35.50	1.70	1.48	0.00
9.50	0.28	0.13	0.02	36.00	1.70	1.48	0.00
10.00	0.32	0.16	0.03	36.50	1.70	1.48	0.00
10.50	0.37	0.20	0.03	37.00	1.70	1.48	0.00
11.00	0.43	0.25	0.04	37.50	1.70	1.48	0.00
11.50	0.51	0.32	0.07	38.00	1.70	1.48	0.00
12.00	0.85	0.65	**0.39**	38.50	1.70	1.48	0.00
12.50	1.19	0.98	**0.13**	39.00	1.70	1.48	0.00
13.00	1.28	1.06	0.05	39.50	1.70	1.48	0.00
13.50	1.33	1.11	0.04	40.00	1.70	1.48	0.00
14.00	1.38	1.16	0.03	40.50	1.70	1.48	0.00
14.50	1.42	1.20	0.03	41.00	1.70	1.48	0.00
15.00	1.45	1.23	0.03	41.50	1.70	1.48	0.00
15.50	1.48	1.26	0.02	42.00	1.70	1.48	0.00
16.00	1.51	1.29	0.02	42.50	1.70	1.48	0.00
16.50	1.53	1.31	0.02	43.00	1.70	1.48	0.00
17.00	1.55	1.33	0.01	43.50	1.70	1.48	0.00
17.50	1.56	1.34	0.01	44.00	1.70	1.48	0.00
18.00	1.58	1.36	0.01	44.50	1.70	1.48	0.00
18.50	1.59	1.37	0.01	45.00	1.70	1.48	0.00
19.00	1.60	1.38	0.01	45.50	1.70	1.48	0.00
19.50	1.62	1.39	0.01	46.00	1.70	1.48	0.00
20.00	1.63	1.41	0.01	46.50	1.70	1.48	0.00
20.50	1.64	1.42	0.01	47.00	1.70	1.48	0.00
21.00	1.65	1.43	0.01	47.50	1.70	1.48	0.00
21.50	1.66	1.44	0.01	48.00	1.70	1.48	0.00
22.00	1.67	1.45	0.01				
22.50	1.68	1.45	0.01				
23.00	1.68	1.46	0.01				
23.50	1.69	1.47	0.01				
24.00	**1.70**	**1.48**	0.01				
24.50	1.70	1.48	0.00				
25.00	1.70	1.48	0.00				
25.50	1.70	1.48	0.00				
26.00	1.70	1.48	0.00				

Summary for Subcatchment 1.2: Alley Way

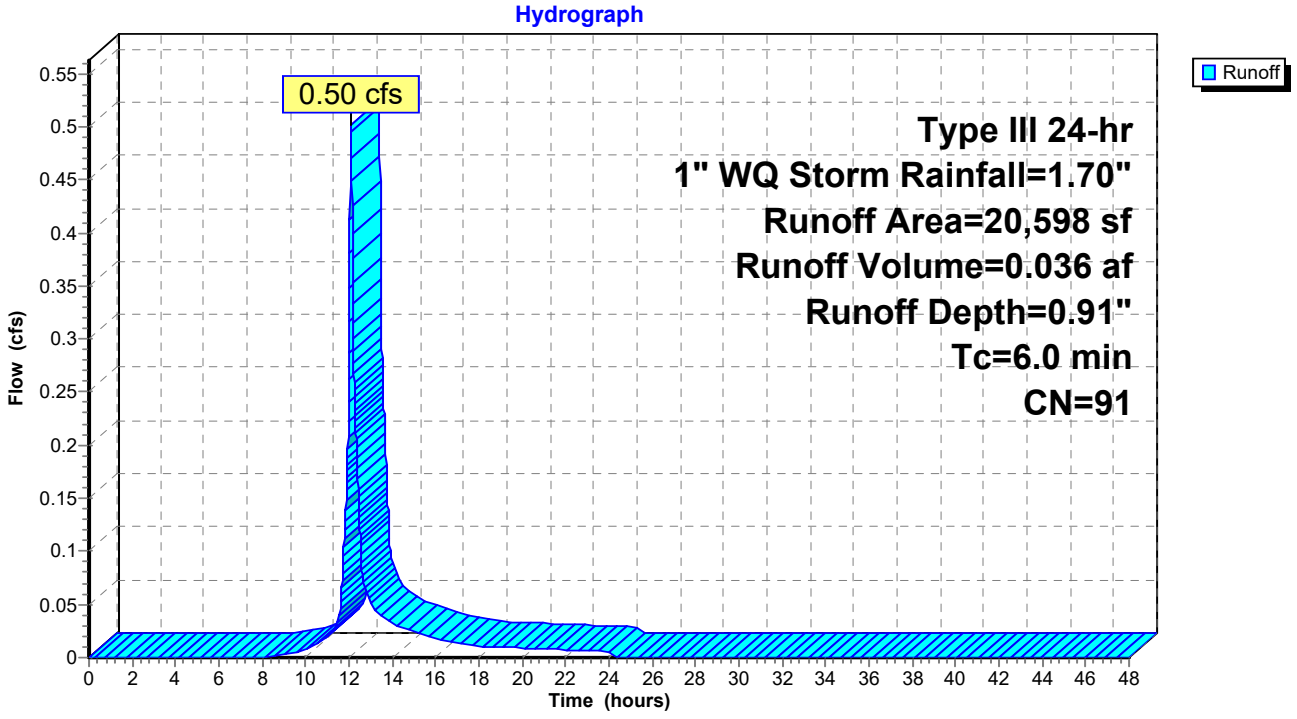
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Depth= 0.91"

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 1" WQ Storm Rainfall=1.70"

Area (sf)	CN	Description
2,755	49	50-75% Grass cover, Fair, HSG A
9,571	98	Paved parking, HSG A
672	96	Gravel surface, HSG A
7,600	98	Roofs, HSG A
20,598	91	Weighted Average
3,427		16.64% Pervious Area
17,171		83.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2: Alley Way



Hydrograph for Subcatchment 1.2: Alley Way

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.70	0.91	0.00
0.50	0.01	0.00	0.00	27.00	1.70	0.91	0.00
1.00	0.02	0.00	0.00	27.50	1.70	0.91	0.00
1.50	0.03	0.00	0.00	28.00	1.70	0.91	0.00
2.00	0.03	0.00	0.00	28.50	1.70	0.91	0.00
2.50	0.04	0.00	0.00	29.00	1.70	0.91	0.00
3.00	0.05	0.00	0.00	29.50	1.70	0.91	0.00
3.50	0.06	0.00	0.00	30.00	1.70	0.91	0.00
4.00	0.07	0.00	0.00	30.50	1.70	0.91	0.00
4.50	0.08	0.00	0.00	31.00	1.70	0.91	0.00
5.00	0.10	0.00	0.00	31.50	1.70	0.91	0.00
5.50	0.11	0.00	0.00	32.00	1.70	0.91	0.00
6.00	0.12	0.00	0.00	32.50	1.70	0.91	0.00
6.50	0.14	0.00	0.00	33.00	1.70	0.91	0.00
7.00	0.15	0.00	0.00	33.50	1.70	0.91	0.00
7.50	0.17	0.00	0.00	34.00	1.70	0.91	0.00
8.00	0.19	0.00	0.00	34.50	1.70	0.91	0.00
8.50	0.22	0.00	0.00	35.00	1.70	0.91	0.00
9.00	0.25	0.00	0.00	35.50	1.70	0.91	0.00
9.50	0.28	0.01	0.00	36.00	1.70	0.91	0.00
10.00	0.32	0.01	0.01	36.50	1.70	0.91	0.00
10.50	0.37	0.03	0.01	37.00	1.70	0.91	0.00
11.00	0.43	0.04	0.02	37.50	1.70	0.91	0.00
11.50	0.51	0.07	0.04	38.00	1.70	0.91	0.00
12.00	0.85	0.26	**0.29**	38.50	1.70	0.91	0.00
12.50	1.19	0.50	**0.12**	39.00	1.70	0.91	0.00
13.00	1.28	0.56	0.05	39.50	1.70	0.91	0.00
13.50	1.33	0.61	0.04	40.00	1.70	0.91	0.00
14.00	1.38	0.64	0.03	40.50	1.70	0.91	0.00
14.50	1.42	0.67	0.03	41.00	1.70	0.91	0.00
15.00	1.45	0.70	0.03	41.50	1.70	0.91	0.00
15.50	1.48	0.73	0.02	42.00	1.70	0.91	0.00
16.00	1.51	0.75	0.02	42.50	1.70	0.91	0.00
16.50	1.53	0.76	0.02	43.00	1.70	0.91	0.00
17.00	1.55	0.78	0.01	43.50	1.70	0.91	0.00
17.50	1.56	0.79	0.01	44.00	1.70	0.91	0.00
18.00	1.58	0.80	0.01	44.50	1.70	0.91	0.00
18.50	1.59	0.81	0.01	45.00	1.70	0.91	0.00
19.00	1.60	0.83	0.01	45.50	1.70	0.91	0.00
19.50	1.62	0.84	0.01	46.00	1.70	0.91	0.00
20.00	1.63	0.84	0.01	46.50	1.70	0.91	0.00
20.50	1.64	0.85	0.01	47.00	1.70	0.91	0.00
21.00	1.65	0.86	0.01	47.50	1.70	0.91	0.00
21.50	1.66	0.87	0.01	48.00	1.70	0.91	0.00
22.00	1.67	0.88	0.01				
22.50	1.68	0.89	0.01				
23.00	1.68	0.89	0.01				
23.50	1.69	0.90	0.01				
24.00	**1.70**	**0.91**	0.01				
24.50	1.70	0.91	0.00				
25.00	1.70	0.91	0.00				
25.50	1.70	0.91	0.00				
26.00	1.70	0.91	0.00				

Summary for Subcatchment 1.3: Lancaster Sidewalk

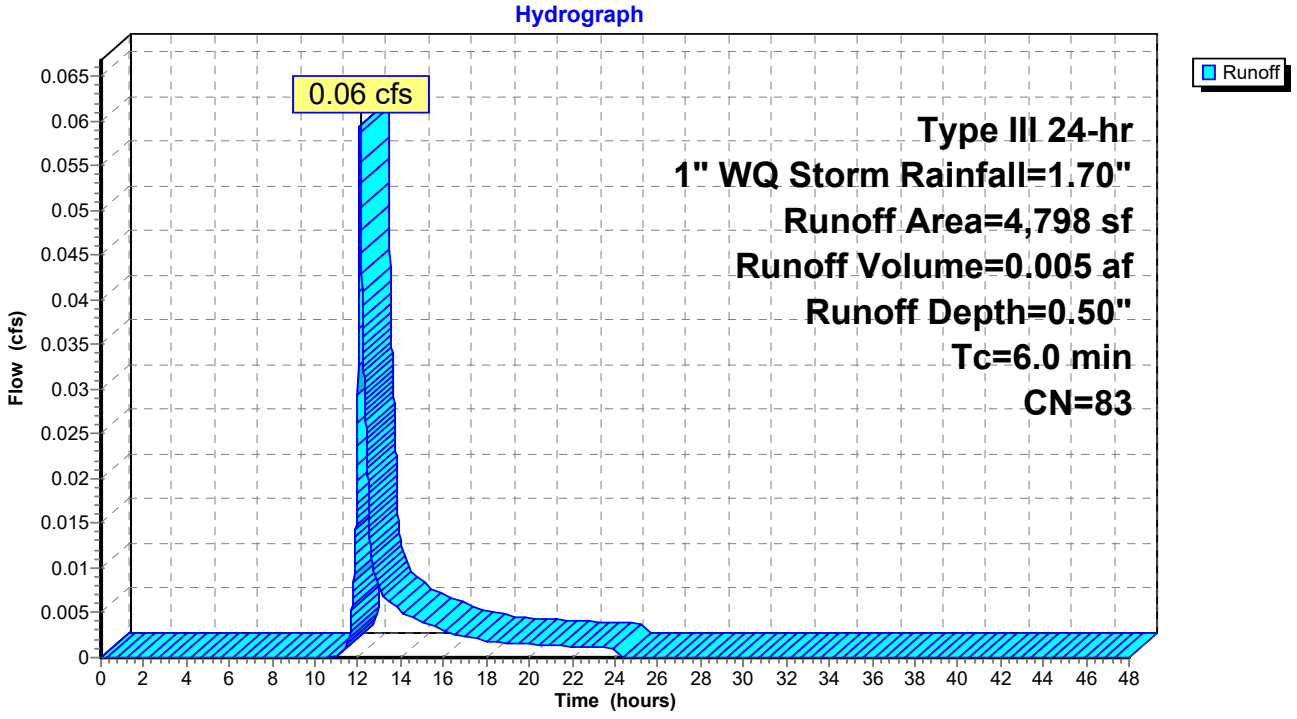
Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 0.50"

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 1" WQ Storm Rainfall=1.70"

Area (sf)	CN	Description
1,538	98	Paved parking, HSG A
1,306	49	50-75% Grass cover, Fair, HSG A
115	49	50-75% Grass cover, Fair, HSG A
1,839	98	Paved parking, HSG A
4,798	83	Weighted Average
1,421		29.62% Pervious Area
3,377		70.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.3: Lancaster Sidewalk



Hydrograph for Subcatchment 1.3: Lancaster Sidewalk

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.70	0.50	0.00
0.50	0.01	0.00	0.00	27.00	1.70	0.50	0.00
1.00	0.02	0.00	0.00	27.50	1.70	0.50	0.00
1.50	0.03	0.00	0.00	28.00	1.70	0.50	0.00
2.00	0.03	0.00	0.00	28.50	1.70	0.50	0.00
2.50	0.04	0.00	0.00	29.00	1.70	0.50	0.00
3.00	0.05	0.00	0.00	29.50	1.70	0.50	0.00
3.50	0.06	0.00	0.00	30.00	1.70	0.50	0.00
4.00	0.07	0.00	0.00	30.50	1.70	0.50	0.00
4.50	0.08	0.00	0.00	31.00	1.70	0.50	0.00
5.00	0.10	0.00	0.00	31.50	1.70	0.50	0.00
5.50	0.11	0.00	0.00	32.00	1.70	0.50	0.00
6.00	0.12	0.00	0.00	32.50	1.70	0.50	0.00
6.50	0.14	0.00	0.00	33.00	1.70	0.50	0.00
7.00	0.15	0.00	0.00	33.50	1.70	0.50	0.00
7.50	0.17	0.00	0.00	34.00	1.70	0.50	0.00
8.00	0.19	0.00	0.00	34.50	1.70	0.50	0.00
8.50	0.22	0.00	0.00	35.00	1.70	0.50	0.00
9.00	0.25	0.00	0.00	35.50	1.70	0.50	0.00
9.50	0.28	0.00	0.00	36.00	1.70	0.50	0.00
10.00	0.32	0.00	0.00	36.50	1.70	0.50	0.00
10.50	0.37	0.00	0.00	37.00	1.70	0.50	0.00
11.00	0.43	0.00	0.00	37.50	1.70	0.50	0.00
11.50	0.51	0.00	0.00	38.00	1.70	0.50	0.00
12.00	0.85	0.08	**0.03**	38.50	1.70	0.50	0.00
12.50	1.19	0.22	**0.02**	39.00	1.70	0.50	0.00
13.00	1.28	0.26	0.01	39.50	1.70	0.50	0.00
13.50	1.33	0.29	0.01	40.00	1.70	0.50	0.00
14.00	1.38	0.31	0.01	40.50	1.70	0.50	0.00
14.50	1.42	0.33	0.00	41.00	1.70	0.50	0.00
15.00	1.45	0.35	0.00	41.50	1.70	0.50	0.00
15.50	1.48	0.37	0.00	42.00	1.70	0.50	0.00
16.00	1.51	0.38	0.00	42.50	1.70	0.50	0.00
16.50	1.53	0.39	0.00	43.00	1.70	0.50	0.00
17.00	1.55	0.41	0.00	43.50	1.70	0.50	0.00
17.50	1.56	0.42	0.00	44.00	1.70	0.50	0.00
18.00	1.58	0.42	0.00	44.50	1.70	0.50	0.00
18.50	1.59	0.43	0.00	45.00	1.70	0.50	0.00
19.00	1.60	0.44	0.00	45.50	1.70	0.50	0.00
19.50	1.62	0.45	0.00	46.00	1.70	0.50	0.00
20.00	1.63	0.45	0.00	46.50	1.70	0.50	0.00
20.50	1.64	0.46	0.00	47.00	1.70	0.50	0.00
21.00	1.65	0.47	0.00	47.50	1.70	0.50	0.00
21.50	1.66	0.47	0.00	48.00	1.70	0.50	0.00
22.00	1.67	0.48	0.00				
22.50	1.68	0.48	0.00				
23.00	1.68	0.49	0.00				
23.50	1.69	0.49	0.00				
24.00	**1.70**	**0.50**	0.00				
24.50	1.70	0.50	0.00				
25.00	1.70	0.50	0.00				
25.50	1.70	0.50	0.00				
26.00	1.70	0.50	0.00				

Summary for Subcatchment 2S: Perimeter Sidewalk

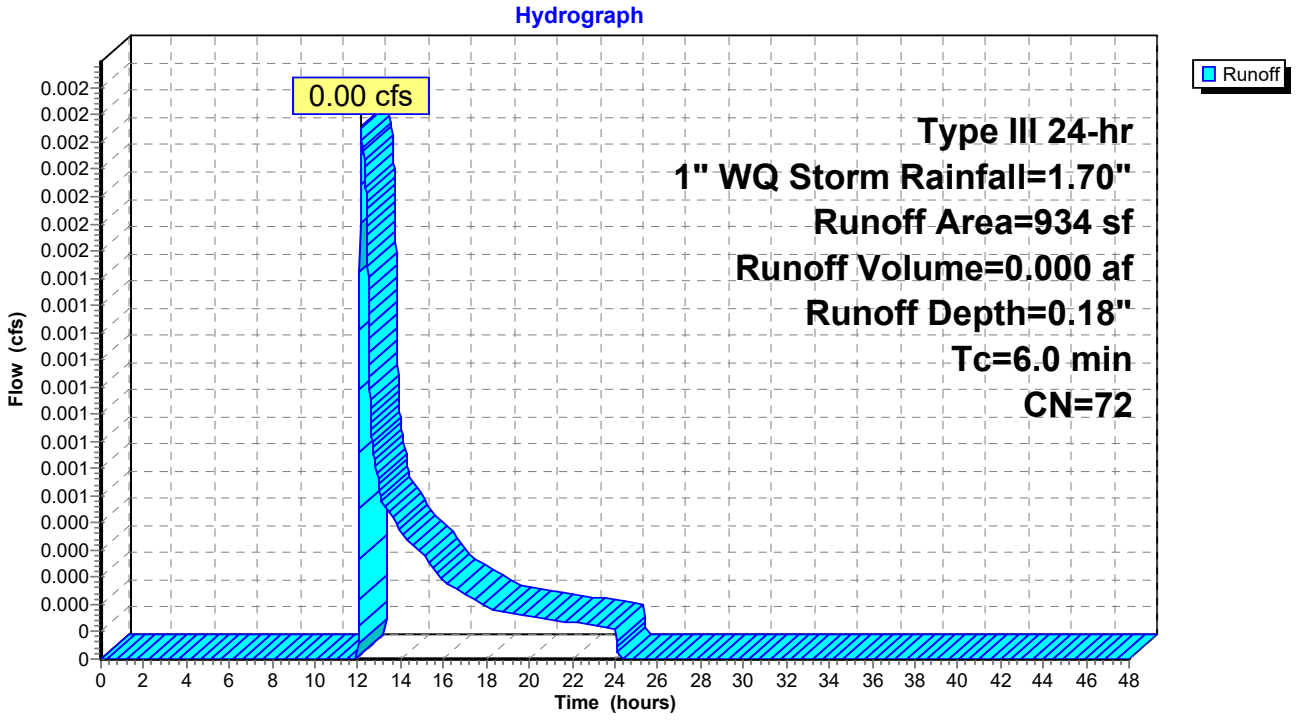
Runoff = 0.00 cfs @ 12.15 hrs, Volume= 0.000 af, Depth= 0.18"

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 1" WQ Storm Rainfall=1.70"

Area (sf)	CN	Description
441	98	Unconnected pavement, HSG A
493	49	50-75% Grass cover, Fair, HSG A
934	72	Weighted Average
493		52.78% Pervious Area
441		47.22% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Perimeter Sidewalk



Hydrograph for Subcatchment 2S: Perimeter Sidewalk

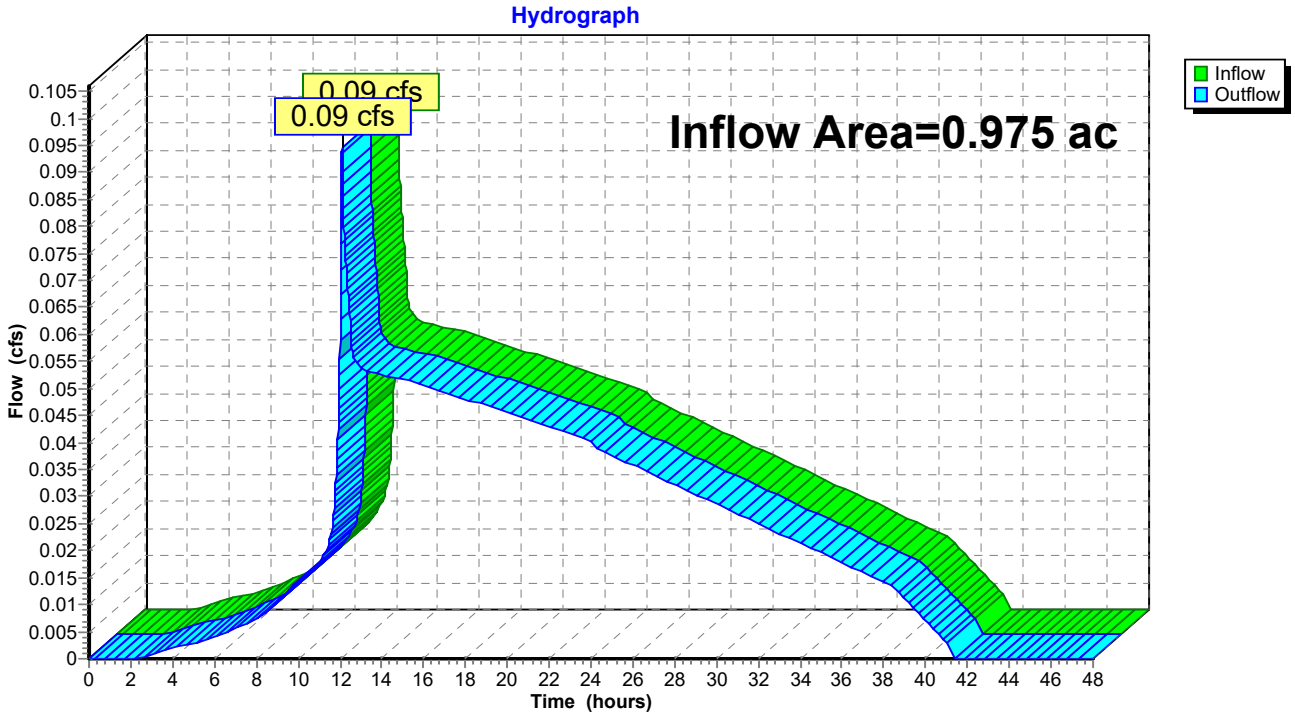
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.08	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.11	0.00	0.00
6.00	0.12	0.00	0.00
6.50	0.14	0.00	0.00
7.00	0.15	0.00	0.00
7.50	0.17	0.00	0.00
8.00	0.19	0.00	0.00
8.50	0.22	0.00	0.00
9.00	0.25	0.00	0.00
9.50	0.28	0.00	0.00
10.00	0.32	0.00	0.00
10.50	0.37	0.00	0.00
11.00	0.43	0.00	0.00
11.50	0.51	0.00	0.00
12.00	0.85	0.00	**0.00**
12.50	1.19	0.04	**0.00**
13.00	1.28	0.06	0.00
13.50	1.33	0.07	0.00
14.00	1.38	0.08	0.00
14.50	1.42	0.09	0.00
15.00	1.45	0.10	0.00
15.50	1.48	0.11	0.00
16.00	1.51	0.11	0.00
16.50	1.53	0.12	0.00
17.00	1.55	0.13	0.00
17.50	1.56	0.13	0.00
18.00	1.58	0.14	0.00
18.50	1.59	0.14	0.00
19.00	1.60	0.14	0.00
19.50	1.62	0.15	0.00
20.00	1.63	0.15	0.00
20.50	1.64	0.16	0.00
21.00	1.65	0.16	0.00
21.50	1.66	0.16	0.00
22.00	1.67	0.17	0.00
22.50	1.68	0.17	0.00
23.00	1.68	0.17	0.00
23.50	1.69	0.17	0.00
24.00	**1.70**	**0.18**	0.00
24.50	1.70	0.18	0.00
25.00	1.70	0.18	0.00
25.50	1.70	0.18	0.00
26.00	1.70	0.18	0.00
26.50	1.70	0.18	0.00
27.00	1.70	0.18	0.00
27.50	1.70	0.18	0.00
28.00	1.70	0.18	0.00
28.50	1.70	0.18	0.00
29.00	1.70	0.18	0.00
29.50	1.70	0.18	0.00
30.00	1.70	0.18	0.00
30.50	1.70	0.18	0.00
31.00	1.70	0.18	0.00
31.50	1.70	0.18	0.00
32.00	1.70	0.18	0.00
32.50	1.70	0.18	0.00
33.00	1.70	0.18	0.00
33.50	1.70	0.18	0.00
34.00	1.70	0.18	0.00
34.50	1.70	0.18	0.00
35.00	1.70	0.18	0.00
35.50	1.70	0.18	0.00
36.00	1.70	0.18	0.00
36.50	1.70	0.18	0.00
37.00	1.70	0.18	0.00
37.50	1.70	0.18	0.00
38.00	1.70	0.18	0.00
38.50	1.70	0.18	0.00
39.00	1.70	0.18	0.00
39.50	1.70	0.18	0.00
40.00	1.70	0.18	0.00
40.50	1.70	0.18	0.00
41.00	1.70	0.18	0.00
41.50	1.70	0.18	0.00
42.00	1.70	0.18	0.00
42.50	1.70	0.18	0.00
43.00	1.70	0.18	0.00
43.50	1.70	0.18	0.00
44.00	1.70	0.18	0.00
44.50	1.70	0.18	0.00
45.00	1.70	0.18	0.00
45.50	1.70	0.18	0.00
46.00	1.70	0.18	0.00
46.50	1.70	0.18	0.00
47.00	1.70	0.18	0.00
47.50	1.70	0.18	0.00
48.00	1.70	0.18	0.00

Summary for Reach 1R: Elm/Lancaster Street

Inflow Area = 0.975 ac, 88.58% Impervious, Inflow Depth = 1.09" for 1" WQ Storm event
Inflow = 0.09 cfs @ 12.10 hrs, Volume= 0.089 af
Outflow = 0.09 cfs @ 12.10 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: Elm/Lancaster Street



Hydrograph for Reach 1R: Elm/Lancaster Street

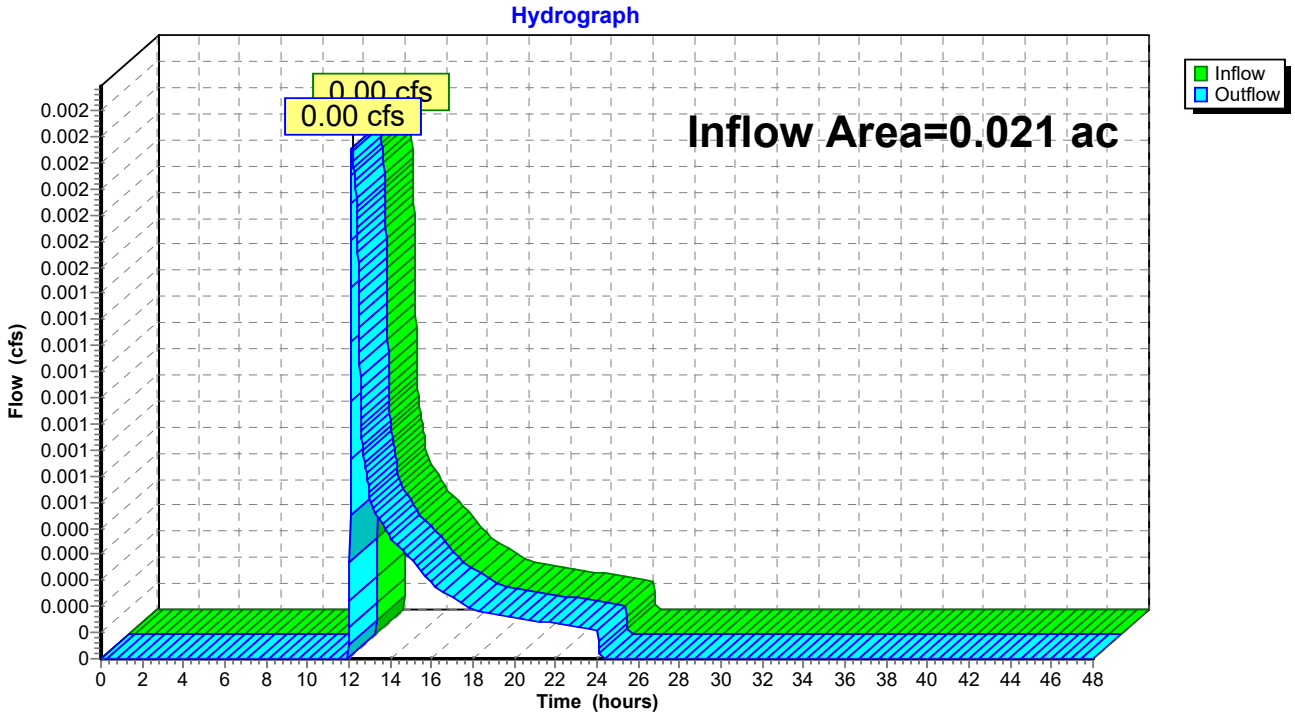
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.03		0.03
0.50	0.00		0.00	27.00	0.03		0.03
1.00	0.00		0.00	27.50	0.03		0.03
1.50	0.00		0.00	28.00	0.03		0.03
2.00	0.00		0.00	28.50	0.03		0.03
2.50	0.00		0.00	29.00	0.03		0.03
3.00	0.00		0.00	29.50	0.03		0.03
3.50	0.00		0.00	30.00	0.03		0.03
4.00	0.00		0.00	30.50	0.03		0.03
4.50	0.00		0.00	31.00	0.03		0.03
5.00	0.00		0.00	31.50	0.03		0.03
5.50	0.00		0.00	32.00	0.03		0.03
6.00	0.00		0.00	32.50	0.02		0.02
6.50	0.00		0.00	33.00	0.02		0.02
7.00	0.01		0.01	33.50	0.02		0.02
7.50	0.01		0.01	34.00	0.02		0.02
8.00	0.01		0.01	34.50	0.02		0.02
8.50	0.01		0.01	35.00	0.02		0.02
9.00	0.01		0.01	35.50	0.02		0.02
9.50	0.01		0.01	36.00	0.02		0.02
10.00	0.01		0.01	36.50	0.02		0.02
10.50	0.02		0.02	37.00	0.02		0.02
11.00	0.02		0.02	37.50	0.02		0.02
11.50	0.02		0.02	38.00	0.01		0.01
12.00	**0.06**		**0.06**	38.50	0.01		0.01
12.50	**0.06**		**0.06**	39.00	0.01		0.01
13.00	0.05		0.05	39.50	0.01		0.01
13.50	0.05		0.05	40.00	0.01		0.01
14.00	0.05		0.05	40.50	0.01		0.01
14.50	0.05		0.05	41.00	0.00		0.00
15.00	0.05		0.05	41.50	0.00		0.00
15.50	0.05		0.05	42.00	0.00		0.00
16.00	0.05		0.05	42.50	0.00		0.00
16.50	0.05		0.05	43.00	0.00		0.00
17.00	0.05		0.05	43.50	0.00		0.00
17.50	0.05		0.05	44.00	0.00		0.00
18.00	0.05		0.05	44.50	0.00		0.00
18.50	0.05		0.05	45.00	0.00		0.00
19.00	0.05		0.05	45.50	0.00		0.00
19.50	0.05		0.05	46.00	0.00		0.00
20.00	0.05		0.05	46.50	0.00		0.00
20.50	0.05		0.05	47.00	0.00		0.00
21.00	0.04		0.04	47.50	0.00		0.00
21.50	0.04		0.04	48.00	0.00		0.00
22.00	0.04		0.04				
22.50	0.04		0.04				
23.00	0.04		0.04				
23.50	0.04		0.04				
24.00	0.04		0.04				
24.50	0.04		0.04				
25.00	0.04		0.04				
25.50	0.04		0.04				
26.00	0.04		0.04				

Summary for Reach 2R: Elm/Oxford

Inflow Area = 0.021 ac, 47.22% Impervious, Inflow Depth = 0.18" for 1" WQ Storm event
Inflow = 0.00 cfs @ 12.15 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.15 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: Elm/Oxford



Hydrograph for Reach 2R: Elm/Oxford

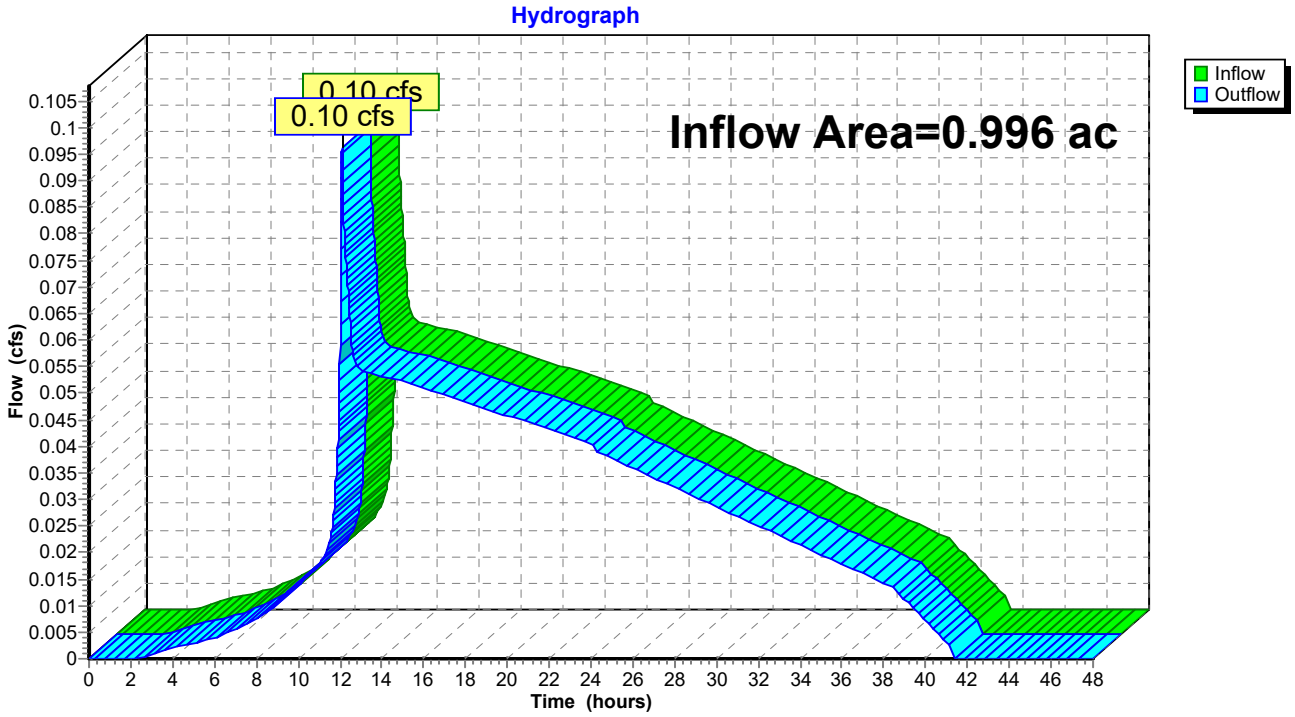
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.00		0.00
0.50	0.00		0.00	27.00	0.00		0.00
1.00	0.00		0.00	27.50	0.00		0.00
1.50	0.00		0.00	28.00	0.00		0.00
2.00	0.00		0.00	28.50	0.00		0.00
2.50	0.00		0.00	29.00	0.00		0.00
3.00	0.00		0.00	29.50	0.00		0.00
3.50	0.00		0.00	30.00	0.00		0.00
4.00	0.00		0.00	30.50	0.00		0.00
4.50	0.00		0.00	31.00	0.00		0.00
5.00	0.00		0.00	31.50	0.00		0.00
5.50	0.00		0.00	32.00	0.00		0.00
6.00	0.00		0.00	32.50	0.00		0.00
6.50	0.00		0.00	33.00	0.00		0.00
7.00	0.00		0.00	33.50	0.00		0.00
7.50	0.00		0.00	34.00	0.00		0.00
8.00	0.00		0.00	34.50	0.00		0.00
8.50	0.00		0.00	35.00	0.00		0.00
9.00	0.00		0.00	35.50	0.00		0.00
9.50	0.00		0.00	36.00	0.00		0.00
10.00	0.00		0.00	36.50	0.00		0.00
10.50	0.00		0.00	37.00	0.00		0.00
11.00	0.00		0.00	37.50	0.00		0.00
11.50	0.00		0.00	38.00	0.00		0.00
12.00	**0.00**		**0.00**	38.50	0.00		0.00
12.50	**0.00**		**0.00**	39.00	0.00		0.00
13.00	0.00		0.00	39.50	0.00		0.00
13.50	0.00		0.00	40.00	0.00		0.00
14.00	0.00		0.00	40.50	0.00		0.00
14.50	0.00		0.00	41.00	0.00		0.00
15.00	0.00		0.00	41.50	0.00		0.00
15.50	0.00		0.00	42.00	0.00		0.00
16.00	0.00		0.00	42.50	0.00		0.00
16.50	0.00		0.00	43.00	0.00		0.00
17.00	0.00		0.00	43.50	0.00		0.00
17.50	0.00		0.00	44.00	0.00		0.00
18.00	0.00		0.00	44.50	0.00		0.00
18.50	0.00		0.00	45.00	0.00		0.00
19.00	0.00		0.00	45.50	0.00		0.00
19.50	0.00		0.00	46.00	0.00		0.00
20.00	0.00		0.00	46.50	0.00		0.00
20.50	0.00		0.00	47.00	0.00		0.00
21.00	0.00		0.00	47.50	0.00		0.00
21.50	0.00		0.00	48.00	0.00		0.00
22.00	0.00		0.00				
22.50	0.00		0.00				
23.00	0.00		0.00				
23.50	0.00		0.00				
24.00	0.00		0.00				
24.50	0.00		0.00				
25.00	0.00		0.00				
25.50	0.00		0.00				
26.00	0.00		0.00				

Summary for Reach 99R: Confluence

Inflow Area = 0.996 ac, 87.69% Impervious, Inflow Depth = 1.07" for 1" WQ Storm event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 0.089 af
Outflow = 0.10 cfs @ 12.11 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 99R: Confluence



Hydrograph for Reach 99R: Confluence

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.03		0.03
0.50	0.00		0.00	27.00	0.03		0.03
1.00	0.00		0.00	27.50	0.03		0.03
1.50	0.00		0.00	28.00	0.03		0.03
2.00	0.00		0.00	28.50	0.03		0.03
2.50	0.00		0.00	29.00	0.03		0.03
3.00	0.00		0.00	29.50	0.03		0.03
3.50	0.00		0.00	30.00	0.03		0.03
4.00	0.00		0.00	30.50	0.03		0.03
4.50	0.00		0.00	31.00	0.03		0.03
5.00	0.00		0.00	31.50	0.03		0.03
5.50	0.00		0.00	32.00	0.03		0.03
6.00	0.00		0.00	32.50	0.02		0.02
6.50	0.00		0.00	33.00	0.02		0.02
7.00	0.01		0.01	33.50	0.02		0.02
7.50	0.01		0.01	34.00	0.02		0.02
8.00	0.01		0.01	34.50	0.02		0.02
8.50	0.01		0.01	35.00	0.02		0.02
9.00	0.01		0.01	35.50	0.02		0.02
9.50	0.01		0.01	36.00	0.02		0.02
10.00	0.01		0.01	36.50	0.02		0.02
10.50	0.02		0.02	37.00	0.02		0.02
11.00	0.02		0.02	37.50	0.02		0.02
11.50	0.02		0.02	38.00	0.01		0.01
12.00	**0.06**		**0.06**	38.50	0.01		0.01
12.50	**0.06**		**0.06**	39.00	0.01		0.01
13.00	0.05		0.05	39.50	0.01		0.01
13.50	0.05		0.05	40.00	0.01		0.01
14.00	0.05		0.05	40.50	0.01		0.01
14.50	0.05		0.05	41.00	0.00		0.00
15.00	0.05		0.05	41.50	0.00		0.00
15.50	0.05		0.05	42.00	0.00		0.00
16.00	0.05		0.05	42.50	0.00		0.00
16.50	0.05		0.05	43.00	0.00		0.00
17.00	0.05		0.05	43.50	0.00		0.00
17.50	0.05		0.05	44.00	0.00		0.00
18.00	0.05		0.05	44.50	0.00		0.00
18.50	0.05		0.05	45.00	0.00		0.00
19.00	0.05		0.05	45.50	0.00		0.00
19.50	0.05		0.05	46.00	0.00		0.00
20.00	0.05		0.05	46.50	0.00		0.00
20.50	0.05		0.05	47.00	0.00		0.00
21.00	0.04		0.04	47.50	0.00		0.00
21.50	0.04		0.04	48.00	0.00		0.00
22.00	0.04		0.04				
22.50	0.04		0.04				
23.00	0.04		0.04				
23.50	0.04		0.04				
24.00	0.04		0.04				
24.50	0.04		0.04				
25.00	0.04		0.04				
25.50	0.04		0.04				
26.00	0.04		0.04				

Summary for Pond 1.2P: R-TANK

Inflow Area = 0.865 ac, 90.90% Impervious, Inflow Depth = 1.16" for 1" WQ Storm event
Inflow = 1.13 cfs @ 12.09 hrs, Volume= 0.084 af
Outflow = 0.05 cfs @ 15.19 hrs, Volume= 0.084 af, Atten= 96%, Lag= 186.5 min
Primary = 0.05 cfs @ 15.19 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 22.45' @ 15.19 hrs Surf.Area= 747 sf Storage= 2,173 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 539.0 min (1,334.9 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1B	19.15'	438 cf	**34.81'W x 21.11'L x 5.45'H Field B** 4,005 cf Overall - 2,909 cf Embedded = 1,096 cf x 40.0% Voids
#2B	19.40'	2,763 cf	**ACF R-Tank HD 3** x 225 Inside #1 Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf 225 Chambers in 25 Rows
#3	19.15'	77 cf	**4.00'D x 6.10'H Vertical Cone/Cylinder**
#4	25.25'	415 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		3,693 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	4	0	0
26.00	1,102	415	415

Device	Routing	Invert	Outlet Devices
#1	Primary	19.05'	**10.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.05' / 18.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	19.10'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	22.75'	**4.0' long x 0.7' breadth OCS Bulkhead** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32
#4	Primary	25.75'	**10.0' long x 5.0' breadth Emergency Overflow.** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.05 cfs @ 15.19 hrs HW=22.45' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.05 cfs of 3.58 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 8.76 fps)
  - **3=OCS Bulkhead** (Controls 0.00 cfs)
- **4=Emergency Overflow.** (Controls 0.00 cfs)

Pond 1.2P: R-TANK - Chamber Wizard Field B

Chamber Model = ACF R-Tank HD 3 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf
Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf

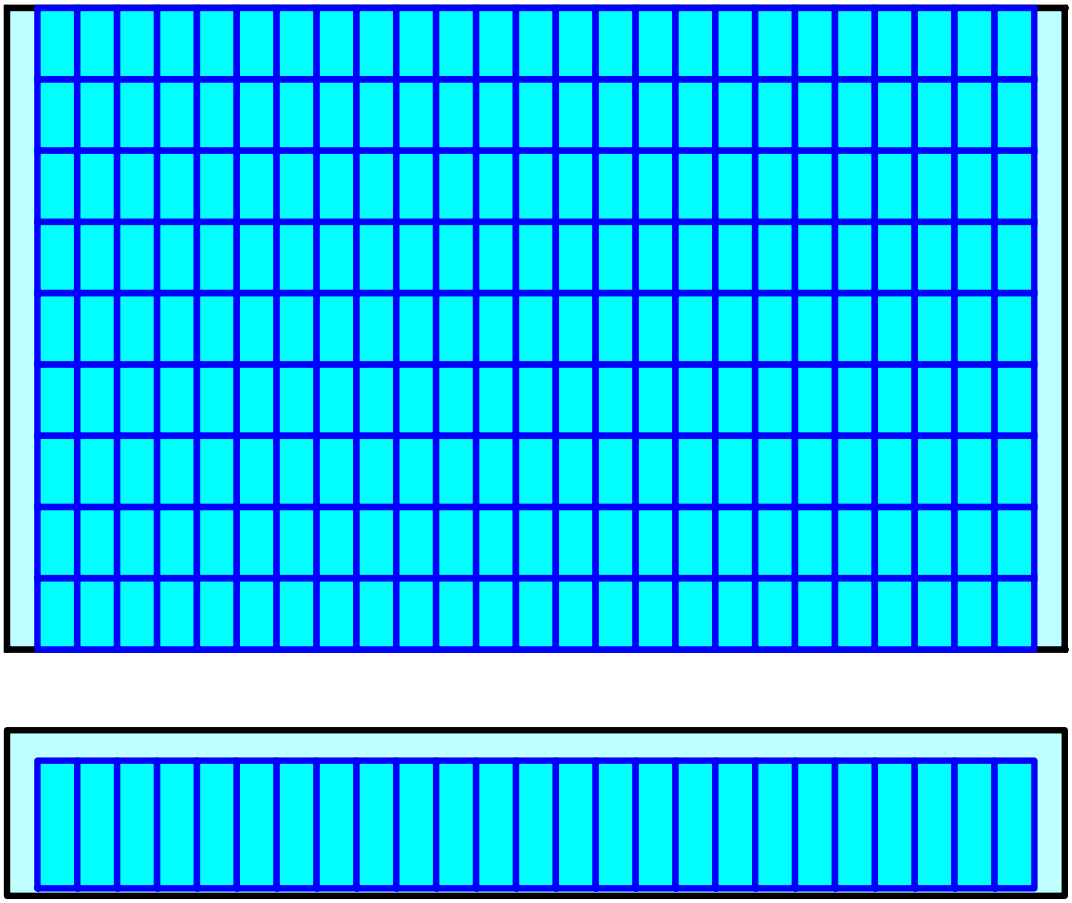
9 Chambers/Row x 2.35' Long = 21.11' Row Length
25 Rows x 15.7" Wide + 12.0" Side Stone x 2 = 34.81' Base Width
3.0" Base + 50.4" Chamber Height + 12.0" Cover = 5.45' Field Height

225 Chambers x 12.3 cf = 2,763.4 cf Chamber Storage
225 Chambers x 12.9 cf = 2,908.8 cf Displacement

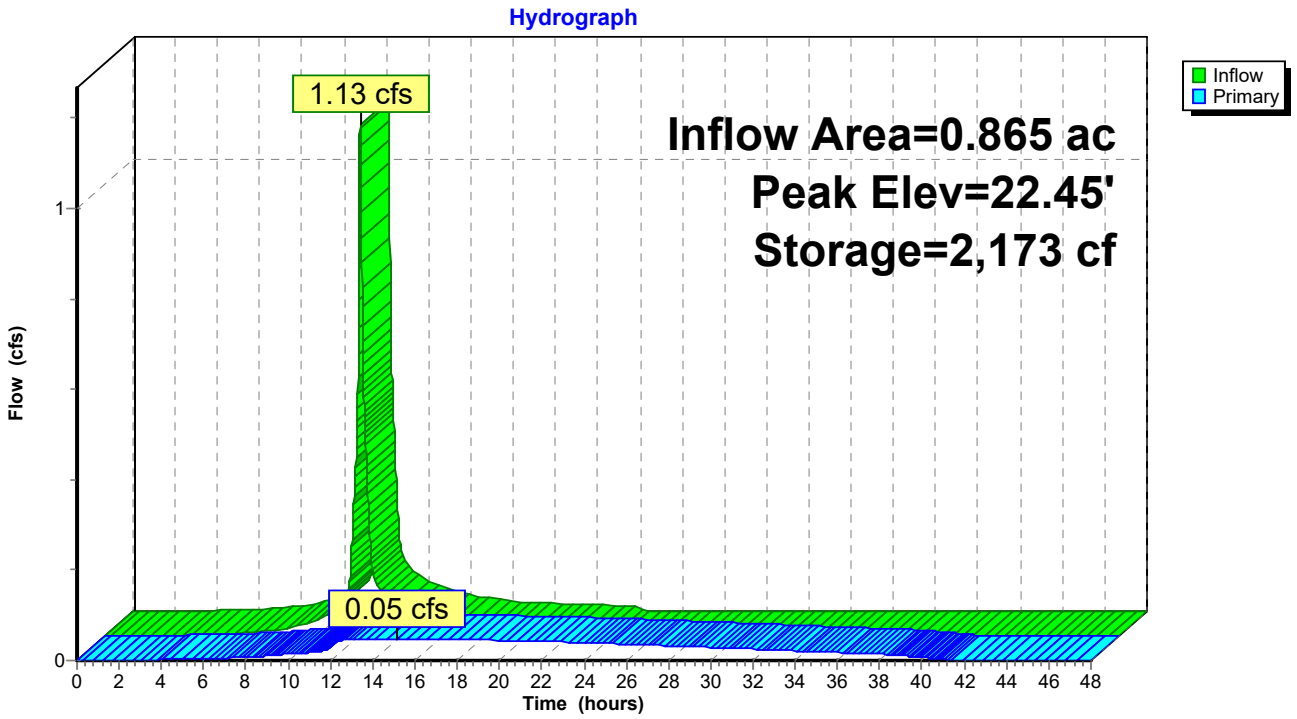
4,004.7 cf Field - 2,908.8 cf Chambers = 1,095.9 cf Stone x 40.0% Voids = 438.4 cf Stone Storage

Chamber Storage + Stone Storage = 3,201.7 cf = 0.074 af
Overall Storage Efficiency = 79.9%
Overall System Size = 21.11' x 34.81' x 5.45'

225 Chambers
148.3 cy Field
40.6 cy Stone



Pond 1.2P: R-TANK



Hydrograph for Pond 1.2P: R-TANK

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	19.15	0.00
1.00	0.00	0	19.15	0.00
2.00	0.00	0	19.15	0.00
3.00	0.00	0	19.15	0.00
4.00	0.00	0	19.15	0.00
5.00	0.00	1	19.15	0.00
6.00	0.01	5	19.16	0.00
7.00	0.01	11	19.19	0.01
8.00	0.01	22	19.22	0.01
9.00	0.02	46	19.30	0.01
10.00	0.03	99	19.43	0.01
11.00	0.06	209	19.59	0.02
12.00	**0.68**	776	20.42	0.03
13.00	**0.10**	2,008	22.21	0.05
14.00	0.07	2,135	22.39	0.05
15.00	0.05	**2,172**	**22.45**	**0.05**
16.00	0.04	**2,156**	**22.43**	**0.05**
17.00	0.03	2,100	22.34	0.05
18.00	0.02	2,023	22.23	0.05
19.00	0.02	1,933	22.10	0.05
20.00	0.02	1,839	21.96	0.04
21.00	0.02	1,743	21.82	0.04
22.00	0.01	1,645	21.68	0.04
23.00	0.01	1,546	21.54	0.04
24.00	0.01	1,447	21.39	0.04
25.00	0.00	1,312	21.20	0.04
26.00	0.00	1,179	21.00	0.04
27.00	0.00	1,054	20.82	0.03
28.00	0.00	934	20.65	0.03
29.00	0.00	822	20.48	0.03
30.00	0.00	715	20.33	0.03
31.00	0.00	616	20.18	0.03
32.00	0.00	522	20.05	0.03
33.00	0.00	436	19.92	0.02
34.00	0.00	355	19.81	0.02
35.00	0.00	282	19.70	0.02
36.00	0.00	214	19.60	0.02
37.00	0.00	153	19.51	0.02
38.00	0.00	99	19.43	0.01
39.00	0.00	53	19.32	0.01
40.00	0.00	20	19.21	0.01
41.00	0.00	2	19.16	0.00
42.00	0.00	0	19.15	0.00
43.00	0.00	0	19.15	0.00
44.00	0.00	0	19.15	0.00
45.00	0.00	0	19.15	0.00
46.00	0.00	0	19.15	0.00
47.00	0.00	0	19.15	0.00
48.00	0.00	0	19.15	0.00

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: ROOF 4-9 Runoff Area=17,072 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=1.18 cfs 0.094 af

Subcatchment 1.2: Alley Way Runoff Area=20,598 sf 83.36% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=1.18 cfs 0.085 af

Subcatchment 1.3: Lancaster Sidewalk Runoff Area=4,798 sf 70.38% Impervious Runoff Depth=1.53"
Tc=6.0 min CN=83 Runoff=0.20 cfs 0.014 af

Subcatchment 2S: Perimeter Sidewalk Runoff Area=934 sf 47.22% Impervious Runoff Depth=0.87"
Tc=6.0 min CN=72 Runoff=0.02 cfs 0.002 af

Reach 1R: Elm/Lancaster Street Inflow=2.33 cfs 0.193 af
Outflow=2.33 cfs 0.193 af

Reach 2R: Elm/Oxford Inflow=0.02 cfs 0.002 af
Outflow=0.02 cfs 0.002 af

Reach 99R: Confluence Inflow=2.35 cfs 0.195 af
Outflow=2.35 cfs 0.195 af

Pond 1.2P: R-TANK Peak Elev=23.08' Storage=2,604 cf Inflow=2.36 cfs 0.179 af
Outflow=2.14 cfs 0.179 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.195 af Average Runoff Depth = 2.34"
12.31% Pervious = 0.123 ac 87.69% Impervious = 0.874 ac

Summary for Subcatchment 1: ROOF 4-9

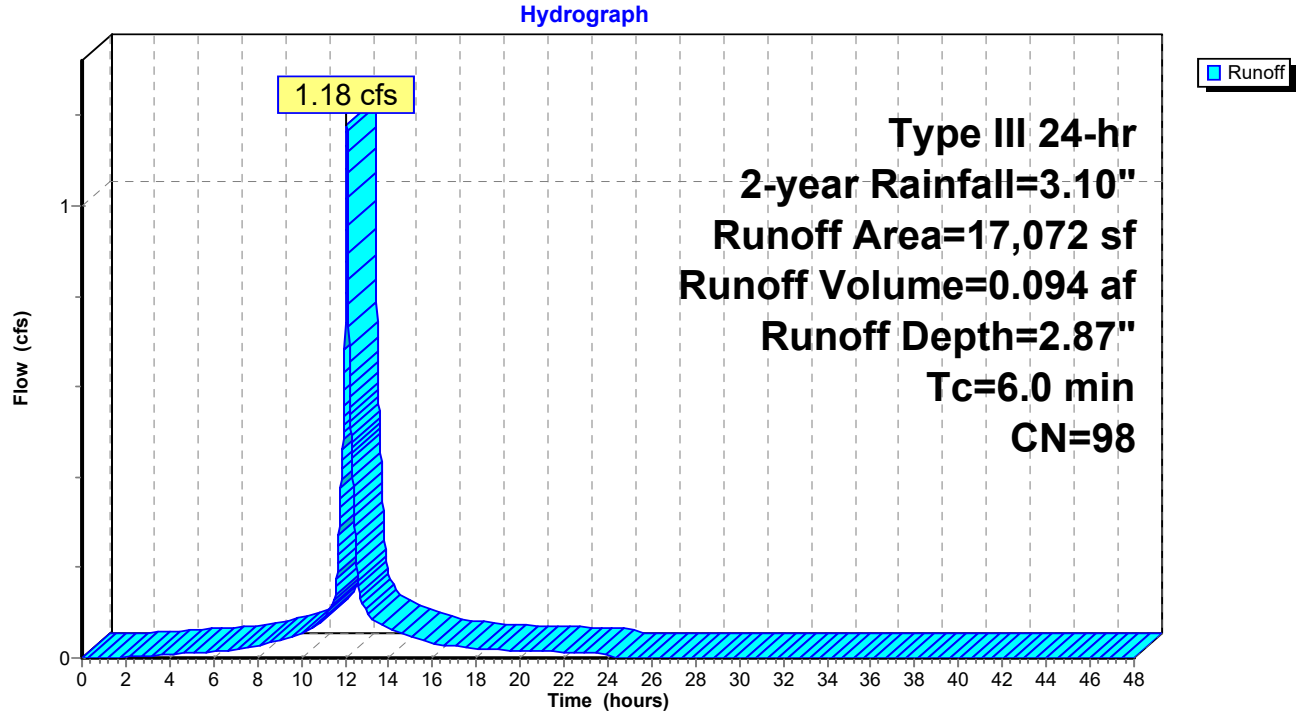
Runoff = 1.18 cfs @ 12.08 hrs, Volume= 0.094 af, Depth= 2.87"

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 2-year Rainfall=3.10"

Area (sf)	CN	Description
17,072	98	Roofs, HSG A
17,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: ROOF 4-9



Hydrograph for Subcatchment 1: ROOF 4-9

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	3.10	2.87	0.00
0.50	0.02	0.00	0.00	27.00	3.10	2.87	0.00
1.00	0.03	0.00	0.00	27.50	3.10	2.87	0.00
1.50	0.05	0.00	0.00	28.00	3.10	2.87	0.00
2.00	0.06	0.00	0.00	28.50	3.10	2.87	0.00
2.50	0.08	0.01	0.00	29.00	3.10	2.87	0.00
3.00	0.10	0.01	0.01	29.50	3.10	2.87	0.00
3.50	0.11	0.02	0.01	30.00	3.10	2.87	0.00
4.00	0.13	0.03	0.01	30.50	3.10	2.87	0.00
4.50	0.15	0.04	0.01	31.00	3.10	2.87	0.00
5.00	0.18	0.05	0.01	31.50	3.10	2.87	0.00
5.50	0.20	0.07	0.01	32.00	3.10	2.87	0.00
6.00	0.22	0.09	0.01	32.50	3.10	2.87	0.00
6.50	0.25	0.11	0.02	33.00	3.10	2.87	0.00
7.00	0.28	0.13	0.02	33.50	3.10	2.87	0.00
7.50	0.32	0.16	0.02	34.00	3.10	2.87	0.00
8.00	0.35	0.19	0.03	34.50	3.10	2.87	0.00
8.50	0.40	0.23	0.03	35.00	3.10	2.87	0.00
9.00	0.45	0.27	0.04	35.50	3.10	2.87	0.00
9.50	0.51	0.33	0.05	36.00	3.10	2.87	0.00
10.00	0.59	0.40	0.05	36.50	3.10	2.87	0.00
10.50	0.67	0.48	0.07	37.00	3.10	2.87	0.00
11.00	0.77	0.57	0.08	37.50	3.10	2.87	0.00
11.50	0.92	0.72	0.13	38.00	3.10	2.87	0.00
12.00	1.55	1.33	**0.74**	38.50	3.10	2.87	0.00
12.50	2.18	1.95	**0.24**	39.00	3.10	2.87	0.00
13.00	2.32	2.10	0.10	39.50	3.10	2.87	0.00
13.50	2.43	2.20	0.08	40.00	3.10	2.87	0.00
14.00	2.51	2.28	0.06	40.50	3.10	2.87	0.00
14.50	2.59	2.36	0.05	41.00	3.10	2.87	0.00
15.00	2.65	2.42	0.05	41.50	3.10	2.87	0.00
15.50	2.70	2.47	0.04	42.00	3.10	2.87	0.00
16.00	2.75	2.52	0.03	42.50	3.10	2.87	0.00
16.50	2.78	2.55	0.03	43.00	3.10	2.87	0.00
17.00	2.82	2.59	0.03	43.50	3.10	2.87	0.00
17.50	2.85	2.62	0.02	44.00	3.10	2.87	0.00
18.00	2.88	2.65	0.02	44.50	3.10	2.87	0.00
18.50	2.90	2.67	0.02	45.00	3.10	2.87	0.00
19.00	2.92	2.69	0.02	45.50	3.10	2.87	0.00
19.50	2.95	2.71	0.02	46.00	3.10	2.87	0.00
20.00	2.97	2.74	0.02	46.50	3.10	2.87	0.00
20.50	2.99	2.75	0.02	47.00	3.10	2.87	0.00
21.00	3.01	2.77	0.01	47.50	3.10	2.87	0.00
21.50	3.02	2.79	0.01	48.00	3.10	2.87	0.00
22.00	3.04	2.81	0.01				
22.50	3.06	2.82	0.01				
23.00	3.07	2.84	0.01				
23.50	3.09	2.85	0.01				
24.00	**3.10**	**2.87**	0.01				
24.50	3.10	2.87	0.00				
25.00	3.10	2.87	0.00				
25.50	3.10	2.87	0.00				
26.00	3.10	2.87	0.00				

Summary for Subcatchment 1.2: Alley Way

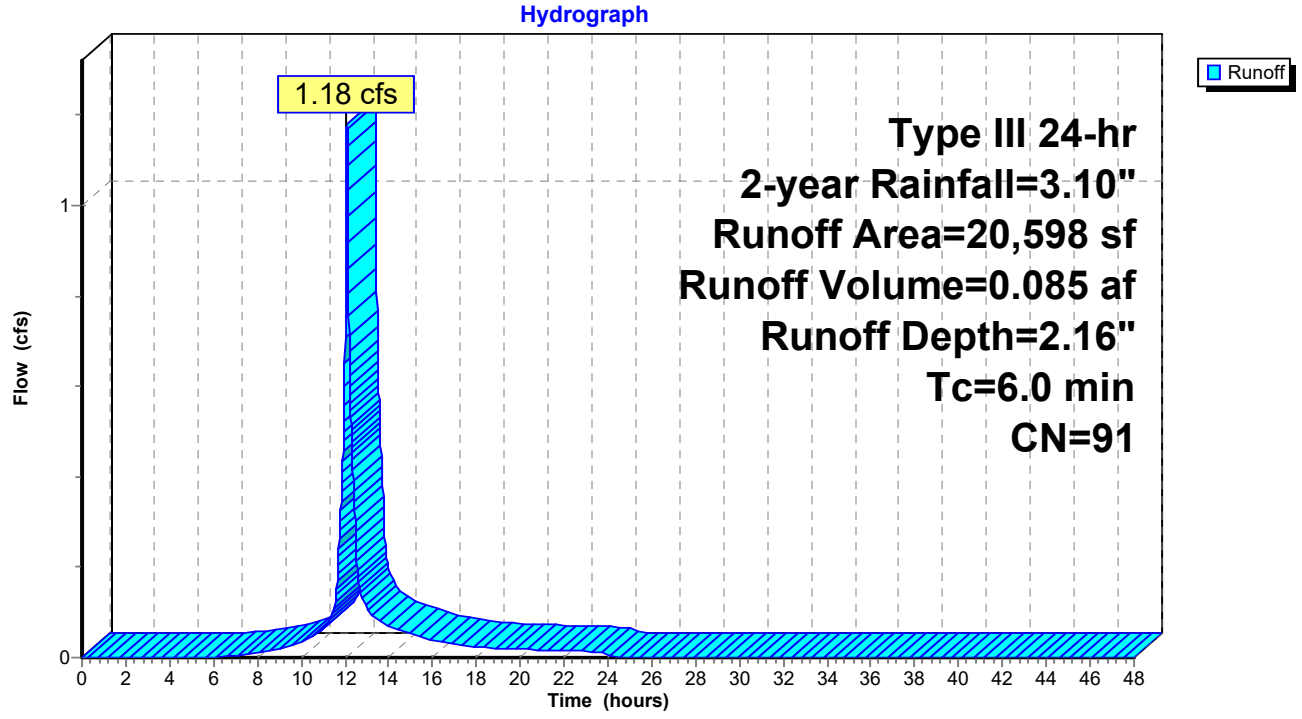
Runoff = 1.18 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 2.16"

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 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,755	49	50-75% Grass cover, Fair, HSG A
9,571	98	Paved parking, HSG A
672	96	Gravel surface, HSG A
7,600	98	Roofs, HSG A
20,598	91	Weighted Average
3,427		16.64% Pervious Area
17,171		83.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2: Alley Way



Hydrograph for Subcatchment 1.2: Alley Way

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	3.10	2.16	0.00
0.50	0.02	0.00	0.00	27.00	3.10	2.16	0.00
1.00	0.03	0.00	0.00	27.50	3.10	2.16	0.00
1.50	0.05	0.00	0.00	28.00	3.10	2.16	0.00
2.00	0.06	0.00	0.00	28.50	3.10	2.16	0.00
2.50	0.08	0.00	0.00	29.00	3.10	2.16	0.00
3.00	0.10	0.00	0.00	29.50	3.10	2.16	0.00
3.50	0.11	0.00	0.00	30.00	3.10	2.16	0.00
4.00	0.13	0.00	0.00	30.50	3.10	2.16	0.00
4.50	0.15	0.00	0.00	31.00	3.10	2.16	0.00
5.00	0.18	0.00	0.00	31.50	3.10	2.16	0.00
5.50	0.20	0.00	0.00	32.00	3.10	2.16	0.00
6.00	0.22	0.00	0.00	32.50	3.10	2.16	0.00
6.50	0.25	0.00	0.00	33.00	3.10	2.16	0.00
7.00	0.28	0.01	0.00	33.50	3.10	2.16	0.00
7.50	0.32	0.01	0.01	34.00	3.10	2.16	0.00
8.00	0.35	0.02	0.01	34.50	3.10	2.16	0.00
8.50	0.40	0.03	0.01	35.00	3.10	2.16	0.00
9.00	0.45	0.05	0.02	35.50	3.10	2.16	0.00
9.50	0.51	0.08	0.03	36.00	3.10	2.16	0.00
10.00	0.59	0.11	0.03	36.50	3.10	2.16	0.00
10.50	0.67	0.15	0.05	37.00	3.10	2.16	0.00
11.00	0.77	0.21	0.06	37.50	3.10	2.16	0.00
11.50	0.92	0.31	0.11	38.00	3.10	2.16	0.00
12.00	1.55	0.78	**0.71**	38.50	3.10	2.16	0.00
12.50	2.18	1.32	**0.26**	39.00	3.10	2.16	0.00
13.00	2.32	1.45	0.11	39.50	3.10	2.16	0.00
13.50	2.43	1.55	0.08	40.00	3.10	2.16	0.00
14.00	2.51	1.62	0.07	40.50	3.10	2.16	0.00
14.50	2.59	1.69	0.06	41.00	3.10	2.16	0.00
15.00	2.65	1.75	0.05	41.50	3.10	2.16	0.00
15.50	2.70	1.80	0.04	42.00	3.10	2.16	0.00
16.00	2.75	1.84	0.04	42.50	3.10	2.16	0.00
16.50	2.78	1.87	0.03	43.00	3.10	2.16	0.00
17.00	2.82	1.90	0.03	43.50	3.10	2.16	0.00
17.50	2.85	1.93	0.03	44.00	3.10	2.16	0.00
18.00	2.88	1.96	0.02	44.50	3.10	2.16	0.00
18.50	2.90	1.98	0.02	45.00	3.10	2.16	0.00
19.00	2.92	2.00	0.02	45.50	3.10	2.16	0.00
19.50	2.95	2.02	0.02	46.00	3.10	2.16	0.00
20.00	2.97	2.04	0.02	46.50	3.10	2.16	0.00
20.50	2.99	2.06	0.02	47.00	3.10	2.16	0.00
21.00	3.01	2.08	0.02	47.50	3.10	2.16	0.00
21.50	3.02	2.09	0.02	48.00	3.10	2.16	0.00
22.00	3.04	2.11	0.01				
22.50	3.06	2.12	0.01				
23.00	3.07	2.14	0.01				
23.50	3.09	2.15	0.01				
24.00	**3.10**	**2.16**	0.01				
24.50	3.10	2.16	0.00				
25.00	3.10	2.16	0.00				
25.50	3.10	2.16	0.00				
26.00	3.10	2.16	0.00				

Summary for Subcatchment 1.3: Lancaster Sidewalk

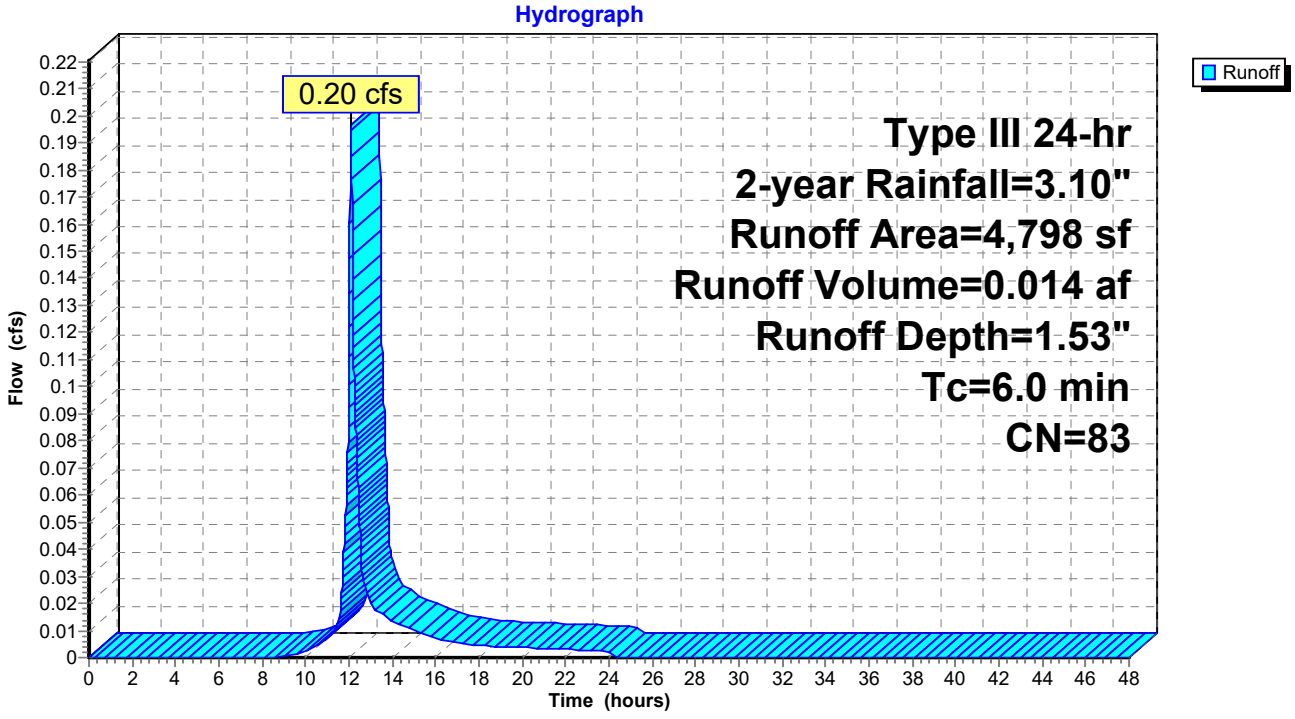
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 1.53"

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 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,538	98	Paved parking, HSG A
1,306	49	50-75% Grass cover, Fair, HSG A
115	49	50-75% Grass cover, Fair, HSG A
1,839	98	Paved parking, HSG A
4,798	83	Weighted Average
1,421		29.62% Pervious Area
3,377		70.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.3: Lancaster Sidewalk



Hydrograph for Subcatchment 1.3: Lancaster Sidewalk

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	3.10	1.53	0.00
0.50	0.02	0.00	0.00	27.00	3.10	1.53	0.00
1.00	0.03	0.00	0.00	27.50	3.10	1.53	0.00
1.50	0.05	0.00	0.00	28.00	3.10	1.53	0.00
2.00	0.06	0.00	0.00	28.50	3.10	1.53	0.00
2.50	0.08	0.00	0.00	29.00	3.10	1.53	0.00
3.00	0.10	0.00	0.00	29.50	3.10	1.53	0.00
3.50	0.11	0.00	0.00	30.00	3.10	1.53	0.00
4.00	0.13	0.00	0.00	30.50	3.10	1.53	0.00
4.50	0.15	0.00	0.00	31.00	3.10	1.53	0.00
5.00	0.18	0.00	0.00	31.50	3.10	1.53	0.00
5.50	0.20	0.00	0.00	32.00	3.10	1.53	0.00
6.00	0.22	0.00	0.00	32.50	3.10	1.53	0.00
6.50	0.25	0.00	0.00	33.00	3.10	1.53	0.00
7.00	0.28	0.00	0.00	33.50	3.10	1.53	0.00
7.50	0.32	0.00	0.00	34.00	3.10	1.53	0.00
8.00	0.35	0.00	0.00	34.50	3.10	1.53	0.00
8.50	0.40	0.00	0.00	35.00	3.10	1.53	0.00
9.00	0.45	0.00	0.00	35.50	3.10	1.53	0.00
9.50	0.51	0.01	0.00	36.00	3.10	1.53	0.00
10.00	0.59	0.01	0.00	36.50	3.10	1.53	0.00
10.50	0.67	0.03	0.00	37.00	3.10	1.53	0.00
11.00	0.77	0.06	0.01	37.50	3.10	1.53	0.00
11.50	0.92	0.10	0.01	38.00	3.10	1.53	0.00
12.00	1.55	0.41	**0.11**	38.50	3.10	1.53	0.00
12.50	2.18	0.82	**0.05**	39.00	3.10	1.53	0.00
13.00	2.32	0.93	0.02	39.50	3.10	1.53	0.00
13.50	2.43	1.00	0.02	40.00	3.10	1.53	0.00
14.00	2.51	1.07	0.01	40.50	3.10	1.53	0.00
14.50	2.59	1.12	0.01	41.00	3.10	1.53	0.00
15.00	2.65	1.17	0.01	41.50	3.10	1.53	0.00
15.50	2.70	1.21	0.01	42.00	3.10	1.53	0.00
16.00	2.75	1.25	0.01	42.50	3.10	1.53	0.00
16.50	2.78	1.28	0.01	43.00	3.10	1.53	0.00
17.00	2.82	1.30	0.01	43.50	3.10	1.53	0.00
17.50	2.85	1.33	0.01	44.00	3.10	1.53	0.00
18.00	2.88	1.35	0.00	44.50	3.10	1.53	0.00
18.50	2.90	1.37	0.00	45.00	3.10	1.53	0.00
19.00	2.92	1.39	0.00	45.50	3.10	1.53	0.00
19.50	2.95	1.40	0.00	46.00	3.10	1.53	0.00
20.00	2.97	1.42	0.00	46.50	3.10	1.53	0.00
20.50	2.99	1.44	0.00	47.00	3.10	1.53	0.00
21.00	3.01	1.45	0.00	47.50	3.10	1.53	0.00
21.50	3.02	1.47	0.00	48.00	3.10	1.53	0.00
22.00	3.04	1.48	0.00				
22.50	3.06	1.49	0.00				
23.00	3.07	1.50	0.00				
23.50	3.09	1.52	0.00				
24.00	**3.10**	**1.53**	0.00				
24.50	3.10	1.53	0.00				
25.00	3.10	1.53	0.00				
25.50	3.10	1.53	0.00				
26.00	3.10	1.53	0.00				

Summary for Subcatchment 2S: Perimeter Sidewalk

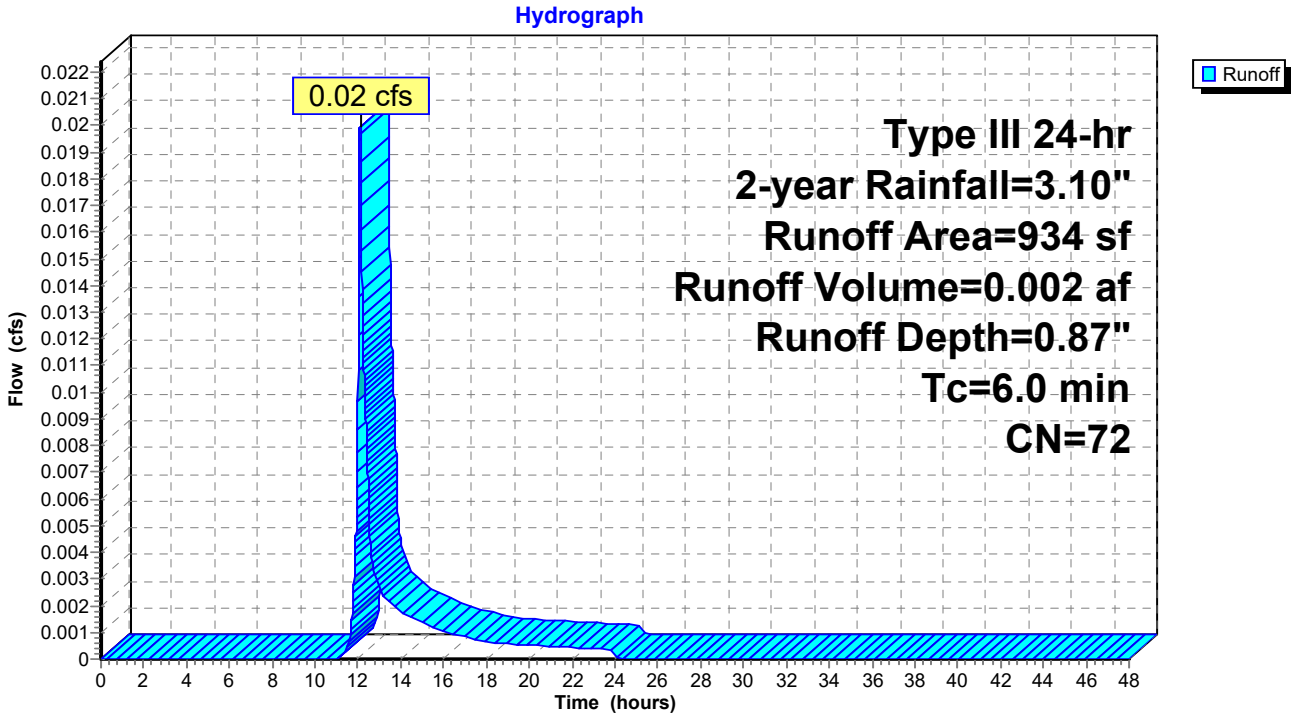
Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.002 af, Depth= 0.87"

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 2-year Rainfall=3.10"

Area (sf)	CN	Description
441	98	Unconnected pavement, HSG A
493	49	50-75% Grass cover, Fair, HSG A
934	72	Weighted Average
493		52.78% Pervious Area
441		47.22% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Perimeter Sidewalk



Hydrograph for Subcatchment 2S: Perimeter Sidewalk

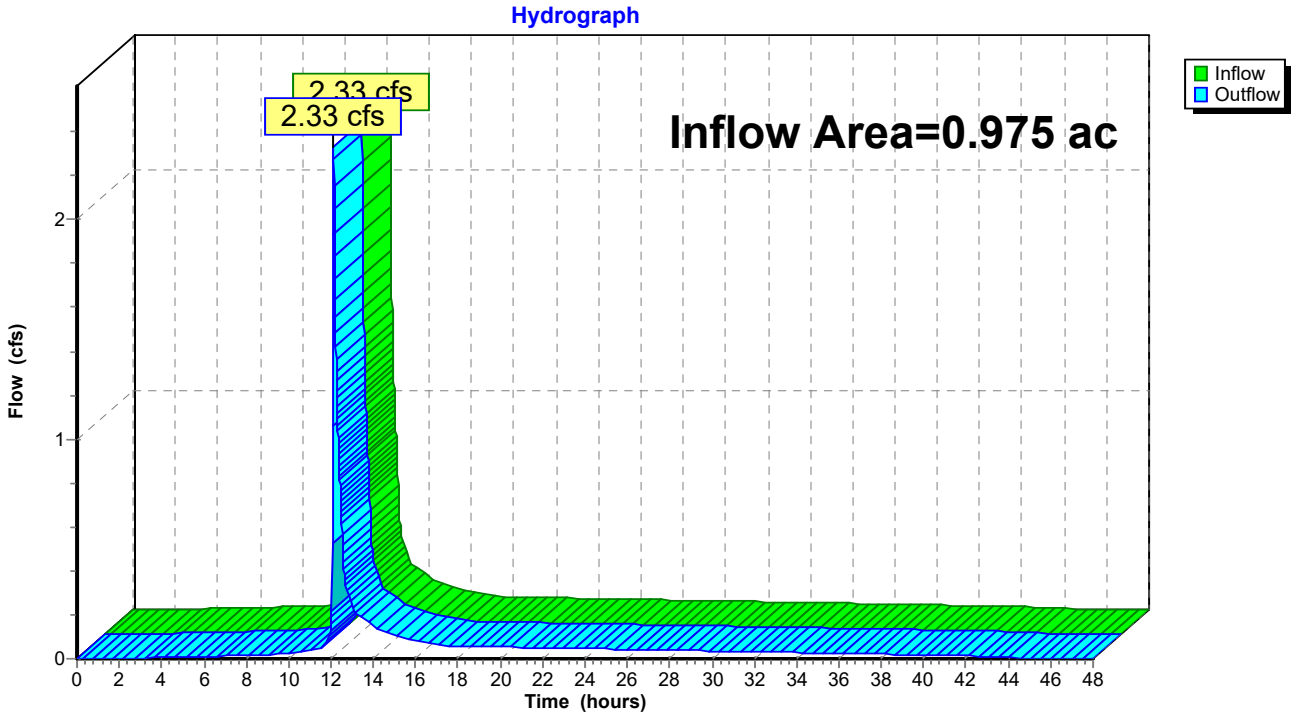
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	3.10	0.87	0.00
0.50	0.02	0.00	0.00	27.00	3.10	0.87	0.00
1.00	0.03	0.00	0.00	27.50	3.10	0.87	0.00
1.50	0.05	0.00	0.00	28.00	3.10	0.87	0.00
2.00	0.06	0.00	0.00	28.50	3.10	0.87	0.00
2.50	0.08	0.00	0.00	29.00	3.10	0.87	0.00
3.00	0.10	0.00	0.00	29.50	3.10	0.87	0.00
3.50	0.11	0.00	0.00	30.00	3.10	0.87	0.00
4.00	0.13	0.00	0.00	30.50	3.10	0.87	0.00
4.50	0.15	0.00	0.00	31.00	3.10	0.87	0.00
5.00	0.18	0.00	0.00	31.50	3.10	0.87	0.00
5.50	0.20	0.00	0.00	32.00	3.10	0.87	0.00
6.00	0.22	0.00	0.00	32.50	3.10	0.87	0.00
6.50	0.25	0.00	0.00	33.00	3.10	0.87	0.00
7.00	0.28	0.00	0.00	33.50	3.10	0.87	0.00
7.50	0.32	0.00	0.00	34.00	3.10	0.87	0.00
8.00	0.35	0.00	0.00	34.50	3.10	0.87	0.00
8.50	0.40	0.00	0.00	35.00	3.10	0.87	0.00
9.00	0.45	0.00	0.00	35.50	3.10	0.87	0.00
9.50	0.51	0.00	0.00	36.00	3.10	0.87	0.00
10.00	0.59	0.00	0.00	36.50	3.10	0.87	0.00
10.50	0.67	0.00	0.00	37.00	3.10	0.87	0.00
11.00	0.77	0.00	0.00	37.50	3.10	0.87	0.00
11.50	0.92	0.01	0.00	38.00	3.10	0.87	0.00
12.00	1.55	0.13	**0.01**	38.50	3.10	0.87	0.00
12.50	2.18	0.37	**0.01**	39.00	3.10	0.87	0.00
13.00	2.32	0.44	0.00	39.50	3.10	0.87	0.00
13.50	2.43	0.49	0.00	40.00	3.10	0.87	0.00
14.00	2.51	0.54	0.00	40.50	3.10	0.87	0.00
14.50	2.59	0.57	0.00	41.00	3.10	0.87	0.00
15.00	2.65	0.61	0.00	41.50	3.10	0.87	0.00
15.50	2.70	0.64	0.00	42.00	3.10	0.87	0.00
16.00	2.75	0.66	0.00	42.50	3.10	0.87	0.00
16.50	2.78	0.68	0.00	43.00	3.10	0.87	0.00
17.00	2.82	0.70	0.00	43.50	3.10	0.87	0.00
17.50	2.85	0.72	0.00	44.00	3.10	0.87	0.00
18.00	2.88	0.74	0.00	44.50	3.10	0.87	0.00
18.50	2.90	0.75	0.00	45.00	3.10	0.87	0.00
19.00	2.92	0.76	0.00	45.50	3.10	0.87	0.00
19.50	2.95	0.78	0.00	46.00	3.10	0.87	0.00
20.00	2.97	0.79	0.00	46.50	3.10	0.87	0.00
20.50	2.99	0.80	0.00	47.00	3.10	0.87	0.00
21.00	3.01	0.81	0.00	47.50	3.10	0.87	0.00
21.50	3.02	0.82	0.00	48.00	3.10	0.87	0.00
22.00	3.04	0.83	0.00				
22.50	3.06	0.84	0.00				
23.00	3.07	0.85	0.00				
23.50	3.09	0.86	0.00				
24.00	**3.10**	**0.87**	0.00				
24.50	3.10	0.87	0.00				
25.00	3.10	0.87	0.00				
25.50	3.10	0.87	0.00				
26.00	3.10	0.87	0.00				

Summary for Reach 1R: Elm/Lancaster Street

Inflow Area = 0.975 ac, 88.58% Impervious, Inflow Depth = 2.38" for 2-year event
Inflow = 2.33 cfs @ 12.12 hrs, Volume= 0.193 af
Outflow = 2.33 cfs @ 12.12 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: Elm/Lancaster Street



Hydrograph for Reach 1R: Elm/Lancaster Street

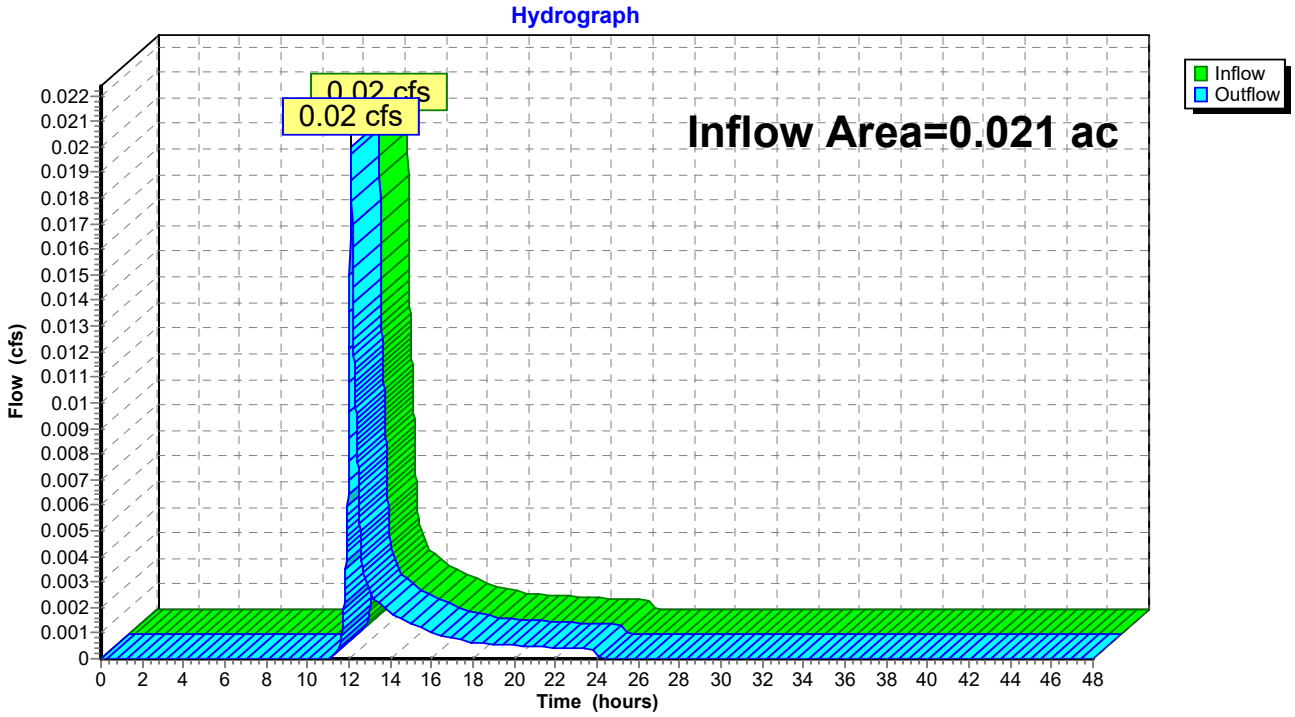
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.00		0.00
2.50	0.00		0.00
3.00	0.00		0.00
3.50	0.00		0.00
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.01		0.01
5.50	0.01		0.01
6.00	0.01		0.01
6.50	0.01		0.01
7.00	0.01		0.01
7.50	0.01		0.01
8.00	0.01		0.01
8.50	0.02		0.02
9.00	0.02		0.02
9.50	0.02		0.02
10.00	0.03		0.03
10.50	0.03		0.03
11.00	0.04		0.04
11.50	0.05		0.05
12.00	**0.16**		**0.16**
12.50	**0.62**		**0.62**
13.00	0.24		0.24
13.50	0.18		0.18
14.00	0.15		0.15
14.50	0.13		0.13
15.00	0.11		0.11
15.50	0.10		0.10
16.00	0.08		0.08
16.50	0.07		0.07
17.00	0.06		0.06
17.50	0.06		0.06
18.00	0.05		0.05
18.50	0.05		0.05
19.00	0.05		0.05
19.50	0.05		0.05
20.00	0.05		0.05
20.50	0.05		0.05
21.00	0.05		0.05
21.50	0.05		0.05
22.00	0.05		0.05
22.50	0.05		0.05
23.00	0.05		0.05
23.50	0.05		0.05
24.00	0.05		0.05
24.50	0.05		0.05
25.00	0.04		0.04
25.50	0.04		0.04
26.00	0.04		0.04
26.50	0.04		0.04
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.03		0.03
31.00	0.03		0.03
31.50	0.03		0.03
32.00	0.03		0.03
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.02		0.02
36.50	0.02		0.02
37.00	0.02		0.02
37.50	0.02		0.02
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.01		0.01
42.00	0.01		0.01
42.50	0.01		0.01
43.00	0.01		0.01
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.00		0.00
45.00	0.00		0.00
45.50	0.00		0.00
46.00	0.00		0.00
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Reach 2R: Elm/Oxford

Inflow Area = 0.021 ac, 47.22% Impervious, Inflow Depth = 0.87" for 2-year event
Inflow = 0.02 cfs @ 12.10 hrs, Volume= 0.002 af
Outflow = 0.02 cfs @ 12.10 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: Elm/Oxford



Hydrograph for Reach 2R: Elm/Oxford

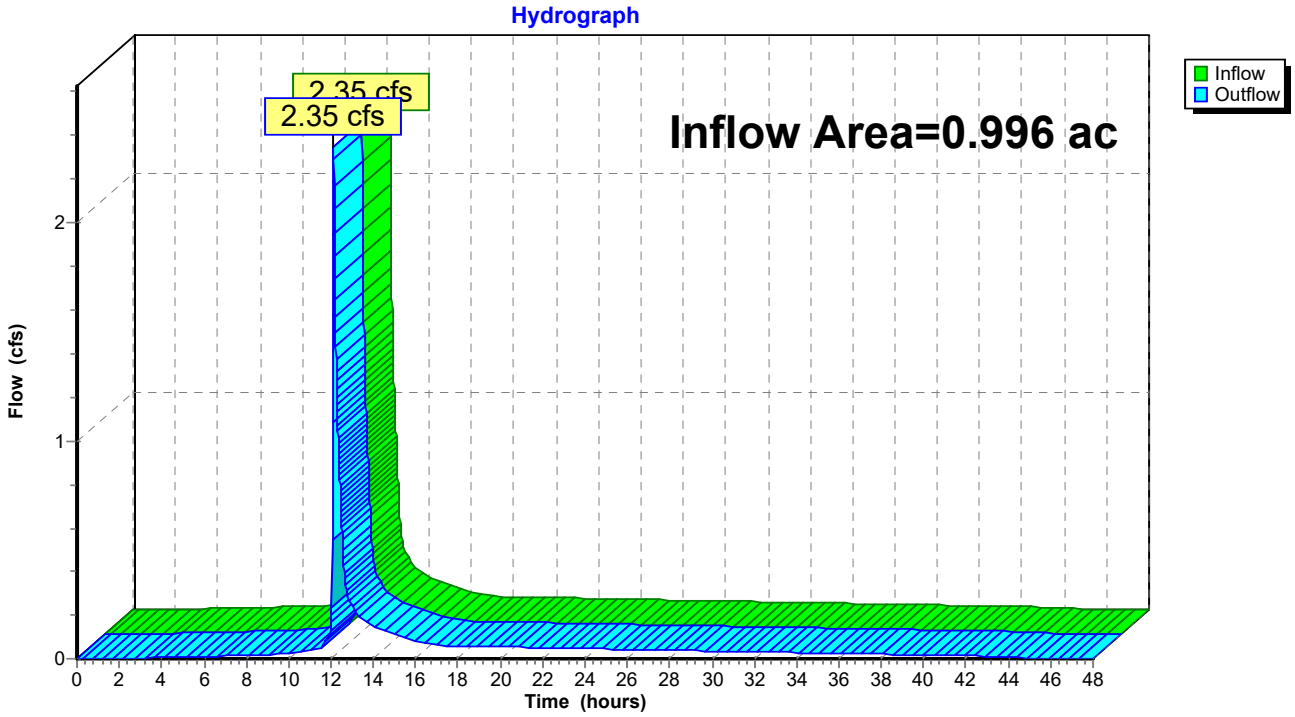
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.00		0.00
0.50	0.00		0.00	27.00	0.00		0.00
1.00	0.00		0.00	27.50	0.00		0.00
1.50	0.00		0.00	28.00	0.00		0.00
2.00	0.00		0.00	28.50	0.00		0.00
2.50	0.00		0.00	29.00	0.00		0.00
3.00	0.00		0.00	29.50	0.00		0.00
3.50	0.00		0.00	30.00	0.00		0.00
4.00	0.00		0.00	30.50	0.00		0.00
4.50	0.00		0.00	31.00	0.00		0.00
5.00	0.00		0.00	31.50	0.00		0.00
5.50	0.00		0.00	32.00	0.00		0.00
6.00	0.00		0.00	32.50	0.00		0.00
6.50	0.00		0.00	33.00	0.00		0.00
7.00	0.00		0.00	33.50	0.00		0.00
7.50	0.00		0.00	34.00	0.00		0.00
8.00	0.00		0.00	34.50	0.00		0.00
8.50	0.00		0.00	35.00	0.00		0.00
9.00	0.00		0.00	35.50	0.00		0.00
9.50	0.00		0.00	36.00	0.00		0.00
10.00	0.00		0.00	36.50	0.00		0.00
10.50	0.00		0.00	37.00	0.00		0.00
11.00	0.00		0.00	37.50	0.00		0.00
11.50	0.00		0.00	38.00	0.00		0.00
12.00	**0.01**		**0.01**	38.50	0.00		0.00
12.50	**0.01**		**0.01**	39.00	0.00		0.00
13.00	0.00		0.00	39.50	0.00		0.00
13.50	0.00		0.00	40.00	0.00		0.00
14.00	0.00		0.00	40.50	0.00		0.00
14.50	0.00		0.00	41.00	0.00		0.00
15.00	0.00		0.00	41.50	0.00		0.00
15.50	0.00		0.00	42.00	0.00		0.00
16.00	0.00		0.00	42.50	0.00		0.00
16.50	0.00		0.00	43.00	0.00		0.00
17.00	0.00		0.00	43.50	0.00		0.00
17.50	0.00		0.00	44.00	0.00		0.00
18.00	0.00		0.00	44.50	0.00		0.00
18.50	0.00		0.00	45.00	0.00		0.00
19.00	0.00		0.00	45.50	0.00		0.00
19.50	0.00		0.00	46.00	0.00		0.00
20.00	0.00		0.00	46.50	0.00		0.00
20.50	0.00		0.00	47.00	0.00		0.00
21.00	0.00		0.00	47.50	0.00		0.00
21.50	0.00		0.00	48.00	0.00		0.00
22.00	0.00		0.00				
22.50	0.00		0.00				
23.00	0.00		0.00				
23.50	0.00		0.00				
24.00	0.00		0.00				
24.50	0.00		0.00				
25.00	0.00		0.00				
25.50	0.00		0.00				
26.00	0.00		0.00				

Summary for Reach 99R: Confluence

Inflow Area = 0.996 ac, 87.69% Impervious, Inflow Depth = 2.34" for 2-year event
Inflow = 2.35 cfs @ 12.12 hrs, Volume= 0.195 af
Outflow = 2.35 cfs @ 12.12 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 99R: Confluence



Hydrograph for Reach 99R: Confluence

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.00		0.00
2.50	0.00		0.00
3.00	0.00		0.00
3.50	0.00		0.00
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.01		0.01
5.50	0.01		0.01
6.00	0.01		0.01
6.50	0.01		0.01
7.00	0.01		0.01
7.50	0.01		0.01
8.00	0.01		0.01
8.50	0.02		0.02
9.00	0.02		0.02
9.50	0.02		0.02
10.00	0.03		0.03
10.50	0.03		0.03
11.00	0.04		0.04
11.50	0.05		0.05
12.00	**0.17**		**0.17**
12.50	**0.63**		**0.63**
13.00	0.24		0.24
13.50	0.18		0.18
14.00	0.15		0.15
14.50	0.13		0.13
15.00	0.11		0.11
15.50	0.10		0.10
16.00	0.08		0.08
16.50	0.07		0.07
17.00	0.06		0.06
17.50	0.06		0.06
18.00	0.05		0.05
18.50	0.05		0.05
19.00	0.05		0.05
19.50	0.05		0.05
20.00	0.05		0.05
20.50	0.05		0.05
21.00	0.05		0.05
21.50	0.05		0.05
22.00	0.05		0.05
22.50	0.05		0.05
23.00	0.05		0.05
23.50	0.05		0.05
24.00	0.05		0.05
24.50	0.05		0.05
25.00	0.04		0.04
25.50	0.04		0.04
26.00	0.04		0.04
26.50	0.04		0.04
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.03		0.03
31.00	0.03		0.03
31.50	0.03		0.03
32.00	0.03		0.03
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.02		0.02
36.50	0.02		0.02
37.00	0.02		0.02
37.50	0.02		0.02
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.01		0.01
42.00	0.01		0.01
42.50	0.01		0.01
43.00	0.01		0.01
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.00		0.00
45.00	0.00		0.00
45.50	0.00		0.00
46.00	0.00		0.00
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Pond 1.2P: R-TANK

Inflow Area = 0.865 ac, 90.90% Impervious, Inflow Depth = 2.48" for 2-year event
Inflow = 2.36 cfs @ 12.08 hrs, Volume= 0.179 af
Outflow = 2.14 cfs @ 12.12 hrs, Volume= 0.179 af, Atten= 9%, Lag= 2.3 min
Primary = 2.14 cfs @ 12.12 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 23.08' @ 12.12 hrs Surf.Area= 747 sf Storage= 2,604 cf

Plug-Flow detention time= 353.8 min calculated for 0.179 af (100% of inflow)
Center-of-Mass det. time= 354.0 min (1,133.2 - 779.3)

Volume	Invert	Avail.Storage	Storage Description
#1B	19.15'	438 cf	**34.81'W x 21.11'L x 5.45'H Field B** 4,005 cf Overall - 2,909 cf Embedded = 1,096 cf x 40.0% Voids
#2B	19.40'	2,763 cf	**ACF R-Tank HD 3** x 225 Inside #1 Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf 225 Chambers in 25 Rows
#3	19.15'	77 cf	**4.00'D x 6.10'H Vertical Cone/Cylinder**
#4	25.25'	415 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		3,693 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	4	0	0
26.00	1,102	415	415

Device	Routing	Invert	Outlet Devices
#1	Primary	19.05'	**10.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.05' / 18.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	19.10'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	22.75'	**4.0' long x 0.7' breadth OCS Bulkhead** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32
#4	Primary	25.75'	**10.0' long x 5.0' breadth Emergency Overflow.** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.14 cfs @ 12.12 hrs HW=23.08' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 2.14 cfs of 3.94 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 9.55 fps)
  - **3=OCS Bulkhead** (Weir Controls 2.09 cfs @ 1.60 fps)
- **4=Emergency Overflow.** (Controls 0.00 cfs)

Pond 1.2P: R-TANK - Chamber Wizard Field B

Chamber Model = ACF R-Tank HD 3 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf
Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf

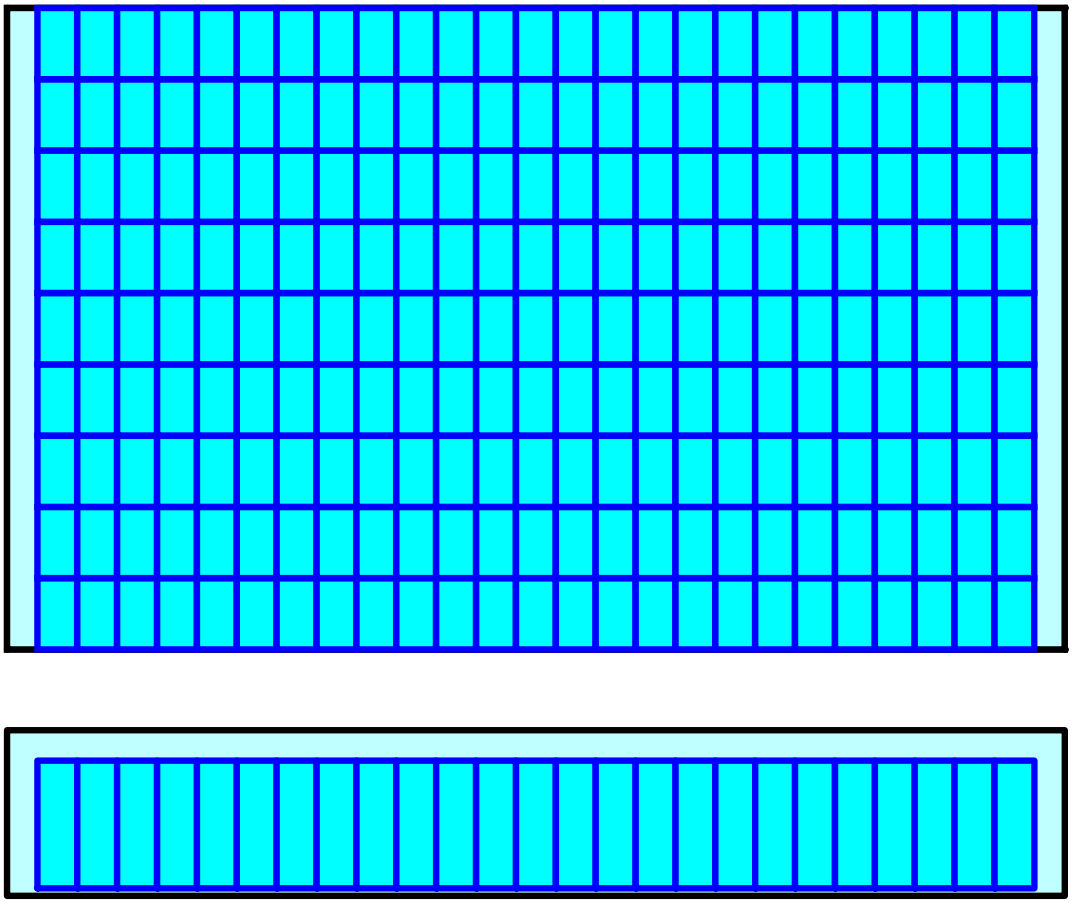
9 Chambers/Row x 2.35' Long = 21.11' Row Length
25 Rows x 15.7" Wide + 12.0" Side Stone x 2 = 34.81' Base Width
3.0" Base + 50.4" Chamber Height + 12.0" Cover = 5.45' Field Height

225 Chambers x 12.3 cf = 2,763.4 cf Chamber Storage
225 Chambers x 12.9 cf = 2,908.8 cf Displacement

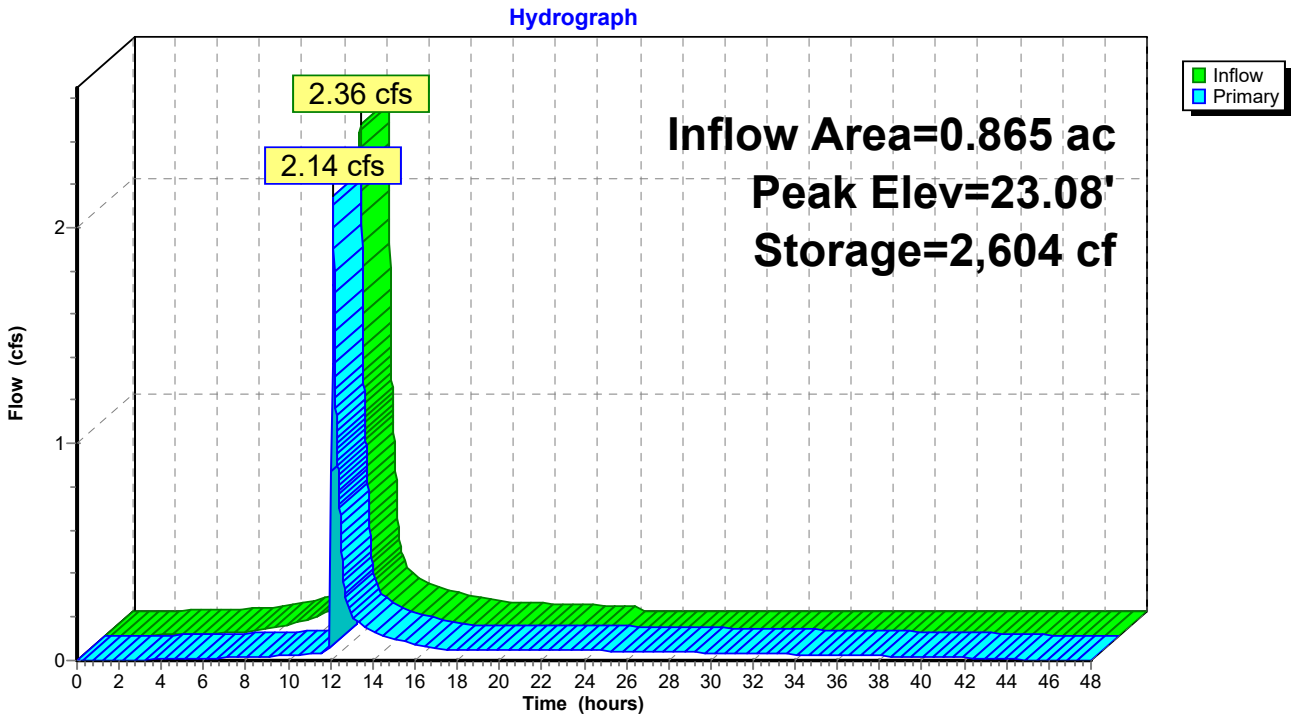
4,004.7 cf Field - 2,908.8 cf Chambers = 1,095.9 cf Stone x 40.0% Voids = 438.4 cf Stone Storage

Chamber Storage + Stone Storage = 3,201.7 cf = 0.074 af
Overall Storage Efficiency = 79.9%
Overall System Size = 21.11' x 34.81' x 5.45'

225 Chambers
148.3 cy Field
40.6 cy Stone



Pond 1.2P: R-TANK



Hydrograph for Pond 1.2P: R-TANK

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	19.15	0.00
1.00	0.00	0	19.15	0.00
2.00	0.00	0	19.15	0.00
3.00	0.01	3	19.16	0.00
4.00	0.01	10	19.18	0.01
5.00	0.01	22	19.22	0.01
6.00	0.01	37	19.27	0.01
7.00	0.02	67	19.37	0.01
8.00	0.04	123	19.47	0.01
9.00	0.06	230	19.62	0.02
10.00	0.09	419	19.90	0.02
11.00	0.14	738	20.36	0.03
12.00	**1.45**	**2,054**	**22.28**	**0.05**
13.00	**0.21**	**2,422**	**22.81**	**0.22**
14.00	0.13	2,406	22.79	0.13
15.00	0.10	2,399	22.78	0.10
16.00	0.07	2,391	22.77	0.07
17.00	0.06	2,385	22.76	0.06
18.00	0.04	2,374	22.74	0.05
19.00	0.04	2,339	22.69	0.05
20.00	0.03	2,291	22.62	0.05
21.00	0.03	2,233	22.54	0.05
22.00	0.03	2,167	22.44	0.05
23.00	0.03	2,093	22.33	0.05
24.00	0.02	2,012	22.21	0.05
25.00	0.00	1,856	21.99	0.04
26.00	0.00	1,700	21.76	0.04
27.00	0.00	1,550	21.54	0.04
28.00	0.00	1,407	21.34	0.04
29.00	0.00	1,270	21.14	0.04
30.00	0.00	1,140	20.95	0.04
31.00	0.00	1,016	20.77	0.03
32.00	0.00	899	20.60	0.03
33.00	0.00	788	20.43	0.03
34.00	0.00	684	20.28	0.03
35.00	0.00	586	20.14	0.03
36.00	0.00	495	20.01	0.02
37.00	0.00	410	19.89	0.02
38.00	0.00	332	19.77	0.02
39.00	0.00	260	19.67	0.02
40.00	0.00	195	19.57	0.02
41.00	0.00	136	19.49	0.02
42.00	0.00	84	19.41	0.01
43.00	0.00	41	19.28	0.01
44.00	0.00	13	19.19	0.01
45.00	0.00	0	19.15	0.00
46.00	0.00	0	19.15	0.00
47.00	0.00	0	19.15	0.00
48.00	0.00	0	19.15	0.00

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: ROOF 4-9 Runoff Area=17,072 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=1.76 cfs 0.143 af

Subcatchment 1.2: Alley Way Runoff Area=20,598 sf 83.36% Impervious Runoff Depth=3.59"
Tc=6.0 min CN=91 Runoff=1.92 cfs 0.142 af

Subcatchment 1.3: Lancaster Sidewalk Runoff Area=4,798 sf 70.38% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=83 Runoff=0.36 cfs 0.026 af

Subcatchment 2S: Perimeter Sidewalk Runoff Area=934 sf 47.22% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=72 Runoff=0.05 cfs 0.003 af

Reach 1R: Elm/Lancaster Street Inflow=3.97 cfs 0.310 af
Outflow=3.97 cfs 0.310 af

Reach 2R: Elm/Oxford Inflow=0.05 cfs 0.003 af
Outflow=0.05 cfs 0.003 af

Reach 99R: Confluence Inflow=4.02 cfs 0.313 af
Outflow=4.02 cfs 0.313 af

Pond 1.2P: R-TANK Peak Elev=23.21' Storage=2,696 cf Inflow=3.68 cfs 0.284 af
Outflow=3.61 cfs 0.284 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.313 af Average Runoff Depth = 3.77"
12.31% Pervious = 0.123 ac 87.69% Impervious = 0.874 ac

Summary for Subcatchment 1: ROOF 4-9

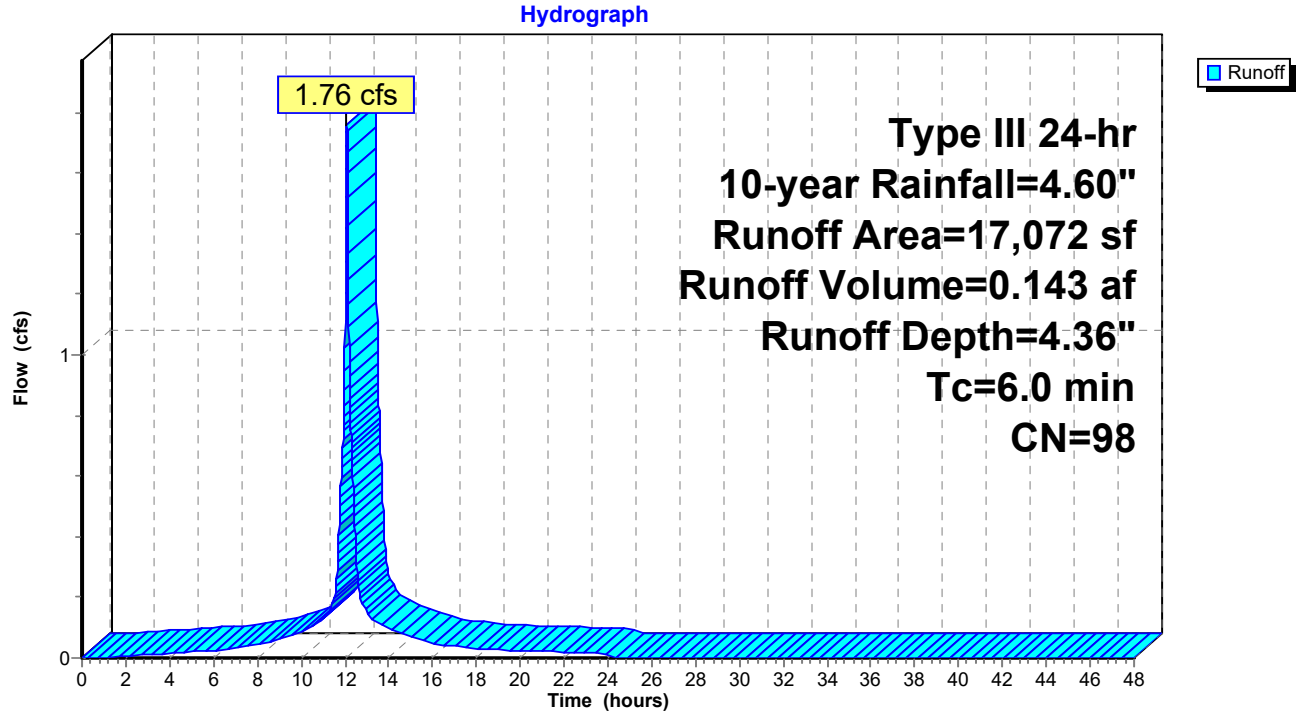
Runoff = 1.76 cfs @ 12.08 hrs, Volume= 0.143 af, Depth= 4.36"

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 10-year Rainfall=4.60"

Area (sf)	CN	Description
17,072	98	Roofs, HSG A
17,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: ROOF 4-9



Hydrograph for Subcatchment 1: ROOF 4-9

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	4.60	4.36	0.00
0.50	0.02	0.00	0.00	27.00	4.60	4.36	0.00
1.00	0.05	0.00	0.00	27.50	4.60	4.36	0.00
1.50	0.07	0.00	0.00	28.00	4.60	4.36	0.00
2.00	0.09	0.01	0.01	28.50	4.60	4.36	0.00
2.50	0.12	0.02	0.01	29.00	4.60	4.36	0.00
3.00	0.14	0.03	0.01	29.50	4.60	4.36	0.00
3.50	0.17	0.05	0.01	30.00	4.60	4.36	0.00
4.00	0.20	0.07	0.02	30.50	4.60	4.36	0.00
4.50	0.23	0.09	0.02	31.00	4.60	4.36	0.00
5.00	0.26	0.11	0.02	31.50	4.60	4.36	0.00
5.50	0.30	0.14	0.02	32.00	4.60	4.36	0.00
6.00	0.33	0.17	0.02	32.50	4.60	4.36	0.00
6.50	0.37	0.20	0.03	33.00	4.60	4.36	0.00
7.00	0.42	0.24	0.03	33.50	4.60	4.36	0.00
7.50	0.47	0.29	0.04	34.00	4.60	4.36	0.00
8.00	0.52	0.34	0.04	34.50	4.60	4.36	0.00
8.50	0.59	0.40	0.05	35.00	4.60	4.36	0.00
9.00	0.67	0.48	0.06	35.50	4.60	4.36	0.00
9.50	0.76	0.56	0.07	36.00	4.60	4.36	0.00
10.00	0.87	0.66	0.08	36.50	4.60	4.36	0.00
10.50	1.00	0.79	0.10	37.00	4.60	4.36	0.00
11.00	1.15	0.94	0.13	37.50	4.60	4.36	0.00
11.50	1.37	1.15	0.20	38.00	4.60	4.36	0.00
12.00	2.30	2.07	**1.11**	38.50	4.60	4.36	0.00
12.50	3.23	3.00	**0.36**	39.00	4.60	4.36	0.00
13.00	3.45	3.22	0.15	39.50	4.60	4.36	0.00
13.50	3.60	3.37	0.11	40.00	4.60	4.36	0.00
14.00	3.73	3.50	0.09	40.50	4.60	4.36	0.00
14.50	3.84	3.60	0.08	41.00	4.60	4.36	0.00
15.00	3.93	3.69	0.07	41.50	4.60	4.36	0.00
15.50	4.01	3.77	0.06	42.00	4.60	4.36	0.00
16.00	4.08	3.84	0.05	42.50	4.60	4.36	0.00
16.50	4.13	3.90	0.04	43.00	4.60	4.36	0.00
17.00	4.18	3.95	0.04	43.50	4.60	4.36	0.00
17.50	4.23	3.99	0.03	44.00	4.60	4.36	0.00
18.00	4.27	4.03	0.03	44.50	4.60	4.36	0.00
18.50	4.30	4.07	0.03	45.00	4.60	4.36	0.00
19.00	4.34	4.10	0.03	45.50	4.60	4.36	0.00
19.50	4.37	4.14	0.03	46.00	4.60	4.36	0.00
20.00	4.40	4.17	0.02	46.50	4.60	4.36	0.00
20.50	4.43	4.20	0.02	47.00	4.60	4.36	0.00
21.00	4.46	4.22	0.02	47.50	4.60	4.36	0.00
21.50	4.49	4.25	0.02	48.00	4.60	4.36	0.00
22.00	4.51	4.28	0.02				
22.50	4.54	4.30	0.02				
23.00	4.56	4.32	0.02				
23.50	4.58	4.34	0.02				
24.00	**4.60**	**4.36**	0.02				
24.50	4.60	4.36	0.00				
25.00	4.60	4.36	0.00				
25.50	4.60	4.36	0.00				
26.00	4.60	4.36	0.00				

Summary for Subcatchment 1.2: Alley Way

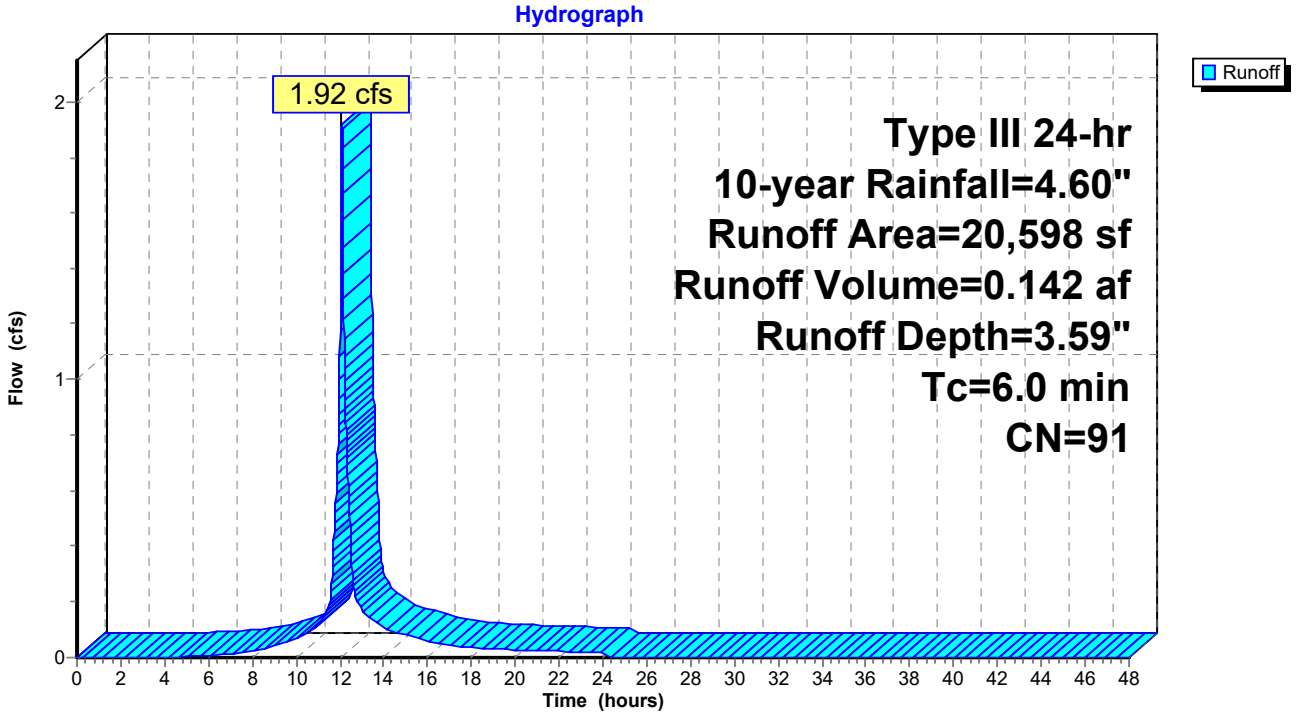
Runoff = 1.92 cfs @ 12.08 hrs, Volume= 0.142 af, Depth= 3.59"

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 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,755	49	50-75% Grass cover, Fair, HSG A
9,571	98	Paved parking, HSG A
672	96	Gravel surface, HSG A
7,600	98	Roofs, HSG A
20,598	91	Weighted Average
3,427		16.64% Pervious Area
17,171		83.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2: Alley Way



Hydrograph for Subcatchment 1.2: Alley Way

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	4.60	3.59	0.00
0.50	0.02	0.00	0.00	27.00	4.60	3.59	0.00
1.00	0.05	0.00	0.00	27.50	4.60	3.59	0.00
1.50	0.07	0.00	0.00	28.00	4.60	3.59	0.00
2.00	0.09	0.00	0.00	28.50	4.60	3.59	0.00
2.50	0.12	0.00	0.00	29.00	4.60	3.59	0.00
3.00	0.14	0.00	0.00	29.50	4.60	3.59	0.00
3.50	0.17	0.00	0.00	30.00	4.60	3.59	0.00
4.00	0.20	0.00	0.00	30.50	4.60	3.59	0.00
4.50	0.23	0.00	0.00	31.00	4.60	3.59	0.00
5.00	0.26	0.00	0.00	31.50	4.60	3.59	0.00
5.50	0.30	0.01	0.01	32.00	4.60	3.59	0.00
6.00	0.33	0.02	0.01	32.50	4.60	3.59	0.00
6.50	0.37	0.03	0.01	33.00	4.60	3.59	0.00
7.00	0.42	0.04	0.01	33.50	4.60	3.59	0.00
7.50	0.47	0.06	0.02	34.00	4.60	3.59	0.00
8.00	0.52	0.08	0.02	34.50	4.60	3.59	0.00
8.50	0.59	0.11	0.03	35.00	4.60	3.59	0.00
9.00	0.67	0.15	0.04	35.50	4.60	3.59	0.00
9.50	0.76	0.21	0.05	36.00	4.60	3.59	0.00
10.00	0.87	0.27	0.07	36.50	4.60	3.59	0.00
10.50	1.00	0.36	0.09	37.00	4.60	3.59	0.00
11.00	1.15	0.47	0.11	37.50	4.60	3.59	0.00
11.50	1.37	0.64	0.19	38.00	4.60	3.59	0.00
12.00	2.30	1.43	**1.18**	38.50	4.60	3.59	0.00
12.50	3.23	2.29	**0.41**	39.00	4.60	3.59	0.00
13.00	3.45	2.49	0.17	39.50	4.60	3.59	0.00
13.50	3.60	2.64	0.13	40.00	4.60	3.59	0.00
14.00	3.73	2.76	0.11	40.50	4.60	3.59	0.00
14.50	3.84	2.86	0.09	41.00	4.60	3.59	0.00
15.00	3.93	2.95	0.08	41.50	4.60	3.59	0.00
15.50	4.01	3.03	0.07	42.00	4.60	3.59	0.00
16.00	4.08	3.09	0.06	42.50	4.60	3.59	0.00
16.50	4.13	3.14	0.05	43.00	4.60	3.59	0.00
17.00	4.18	3.19	0.05	43.50	4.60	3.59	0.00
17.50	4.23	3.24	0.04	44.00	4.60	3.59	0.00
18.00	4.27	3.28	0.03	44.50	4.60	3.59	0.00
18.50	4.30	3.31	0.03	45.00	4.60	3.59	0.00
19.00	4.34	3.34	0.03	45.50	4.60	3.59	0.00
19.50	4.37	3.37	0.03	46.00	4.60	3.59	0.00
20.00	4.40	3.40	0.03	46.50	4.60	3.59	0.00
20.50	4.43	3.43	0.03	47.00	4.60	3.59	0.00
21.00	4.46	3.46	0.03	47.50	4.60	3.59	0.00
21.50	4.49	3.48	0.02	48.00	4.60	3.59	0.00
22.00	4.51	3.51	0.02				
22.50	4.54	3.53	0.02				
23.00	4.56	3.55	0.02				
23.50	4.58	3.58	0.02				
24.00	**4.60**	**3.59**	0.02				
24.50	4.60	3.59	0.00				
25.00	4.60	3.59	0.00				
25.50	4.60	3.59	0.00				
26.00	4.60	3.59	0.00				

Summary for Subcatchment 1.3: Lancaster Sidewalk

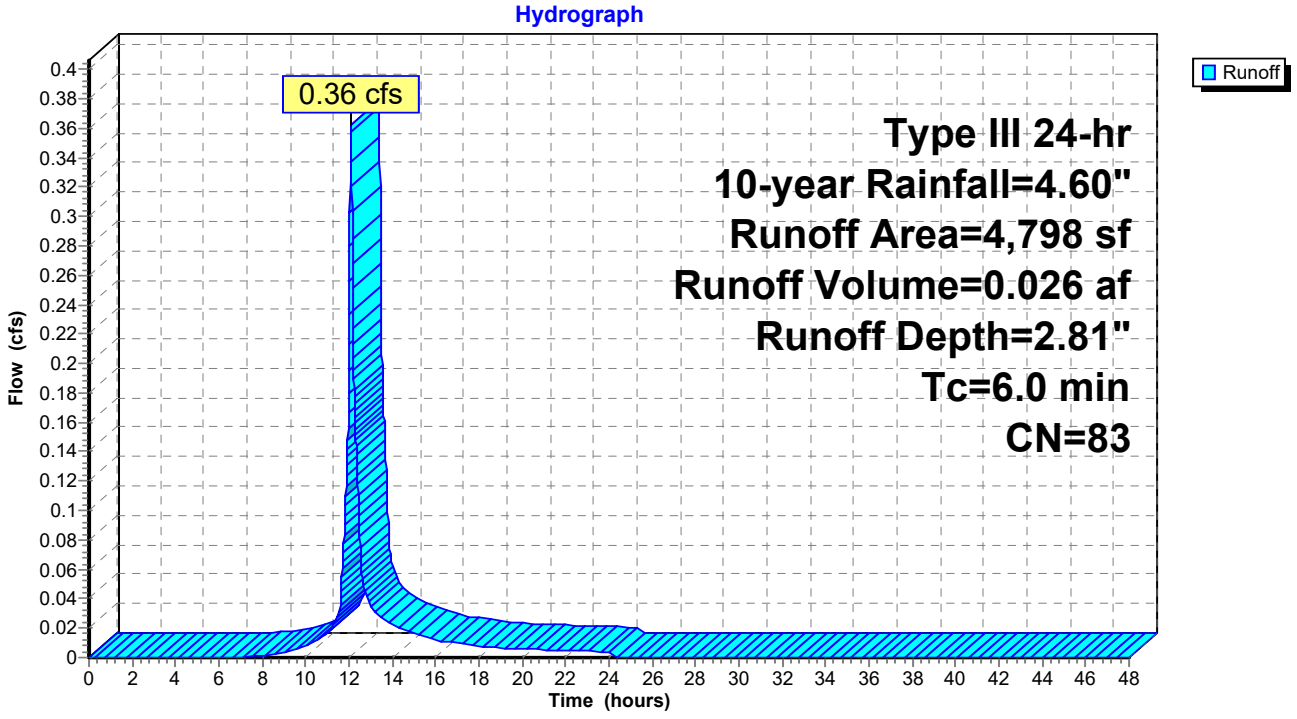
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 2.81"

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 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,538	98	Paved parking, HSG A
1,306	49	50-75% Grass cover, Fair, HSG A
115	49	50-75% Grass cover, Fair, HSG A
1,839	98	Paved parking, HSG A
4,798	83	Weighted Average
1,421		29.62% Pervious Area
3,377		70.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.3: Lancaster Sidewalk



Hydrograph for Subcatchment 1.3: Lancaster Sidewalk

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	4.60	2.81	0.00
0.50	0.02	0.00	0.00	27.00	4.60	2.81	0.00
1.00	0.05	0.00	0.00	27.50	4.60	2.81	0.00
1.50	0.07	0.00	0.00	28.00	4.60	2.81	0.00
2.00	0.09	0.00	0.00	28.50	4.60	2.81	0.00
2.50	0.12	0.00	0.00	29.00	4.60	2.81	0.00
3.00	0.14	0.00	0.00	29.50	4.60	2.81	0.00
3.50	0.17	0.00	0.00	30.00	4.60	2.81	0.00
4.00	0.20	0.00	0.00	30.50	4.60	2.81	0.00
4.50	0.23	0.00	0.00	31.00	4.60	2.81	0.00
5.00	0.26	0.00	0.00	31.50	4.60	2.81	0.00
5.50	0.30	0.00	0.00	32.00	4.60	2.81	0.00
6.00	0.33	0.00	0.00	32.50	4.60	2.81	0.00
6.50	0.37	0.00	0.00	33.00	4.60	2.81	0.00
7.00	0.42	0.00	0.00	33.50	4.60	2.81	0.00
7.50	0.47	0.00	0.00	34.00	4.60	2.81	0.00
8.00	0.52	0.01	0.00	34.50	4.60	2.81	0.00
8.50	0.59	0.01	0.00	35.00	4.60	2.81	0.00
9.00	0.67	0.03	0.00	35.50	4.60	2.81	0.00
9.50	0.76	0.05	0.01	36.00	4.60	2.81	0.00
10.00	0.87	0.08	0.01	36.50	4.60	2.81	0.00
10.50	1.00	0.13	0.01	37.00	4.60	2.81	0.00
11.00	1.15	0.20	0.02	37.50	4.60	2.81	0.00
11.50	1.37	0.31	0.03	38.00	4.60	2.81	0.00
12.00	2.30	0.91	**0.21**	38.50	4.60	2.81	0.00
12.50	3.23	1.63	**0.08**	39.00	4.60	2.81	0.00
13.00	3.45	1.82	0.03	39.50	4.60	2.81	0.00
13.50	3.60	1.95	0.03	40.00	4.60	2.81	0.00
14.00	3.73	2.05	0.02	40.50	4.60	2.81	0.00
14.50	3.84	2.15	0.02	41.00	4.60	2.81	0.00
15.00	3.93	2.23	0.02	41.50	4.60	2.81	0.00
15.50	4.01	2.29	0.01	42.00	4.60	2.81	0.00
16.00	4.08	2.35	0.01	42.50	4.60	2.81	0.00
16.50	4.13	2.40	0.01	43.00	4.60	2.81	0.00
17.00	4.18	2.45	0.01	43.50	4.60	2.81	0.00
17.50	4.23	2.49	0.01	44.00	4.60	2.81	0.00
18.00	4.27	2.52	0.01	44.50	4.60	2.81	0.00
18.50	4.30	2.55	0.01	45.00	4.60	2.81	0.00
19.00	4.34	2.58	0.01	45.50	4.60	2.81	0.00
19.50	4.37	2.61	0.01	46.00	4.60	2.81	0.00
20.00	4.40	2.64	0.01	46.50	4.60	2.81	0.00
20.50	4.43	2.66	0.01	47.00	4.60	2.81	0.00
21.00	4.46	2.69	0.01	47.50	4.60	2.81	0.00
21.50	4.49	2.71	0.01	48.00	4.60	2.81	0.00
22.00	4.51	2.74	0.00				
22.50	4.54	2.76	0.00				
23.00	4.56	2.78	0.00				
23.50	4.58	2.80	0.00				
24.00	**4.60**	**2.81**	0.00				
24.50	4.60	2.81	0.00				
25.00	4.60	2.81	0.00				
25.50	4.60	2.81	0.00				
26.00	4.60	2.81	0.00				

Summary for Subcatchment 2S: Perimeter Sidewalk

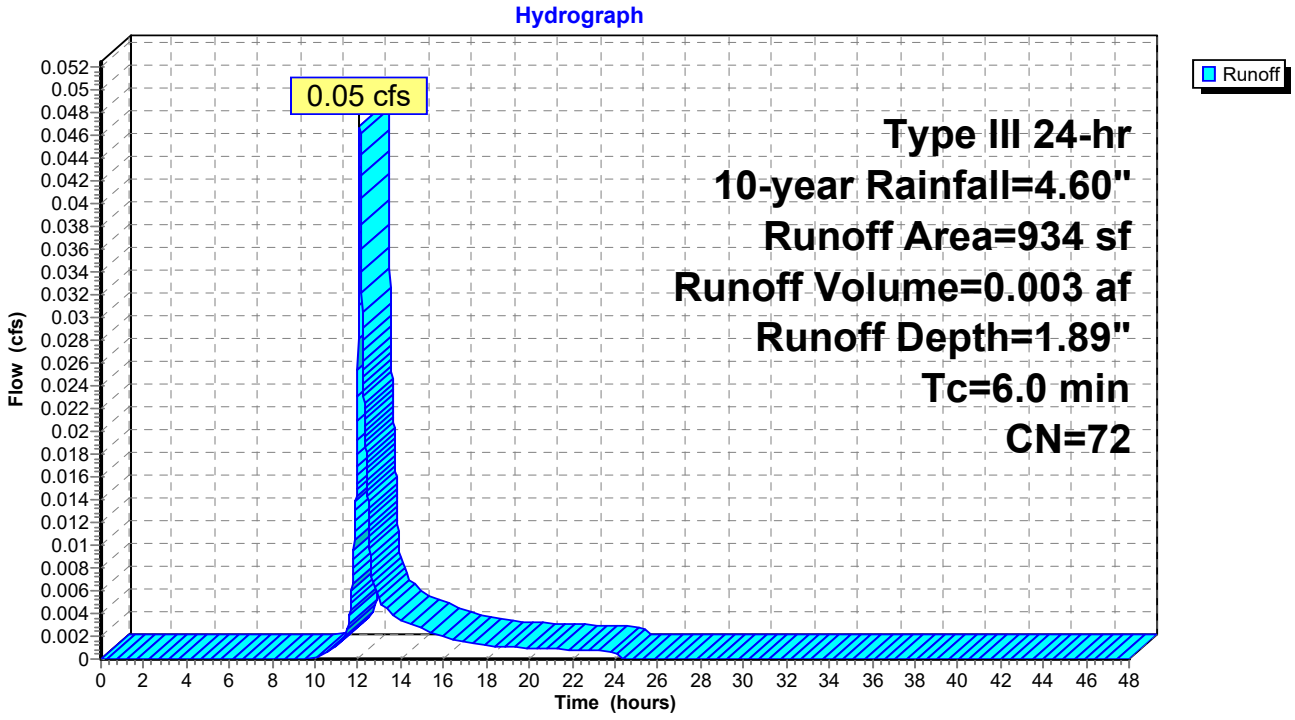
Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 1.89"

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 10-year Rainfall=4.60"

Area (sf)	CN	Description
441	98	Unconnected pavement, HSG A
493	49	50-75% Grass cover, Fair, HSG A
934	72	Weighted Average
493		52.78% Pervious Area
441		47.22% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Perimeter Sidewalk



Hydrograph for Subcatchment 2S: Perimeter Sidewalk

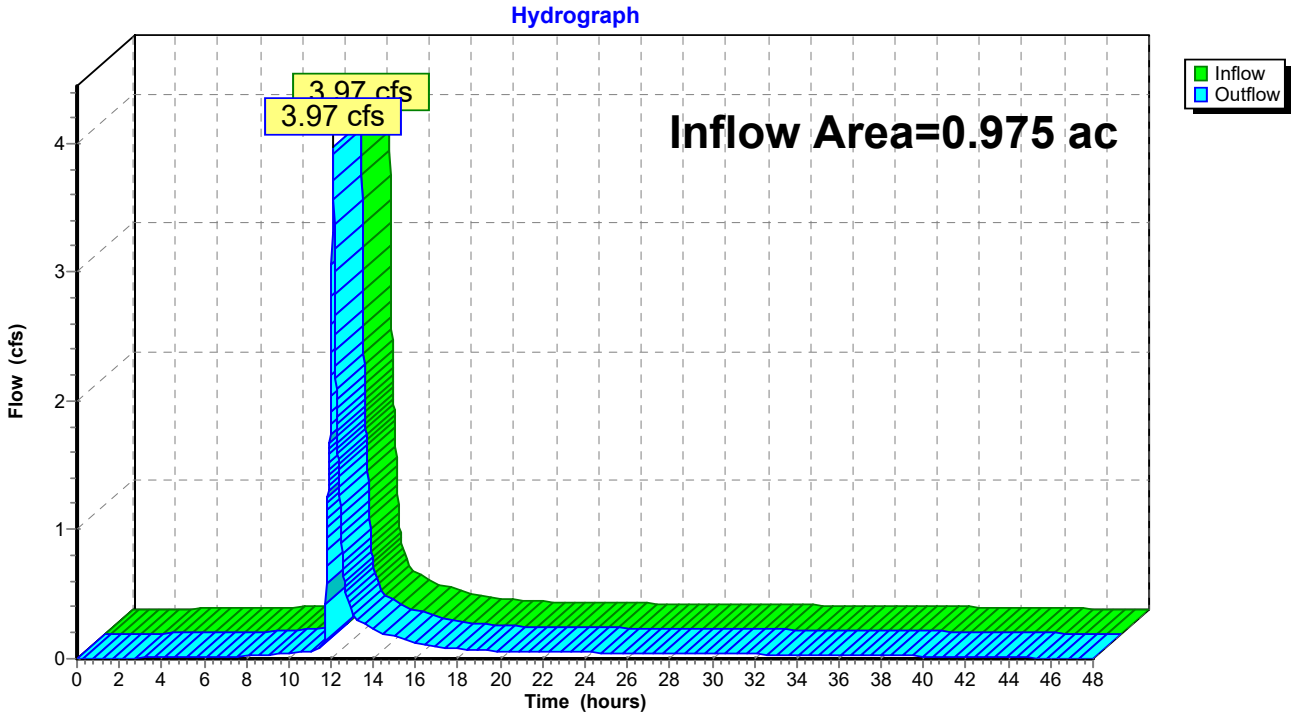
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	4.60	1.89	0.00
0.50	0.02	0.00	0.00	27.00	4.60	1.89	0.00
1.00	0.05	0.00	0.00	27.50	4.60	1.89	0.00
1.50	0.07	0.00	0.00	28.00	4.60	1.89	0.00
2.00	0.09	0.00	0.00	28.50	4.60	1.89	0.00
2.50	0.12	0.00	0.00	29.00	4.60	1.89	0.00
3.00	0.14	0.00	0.00	29.50	4.60	1.89	0.00
3.50	0.17	0.00	0.00	30.00	4.60	1.89	0.00
4.00	0.20	0.00	0.00	30.50	4.60	1.89	0.00
4.50	0.23	0.00	0.00	31.00	4.60	1.89	0.00
5.00	0.26	0.00	0.00	31.50	4.60	1.89	0.00
5.50	0.30	0.00	0.00	32.00	4.60	1.89	0.00
6.00	0.33	0.00	0.00	32.50	4.60	1.89	0.00
6.50	0.37	0.00	0.00	33.00	4.60	1.89	0.00
7.00	0.42	0.00	0.00	33.50	4.60	1.89	0.00
7.50	0.47	0.00	0.00	34.00	4.60	1.89	0.00
8.00	0.52	0.00	0.00	34.50	4.60	1.89	0.00
8.50	0.59	0.00	0.00	35.00	4.60	1.89	0.00
9.00	0.67	0.00	0.00	35.50	4.60	1.89	0.00
9.50	0.76	0.00	0.00	36.00	4.60	1.89	0.00
10.00	0.87	0.00	0.00	36.50	4.60	1.89	0.00
10.50	1.00	0.01	0.00	37.00	4.60	1.89	0.00
11.00	1.15	0.03	0.00	37.50	4.60	1.89	0.00
11.50	1.37	0.08	0.00	38.00	4.60	1.89	0.00
12.00	2.30	0.43	**0.03**	38.50	4.60	1.89	0.00
12.50	3.23	0.95	**0.01**	39.00	4.60	1.89	0.00
13.00	3.45	1.09	0.01	39.50	4.60	1.89	0.00
13.50	3.60	1.19	0.00	40.00	4.60	1.89	0.00
14.00	3.73	1.27	0.00	40.50	4.60	1.89	0.00
14.50	3.84	1.35	0.00	41.00	4.60	1.89	0.00
15.00	3.93	1.41	0.00	41.50	4.60	1.89	0.00
15.50	4.01	1.47	0.00	42.00	4.60	1.89	0.00
16.00	4.08	1.51	0.00	42.50	4.60	1.89	0.00
16.50	4.13	1.55	0.00	43.00	4.60	1.89	0.00
17.00	4.18	1.59	0.00	43.50	4.60	1.89	0.00
17.50	4.23	1.62	0.00	44.00	4.60	1.89	0.00
18.00	4.27	1.65	0.00	44.50	4.60	1.89	0.00
18.50	4.30	1.68	0.00	45.00	4.60	1.89	0.00
19.00	4.34	1.70	0.00	45.50	4.60	1.89	0.00
19.50	4.37	1.73	0.00	46.00	4.60	1.89	0.00
20.00	4.40	1.75	0.00	46.50	4.60	1.89	0.00
20.50	4.43	1.77	0.00	47.00	4.60	1.89	0.00
21.00	4.46	1.79	0.00	47.50	4.60	1.89	0.00
21.50	4.49	1.81	0.00	48.00	4.60	1.89	0.00
22.00	4.51	1.83	0.00				
22.50	4.54	1.85	0.00				
23.00	4.56	1.86	0.00				
23.50	4.58	1.88	0.00				
24.00	**4.60**	**1.89**	0.00				
24.50	4.60	1.89	0.00				
25.00	4.60	1.89	0.00				
25.50	4.60	1.89	0.00				
26.00	4.60	1.89	0.00				

Summary for Reach 1R: Elm/Lancaster Street

Inflow Area = 0.975 ac, 88.58% Impervious, Inflow Depth = 3.82" for 10-year event
Inflow = 3.97 cfs @ 12.10 hrs, Volume= 0.310 af
Outflow = 3.97 cfs @ 12.10 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: Elm/Lancaster Street



Hydrograph for Reach 1R: Elm/Lancaster Street

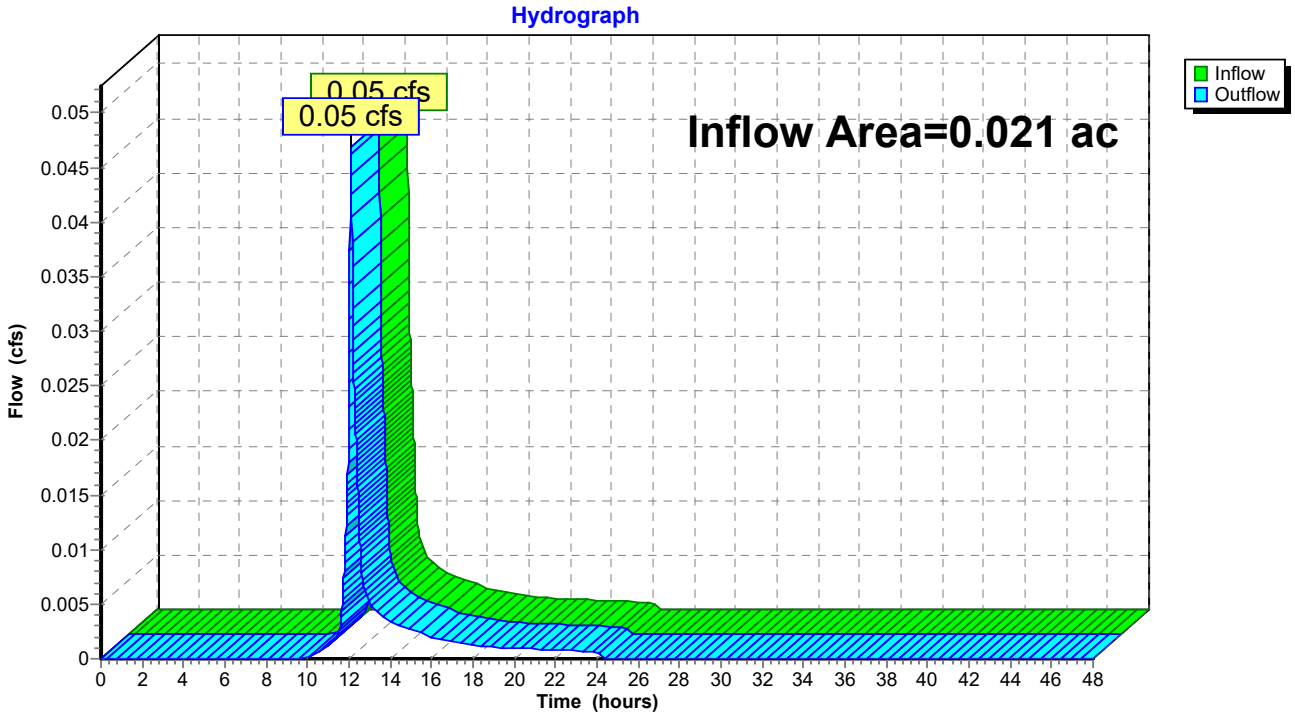
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.00		0.00
2.50	0.01		0.01
3.00	0.01		0.01
3.50	0.01		0.01
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.01		0.01
5.50	0.01		0.01
6.00	0.01		0.01
6.50	0.02		0.02
7.00	0.02		0.02
7.50	0.02		0.02
8.00	0.02		0.02
8.50	0.03		0.03
9.00	0.03		0.03
9.50	0.03		0.03
10.00	0.04		0.04
10.50	0.05		0.05
11.00	0.06		0.06
11.50	0.07		0.07
12.00	**2.20**		**2.20**
12.50	**0.95**		**0.95**
13.00	0.37		0.37
13.50	0.28		0.28
14.00	0.23		0.23
14.50	0.19		0.19
15.00	0.17		0.17
15.50	0.15		0.15
16.00	0.12		0.12
16.50	0.11		0.11
17.00	0.10		0.10
17.50	0.08		0.08
18.00	0.07		0.07
18.50	0.07		0.07
19.00	0.06		0.06
19.50	0.06		0.06
20.00	0.06		0.06
20.50	0.06		0.06
21.00	0.06		0.06
21.50	0.05		0.05
22.00	0.05		0.05
22.50	0.05		0.05
23.00	0.05		0.05
23.50	0.05		0.05
24.00	0.05		0.05
24.50	0.05		0.05
25.00	0.05		0.05
25.50	0.05		0.05
26.00	0.05		0.05
26.50	0.04		0.04
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.04		0.04
31.00	0.04		0.04
31.50	0.04		0.04
32.00	0.03		0.03
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.03		0.03
36.50	0.03		0.03
37.00	0.03		0.03
37.50	0.02		0.02
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.02		0.02
42.00	0.02		0.02
42.50	0.02		0.02
43.00	0.01		0.01
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.01		0.01
45.00	0.01		0.01
45.50	0.01		0.01
46.00	0.00		0.00
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Reach 2R: Elm/Oxford

Inflow Area = 0.021 ac, 47.22% Impervious, Inflow Depth = 1.89" for 10-year event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: Elm/Oxford



Hydrograph for Reach 2R: Elm/Oxford

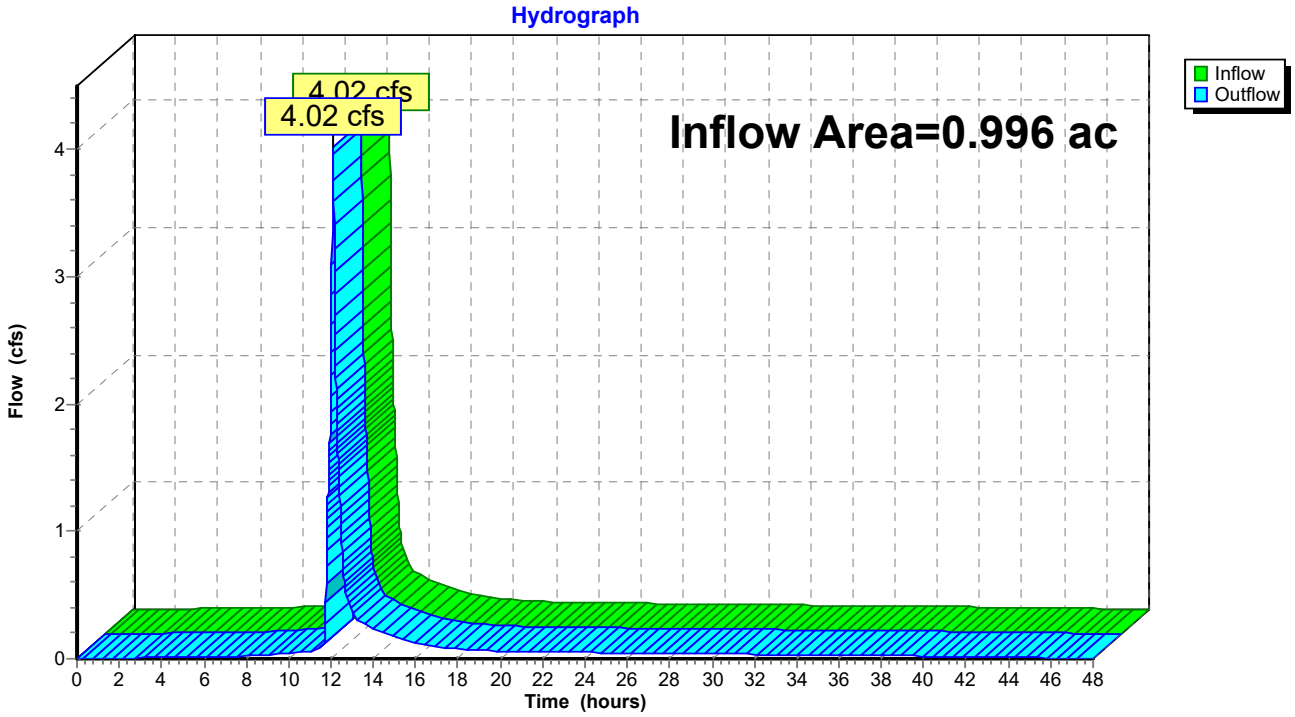
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.00		0.00
0.50	0.00		0.00	27.00	0.00		0.00
1.00	0.00		0.00	27.50	0.00		0.00
1.50	0.00		0.00	28.00	0.00		0.00
2.00	0.00		0.00	28.50	0.00		0.00
2.50	0.00		0.00	29.00	0.00		0.00
3.00	0.00		0.00	29.50	0.00		0.00
3.50	0.00		0.00	30.00	0.00		0.00
4.00	0.00		0.00	30.50	0.00		0.00
4.50	0.00		0.00	31.00	0.00		0.00
5.00	0.00		0.00	31.50	0.00		0.00
5.50	0.00		0.00	32.00	0.00		0.00
6.00	0.00		0.00	32.50	0.00		0.00
6.50	0.00		0.00	33.00	0.00		0.00
7.00	0.00		0.00	33.50	0.00		0.00
7.50	0.00		0.00	34.00	0.00		0.00
8.00	0.00		0.00	34.50	0.00		0.00
8.50	0.00		0.00	35.00	0.00		0.00
9.00	0.00		0.00	35.50	0.00		0.00
9.50	0.00		0.00	36.00	0.00		0.00
10.00	0.00		0.00	36.50	0.00		0.00
10.50	0.00		0.00	37.00	0.00		0.00
11.00	0.00		0.00	37.50	0.00		0.00
11.50	0.00		0.00	38.00	0.00		0.00
12.00	**0.03**		**0.03**	38.50	0.00		0.00
12.50	**0.01**		**0.01**	39.00	0.00		0.00
13.00	0.01		0.01	39.50	0.00		0.00
13.50	0.00		0.00	40.00	0.00		0.00
14.00	0.00		0.00	40.50	0.00		0.00
14.50	0.00		0.00	41.00	0.00		0.00
15.00	0.00		0.00	41.50	0.00		0.00
15.50	0.00		0.00	42.00	0.00		0.00
16.00	0.00		0.00	42.50	0.00		0.00
16.50	0.00		0.00	43.00	0.00		0.00
17.00	0.00		0.00	43.50	0.00		0.00
17.50	0.00		0.00	44.00	0.00		0.00
18.00	0.00		0.00	44.50	0.00		0.00
18.50	0.00		0.00	45.00	0.00		0.00
19.00	0.00		0.00	45.50	0.00		0.00
19.50	0.00		0.00	46.00	0.00		0.00
20.00	0.00		0.00	46.50	0.00		0.00
20.50	0.00		0.00	47.00	0.00		0.00
21.00	0.00		0.00	47.50	0.00		0.00
21.50	0.00		0.00	48.00	0.00		0.00
22.00	0.00		0.00				
22.50	0.00		0.00				
23.00	0.00		0.00				
23.50	0.00		0.00				
24.00	0.00		0.00				
24.50	0.00		0.00				
25.00	0.00		0.00				
25.50	0.00		0.00				
26.00	0.00		0.00				

Summary for Reach 99R: Confluence

Inflow Area = 0.996 ac, 87.69% Impervious, Inflow Depth = 3.77" for 10-year event
Inflow = 4.02 cfs @ 12.10 hrs, Volume= 0.313 af
Outflow = 4.02 cfs @ 12.10 hrs, Volume= 0.313 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 99R: Confluence



Hydrograph for Reach 99R: Confluence

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.00		0.00
2.50	0.01		0.01
3.00	0.01		0.01
3.50	0.01		0.01
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.01		0.01
5.50	0.01		0.01
6.00	0.01		0.01
6.50	0.02		0.02
7.00	0.02		0.02
7.50	0.02		0.02
8.00	0.02		0.02
8.50	0.03		0.03
9.00	0.03		0.03
9.50	0.03		0.03
10.00	0.04		0.04
10.50	0.05		0.05
11.00	0.06		0.06
11.50	0.08		0.08
12.00	**2.23**		**2.23**
12.50	**0.96**		**0.96**
13.00	0.37		0.37
13.50	0.28		0.28
14.00	0.23		0.23
14.50	0.20		0.20
15.00	0.17		0.17
15.50	0.15		0.15
16.00	0.12		0.12
16.50	0.11		0.11
17.00	0.10		0.10
17.50	0.09		0.09
18.00	0.08		0.08
18.50	0.07		0.07
19.00	0.07		0.07
19.50	0.06		0.06
20.00	0.06		0.06
20.50	0.06		0.06
21.00	0.06		0.06
21.50	0.06		0.06
22.00	0.06		0.06
22.50	0.05		0.05
23.00	0.05		0.05
23.50	0.05		0.05
24.00	0.05		0.05
24.50	0.05		0.05
25.00	0.05		0.05
25.50	0.05		0.05
26.00	0.05		0.05
26.50	0.04		0.04
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.04		0.04
31.00	0.04		0.04
31.50	0.04		0.04
32.00	0.03		0.03
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.03		0.03
36.50	0.03		0.03
37.00	0.03		0.03
37.50	0.02		0.02
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.02		0.02
42.00	0.02		0.02
42.50	0.02		0.02
43.00	0.01		0.01
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.01		0.01
45.00	0.01		0.01
45.50	0.01		0.01
46.00	0.00		0.00
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Pond 1.2P: R-TANK

Inflow Area = 0.865 ac, 90.90% Impervious, Inflow Depth = 3.94" for 10-year event
Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.284 af
Outflow = 3.61 cfs @ 12.10 hrs, Volume= 0.284 af, Atten= 2%, Lag= 0.9 min
Primary = 3.61 cfs @ 12.10 hrs, Volume= 0.284 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 23.21' @ 12.10 hrs Surf.Area= 747 sf Storage= 2,696 cf

Plug-Flow detention time= 256.3 min calculated for 0.284 af (100% of inflow)
Center-of-Mass det. time= 256.5 min (1,026.0 - 769.5)

Volume	Invert	Avail.Storage	Storage Description
#1B	19.15'	438 cf	**34.81'W x 21.11'L x 5.45'H Field B** 4,005 cf Overall - 2,909 cf Embedded = 1,096 cf x 40.0% Voids
#2B	19.40'	2,763 cf	**ACF R-Tank HD 3** x 225 Inside #1 Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf 225 Chambers in 25 Rows
#3	19.15'	77 cf	**4.00'D x 6.10'H Vertical Cone/Cylinder**
#4	25.25'	415 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		3,693 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	4	0	0
26.00	1,102	415	415

Device	Routing	Invert	Outlet Devices
#1	Primary	19.05'	**10.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.05' / 18.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	19.10'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	22.75'	**4.0' long x 0.7' breadth OCS Bulkhead** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32
#4	Primary	25.75'	**10.0' long x 5.0' breadth Emergency Overflow.** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.61 cfs @ 12.10 hrs HW=23.21' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.61 cfs of 4.01 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 9.71 fps)
  - **3=OCS Bulkhead** (Weir Controls 3.56 cfs @ 1.93 fps)
- **4=Emergency Overflow.** (Controls 0.00 cfs)

Pond 1.2P: R-TANK - Chamber Wizard Field B

Chamber Model = ACF R-Tank HD 3 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf
Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf

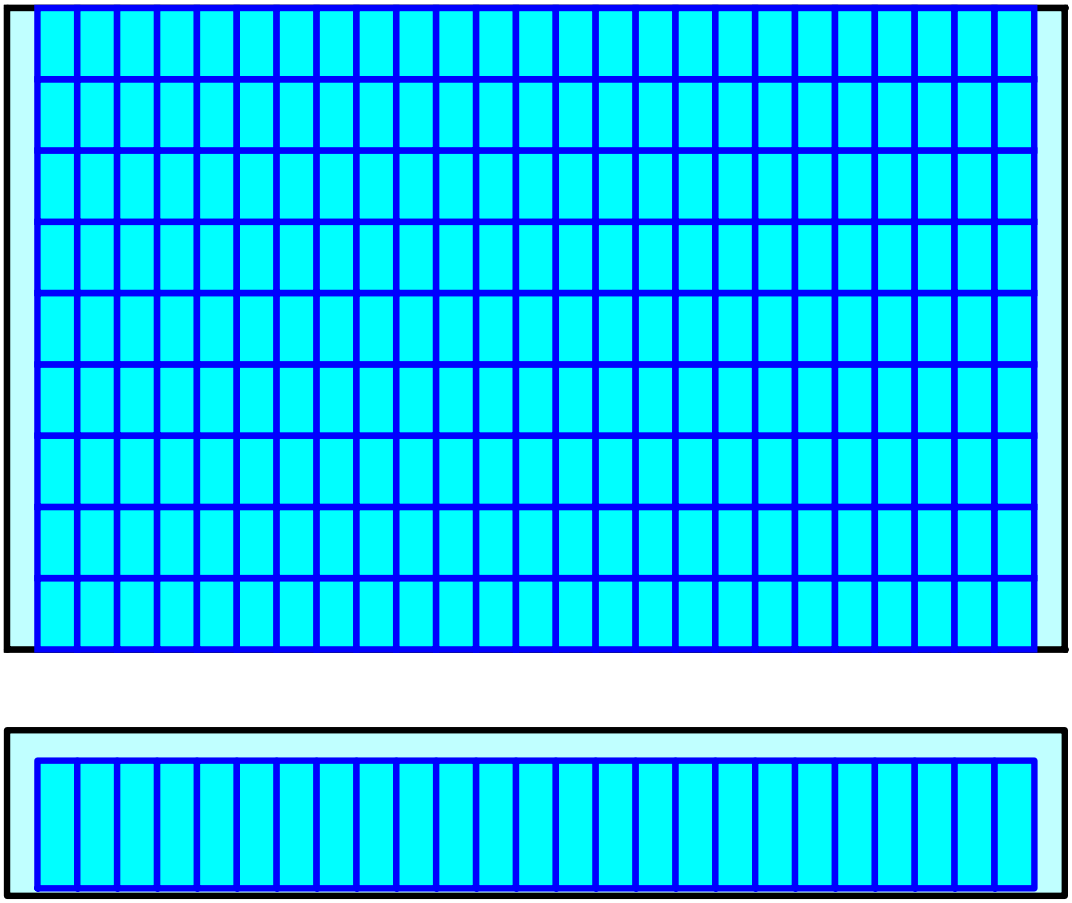
9 Chambers/Row x 2.35' Long = 21.11' Row Length
25 Rows x 15.7" Wide + 12.0" Side Stone x 2 = 34.81' Base Width
3.0" Base + 50.4" Chamber Height + 12.0" Cover = 5.45' Field Height

225 Chambers x 12.3 cf = 2,763.4 cf Chamber Storage
225 Chambers x 12.9 cf = 2,908.8 cf Displacement

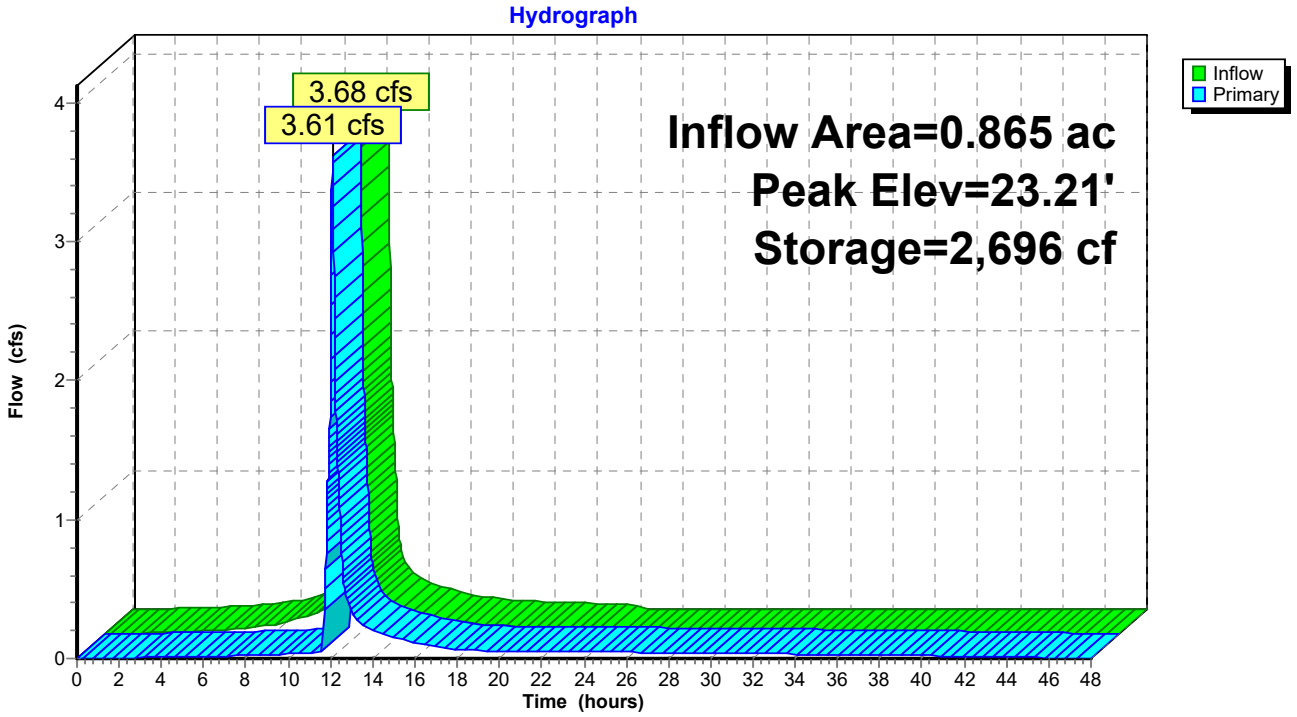
4,004.7 cf Field - 2,908.8 cf Chambers = 1,095.9 cf Stone x 40.0% Voids = 438.4 cf Stone Storage

Chamber Storage + Stone Storage = 3,201.7 cf = 0.074 af
Overall Storage Efficiency = 79.9%
Overall System Size = 21.11' x 34.81' x 5.45'

225 Chambers
148.3 cy Field
40.6 cy Stone



Pond 1.2P: R-TANK



Hydrograph for Pond 1.2P: R-TANK

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	19.15	0.00
1.00	0.00	0	19.15	0.00
2.00	0.01	4	19.16	0.00
3.00	0.01	16	19.20	0.01
4.00	0.02	36	19.27	0.01
5.00	0.02	67	19.37	0.01
6.00	0.03	115	19.46	0.01
7.00	0.05	197	19.57	0.02
8.00	0.07	331	19.77	0.02
9.00	0.10	551	20.09	0.03
10.00	0.15	906	20.61	0.03
11.00	0.24	1,470	21.43	0.04
12.00	**2.29**	**2,593**	**23.06**	**1.99**
13.00	**0.32**	**2,439**	**22.84**	**0.33**
14.00	0.20	2,420	22.81	0.20
15.00	0.15	2,410	22.79	0.15
16.00	0.11	2,401	22.78	0.11
17.00	0.08	2,395	22.77	0.09
18.00	0.06	2,389	22.76	0.07
19.00	0.06	2,385	22.76	0.06
20.00	0.05	2,382	22.75	0.05
21.00	0.05	2,377	22.75	0.05
22.00	0.04	2,360	22.72	0.05
23.00	0.04	2,327	22.67	0.05
24.00	0.03	2,280	22.60	0.05
25.00	0.00	2,118	22.37	0.05
26.00	0.00	1,952	22.13	0.05
27.00	0.00	1,791	21.89	0.04
28.00	0.00	1,638	21.67	0.04
29.00	0.00	1,491	21.46	0.04
30.00	0.00	1,350	21.25	0.04
31.00	0.00	1,216	21.06	0.04
32.00	0.00	1,088	20.87	0.03
33.00	0.00	967	20.70	0.03
34.00	0.00	853	20.53	0.03
35.00	0.00	745	20.37	0.03
36.00	0.00	643	20.22	0.03
37.00	0.00	548	20.09	0.03
38.00	0.00	459	19.96	0.02
39.00	0.00	377	19.84	0.02
40.00	0.00	302	19.73	0.02
41.00	0.00	233	19.63	0.02
42.00	0.00	170	19.54	0.02
43.00	0.00	114	19.45	0.01
44.00	0.00	65	19.36	0.01
45.00	0.00	28	19.24	0.01
46.00	0.00	5	19.17	0.00
47.00	0.00	0	19.15	0.00
48.00	0.00	0	19.15	0.00

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: ROOF 4-9 Runoff Area=17,072 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=2.23 cfs 0.182 af

Subcatchment 1.2: Alley Way Runoff Area=20,598 sf 83.36% Impervious Runoff Depth=4.76"
Tc=6.0 min CN=91 Runoff=2.50 cfs 0.188 af

Subcatchment 1.3: Lancaster Sidewalk Runoff Area=4,798 sf 70.38% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=0.50 cfs 0.036 af

Subcatchment 2S: Perimeter Sidewalk Runoff Area=934 sf 47.22% Impervious Runoff Depth=2.83"
Tc=6.0 min CN=72 Runoff=0.07 cfs 0.005 af

Reach 1R: Elm/Lancaster Street Inflow=4.60 cfs 0.405 af
Outflow=4.60 cfs 0.405 af

Reach 2R: Elm/Oxford Inflow=0.07 cfs 0.005 af
Outflow=0.07 cfs 0.005 af

Reach 99R: Confluence Inflow=4.67 cfs 0.410 af
Outflow=4.67 cfs 0.410 af

Pond 1.2P: R-TANK Peak Elev=23.43' Storage=2,844 cf Inflow=4.73 cfs 0.369 af
Outflow=4.13 cfs 0.369 af

Total Runoff Area = 0.996 ac Runoff Volume = 0.410 af Average Runoff Depth = 4.94"
12.31% Pervious = 0.123 ac 87.69% Impervious = 0.874 ac

Summary for Subcatchment 1: ROOF 4-9

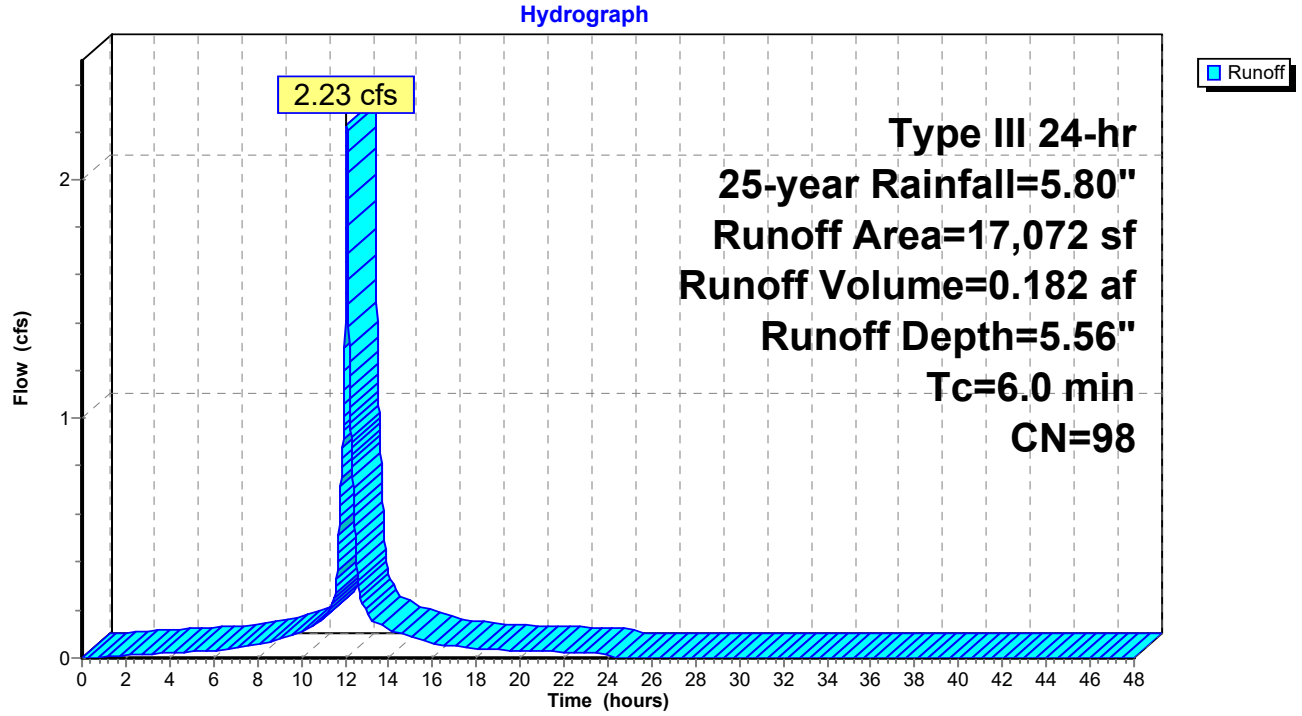
Runoff = 2.23 cfs @ 12.08 hrs, Volume= 0.182 af, Depth= 5.56"

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-year Rainfall=5.80"

Area (sf)	CN	Description
17,072	98	Roofs, HSG A
17,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: ROOF 4-9



Hydrograph for Subcatchment 1: ROOF 4-9

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.06	0.00	0.00
1.50	0.09	0.01	0.01
2.00	0.12	0.02	0.01
2.50	0.15	0.04	0.01
3.00	0.18	0.06	0.02
3.50	0.21	0.08	0.02
4.00	0.25	0.11	0.02
4.50	0.29	0.14	0.02
5.00	0.33	0.17	0.03
5.50	0.37	0.21	0.03
6.00	0.42	0.24	0.03
6.50	0.47	0.29	0.04
7.00	0.52	0.34	0.04
7.50	0.59	0.40	0.05
8.00	0.66	0.47	0.05
8.50	0.74	0.55	0.07
9.00	0.85	0.64	0.08
9.50	0.96	0.75	0.09
10.00	1.10	0.88	0.11
10.50	1.26	1.04	0.13
11.00	1.45	1.23	0.16
11.50	1.73	1.51	0.25
12.00	2.90	2.67	**1.40**
12.50	4.07	3.84	**0.46**
13.00	4.35	4.11	0.19
13.50	4.54	4.31	0.14
14.00	4.70	4.47	0.12
14.50	4.84	4.60	0.10
15.00	4.95	4.72	0.09
15.50	5.06	4.82	0.08
16.00	5.14	4.90	0.06
16.50	5.21	4.97	0.05
17.00	5.28	5.04	0.05
17.50	5.33	5.10	0.04
18.00	5.38	5.15	0.04
18.50	5.43	5.19	0.04
19.00	5.47	5.23	0.03
19.50	5.51	5.27	0.03
20.00	5.55	5.31	0.03
20.50	5.59	5.35	0.03
21.00	5.62	5.39	0.03
21.50	5.66	5.42	0.03
22.00	5.69	5.45	0.02
22.50	5.72	5.48	0.02
23.00	5.75	5.51	0.02
23.50	5.77	5.54	0.02
24.00	**5.80**	**5.56**	0.02
24.50	5.80	5.56	0.00
25.00	5.80	5.56	0.00
25.50	5.80	5.56	0.00
26.00	5.80	5.56	0.00
26.50	5.80	5.56	0.00
27.00	5.80	5.56	0.00
27.50	5.80	5.56	0.00
28.00	5.80	5.56	0.00
28.50	5.80	5.56	0.00
29.00	5.80	5.56	0.00
29.50	5.80	5.56	0.00
30.00	5.80	5.56	0.00
30.50	5.80	5.56	0.00
31.00	5.80	5.56	0.00
31.50	5.80	5.56	0.00
32.00	5.80	5.56	0.00
32.50	5.80	5.56	0.00
33.00	5.80	5.56	0.00
33.50	5.80	5.56	0.00
34.00	5.80	5.56	0.00
34.50	5.80	5.56	0.00
35.00	5.80	5.56	0.00
35.50	5.80	5.56	0.00
36.00	5.80	5.56	0.00
36.50	5.80	5.56	0.00
37.00	5.80	5.56	0.00
37.50	5.80	5.56	0.00
38.00	5.80	5.56	0.00
38.50	5.80	5.56	0.00
39.00	5.80	5.56	0.00
39.50	5.80	5.56	0.00
40.00	5.80	5.56	0.00
40.50	5.80	5.56	0.00
41.00	5.80	5.56	0.00
41.50	5.80	5.56	0.00
42.00	5.80	5.56	0.00
42.50	5.80	5.56	0.00
43.00	5.80	5.56	0.00
43.50	5.80	5.56	0.00
44.00	5.80	5.56	0.00
44.50	5.80	5.56	0.00
45.00	5.80	5.56	0.00
45.50	5.80	5.56	0.00
46.00	5.80	5.56	0.00
46.50	5.80	5.56	0.00
47.00	5.80	5.56	0.00
47.50	5.80	5.56	0.00
48.00	5.80	5.56	0.00

Summary for Subcatchment 1.2: Alley Way

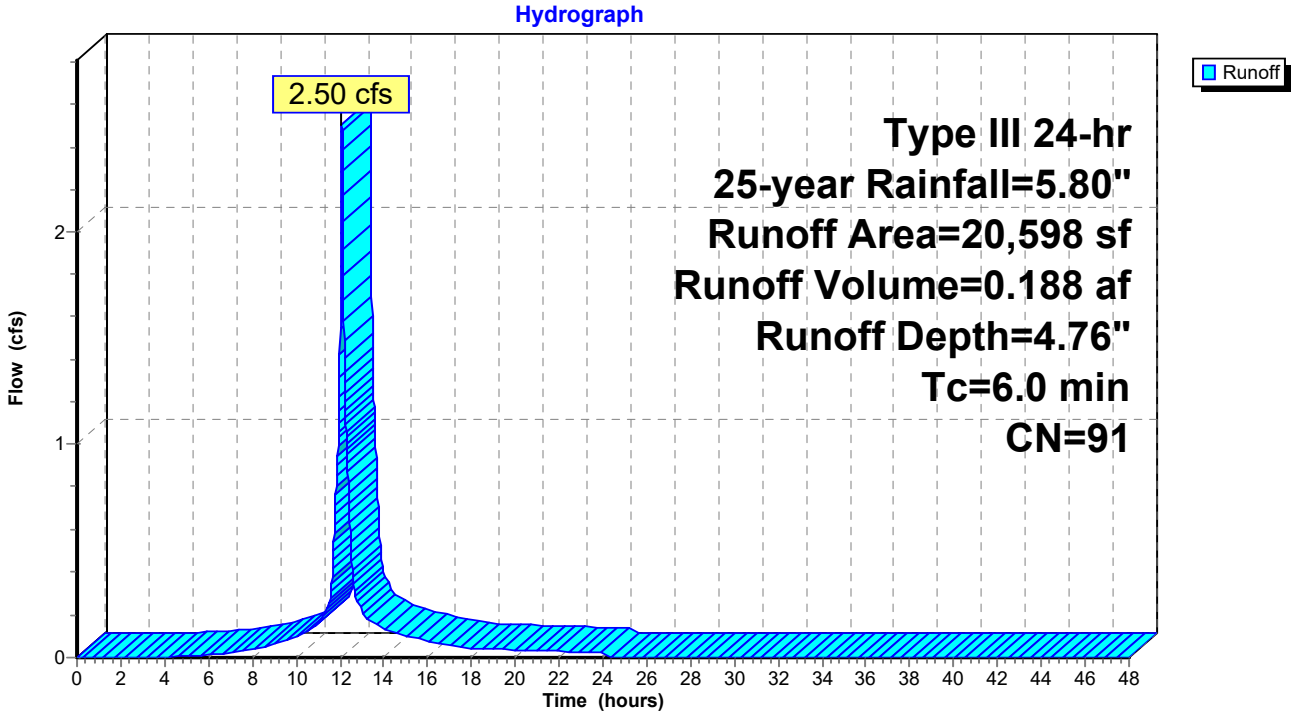
Runoff = 2.50 cfs @ 12.08 hrs, Volume= 0.188 af, Depth= 4.76"

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-year Rainfall=5.80"

Area (sf)	CN	Description
2,755	49	50-75% Grass cover, Fair, HSG A
9,571	98	Paved parking, HSG A
672	96	Gravel surface, HSG A
7,600	98	Roofs, HSG A
20,598	91	Weighted Average
3,427		16.64% Pervious Area
17,171		83.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2: Alley Way



Hydrograph for Subcatchment 1.2: Alley Way

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	5.80	4.76	0.00
0.50	0.03	0.00	0.00	27.00	5.80	4.76	0.00
1.00	0.06	0.00	0.00	27.50	5.80	4.76	0.00
1.50	0.09	0.00	0.00	28.00	5.80	4.76	0.00
2.00	0.12	0.00	0.00	28.50	5.80	4.76	0.00
2.50	0.15	0.00	0.00	29.00	5.80	4.76	0.00
3.00	0.18	0.00	0.00	29.50	5.80	4.76	0.00
3.50	0.21	0.00	0.00	30.00	5.80	4.76	0.00
4.00	0.25	0.00	0.00	30.50	5.80	4.76	0.00
4.50	0.29	0.01	0.01	31.00	5.80	4.76	0.00
5.00	0.33	0.02	0.01	31.50	5.80	4.76	0.00
5.50	0.37	0.03	0.01	32.00	5.80	4.76	0.00
6.00	0.42	0.04	0.01	32.50	5.80	4.76	0.00
6.50	0.47	0.06	0.02	33.00	5.80	4.76	0.00
7.00	0.52	0.08	0.02	33.50	5.80	4.76	0.00
7.50	0.59	0.11	0.03	34.00	5.80	4.76	0.00
8.00	0.66	0.15	0.04	34.50	5.80	4.76	0.00
8.50	0.74	0.19	0.05	35.00	5.80	4.76	0.00
9.00	0.85	0.26	0.06	35.50	5.80	4.76	0.00
9.50	0.96	0.33	0.08	36.00	5.80	4.76	0.00
10.00	1.10	0.43	0.10	36.50	5.80	4.76	0.00
10.50	1.26	0.55	0.12	37.00	5.80	4.76	0.00
11.00	1.45	0.70	0.16	37.50	5.80	4.76	0.00
11.50	1.73	0.93	0.26	38.00	5.80	4.76	0.00
12.00	2.90	1.98	**1.55**	38.50	5.80	4.76	0.00
12.50	4.07	3.09	**0.53**	39.00	5.80	4.76	0.00
13.00	4.35	3.35	0.22	39.50	5.80	4.76	0.00
13.50	4.54	3.54	0.17	40.00	5.80	4.76	0.00
14.00	4.70	3.69	0.14	40.50	5.80	4.76	0.00
14.50	4.84	3.82	0.12	41.00	5.80	4.76	0.00
15.00	4.95	3.94	0.10	41.50	5.80	4.76	0.00
15.50	5.06	4.04	0.09	42.00	5.80	4.76	0.00
16.00	5.14	4.12	0.07	42.50	5.80	4.76	0.00
16.50	5.21	4.19	0.06	43.00	5.80	4.76	0.00
17.00	5.28	4.25	0.06	43.50	5.80	4.76	0.00
17.50	5.33	4.31	0.05	44.00	5.80	4.76	0.00
18.00	5.38	4.35	0.04	44.50	5.80	4.76	0.00
18.50	5.43	4.40	0.04	45.00	5.80	4.76	0.00
19.00	5.47	4.44	0.04	45.50	5.80	4.76	0.00
19.50	5.51	4.48	0.04	46.00	5.80	4.76	0.00
20.00	5.55	4.52	0.04	46.50	5.80	4.76	0.00
20.50	5.59	4.55	0.03	47.00	5.80	4.76	0.00
21.00	5.62	4.59	0.03	47.50	5.80	4.76	0.00
21.50	5.66	4.62	0.03	48.00	5.80	4.76	0.00
22.00	5.69	4.65	0.03				
22.50	5.72	4.68	0.03				
23.00	5.75	4.71	0.03				
23.50	5.77	4.74	0.02				
24.00	**5.80**	**4.76**	0.02				
24.50	5.80	4.76	0.00				
25.00	5.80	4.76	0.00				
25.50	5.80	4.76	0.00				
26.00	5.80	4.76	0.00				

Summary for Subcatchment 1.3: Lancaster Sidewalk

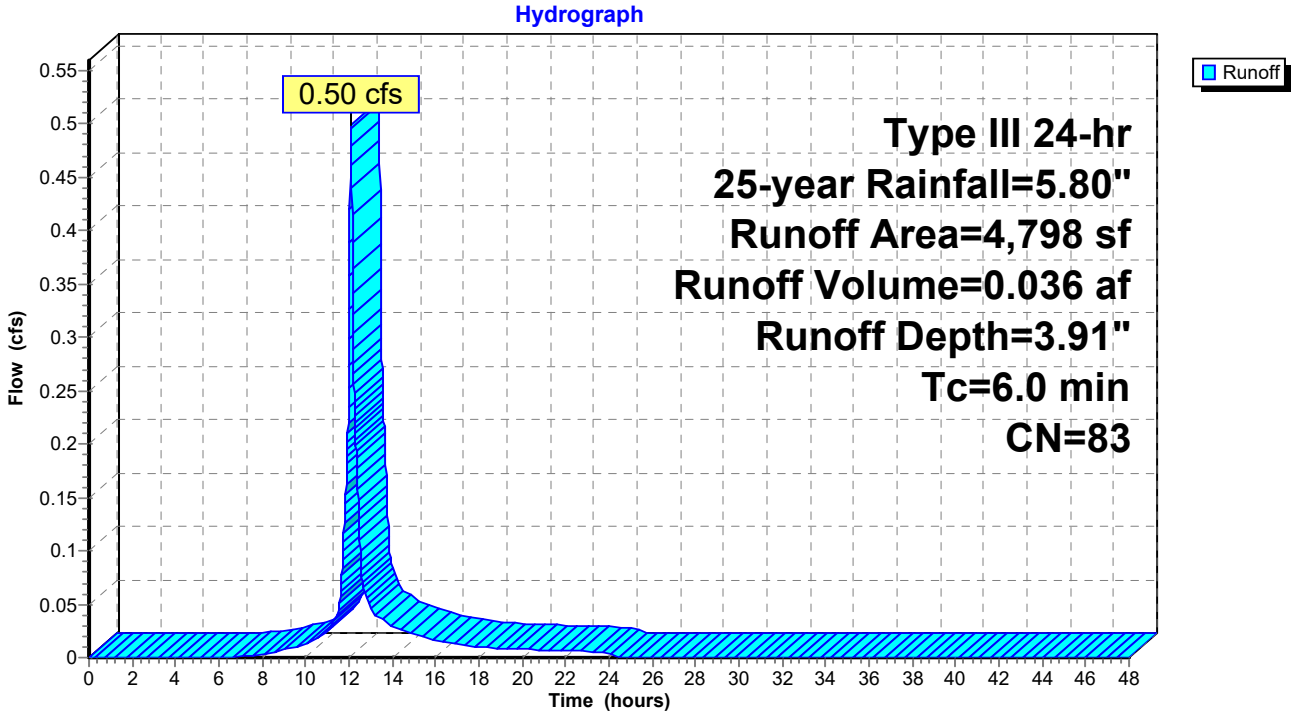
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Depth= 3.91"

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-year Rainfall=5.80"

Area (sf)	CN	Description
1,538	98	Paved parking, HSG A
1,306	49	50-75% Grass cover, Fair, HSG A
115	49	50-75% Grass cover, Fair, HSG A
1,839	98	Paved parking, HSG A
4,798	83	Weighted Average
1,421		29.62% Pervious Area
3,377		70.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.3: Lancaster Sidewalk



Hydrograph for Subcatchment 1.3: Lancaster Sidewalk

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.06	0.00	0.00
1.50	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.50	0.15	0.00	0.00
3.00	0.18	0.00	0.00
3.50	0.21	0.00	0.00
4.00	0.25	0.00	0.00
4.50	0.29	0.00	0.00
5.00	0.33	0.00	0.00
5.50	0.37	0.00	0.00
6.00	0.42	0.00	0.00
6.50	0.47	0.00	0.00
7.00	0.52	0.01	0.00
7.50	0.59	0.01	0.00
8.00	0.66	0.03	0.00
8.50	0.74	0.05	0.00
9.00	0.85	0.08	0.01
9.50	0.96	0.12	0.01
10.00	1.10	0.17	0.01
10.50	1.26	0.25	0.02
11.00	1.45	0.35	0.03
11.50	1.73	0.52	0.04
12.00	2.90	1.37	**0.30**
12.50	4.07	2.35	**0.11**
13.00	4.35	2.59	0.05
13.50	4.54	2.76	0.04
14.00	4.70	2.91	0.03
14.50	4.84	3.03	0.03
15.00	4.95	3.13	0.02
15.50	5.06	3.22	0.02
16.00	5.14	3.30	0.02
16.50	5.21	3.37	0.01
17.00	5.28	3.42	0.01
17.50	5.33	3.48	0.01
18.00	5.38	3.52	0.01
18.50	5.43	3.56	0.01
19.00	5.47	3.60	0.01
19.50	5.51	3.64	0.01
20.00	5.55	3.68	0.01
20.50	5.59	3.71	0.01
21.00	5.62	3.74	0.01
21.50	5.66	3.77	0.01
22.00	5.69	3.80	0.01
22.50	5.72	3.83	0.01
23.00	5.75	3.86	0.01
23.50	5.77	3.88	0.01
24.00	**5.80**	**3.91**	0.01
24.50	5.80	3.91	0.00
25.00	5.80	3.91	0.00
25.50	5.80	3.91	0.00
26.00	5.80	3.91	0.00
26.50	5.80	3.91	0.00
27.00	5.80	3.91	0.00
27.50	5.80	3.91	0.00
28.00	5.80	3.91	0.00
28.50	5.80	3.91	0.00
29.00	5.80	3.91	0.00
29.50	5.80	3.91	0.00
30.00	5.80	3.91	0.00
30.50	5.80	3.91	0.00
31.00	5.80	3.91	0.00
31.50	5.80	3.91	0.00
32.00	5.80	3.91	0.00
32.50	5.80	3.91	0.00
33.00	5.80	3.91	0.00
33.50	5.80	3.91	0.00
34.00	5.80	3.91	0.00
34.50	5.80	3.91	0.00
35.00	5.80	3.91	0.00
35.50	5.80	3.91	0.00
36.00	5.80	3.91	0.00
36.50	5.80	3.91	0.00
37.00	5.80	3.91	0.00
37.50	5.80	3.91	0.00
38.00	5.80	3.91	0.00
38.50	5.80	3.91	0.00
39.00	5.80	3.91	0.00
39.50	5.80	3.91	0.00
40.00	5.80	3.91	0.00
40.50	5.80	3.91	0.00
41.00	5.80	3.91	0.00
41.50	5.80	3.91	0.00
42.00	5.80	3.91	0.00
42.50	5.80	3.91	0.00
43.00	5.80	3.91	0.00
43.50	5.80	3.91	0.00
44.00	5.80	3.91	0.00
44.50	5.80	3.91	0.00
45.00	5.80	3.91	0.00
45.50	5.80	3.91	0.00
46.00	5.80	3.91	0.00
46.50	5.80	3.91	0.00
47.00	5.80	3.91	0.00
47.50	5.80	3.91	0.00
48.00	5.80	3.91	0.00

Summary for Subcatchment 2S: Perimeter Sidewalk

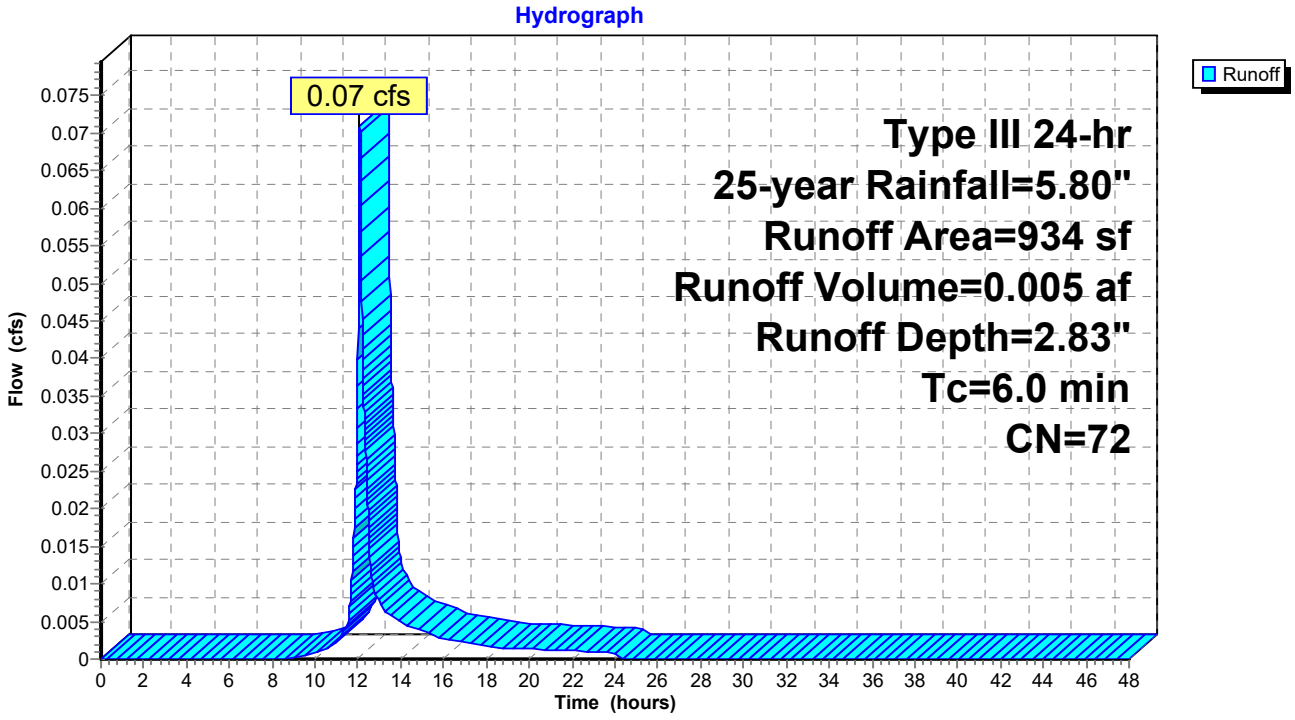
Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 2.83"

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-year Rainfall=5.80"

Area (sf)	CN	Description
441	98	Unconnected pavement, HSG A
493	49	50-75% Grass cover, Fair, HSG A
934	72	Weighted Average
493		52.78% Pervious Area
441		47.22% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Perimeter Sidewalk



Hydrograph for Subcatchment 2S: Perimeter Sidewalk

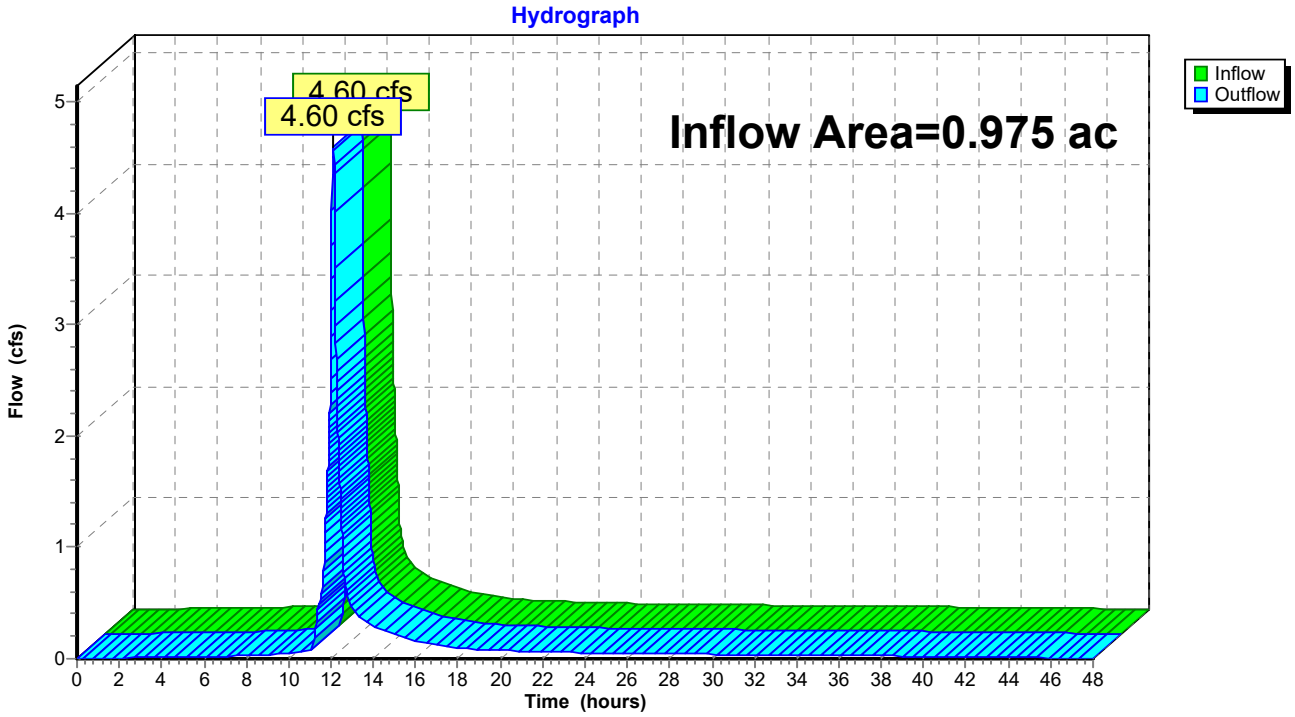
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	5.80	2.83	0.00
0.50	0.03	0.00	0.00	27.00	5.80	2.83	0.00
1.00	0.06	0.00	0.00	27.50	5.80	2.83	0.00
1.50	0.09	0.00	0.00	28.00	5.80	2.83	0.00
2.00	0.12	0.00	0.00	28.50	5.80	2.83	0.00
2.50	0.15	0.00	0.00	29.00	5.80	2.83	0.00
3.00	0.18	0.00	0.00	29.50	5.80	2.83	0.00
3.50	0.21	0.00	0.00	30.00	5.80	2.83	0.00
4.00	0.25	0.00	0.00	30.50	5.80	2.83	0.00
4.50	0.29	0.00	0.00	31.00	5.80	2.83	0.00
5.00	0.33	0.00	0.00	31.50	5.80	2.83	0.00
5.50	0.37	0.00	0.00	32.00	5.80	2.83	0.00
6.00	0.42	0.00	0.00	32.50	5.80	2.83	0.00
6.50	0.47	0.00	0.00	33.00	5.80	2.83	0.00
7.00	0.52	0.00	0.00	33.50	5.80	2.83	0.00
7.50	0.59	0.00	0.00	34.00	5.80	2.83	0.00
8.00	0.66	0.00	0.00	34.50	5.80	2.83	0.00
8.50	0.74	0.00	0.00	35.00	5.80	2.83	0.00
9.00	0.85	0.00	0.00	35.50	5.80	2.83	0.00
9.50	0.96	0.01	0.00	36.00	5.80	2.83	0.00
10.00	1.10	0.02	0.00	36.50	5.80	2.83	0.00
10.50	1.26	0.05	0.00	37.00	5.80	2.83	0.00
11.00	1.45	0.10	0.00	37.50	5.80	2.83	0.00
11.50	1.73	0.19	0.00	38.00	5.80	2.83	0.00
12.00	2.90	0.75	**0.04**	38.50	5.80	2.83	0.00
12.50	4.07	1.51	**0.02**	39.00	5.80	2.83	0.00
13.00	4.35	1.71	0.01	39.50	5.80	2.83	0.00
13.50	4.54	1.85	0.01	40.00	5.80	2.83	0.00
14.00	4.70	1.97	0.00	40.50	5.80	2.83	0.00
14.50	4.84	2.07	0.00	41.00	5.80	2.83	0.00
15.00	4.95	2.16	0.00	41.50	5.80	2.83	0.00
15.50	5.06	2.24	0.00	42.00	5.80	2.83	0.00
16.00	5.14	2.31	0.00	42.50	5.80	2.83	0.00
16.50	5.21	2.36	0.00	43.00	5.80	2.83	0.00
17.00	5.28	2.41	0.00	43.50	5.80	2.83	0.00
17.50	5.33	2.46	0.00	44.00	5.80	2.83	0.00
18.00	5.38	2.50	0.00	44.50	5.80	2.83	0.00
18.50	5.43	2.53	0.00	45.00	5.80	2.83	0.00
19.00	5.47	2.57	0.00	45.50	5.80	2.83	0.00
19.50	5.51	2.60	0.00	46.00	5.80	2.83	0.00
20.00	5.55	2.63	0.00	46.50	5.80	2.83	0.00
20.50	5.59	2.66	0.00	47.00	5.80	2.83	0.00
21.00	5.62	2.69	0.00	47.50	5.80	2.83	0.00
21.50	5.66	2.71	0.00	48.00	5.80	2.83	0.00
22.00	5.69	2.74	0.00				
22.50	5.72	2.76	0.00				
23.00	5.75	2.79	0.00				
23.50	5.77	2.81	0.00				
24.00	**5.80**	**2.83**	0.00				
24.50	5.80	2.83	0.00				
25.00	5.80	2.83	0.00				
25.50	5.80	2.83	0.00				
26.00	5.80	2.83	0.00				

Summary for Reach 1R: Elm/Lancaster Street

Inflow Area = 0.975 ac, 88.58% Impervious, Inflow Depth = 4.99" for 25-year event
Inflow = 4.60 cfs @ 12.10 hrs, Volume= 0.405 af
Outflow = 4.60 cfs @ 12.10 hrs, Volume= 0.405 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: Elm/Lancaster Street



Hydrograph for Reach 1R: Elm/Lancaster Street

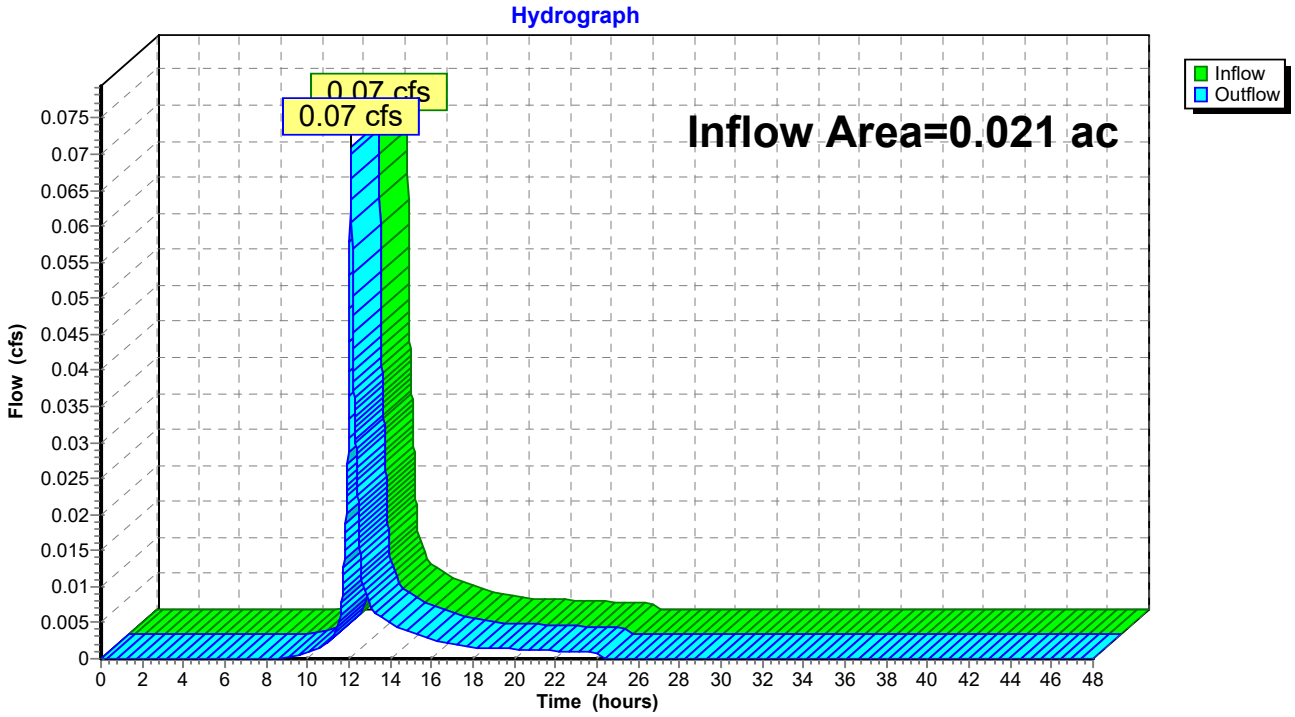
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.01		0.01
2.50	0.01		0.01
3.00	0.01		0.01
3.50	0.01		0.01
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.02		0.02
5.50	0.02		0.02
6.00	0.02		0.02
6.50	0.02		0.02
7.00	0.02		0.02
7.50	0.03		0.03
8.00	0.03		0.03
8.50	0.03		0.03
9.00	0.04		0.04
9.50	0.04		0.04
10.00	0.05		0.05
10.50	0.06		0.06
11.00	0.07		0.07
11.50	0.53		0.53
12.00	**2.89**		**2.89**
12.50	**1.21**		**1.21**
13.00	0.47		0.47
13.50	0.35		0.35
14.00	0.29		0.29
14.50	0.25		0.25
15.00	0.22		0.22
15.50	0.19		0.19
16.00	0.15		0.15
16.50	0.13		0.13
17.00	0.12		0.12
17.50	0.11		0.11
18.00	0.09		0.09
18.50	0.09		0.09
19.00	0.08		0.08
19.50	0.08		0.08
20.00	0.07		0.07
20.50	0.07		0.07
21.00	0.07		0.07
21.50	0.06		0.06
22.00	0.06		0.06
22.50	0.06		0.06
23.00	0.06		0.06
23.50	0.06		0.06
24.00	0.05		0.05
24.50	0.05		0.05
25.00	0.05		0.05
25.50	0.05		0.05
26.00	0.05		0.05
26.50	0.05		0.05
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.04		0.04
31.00	0.04		0.04
31.50	0.04		0.04
32.00	0.04		0.04
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.03		0.03
36.50	0.03		0.03
37.00	0.03		0.03
37.50	0.03		0.03
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.02		0.02
42.00	0.02		0.02
42.50	0.02		0.02
43.00	0.02		0.02
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.01		0.01
45.00	0.01		0.01
45.50	0.01		0.01
46.00	0.01		0.01
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Reach 2R: Elm/Oxford

Inflow Area = 0.021 ac, 47.22% Impervious, Inflow Depth = 2.83" for 25-year event
Inflow = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: Elm/Oxford



Hydrograph for Reach 2R: Elm/Oxford

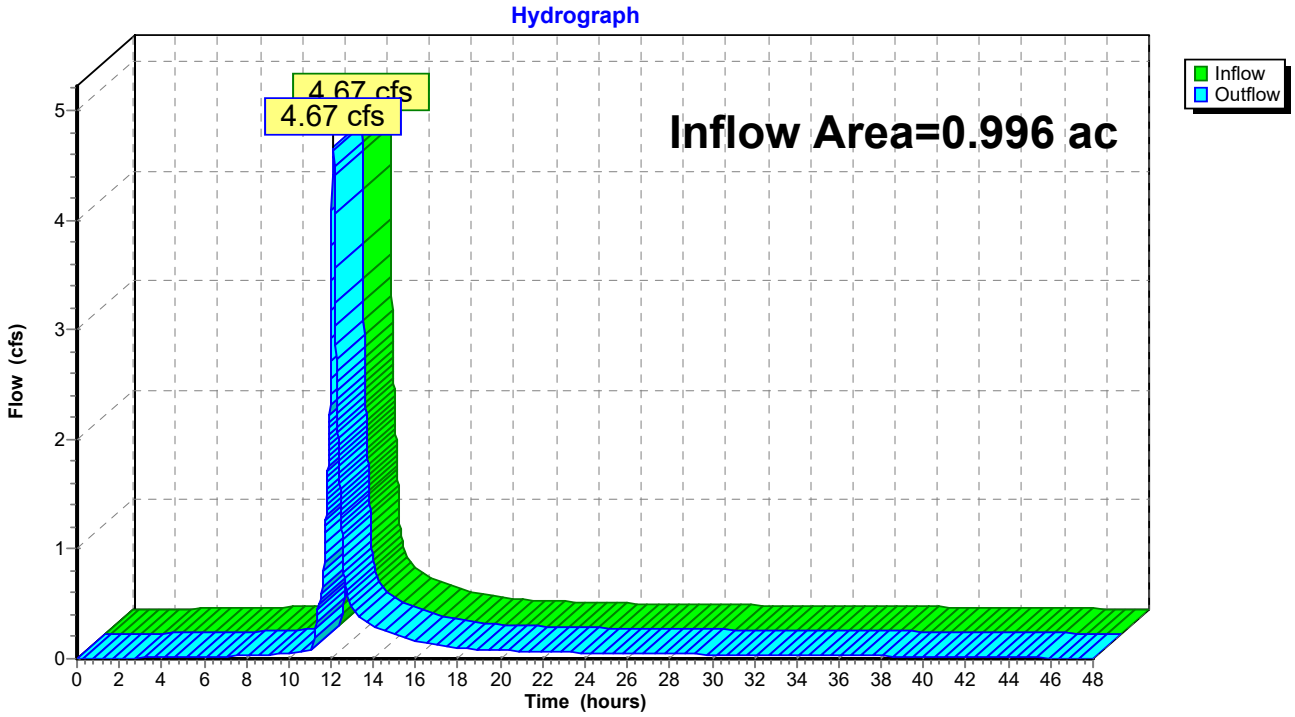
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	26.50	0.00		0.00
0.50	0.00		0.00	27.00	0.00		0.00
1.00	0.00		0.00	27.50	0.00		0.00
1.50	0.00		0.00	28.00	0.00		0.00
2.00	0.00		0.00	28.50	0.00		0.00
2.50	0.00		0.00	29.00	0.00		0.00
3.00	0.00		0.00	29.50	0.00		0.00
3.50	0.00		0.00	30.00	0.00		0.00
4.00	0.00		0.00	30.50	0.00		0.00
4.50	0.00		0.00	31.00	0.00		0.00
5.00	0.00		0.00	31.50	0.00		0.00
5.50	0.00		0.00	32.00	0.00		0.00
6.00	0.00		0.00	32.50	0.00		0.00
6.50	0.00		0.00	33.00	0.00		0.00
7.00	0.00		0.00	33.50	0.00		0.00
7.50	0.00		0.00	34.00	0.00		0.00
8.00	0.00		0.00	34.50	0.00		0.00
8.50	0.00		0.00	35.00	0.00		0.00
9.00	0.00		0.00	35.50	0.00		0.00
9.50	0.00		0.00	36.00	0.00		0.00
10.00	0.00		0.00	36.50	0.00		0.00
10.50	0.00		0.00	37.00	0.00		0.00
11.00	0.00		0.00	37.50	0.00		0.00
11.50	0.00		0.00	38.00	0.00		0.00
12.00	**0.04**		**0.04**	38.50	0.00		0.00
12.50	**0.02**		**0.02**	39.00	0.00		0.00
13.00	0.01		0.01	39.50	0.00		0.00
13.50	0.01		0.01	40.00	0.00		0.00
14.00	0.00		0.00	40.50	0.00		0.00
14.50	0.00		0.00	41.00	0.00		0.00
15.00	0.00		0.00	41.50	0.00		0.00
15.50	0.00		0.00	42.00	0.00		0.00
16.00	0.00		0.00	42.50	0.00		0.00
16.50	0.00		0.00	43.00	0.00		0.00
17.00	0.00		0.00	43.50	0.00		0.00
17.50	0.00		0.00	44.00	0.00		0.00
18.00	0.00		0.00	44.50	0.00		0.00
18.50	0.00		0.00	45.00	0.00		0.00
19.00	0.00		0.00	45.50	0.00		0.00
19.50	0.00		0.00	46.00	0.00		0.00
20.00	0.00		0.00	46.50	0.00		0.00
20.50	0.00		0.00	47.00	0.00		0.00
21.00	0.00		0.00	47.50	0.00		0.00
21.50	0.00		0.00	48.00	0.00		0.00
22.00	0.00		0.00				
22.50	0.00		0.00				
23.00	0.00		0.00				
23.50	0.00		0.00				
24.00	0.00		0.00				
24.50	0.00		0.00				
25.00	0.00		0.00				
25.50	0.00		0.00				
26.00	0.00		0.00				

Summary for Reach 99R: Confluence

Inflow Area = 0.996 ac, 87.69% Impervious, Inflow Depth = 4.94" for 25-year event
Inflow = 4.67 cfs @ 12.10 hrs, Volume= 0.410 af
Outflow = 4.67 cfs @ 12.10 hrs, Volume= 0.410 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 99R: Confluence



Hydrograph for Reach 99R: Confluence

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00
0.50	0.00		0.00
1.00	0.00		0.00
1.50	0.00		0.00
2.00	0.01		0.01
2.50	0.01		0.01
3.00	0.01		0.01
3.50	0.01		0.01
4.00	0.01		0.01
4.50	0.01		0.01
5.00	0.02		0.02
5.50	0.02		0.02
6.00	0.02		0.02
6.50	0.02		0.02
7.00	0.02		0.02
7.50	0.03		0.03
8.00	0.03		0.03
8.50	0.03		0.03
9.00	0.04		0.04
9.50	0.04		0.04
10.00	0.05		0.05
10.50	0.06		0.06
11.00	0.07		0.07
11.50	0.54		0.54
12.00	**2.93**		**2.93**
12.50	**1.22**		**1.22**
13.00	0.47		0.47
13.50	0.36		0.36
14.00	0.29		0.29
14.50	0.25		0.25
15.00	0.22		0.22
15.50	0.19		0.19
16.00	0.16		0.16
16.50	0.14		0.14
17.00	0.12		0.12
17.50	0.11		0.11
18.00	0.10		0.10
18.50	0.09		0.09
19.00	0.08		0.08
19.50	0.08		0.08
20.00	0.08		0.08
20.50	0.07		0.07
21.00	0.07		0.07
21.50	0.07		0.07
22.00	0.06		0.06
22.50	0.06		0.06
23.00	0.06		0.06
23.50	0.06		0.06
24.00	0.06		0.06
24.50	0.05		0.05
25.00	0.05		0.05
25.50	0.05		0.05
26.00	0.05		0.05
26.50	0.05		0.05
27.00	0.04		0.04
27.50	0.04		0.04
28.00	0.04		0.04
28.50	0.04		0.04
29.00	0.04		0.04
29.50	0.04		0.04
30.00	0.04		0.04
30.50	0.04		0.04
31.00	0.04		0.04
31.50	0.04		0.04
32.00	0.04		0.04
32.50	0.03		0.03
33.00	0.03		0.03
33.50	0.03		0.03
34.00	0.03		0.03
34.50	0.03		0.03
35.00	0.03		0.03
35.50	0.03		0.03
36.00	0.03		0.03
36.50	0.03		0.03
37.00	0.03		0.03
37.50	0.03		0.03
38.00	0.02		0.02
38.50	0.02		0.02
39.00	0.02		0.02
39.50	0.02		0.02
40.00	0.02		0.02
40.50	0.02		0.02
41.00	0.02		0.02
41.50	0.02		0.02
42.00	0.02		0.02
42.50	0.02		0.02
43.00	0.02		0.02
43.50	0.01		0.01
44.00	0.01		0.01
44.50	0.01		0.01
45.00	0.01		0.01
45.50	0.01		0.01
46.00	0.01		0.01
46.50	0.00		0.00
47.00	0.00		0.00
47.50	0.00		0.00
48.00	0.00		0.00

Summary for Pond 1.2P: R-TANK

Inflow Area = 0.865 ac, 90.90% Impervious, Inflow Depth = 5.12" for 25-year event
Inflow = 4.73 cfs @ 12.08 hrs, Volume= 0.369 af
Outflow = 4.13 cfs @ 12.13 hrs, Volume= 0.369 af, Atten= 13%, Lag= 2.7 min
Primary = 4.13 cfs @ 12.13 hrs, Volume= 0.369 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 23.43' @ 12.13 hrs Surf.Area= 747 sf Storage= 2,844 cf

Plug-Flow detention time= 210.0 min calculated for 0.369 af (100% of inflow)
Center-of-Mass det. time= 210.2 min (974.4 - 764.2)

Volume	Invert	Avail.Storage	Storage Description
#1B	19.15'	438 cf	**34.81'W x 21.11'L x 5.45'H Field B** 4,005 cf Overall - 2,909 cf Embedded = 1,096 cf x 40.0% Voids
#2B	19.40'	2,763 cf	**ACF R-Tank HD 3** x 225 Inside #1 Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf 225 Chambers in 25 Rows
#3	19.15'	77 cf	**4.00'D x 6.10'H Vertical Cone/Cylinder**
#4	25.25'	415 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		3,693 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	4	0	0
26.00	1,102	415	415

Device	Routing	Invert	Outlet Devices
#1	Primary	19.05'	**10.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.05' / 18.85' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	19.10'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	22.75'	**4.0' long x 0.7' breadth OCS Bulkhead** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32
#4	Primary	25.75'	**10.0' long x 5.0' breadth Emergency Overflow.** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.12 cfs @ 12.13 hrs HW=23.42' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 4.12 cfs @ 7.56 fps)
  - **2=WQ Orifice** (Passes < 0.05 cfs potential flow)
  - **3=OCS Bulkhead** (Passes < 6.63 cfs potential flow)
- **4=Emergency Overflow.** (Controls 0.00 cfs)

Pond 1.2P: R-TANK - Chamber Wizard Field B

Chamber Model = ACF R-Tank HD 3 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 50.4"H => 5.24 sf x 2.35'L = 12.3 cf
Outside= 15.7"W x 50.4"H => 5.51 sf x 2.35'L = 12.9 cf

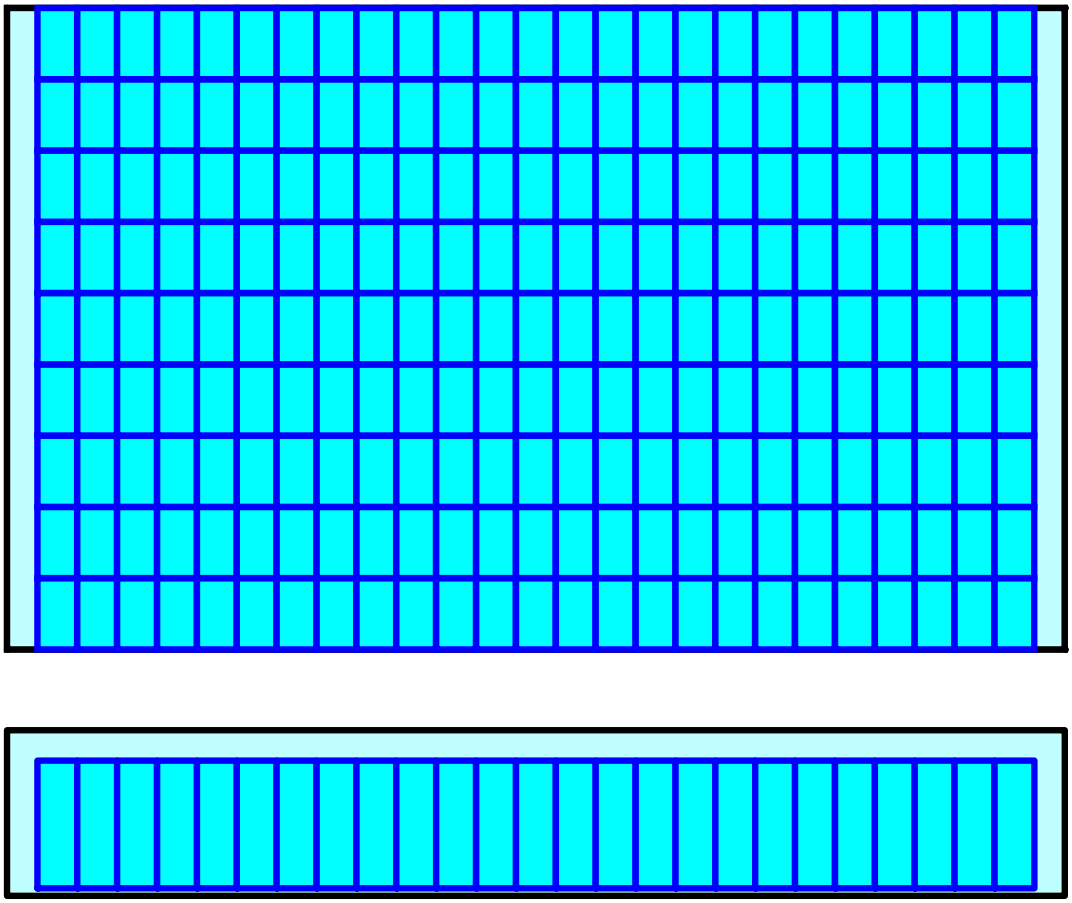
9 Chambers/Row x 2.35' Long = 21.11' Row Length
25 Rows x 15.7" Wide + 12.0" Side Stone x 2 = 34.81' Base Width
3.0" Base + 50.4" Chamber Height + 12.0" Cover = 5.45' Field Height

225 Chambers x 12.3 cf = 2,763.4 cf Chamber Storage
225 Chambers x 12.9 cf = 2,908.8 cf Displacement

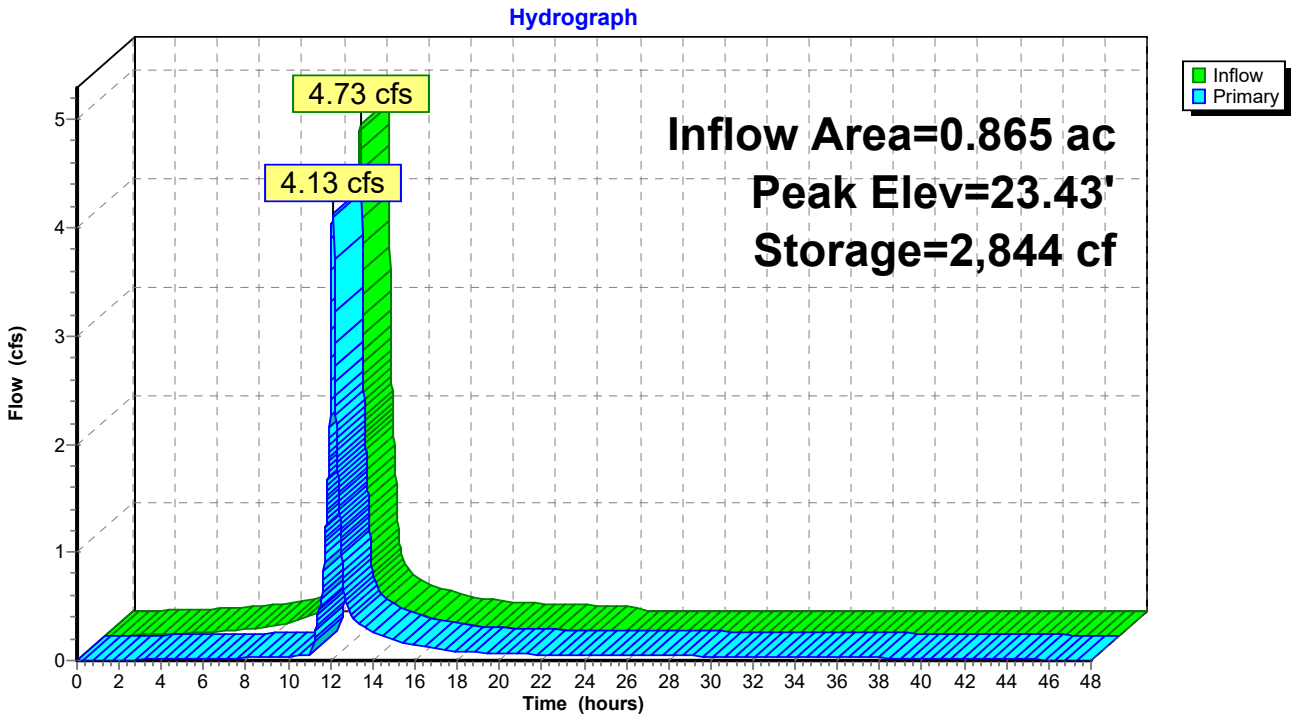
4,004.7 cf Field - 2,908.8 cf Chambers = 1,095.9 cf Stone x 40.0% Voids = 438.4 cf Stone Storage

Chamber Storage + Stone Storage = 3,201.7 cf = 0.074 af
Overall Storage Efficiency = 79.9%
Overall System Size = 21.11' x 34.81' x 5.45'

225 Chambers
148.3 cy Field
40.6 cy Stone



Pond 1.2P: R-TANK



Hydrograph for Pond 1.2P: R-TANK

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	19.15	0.00
1.00	0.00	0	19.15	0.00
2.00	0.01	11	19.19	0.01
3.00	0.02	33	19.26	0.01
4.00	0.03	67	19.37	0.01
5.00	0.04	126	19.47	0.02
6.00	0.05	213	19.60	0.02
7.00	0.07	344	19.79	0.02
8.00	0.09	546	20.08	0.03
9.00	0.14	862	20.54	0.03
10.00	0.20	1,357	21.26	0.04
11.00	0.32	2,125	22.38	0.05
12.00	**2.95**	**2,635**	**23.12**	**2.59**
13.00	**0.40**	**2,451**	**22.85**	**0.42**
14.00	0.25	2,429	22.82	0.26
15.00	0.19	2,418	22.81	0.19
16.00	0.13	2,407	22.79	0.14
17.00	0.11	2,401	22.78	0.11
18.00	0.08	2,394	22.77	0.08
19.00	0.07	2,391	22.77	0.07
20.00	0.07	2,389	22.76	0.07
21.00	0.06	2,386	22.76	0.06
22.00	0.05	2,384	22.76	0.05
23.00	0.05	2,380	22.75	0.05
24.00	0.04	2,365	22.73	0.05
25.00	0.00	2,203	22.49	0.05
26.00	0.00	2,034	22.25	0.05
27.00	0.00	1,870	22.01	0.04
28.00	0.00	1,713	21.78	0.04
29.00	0.00	1,563	21.56	0.04
30.00	0.00	1,419	21.35	0.04
31.00	0.00	1,282	21.15	0.04
32.00	0.00	1,151	20.96	0.04
33.00	0.00	1,027	20.78	0.03
34.00	0.00	909	20.61	0.03
35.00	0.00	798	20.45	0.03
36.00	0.00	693	20.30	0.03
37.00	0.00	594	20.15	0.03
38.00	0.00	503	20.02	0.02
39.00	0.00	417	19.90	0.02
40.00	0.00	338	19.78	0.02
41.00	0.00	266	19.68	0.02
42.00	0.00	200	19.58	0.02
43.00	0.00	141	19.49	0.02
44.00	0.00	88	19.42	0.01
45.00	0.00	44	19.29	0.01
46.00	0.00	15	19.20	0.01
47.00	0.00	0	19.15	0.00
48.00	0.00	0	19.15	0.00

SECTION J

STORMWATER MANAGMENT REPORT

Attachment D: USDA Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cumberland County and Part of Oxford County, Maine



January 31, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


70° 15' 57" W
70° 15' 26" W
43° 39' 45" N
43° 39' 30" N
397930
398000
398070
398140
398210
398280
398350
398420
398490
398560
398630
4835150
4835080
4835010
4834940
4834870
4834800
4834730
Preble
Marginal
Somerset
Elm
Hanover St
Chestnut St
Pearl St
Cedar St
Oxford St
Alder St
Lancaster St
Preble St
Elm St
Cumberland Ave
Cu
So
Au
HIB
DeB
HIB
Soil Map may not be valid at this scale.
Map Scale: 1:3,220 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 45 90 180 270
Feet
0 150 300 600 900
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 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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	23.4	51.5%
Cu	Cut and fill land	2.1	4.6%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	1.2	2.7%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	16.3	35.8%
So	Scarboro sandy loam	2.4	5.4%
Totals for Area of Interest		**45.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cumberland County and Part of Oxford County, Maine

Au—Au Gres loamy sand

Map Unit Setting

National map unit symbol: blgr
Elevation: 200 to 1,800 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 90 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Au gres and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Au Gres

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

H1 - 0 to 10 inches: loamy sand
H2 - 10 to 32 inches: loamy sand
H3 - 32 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Cu—Cut and fill land

Map Unit Composition

Cut and fill land: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cut And Fill Land

Typical profile

H1 - 0 to 65 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 24 to 42 inches
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

HIB—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash plains, eskers, moraines, kame terraces, kames, outwash terraces, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand

Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

So—Scarboro sandy loam

Map Unit Setting

National map unit symbol: bljz
Elevation: 10 to 2,800 feet
Mean annual precipitation: 34 to 48 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

Oa - 0 to 8 inches: mucky peat
H2 - 8 to 24 inches: mucky sand

H3 - 24 to 65 inches: coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp, F144BY301ME - Loamy Till Swamp
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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:

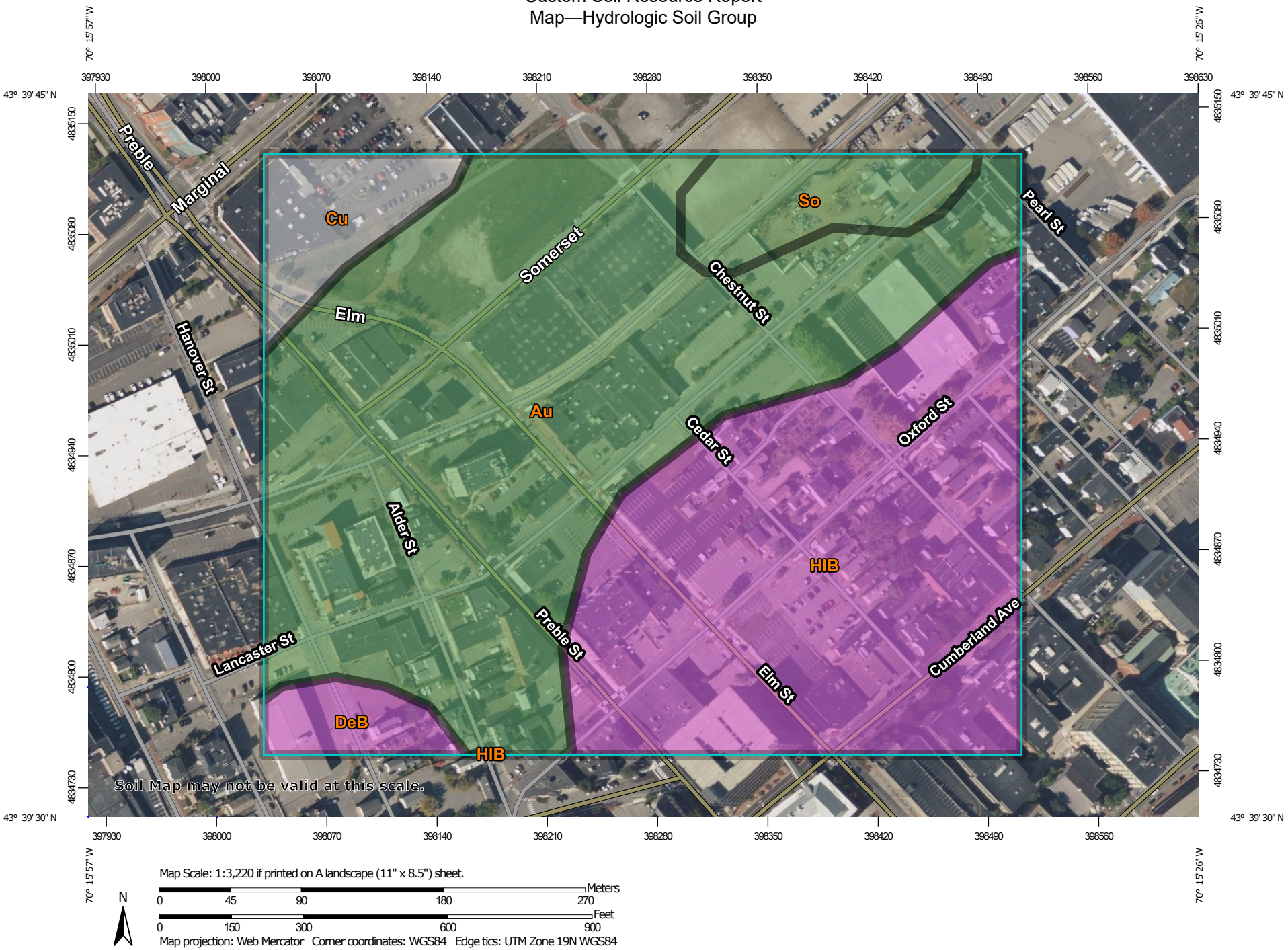
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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.


70° 15' 57" W
70° 15' 26" W
397930
398000
398070
398140
398210
398280
398350
398420
398490
398560
398630
43° 39' 45" N
43° 39' 30" N
4835150
4835080
4835010
4834940
4834870
4834800
4834730
Preble
Marginal
Hanover St
Somerset
Elm
Chestnut St
Pearl St
Cedar St
Oxford St
Alder St
Preble St
Lancaster St
Elm St
Cumberland Ave
Cu
So
Au
HIB
DeB
HIB
Soil Map may not be valid at this scale.
Map Scale: 1:3,220 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 45 90 180 270
Feet
0 150 300 600 900
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 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Au	Au Gres loamy sand	A/D	23.4	51.5%
Cu	Cut and fill land		2.1	4.6%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	A	1.2	2.7%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	A	16.3	35.8%
So	Scarboro sandy loam	A/D	2.4	5.4%
Totals for Area of Interest			**45.4**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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SECTION J

STORMWATER MANAGMENT REPORT

Attachment E: Geotechnical Report

The key to success starts with a solid foundation.
ENGINEERING | EXPLORATION | EXPERIENCE

Geotechnical Report

Bayside Development (Phase 1a & 1b)
Lancaster and Elm Street, Portland, ME



Client

Tom Watson & Co/Bush-Watson
188 State Street, 3rd Floor
Portland, ME 04101

Project #: 22504
Date: 3/24/2023

SUMMIT
GEOENGINEERING SERVICES

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Appendix A – Exploration Location Plan
Appendix B – Exploration Logs
Appendix C – Laboratory Results

March 24, 2023
SGS Project #: 22504

Tom Watson & Co/Bush-Watson
188 State Street, 3rd Floor
Portland, ME 04101
Attn: Michael Barton

Reference: Geotechnical Report – Bayside Development (Phase 1a: 196 Lancaster Street & Phase 1b: 89 Elm Street)
Lancaster and Elm Street, Portland, ME

Dear Mike,

Summit Geoengineering Services, Inc. (SGS) has completed a geotechnical investigation for the construction of the proposed development at the site referenced above. Our scope of services included the observation of fifteen test borings, the installation of five observation wells, laboratory testing, and the preparation of 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 exploration logs, regarding odors or unusual and suspicious conditions observed are for informational purposes and are not intended to constitute an environmental assessment. It should be noted that an environmental site assessment was performed by TRC Companies.

1.0 Project Description

The project consists of the construction of a new development near the intersection of Lancaster and Elm Street in Portland, Maine. This report will address Phase 1a and Phase 1b of the development focusing on two of the proposed buildings in the development, 196 Lancaster Street and 89 Elm Street. The buildings will consist of the following:

Phase 1a: 196 Lancaster Street
- 8-Stories, 111 units
- Approximately 11,400 square feet
- Existing grades within the proposed building footprint range from elevation 18 to 22 feet)
- Grading not known as of the writing of this report (Assumed maximum 10 feet of cut and 6 feet of fill)
- Maximum anticipated column load (dead and live) ~ 630 kips

Phase 1b: 89 Elm Street
- 8-Stories, 201 units
- Approximately 25,000 square feet
- Existing grades within the proposed building footprint range from elevation 18 to 43 feet)

- 3 different finished floor elevations increasing towards the south (Elevation 18.75 to 36.10 to 44.00)
- The following maximum cuts and fills per section:
    - Elevation 18.75
        - 1 foot fill; 10.5 feet cut
    - Elevation 36.10
        - 8 feet fill; 1 foot cut
    - Elevation 44.00
        - 7 feet fill; 0 feet cut
- Maximum anticipated column load (dead and live) ~ 630 kips

Parking lots will append the new developments. The existing sites consist of large parking lots, isolated landscaped areas, concrete walkways, an existing concrete retaining wall near 73 Elm Street, and an existing building near 196 Lancaster Street, set to be demolished.

If the final plans do not reflect the assumptions above, SGS should be contacted so we can confirm the recommendations in this report are appropriate.

Proposed and existing conditions for 89 Elm Street were referenced from a plan entitled *Grading and Drainage Plan – 89 Elm Street Redevelopment* by Acorn Engineering, Inc. dated February 13, 2023.

2.0 Explorations

Summit Geoengineering Services (SGS) observed the subsurface conditions from February 7, 2023 to February 10, 2023 with the drilling of 15 borings and the installation of 5 groundwater wells. TRC Companies was on-site during the explorations to complete an environmental site assessment.

The borings were completed by SGS using a rubber tracked AMS PowerProbe 9500 VTR drill rig. The borings were drilled to depths ranging from 17 feet (elevation 13.5 feet, auger refusal) to 50 feet (elevation -32 feet, no refusal). The borings were completed using both 2 ¼-inch hollow stem augers and 3 ¼-inch hollow stem augers. Standard Penetration Tests (SPT) were performed from the ground surface. The upper 10 feet on a majority of the borings were sampled continuously and then in increments of 5 feet afterwards. Soils were visually classified (*ASTM D2488*) using SPT split spoon sampling (*ASTM D1586*).

An undisturbed tube sample was collected in SB-5 at 20 feet. Field vanes were performed in the lower glacial marine in SB-1, SB-5, and SB-6.

Groundwater observation wells were installed in SB-1, 2, 3, 4 and SB-12. The wells consisted of a 2-inch PVC pipe with varying amounts of screen and riser placements, see the boring logs in *Appendix B*. After initial installation of the wells in SB-2 and SB-12, it was determined that pre-packed PVC wells were a necessity at the site. This decision was made by both SGS and TRC Companies.

The exploration locations were determined by SGS and TRC Companies and were marked out by SGS prior to drilling. An exploration location plan and the exploration logs are included in *Appendix A* and *Appendix B*, respectively.

3.0 Laboratory Testing

Laboratory testing was performed at the following locations and depths within the lower glacial marine layer:

LABORATORY TEST RESULTS			
Location	**Depth (ft)**	**Type of Test**	**Results**
SB-1	10 to 12	Moisture Content	MC = 33.5%
	15 to 17	Moisture Content	MC = 41.6%
	20 to 22	Moisture Content	MC = 44.3%
SB-5	10 to 12	Moisture Content	MC = 36.5%
	15 to 17	Atterberg Limit	LL = 43 PI = 22 MC = 46.0%
SB-7	15 to 17	Moisture Content	MC = 38.3%
	20 to 22	Atterberg Limit	LL = 45 PI = 23 MC = 45.8%

Detailed results of the laboratory testing can be found in *Appendix C*.

4.0 Subsurface Conditions

4.1 Soil

From the explorations, the soil at this site generally consists of the following:

- **Pavement** (6 inches thick)
- **Fill** (0.5 feet to 9.5 feet thick)
- **Glacial Marine**
  - Upper Layer: 3.5 feet to 12 feet thick
  - Lower Layer (soft clay; encountered in SB-1, 5, 6, 7, & 8; 10 feet to 32 feet thick)
- **Glacial Till** (11.5 feet to 20.7 feet thick; some portions greater than 20.5 feet thick)
- **(Probable) Bedrock** (encountered in SB-2, 10, 14, & 15 at depths ranging from 17.0 feet (elevation 13.5 feet) to 24.2 feet (elevation 1.8 feet))

The **fill** generally consists of brown sand with some silt, little gravel, and frequent pieces of brick and asphalt. Silt and clay mixtures were often present throughout the fill with occasional portions having layers of ash. It is generally very loose to compact and damp to moist. It is 0.5 to 9.5 feet thick and is visually classified as either SM or SP, in accordance with the Unified Soil

Classification System (USCS). SPT N-values range from 1 blow per foot (bpf) to 28 bpf and average 8 bpf.

The **glacial marine** can be separated into two distinct layers, an upper and a lower layer. The upper layer generally consists of gray silty clay with little to trace fine sand. There were occasional layers of silty sand and clayey silt throughout the upper glacial marine. It is generally firm to stiff and damp to wet with occasional soft clay lenses. It is 3.5 feet to 12 feet thick and is visually classified as CL, in accordance with the USCS. SPT N-values range from 5 bpf to 12 bpf and average 7 bpf. Pocket penetrometer readings, a measure of unconfined compressive strength, range from 1.0 tsf to 4.5 tsf.

The lower glacial marine starts at depths ranging from 10 feet to 15 feet below the ground surface and generally consists of gray silty clay with trace fine sand. The layer is generally very soft to soft and damp to saturated. It is 10 to 32 feet thick and is visually classified as CL, in accordance with the USCS. The SPT N-values for this layer range from weight of hammer (WH) to 4 bpf. Field vanes performed in the lower glacial marine range from 550 psf to 1375 psf and average 725 psf.

The liquid limit (LL) in the lower glacial marine ranges from 43 to 45 and the plasticity index (PI) ranges from 22 to 23. The moisture contents in the lower glacial marine range from 33.5% to 46.0% and average 40.9%.

The **glacial till** generally consists of brown and gray silty sand with some to little clay and little gravel. It is very loose to compact and damp to saturated. The layer is estimated to be 11.5 to 20.7 feet thick with portions of the glacial till likely greater than 20.5 feet. The glacial till thickness was either sampled through to bedrock or estimated through probing with a spear tip placed on the end of rods and hammered using the SPT hammer. The glacial till overlies probable bedrock. It is visually classified as SM, in accordance with the USCS. The SPT N-values range from 3 bpf to 25 bpf and average 13 bpf. Pocket penetrometer readings range from 1.3 tsf to greater than 4.5 tsf.

Detailed descriptions of the soil can be found in the exploration logs in *Appendix B*.

4.2 Groundwater

Groundwater was measured or estimated at the following depths and approximate elevations:

GROUNDWATER DEPTHS AND ELEVATIONS				
Location	**Date**	**Depth (ft)**	**Approximate Elevation (ft +/-)**	**Reference**
SB-1/GW-1	2/10/2023	5.0	13.0	Measured in well
	2/24/2023	4.9	13.1	
SB-2/GW-2	2/10/2023	4.8	21.2	
	2/24/2023	8.0	18.0	
SB-3/GW-3	2/10/2023	8.0	17.0	
	2/24/2023	8.7	16.3	
SB-4/GW-4	2/10/2023	8.7	33.3	
	2/24/2023	5.5	36.5	
SB-5	2/9/2023	7.0	16.0	Estimated in spoon samples
SB-6	2/10/2023	5.0	16.0	Estimated in spoon samples
SB-7	2/10/2023	3.0	16.0	Estimated in spoon samples
SB-8	2/7/2023	5.5	14.5	Estimated in spoon samples
SB-9	2/8/2023	3.0	26.5	Estimated in spoon samples
SB-10	2/10/2023	6.0	24.5	Estimated in spoon samples
SB-11	2/8/2023	NE	NE	NE
SB-12/GW-5	2/10/2023	2.8	15.2	Measured in well
	2/24/2023	2.8	15.2	
SB-13	2/10/2023	7.0	18.0	Estimated in spoon samples
SB-14	2/8/2023	NE	NE	NE
SB-15	2/9/2023	NE	NE	NE

Note: NE = None encountered

Due to the low permeability of the glacial marine and the glacial till soils, groundwater could not be accurately estimated in the spoon samples. After completion of the borings, the groundwater did not have enough time to infiltrate the boreholes for an accurate reading. Our five groundwater monitoring wells revealed that groundwater is likely shallower than our initial estimated groundwater depths in the spoon samples. Based on this, our estimation of groundwater in spoon samples is based on plotting groundwater elevations from the known groundwater depths and from estimating slight increases in visual moisture contents in the borings. Groundwater will likely follow the existing ground contours of the site flowing from southeast to northeast. Groundwater will fluctuate seasonally and with precipitation levels.

4.3 Bedrock

Refusal on probable bedrock was encountered in SB-2, 10, 14, & 15 at depths ranging from 17.0 feet (elevation 13.5 feet) to 24.2 feet (elevation 1.8 feet). Probable bedrock slopes from east to west across the site following the existing contours, generally becoming deeper towards the west.

Samples of the bedrock were not obtained for examination. According to the *Bedrock Geology Map* from the Maine Geological Survey, the bedrock around Lancaster and Elm Street in Portland, ME is classified as a Spring Point Formation primarily consisting of actinolite-biotite-chlorite-plagioclase-quartz schist and amphibolite.

Bedrock will not be encountered during construction.

5.0 Geotechnical Evaluations and Considerations

Based on the data collected during the field explorations, the subgrade conditions are suitable for the building to be supported on conventional spread or continuous footings. Some geotechnical considerations for the proposed building are:

- Varying subgrade bearing conditions, including imported granular fill, glacial marine, and glacial till.
- Manmade elements, including bricks, asphalt, and ash, within the fill layer, likely needing to be removed before construction. Large elements in the native subgrade will also need to be removed (cobbles and boulders).
- Large building loads overlying large thicknesses of soft clay, especially at the 196 Lancaster Street development.
- Varying groundwater elevations across the site potentially being encountered in the footing subgrades and the large cuts within the buildings.

There is potential for the varying subgrade conditions to cause differential settlement between footings. To minimize the potential for differential settlement and to create a uniform bearing surface between all footings, we recommend all footings be constructed on ¾-inch crushed stone (CS) placed over a woven geotextile placed over compacted subgrade soils (thickness of CS and type of geotextile dependent on location at the development, see *Section 6.1*).

Pending the results of the environmental site assessment, the fill soils may need to be removed. If it is determined that these soils are acceptable within the building footprint, we recommend any large elements be removed and replaced with CS. Any soft, wet, or unstable portions of the fill should be removed and replaced with CS. Large cobbles and boulders in the glacial till may be encountered in the footing and slab subgrades. We recommend these elements be removed and replaced with CS also.

SGS evaluated settlement for the 196 Lancaster Street development. At the writing of this report, SGS did not have proposed grading for this portion of the development. Based on this, we assumed a range of conditions with the same control parameters. These control parameters for each analysis included the same layering conditions based on SB-1 (thickest clay layer), a bearing pressure of 3,000 psf, and a maximum column load of 630 kips (square footing with B/L = 14.5 ft). SGS then changed the respective fill and cut heights for our analysis. The results of the analysis are as follows:

196 LANCASTER STREET SETTLEMENT ANALYSIS				
Loading	**Immediate Settlement (Footing Only) (in)**	**Consolidation Settlement (Footing Only) (in)**	**Consolidation Settlement (Fill Only) (in)**	**Total Settlement (in)**
6 ft fill; Footing 2 ft above GS	0.72	0.35	0.79	**1.86**
4 ft fill; Footing at GS	0.79	0.40	0.55	**1.74**
2 ft fill; Footing 2 ft below GS	0.53	0.45	0.29	**1.27**
0 ft fill; Footing 4 ft below GS	0.54	0.51	0.00	**1.05**
Footing 6 ft below GS	0.45	0.58	0.00	**1.03**
Footing 8 ft below GS	0.35	0.67	0.00	**1.02**
Footing 10 ft below GS	0.23	0.78	0.00	**1.01**

Note: GS = Ground surface
Settlement values should be assumed as approximate. The values above are meant to represent general trends in settlement as the loading conditions vary.
Assumptions: Soil layering based on SB-1; Bearing Pressure = 3,000 psf; Max Column Load = 630 kips

Based on the analysis, settlement from the footings will be greater than 1 inch but less than 1.5 inches. Based on this, we believe the settlement can be reduced to an acceptable level if localized subgrade improvements are implemented consisting of CS and a woven geotextile. If fill loads greater than 2 feet are proposed for the development at 196 Lancaster Street, a no lost time preload will likely need to be implemented to allow the underlying soft clay to consolidate without hindering the construction schedule. SGS should be notified of the proposed grading as soon as it is available so we can compare the proposed conditions to our analysis.

The subgrade conditions are generally different between the building at 89 Elm Street and 196 Lancaster Street. Though 89 Elm Street will have similar loading conditions to 196 Lancaster Street, 89 Elm will bear primarily on dense glacial till soils with minimal thicknesses of soft clay across the building. The subgrade preparation and improvements will be different between these two buildings. *Section 6.1* will provide specific recommendations for each building.

Due to the varying groundwater elevations across the site, groundwater will likely be encountered in the construction of the developments. De-watering during construction will likely be required to mitigate the groundwater. Foundation underdrains are also highly recommended even if groundwater isn't encountered during construction to mitigate the presence of fluctuating groundwater conditions and surface infiltration.

6.0 Geotechnical Recommendations

6.1 Bearing Capacity and Subgrade Preparation

Based on the results of our subsurface explorations, foundations can be supported on conventional spread footing foundations. We recommend that the bottom of the footings for the proposed developments be constructed on CS and a woven geotextile placed over proofrolled native soil. Assuming that the recommendations below are followed, the footings for both buildings can be proportioned using a maximum allowable bearing pressure of **3,000 pounds per**

square foot (psf). With proper subgrade improvements, total settlement for each building is expected to be 1 inch or less and differential settlement is expected to remain within tolerable limits. The allowable bearing pressure is based on the specific construction sequences across the site, separated below for each building.

6.1.1 196 Lancaster Street Subgrade Preparation

- After grubbing the building footprint and removing all existing pavement, proofroll the exposed soil by making a minimum of 4 passes in each of two perpendicular directions using a vibratory compactor with a minimum operating weight of 8 tons. Proofrolling is not necessary where the exposed soil consists of fine-grained soil (silt and clay), as long as a smooth-edged bucket is used for excavations to limit disturbance to the upper layer of clay.

- Excavate to 12 inches below the proposed bottom of footing elevation. Excavations should be completed using a smooth-edged bucket. Proofroll the exposed soil by making a minimum of 4 passes using a plate compactor. If the subgrade consists of fine-grained soil, these soils do not need to be proofrolled to avoid disturbing the fine-grained soils, as long as the excavation is compacted with a smooth-edged bucket. Soft, wet, or unstable areas should be removed and replaced with CS.

- Place a layer of woven geotextile, such as Mirafi HP570, RS580i, or equivalent, directly on the proofrolled subgrade. The geotextile should extend a minimum of 2 feet outside of the footing on all sides and should be pulled taught to remove wrinkles.

- Place a minimum of 12 inches of CS directly on the geotextile. CS should be compacted to lock the particles together. The footings can be constructed directly on the compacted CS. In no case shall footings be constructed in standing water or frozen soil.

- SGS should observe the footing subgrade conditions after proofrolling and prior to the placement of the geotextile and CS.

6.1.2 89 Elm Street Subgrade Preparation

- After grubbing the building footprint and removing all existing pavement, proofroll the exposed soil by making a minimum of 4 passes in each of two perpendicular directions using a vibratory compactor with a minimum operating weight of 8 tons. Proofrolling is not necessary where the exposed soil consists of fine-grained soil (silt and clay), as long as a smooth-edged bucket is used for excavations to limit disturbance to the upper layer of clay.

- Excavate to 8 inches below the proposed bottom of footing elevation. Excavations should be completed using a smooth-edged bucket. Proofroll the exposed soil by making a minimum of 4 passes using a plate compactor. If the subgrade consists of fine-grained soil, these soils do not need to be proofrolled to avoid disturbing the fine-grained soils, as

long as the excavation is compacted with a smooth-edged bucket. Soft, wet, or unstable areas should be removed and replaced with CS.

- Place a layer of woven geotextile, such as Mirafi 600X, or equivalent, directly on the proofrolled subgrade. The geotextile should extend a minimum of 2 feet outside of the footing on all sides and should be pulled taught to remove wrinkles.

- Place a minimum of 8 inches of CS directly on the geotextile. CS should be compacted to lock the particles together. The footings can be constructed directly on the compacted CS. In no case shall footings be constructed in standing water or frozen soil.

- SGS should observe the footing subgrade conditions after proofrolling and prior to the placement of the geotextile and CS.

6.2 Frost Protection

The design air freezing index for the Portland, Maine area is approximately 1,190-degree F days (10-year, 90% probability). Based on this, exterior footings and other footings exposed to freezing temperatures should be placed at a minimum depth of **4.0 feet** in order to provide adequate frost protection. We recommend that all foundations exposed to freezing temperatures be backfilled with Granular Borrow (GB), see *Section 7.2* for gradation requirements. GB should be compacted to a minimum of 95% of *ASTM D1557* when beneath paved areas, under slabs and under footings. The compaction can be reduced to 90% in landscaped areas.

6.3 Seismic Design

Based on the discovered soils, this site can be classified as **Seismic Site Class D** in accordance with ASCE 7-10 and 7-16 and **Seismic Site Class CD** in accordance with ASCE 7-22. The following seismic design coefficients should be used:

SUBGRADE SITE SEISMIC DESIGN COEFFICIENTS – ASCE 7			
Seismic Coefficient	**ASCE 7-10 (Class D)**	**ASCE 7-16 (Class D)**	**ASCE 7-22 (Class CD)**
S_S	0.241	0.281	0.280
S_1	0.078	0.072	0.063
S_{MS}	0.386	0.443	0.320
S_{M1}	0.188	0.172	0.110
S_{DS}	0.257	0.295	0.210
S_{D1}	0.125	0.115	0.074
PGA_m	0.201 g	0.244 g	0.170 g

No liquefiable soils were encountered in our explorations.

6.4 Groundwater Control

Based on observed groundwater levels and the potential for groundwater to fluctuate across the site, we recommend underdrains be installed along the exterior and interior foundations of the

buildings. Underdrains should consist of 4-inch rigid PVC or flexible ADS pipe surrounded by 6 inches of ¾-inch crushed stone (CS) which is then surrounded by Mirafi 140N or equivalent. Underdrains should be outlet to a free draining location. Where exposed at the ground surface, a screen or other device should be placed over the outlet to prevent the migration of animals into the underdrain system.

In addition, we recommend all exterior grades slope away from the building footprints to reduce runoff water from infiltrating the foundation backfill soils.

6.5 Slabs-on-Grade

All fill should be compacted to a minimum of 95% of *ASTM D1557*. The gradation requirements for Granular Borrow (GB), ¾-inch crushed stone (CS), and Structural Fill (SF) can be found in *Section 7.2*.

6.5.1 Interior Slabs

To provide a uniform support condition for slabs-on-grade, we recommend the following steps be taken for construction:

- After grubbing and removing all existing pavement, grade the entire building footprint to 8 or 12 inches below the proposed finished slab-on-grade elevation, depending on the material being used as the slab subbase (CS or SF). Fill required to raise the grade to the bottom of the slab subbase soil should consist of GB or SF. The maximum particle size for these materials should be limited to 6 inches. GB and SF should be compacted to a minimum of 95% of *ASTM D1557*.

- Place either 8 inches of CS or 12 inches of SF. The CS should be compacted to lock the particles together. The SF should be compacted to a minimum of 95% of *ASTM D1557*. The slab can be constructed directly on the compacted SF or CS.

6.5.2 Exterior Slabs

For slabs in unheated entry areas, the following options should be considered for frost protection:

- Construct slab on frost wall foundation, in accordance with *Section 6.1 and 6.2*

- 6-inch slab (minimum thickness) over 2 inches of rigid insulation over 12 inches CS or SF (compacted)

- 6-inch slab (minimum thickness) over 36 inches CS or SF (compacted)

We recommend that insulation, if used, be extended 2 feet beyond the edge of the slabs and that it consist of a rigid polystyrene product.

6.6 Pavement Section Recommendations

The mean annual freezing index for the Portland, Maine area is estimated at 890-degree F days (2-year, 50% probability). Based on the subgrade and mean annual freezing index, the anticipated mean annual frost penetration depth is 36 inches.

For the parking lots and access road, we recommend a minimum total section thickness of **18 inches**. We further recommend that the pavement section consist of the following materials:

PAVEMENT SECTION MATERIALS AND THICKNESSES		
Material	**Thickness (in)**	**Specifications**
Asphalt Surface Course	1 1/4	MDOT 703.09 Type 9.5 mm (Light Duty) or 12.5 mm (Heavy Duty)
Asphalt Binder Course	1 3/4	MDOT 703.09 Type 19 mm
Base Soil	3	MDOT 703.06 Type A
Subbase Soil	12	MDOT 703.06 Type D

Reference: *MDOT Standard Specifications, 2014*

Fill beneath the subbase soil can consist of SF or GB placed and compacted to a minimum of 95% of *ASTM D1557*.

Underdrains are not necessary beneath paved areas. Ditches should be provided adjacent to paved areas wherever possible.

6.7 Basement Walls

SGS recommends the following design parameters be used for basement walls across the site:

DESIGN PARAMETERS FOR SOILS ACROSS THE SITE					
Parameter	**Structural Fill (SF)**	**Granular Borrow (GB)**	**Glacial Till**	**Existing Fill**	**Upper Glacial Marine**
Moist Unit Weight (γ_m)	135 pcf	125 pcf	135 pcf	120 pcf	122 pcf
Buoyant Unit Weight (γ_b)	78 pcf	68 pcf	78 pcf	63 pcf	65 pcf
Friction Coefficient (f)*	0.55	0.5	0.45	0.4	0.35
Passive Earth Pressure Coefficient (K_p)	3.54	3.25	3.25	3.00	1.0
Active Earth Pressure Coefficient (K_a)	0.28	0.31	0.31	0.33	1.0
At Rest Pressure Coefficient (K_o)	0.44	0.47	0.47	0.5	1.0
Effective Friction Angle ($\phi°$)	34°	32°	32°	30°	0°
Undrained Shear Strength (s_u)	0 psf	0 psf	0 psf	0 psf	1000 psf

Note: The equivalent fluid pressure for computing retaining wall lateral loads can be taken as the product $\gamma_t \cdot$ (K_a, K_0, or K_p)

*The friction coefficient is assumed to be the interface between cast-in-place concrete and the soil

Basement wall footings should be prepared with the same subgrade preparations outlined in *Section 6.1* (preparation requirements dependent on the building location). Footings should be placed at proper frost protection depth. The footings should be proportioned using a maximum allowable bearing pressure of 3,000 psf. Concrete footings bearing on CS should have an assumed friction coefficient of 0.60. We recommend all basement walls be backfilled with either Granular Borrow (GB) or Structural Fill (SF). We recommend the following equivalent fluid pressures be used across the site:

EQUIVALENT FLUID PRESSURES		
Backfill Material	**Structural Fill (SF)**	**Granular Borrow (GB)**
Active	40 psf/foot	40 psf/foot
At-Rest	60 psf/foot	60 psf/foot
Passive	480 psf/foot	405 psf/foot

Active earth pressure coefficients assume structures are free to rotate at the top. At-rest earth pressure coefficients assume the top of structures are braced prior to backfilling and no lateral movement occurs.

The values above are based on groundwater being controlled at the base of the walls with underdrains to prevent the buildup of hydrostatic pressures. The underdrains should be located adjacent to the wall on the top of the footing. All underdrains should be 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 the foundation backfill soils. The underdrain pipe should outlet to a location where it will be free flowing.

7.0 Earthwork Considerations

7.1 Earthwork for Construction

The following temporary side slope requirements should be used during construction:

OSHA EXCAVATION STABILITY SOIL CLASSIFICAITON		
Soil Type	**OSHA Classification**	**Occupied Excavation >5 feet Temporary Side Slope Requirement**
Structural Fill (SF)	Type C	1.5H:1V
¾-inch Crushed Stone (CS)		
Granular Borrow (GB)		
Existing Fill		
Glacial Till	Type A	0.75H:1V
Upper Glacial Marine		

The permissible slopes noted above are for excavations less than 20 feet deep. Excavations deeper than this should be designed by a professional engineer. If seepage occurs in any occupied excavation deeper than 5 feet, de-watering techniques should be considered and side slopes shall not exceed 1.5H:1V. De-watering in the excavations may also be required if water

begins to pond in the excavations. We anticipate that dewatering, if necessary, can be accomplished using shallow sump and pumps.

Adequate proof rolling of the subgrade soil is important to the success of any fill as a uniform bearing material, especially if the subgrade soil is loose in isolated areas. Excavations into fine-grained soils should be performed using a smooth-edged bucket. Fine-grained soils do not need to be proofrolled if excavations are completed using a smooth-edged bucket. All foundations should be constructed on CS and a woven geotextile (thickness of CS and type of geotextile dependent on the location of the building within the development).

To the extent possible, construction should occur during periods of dry weather to minimize disturbance to excavated subgrade areas, including clay soils which are subject to softening when wet and disturbed. If excavations and construction occur during wet periods, the contractor should employ the necessary measures to eliminate disturbance to the subgrade from heavy rainfall, surface water runoff, freeze/thaw softening, or any other potential weather-related cause of subgrade disturbance.

Once excavation for the footings is initiated, SGS should be contacted to observe the subgrade conditions after proofrolling and prior to the placement of the geotextile and CS.

7.2 Materials

The gradation requirements reflect the portion of soil passing the 3-inch sieve size. The following table presents the recommended grain sizes for the materials to be used at the site:

GRADATION REQUIREMENTS FOR SITE MATERIALS			
Sieve Size	**[1] Structural Fill (SF)**	**[2] Crushed Stone (CS)**	**[3] Granular Borrow (GB)**
3 Inch	100	---	100
2 Inch	---	---	---
1 Inch	---	100	---
¾ Inch	---	90 – 100	---
½ Inch	35 – 80	20 – 55	---
⅜ Inch	---	0 – 15	---
¼ Inch	25 – 65	---	---
No. 4	---	0 – 5	---
No. 40	0 – 30	---	0 – 70
No. 200	0 – 7	---	0 – 7
Maximum Particle Size	6”	1”	6”
[4] Minimum Compaction Requirement	95%	---	[5] 95%

[1]Maine DOT Specification 703.06, 2014, Type D
[2]Maine DOT Specification 703.13, 2020, Crushed Stone ¾-Inch
[3]Maine DOT Specification 703.19, 2020, Granular Borrow
[4]Per ASTM D1557
[5]Compaction requirement for GB can be reduced to 90%, when in landscaping areas.

CS should be placed in 12-inch maximum lifts and compacted with a minimum of 4 passes with a vibratory compactor. GB should consist of a free draining, granular soil.

8.0 Closure

Our recommendations are based on professional judgment, generally accepted principles of geotechnical engineering and project information provided by others. No other warranty is expressed or implied. Some changes in subsurface conditions from those presented in this report may occur. Should the subsurface conditions, finish grades, or foundation loadings differ materially from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

We recommend that a qualified third-party testing agency be retained to provide QA/QC services during construction.

SGS should be contacted to observe the footing subgrades for each building after compaction and before the placement of the geotextile and CS to ensure the subgrade conditions are sufficient to support the proposed foundations.

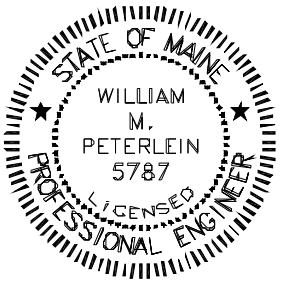
We appreciate the opportunity to serve you during this phase of your project. If there are any questions or if additional information is required, please do not hesitate to call.

Sincerely,
Summit Geoengineering Services, Inc.



Colin M. Plante, E.I.
Geotechnical Engineer





William M. Peterlein, P.E.
President & Principal Engineer

Appendix A

Exploration Location Plan

SCALE: 1" = 50'

0 25 50 100 150

N NORTH

PLAN REFERENCE

AERIAL IMAGE (2020) WAS OBTAINED FROM THE MAINE OFFICE OF GIS WEBSITE.

LANCASTER STREET

ELM STREET

CEDAR STREET

OXFORD STREET

PREBLE STREET

PROPOSED PHASE IA BUILDING

PROPOSED PHASE IB BUILDING

SB-1/GW-1

SB-2/GW-2

SB-3/GW-3

SB-4/GW-4

SB-5

SB-6

SB-7

SB-8

SB-9

SB-10

SB-11

SB-12/GW-5

SB-13

SB-14

SB-15

LEGEND

SB-6	SUMMIT TEST BORING (FEBRUARY 7-10, 2023)
SB-1/GW-1	SUMMIT TEST BORING WITH MONITORING WELL (FEBRUARY 7-10, 2023)

PROJECT: ELM ST. - BAYSIDE
PHASE 1 REDEVELOPMENT
PORTLAND, MAINE

CLIENT: TOM WATSON & CO./ BUSH-WATSON

TITLE: TEST BORINGS LOCATION PLAN

DRAWN BY: KRF

APPR. BY: CMP

SCALE: 1" = 50'

DATE: FEBRUARY 17, 2023

SUMMIT GEOENGINEERING SERVICES

MAIL: P.O. BOX 515 GARDINER, ME 04345

OFFICE: 210 MAINE AVENUE FARMINGDALE, MAINE TEL.: (207) 588-7573

PROJ.#: 22504

FIGURE: 1

PLAN REFERENCE

"TOPOGRAPHIC SURVEY, BAYSIDE PARCELS", DATED DECEMBER 8, 2022, PREPARED BY OWEN HASKELL, INC.

PROJECT: ELM ST. - BAYSIDE
PHASE 1 REDEVELOPMENT
PORTLAND, MAINE

CLIENT: TOM WATSON & CO./ BUSH-WATSON

TITLE: TEST BORINGS LOCATION PLAN

DRAWN BY: KRF

APPR. BY: CMP

SCALE: 1" = 40'

DATE: MARCH 15, 2023

PROJ.#: 22504

FIGURE: 1

SCALE: 1" = 40'

0 20 40 80 120

LEGEND

- SB-6 — SUMMIT TEST BORING (FEBRUARY 7-10, 2023)
- SB-1/GW-1 — SUMMIT TEST BORING WITH MONITORING WELL (FEBRUARY 7-10, 2023)

SUMMIT
GEOENGINEERING SERVICES
OFFICE: 210 MAINE AVENUE
FARMINGDALE, MAINE
TEL.: (207) 588-1519
MAIL: P.O. BOX 515
GARDINER, ME 04345

Appendix B

Exploration Logs

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **SB-1 GW-1**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 2
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	18 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	5.0 ft	13.0 ft +/-	Measured in well
2/24/2023	4.9 ft	13.1 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					17.5	6" Pavement	GRAVEL/PAVE	PAVEMENT
1						Brown SAND, some Gravel and Silt, trace weathered	BENTONITE	
	S-1	24/11	1-3	32		rock, compact, damp, SM	BACKFILL	FILL
2				7		Brick and ash in tip		
				7		Hard drilling to 3 ft		
3				6				
	S-2	24/11	3-5	3	14.5	Black and brown SAND, some ash, asphalt, and brick		
4				2		Gray Silty CLAY, trace fine Sand, strong petroleum odor,		
				3		firm, moist to wet, CL		GLACIAL MARINE
5				3				
	S-3	24/21	5-7	3		Gray Silty CLAY, little fine Sand seams, strong petroleum		Riser
6				4		odor, firm, moist to wet, CL		
				2				
7				2				
8								
9								
10								
	S-4	24/24	10-12	1		Gray Silty CLAY, trace fine Sand, slightly mottled, soft,	PP = 1.0 - 2.0 tsf	
11				1		moist to wet, CL		
				1				
12				2				
13								
								Pre-Packed
14								Screen
15								
	S-5	24/24	15-17	WH		Gray Silty CLAY, some organic streaks, trace fine Sand,		
16				WH		very soft, wet, CL		
				WH				
17				WH				
18								
	FV-1		18			Su = 1050 psf		
19						Su(r) = 25 psf		
	FV-2		19			Su = 1375 psf		
20						Su(r) = 50 psf		
	S-6	24/24	20-22	WH		Gray Silty CLAY, little organic streaks, trace fine Sand,		
21				WH		very soft, saturated, CL		
				WH		Gray Silty fine SAND, some Clay, trace seashells, SM-SC		
22				WH		Gray Silty CLAY, little organic streaks, trace fine Sand,		
						very soft, saturated, CL		

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 #: **SB-1 GW-1**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	2 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	18 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	5.0 ft	13.0 ft +/-	Measured in well
2/24/2023	4.9 ft	13.1 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23						Gray Silty CLAY, little organic streaks, trace fine Sand, very soft, saturated, CL		GLACIAL MARINE
24				WH		Probe with spear tip and SPT hammer		
25				WH				
26				WH				
27				WH				
28				WH				
29				WH				
30				WH				
31				WH				
32				WH				
33				WH				
34				WH				
35				WH				
36				WH				
37				WH				
38				WH				
39				WH				
40				WH				
41				WH				
42				WH	-24			
43				5				GLACIAL TILL
44				5				
45				5				
46				5				
47				5				
48				12				
49				10				
50				11	-32			
51						End of Boring at 50 ft - No refusal		
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								

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 #: **SB-2 GW-2**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 2
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	26 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/7/2023	Date Completed: 2/7/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	4.8 ft	21.2 ft +/-	Measured in well
2/24/2023	8.0 ft	18.0 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					25.5	6" Pavement	GRAVEL/PAVE	PAVEMENT
1						Dark brown fine SAND, sm Silt, tr Gravel and ash, SM	BENTONITE	
	S-1	24/8	1-3	6			BACKFILL	FILL
2				4		Brown fine-medium SAND, trace Silt, loose, damp, SP		
				1				
3				1				Riser
	S-2	24/17	3-5	1	22.5	Brown fine-medium SAND, trace Silt, loose, damp, SP		
4				2		Brown Silty fine SAND, little Gravel and Clay, moderately		
				2		mottled, loose, moist, SM		GLACIAL TILL
5				5	▽			
	S-3	24/20	5-7	1		Brown Silty SAND, some to little Clay, little Gravel,	PP = 2.8 - 3.8 tsf	
6				4		moderately mottled, loose, moist, SM-SC		
				6				
7				6				
8					▽			
9								
10								
	S-4	24/24	10-12	1		Brownish gray Silty fine SAND, some Clay, little Gravel,	PP = 3.5 - 4.0 tsf	
11				6		loose, moist, SM-SC		
				5				
12				7				
13								
14								Screen
15								
	S-5	24/18	15-17	4		Gray Silty SAND, some to little Clay, little Gravel,	PP = 4.3 - >4.5 tsf	
16				7		compact, damp to moist, SM-SC		
				12				
17				13				
18								
19								
20								
	S-6	24/19	20-22	1		Gray Silty SAND, some to little Clay, little Gravel, loose,		
21				3		moist, SM-SC		
				5				
22				10				

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 #: **SB-2 GW-2**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	2 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	26 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/7/2023	Date Completed: 2/7/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	4.8 ft	21.2 ft +/-	Measured in well
2/24/2023	8.0 ft	18.0 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23						Gray Silty SAND, some to little Clay, little Gravel, loose, moist, SM-SC	BACKFILL	GLACIAL TILL
24					1.8		Screen	
25						End of Boring at 24.2 ft - Auger refusal		(PROBABLE) BEDROCK
26								
27								
28								
29								
30								
31								
32								
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%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **SB-3 GW-3**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	25 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	8.0 ft	17.0 ft +/-	Measured in well
2/24/2023	8.7 ft	16.3 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					24.5	6" Pavement	GRAVEL/PAVE	PAVEMENT
1	S-1	24/18	0.5-2.5	11		Brown fine SAND, little to trace Silt, some Silty Clay	BENTONITE	
				6		seams, compact, moist, SP	BACKFILL	FILL
2				3		Olive Silty CLAY, trace fine Sand, firm, moist, CL		
				3				
3	S-2	24/13	2.5-4.5	3		Black and brown SAND, some ash, brick, and wood		
				3		pieces, little Gravel and asphalt, moist, SP		
4				5	21			Riser
				4		Olive gray Silty CLAY, firm, moist, CL		
5								GLACIAL MARINE
	S-3	24/16	5-7	WH		Olive Silty CLAY, trace fine Sand, strong petroleum odor,	PP = 2.0 - 3.8 tsf	
6				2		firm, damp to moist, CL		
				3				
7				3				
8					▽			
9					▽			
10								
	S-4	24/24	10-12	1		Olive gray Silty CLAY, trace fine Sand, slightly mottled,	PP = 2.0 - 3.3 tsf	
11				2		firm, damp to moist, CL		
				3				
12				3				
13								
14								Pre-Packed Screen
15								
	S-5	24/19	15-17	2		Olive brown Silty fine SAND, trace Clay, very loose,		
16				2		saturated, SM		
				2		Many olive Silty Clay seams		
17				WH		Gray soft clay in tip		
18								
19					6			
						Hard drilling at 19 ft		GLACIAL TILL
20								
	S-6	24/14	20-22	13		Gray Silty fine SAND, some Clay, little Gravel, very		
21				2		loose, saturated, SM-SC		
				2				
22				3	3			
						End of Boring at 22 ft - No refusal		

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 #: **SB-4 GW-4**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	42 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/8/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	8.7 ft	33.3 ft +/-	Measured in well
2/24/2023	5.5 ft	36.5 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					41.5	6" Pavement	GRAVEL/PAVE	PAVEMENT
1						Brown Silty fine SAND, little Clay and Gravel, trace brick,	BENTONITE	FILL
	S-1	24/15	1-3	2		very loose, moist, SM	BACKFILL	
2				1				
				3		Light brown fine SAND, some Silt, trace Clay and Gravel,		
3				3		loose, damp to moist, SM		
	S-2	24/16	3-5	6		Olive brown fine SAND, some Silt, little Gravel, trace		
4				9	38	Clay, compact, moist, SM (Re-worked)		Riser
				12		Olive brown Silty fine SAND, little Clay and Gravel,		
5				18		compact, moist, SM (Weathered rock in tip)		GLACIAL TILL
	S-3	24/22	5-7	5		Olive brown Silty fine SAND, some to little Clay, little		
6				8		Gravel, slightly mottled, compact, moist to wet, SM-SC		
				10				
7				10		Very hard drilling at 6.5 ft; probable Boulder or Cobble		
8								
9								
10								
	S-4	24/22	10-12	4		Olive brown Silty fine SAND, some to little Clay, little	PP = 4.3 - >4.5 tsf	
11				11		Gravel, slightly braided, compact, damp to moist, SM-SC		
				11				
12				13		White weathered rock at 11.7 ft		
13								
14								Pre-Packed Screen
15								
	S-5	24/24	15-17	4		Gray Silty fine SAND, little Clay and Gravel, compact,	PP = 3.3 - >4.5 tsf	
16				5		moist to wet, SM		
				7				
17				8				
18								
19								
20								
	S-6	24/10	20-22	2		Gray Silty fine SAND, some Clay, little Gravel, firm, wet,		
21				3		SM-SC		
				5				
22				5	20			
						End of Boring at 22 ft		

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 #: **SB-5**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	23 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/9/2023	7.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					22.5	6" Pavement		PAVEMENT
1						Brown fine-medium SAND, trace asphalt and brick,		
	S-1	24/8	1-3	6		compact, damp, SP		FILL
2				12				
				16				
3				15		Spoon bending in hole; no sample at 3 ft		
4								
5								
	S-2	24/12	5-7	1		Gray and black Silty CLAY, some Sand and Gravel,		
6				WH		trace ash and brick, very soft, saturated, CL		
				WH				
7				2	▽			
8								
9								
10					13			
	S-3	24/24	10-12	WH		Olive gray Silty CLAY, trace fine Sand, soft, moist to	PP = 1.0 - 1.3 tsf	
11				1		wet, CL		GLACIAL MARINE
				2				
12				2				
13								
14								
15								
	S-4	24/24	15-17	WH		Gray Silty CLAY, trace fine Sand, very soft, wet, CL		
16				WH				
				WH				
17				WH				
18								
	FV-1		18			Su = 700 psf		
19						Su(r) = 50 psf		
20								
	UT-1	30/12	20-22.5	PUSH		Olive gray Silty CLAY, very soft, wet, CL		
21				PUSH	2			
						Tube refusal at 21 ft		
22								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 #: **SB-5**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	2 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	23 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/9/2023	7.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
				3		Probe with spear tip and SPT hammer		
23								GLACIAL TILL
				10				
24								
				23				
25								
				14				
26								
				20				
27					-4			
						End of Boring at 27 ft - No refusal		
28								
29								
30								
31								
32								
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%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **SB-6**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	21 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/10/2023	Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	5.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						6" Pavement		PAVEMENT
1						Brown SAND, trace Silt, loose, damp to moist, SP		
	S-1	24/13	1-3	5				FILL
2				2				
				2		Black Silty SAND, some ash and brick, SM		
3				3				
	S-2	24/9	3-5	2		Brown SAND, some Silt and ash, many brick pieces, SM		
4				3				
				2		Gray Silty CLAY, some fine Sand and wood pieces, firm,		
5				3	▽	moist, CL		
	S-3	24/22	5-7	2	16	Gray Silty CLAY, some fine Sand, firm, moist, CL		
6				3		Some to little fine Sand and slightly mottled at 5.5 ft	PP = 1.5 - 2.0 tsf	GLACIAL MARINE
				3				
7				5				
8								
9								
10								
	S-4	24/24	10-12	2		Olive gray Silty CLAY, little to trace fine Sand, slightly	PP = 1.3 - 2.5 tsf	
11				2		mottled, soft, moist, CL		
				2				
12				3				
13								
14								
15								
	S-5	24/24	15-17	WH		Gray Silty CLAY, trace fine Sand and organic streaks,		
16				WH		very soft, moist to wet, CL		
				WH				
17				WH				
18								
	FV-1		18			Su = 600 psf		
19						Su(r) = 75 psf		
	FV-2		19			Su = 600 psf		
20						Su(r) = 75 psf		
	FV-3		20			Su = 550 psf		
21						Su(r) = 50 psf		
22								
	FV-4		22			Su = 550 psf		
						Su(r) = 50 psf		

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 #: **SB-6**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	2 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	21 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/10/2023	Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	5.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23								GLACIAL MARINE
24								
25	FV-5		24			Su = 550 psf		
26						Su(r) = 50 psf		
27	FV-6		26			Su = 600 psf		
28						Su(r) = 75 psf		
29	FV-7		28			Su = 800 psf		
30						Su(r) = 200 psf		
31				WH		Probe with spear tip and SPT hammer		
32				WH				
33				WH	-12			
34				6				GLACIAL TILL
35				6				
36				6				
37				5				
38				6				
39				7				
40				10				
41				8				
42				9				
43				10				
44				13				
45				14				
46				16				
47				16				
48				15				
49				15	-28			
50						End of Boring at 49 ft - No refusal		
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
5-10	Loose	2-4	Soft
11-30	Compact	5-8	Firm
31-50	Dense	9-15	Stiff
>50	V. Dense	16-30	V. Stiff
		>30	Hard

% Composition ASTM D2487
< 5% Trace
5-15% Little
15-30% Some
> 30% With

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 #: **SB-7**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 2
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	19 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started:	2/10/2023 Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	3.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					18.5	6" Pavement		PAVEMENT
1	S-1	24/13	0.5-2.5	6		Brown fine SAND, trace Silt and Gravel, many brick		
				5		pieces, SP		FILL
2				3		Silty SAND seam at 1 ft		
				3				
3	S-2	24/5	2.5-4.5	3	▽	Brown SAND, trace Silt, large brick, porcelain, &		
				2		weathered rock pieces, saturated, SP		
4				2				
				5				
5								
	S-3	24/20	5-7	2	13.5	Gray Silty CLAY, little fine Sand, many wood pieces, CL		
6				2		Gray Silty CLAY, little fine Sand, slightly mottled, firm,	PP = 2.0 - 3.0 tsf	
				3		moist to wet, CL		GLACIAL MARINE
7				4				
8								
9								
10								
	S-4	24/4	10-12	2		Gray Silty CLAY, trace fine Sand, slightly braided, firm,		
11				3		saturated, CL		
				2				
12				3				
13								
14								
15								
	S-5	24/24	15-17	WH		Gray Silty CLAY, trace fine Sand and organic streaks,		
16				WH		very soft, saturated, CL		
				WH				
17				WH				
18								
19								
20								
	S-6	24/24	20-22	WH		Gray Silty CLAY, trace fine Sand and organic streaks,		
21				WH		very soft, wet, CL		
				WH				
22				WH				

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 #: **SB-7**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	2 of 2
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	19 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/10/2023	Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	3.0 ft	16.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23						Gray Silty CLAY, trace fine Sand and organic streaks, very soft, wet, CL		GLACIAL MARINE
				WH		Probe with spear tip and SPT hammer		
24								
				WH				
25								
				WH				
26								
				WH				
27								
				WH				
28					-9			
				7				GLACIAL TILL
29								
				3				
30								
				3				
31								
				4				
32								
				6				
33								
				13				
34								
				17				
35								
				18				
36								
				26				
37								
				35				
38					-19			
						End of Boring at 38 ft - No refusal		
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 BORING LOG

Boring #: **SB-8**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	20 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/7/2023	Date Completed: 2/7/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/7/2023	5.5 ft	14.5 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					19.5	6" Pavement		PAVEMENT
1						Brown Silty fine-medium SAND, little Clay, trace Gravel,		FILL
	S-1	24/19	1-3	7	18.5	ash, apshalt, and brick, loose, damp to moist, SM		
2				2		Olive gray Clayey SILT, little fine Sand, firm, damp to	PP = 1.8 - 2.3 tsf	
				3		moist, ML		GLACIAL MARINE
3				3				
	S-2	24/17	3-5	5		Brownish gray Silty CLAY, little fine Sand, slightly mottled	PP = 2.5 - 3.8 tsf	
4				5		stiff, damp, CL		
				5				
5				7				
	S-3	24/24	5-7	2	▽	Brownish gray Silty CLAY, little fine Sand, firm, damp, CL		
6				3		Grayish brown Clayey fine SAND, some Silt and Silty Clay		
				3		seams, slightly mottled, loose, moist, SC-SM		
7				4				
8								
9								
10								
	S-4	24/24	10-12	1		Gray Silty CLAY, trace fine Sand, soft, damp to moist,	PP = 1.8 - 2.5 tsf	
11				2		CL		
				2				
12				3				
13								
14								
15								
	S-5	24/24	15-17	WH		Gray Silty CLAY, trace fine Sand, very soft, wet, CL		
16				WH				
				WH				
17				2		Clayey Sand in tip		
18								
19								
20					0			
	S-6	24/20	20-22	WR		Gray Clayey SILT, some fine Sand, trace Gravel, soft,		
21				3		saturated, ML		GLACIAL TILL
				4		Gray Silty fine-medium SAND, little Clay and Gravel,		
22				6	-2	loose, saturated, SM		
						End of Boring at 22 ft - No refusal		

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 #: **SB-9**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	29.5 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/8/2023	Date Completed: 2/8/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/8/2023	3.0 ft	26.5 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					29	6" Pavement		PAVEMENT
1						Olive brown fine SAND, some Silt, little Gravel, trace		
	S-1	24/15	1-3	8		brick, compact, damp, SM		FILL
2				22	27.5	White and gray weathered rock		
				7		Olive Silty SAND, little Clay, trace coarse Sand, compact,		
3				3	▽	moist, SM		GLACIAL TILL
	S-2	24/16	3-5	3		Olive brown Silty fine SAND, some to little Clay, little to		
4				4		trace Gravel, loose, moist, SM-SC		
				5		Hard drilling to 4 ft; many Cobbles		
5				6				
	S-3	24/18	5-7	4		Olive brown Silty fine SAND, some to little Clay, little	PP = 3.3 - 4.0 tsf	
6				5		Gravel, moderately mottled, loose, damp to moist, SM-		
				5		SC		
7				6				
8								
9								
10								
	S-4	24/18	10-12	6		Olive gray Silty fine-medium SAND, some to little Gravel		
11				14		and Clay, trace weathered rock seams, compact,		
				6		saturated, SM-SC		
12				10				
						Very hard drilling to 15 ft		
13								
14								
15								
	S-5	24/20	15-17	4		Gray Silty fine-medium SAND, little Gravel and Clay,	PP = 3.0 - >4.5 tsf	
16				8		compact, saturated, SM		
				7				
17				8				
18								
19								
20								
	S-6	24/19	20-22	4		Gray Silty fine-medium SAND, little Gravel and Clay,		
21				7		compact, saturated, SM		
				12				
22				12	7.5			
						End of Boring at 22 ft - No refusal		

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 #: **SB-10**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	30.5 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/10/2023	Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	6.0 ft	24.5 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					30	6" Pavement		PAVEMENT
1						Brown fine SAND, some Gravel, little Silt, trace asphalt,		
	S-1	24/10	1-3	7		loose, damp, SP		FILL
2				3		Gray weathered rock		
				3		Re-worked Silty fine SAND, little Clay and Gravel		
3				2				
	S-2	24/18	3-5	3		Gray weathered rock		
4				3		Re-worked Silty fine SAND, little Clay and Gravel		
				4		Olive brown fine Sandy SILT, some Clay, heavily		
5				7		mottled, firm, damp, ML-CL		
	S-3	24/22	5-7	4	25	Olive brown fine Sandy SILT, some Clay		
6				6	▽	Gray Silty fine SAND, some Clay, loose, moist to wet,		
				4		SM-SC		GLACIAL TILL
7				6		Trace Gravel in tip		
8								
9								
10								
	S-4	24/20	10-12	2		Olive brown Silty fine SAND, little Clay and Gravel, loose,	PP = 1.3 - 4.0 tsf	
11				4		moist to wet, SM		
				5				
12				7				
13								
14								
15								
	S-5	24/21	15-17	3		Gray Silty fine SAND, little Gravel, little to trace Clay,		
16				9		compact, damp to moist, SM		
				10				
17				14	13.5	Trace white weathered rock in tip		
						End of Boring at 17.0 ft - Auger refusal		(PROBABLE)
18								BEDROCK
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 BORING LOG

Boring #: **SB-11**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	42 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/8/2023	Date Completed: 2/8/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/8/2023			None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					41.5	6" Pavement		PAVEMENT
1						Brown SAND, some Silt, little Gravel, trace weathered		FILL
	S-1	24/17	1-3	4	40.5	rock, loose, damp to moist, SM		
2				5		Olive brown Silty fine SAND, little Gravel, trace Clay,		
				7		slightly mottled, compact, damp to moist, SM		GLACIAL TILL
3				6				
	S-2	24/15	3-5	6		Olive brown Silty fine SAND, little Gravel, trace Clay and		
4				12		weathered rock seams, compact, damp to moist, SM		
				12		Little Clay at 3.8 ft		
5				13		Few Cobbles in drilling to 4 ft		
	S-3	24/22	5-7	4		Olive brown Silty fine SAND, some to little Clay, little	PP = 3.3 - 4.5 tsf	
6				7		Gravel, slightly mottled, compact, damp to moist, SM-SC		
				7				
7				9				
8								
9						Cobbles in drilling at 9 ft		
10								
	S-4	24/24	10-12	4		Gray Silty fine SAND, some to little Clay, little to trace	PP = 3.5 - 3.8 tsf	
11				5		Gravel, loose, moist, SM-SC		
				6				
12				12				
13								
14								
15								
	S-5	24/21	15-17	6		Gray fine SAND, some Silt, little Clay and Gravel,		
16				9		compact, damp to moist, SM		
				10				
17				13				
18								
19								
20								
	S-6	24/24	20-22	5		Gray Silty fine SAND, little Clay and Gravel, compact,		
21				8		damp to moist, SM		
				10				
22				13	20			
						End of Boring at 22 ft - No refusal		

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 #: **SB-12 GW-5**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP
Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	18 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/7/2023	Date Completed: 2/7/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	3 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	2.8 ft	15.2 ft +/-	Measured in well
2/24/2023	2.8 ft	15.2 ft +/-	Measured in well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					17.5	6" Pavement	GRAVEL/PAVE	PAVEMENT
1						Black SAND with Gravel, some asphalt, trace brick, SP	BENTONITE	FILL
	S-1	24/20	1-3	8	16.5		BACKFILL	
2				3		Brownish gray Silty CLAY, some fine Sand, firm, moist		
				4		to wet, CL		GLACIAL MARINE
3				4				
	S-2	24/18	3-5	6		Olive brown Silty fine SAND, some Clay, slightly mottled,		
4				8		compact, moist to wet, SM-SC		Riser
				4				
5				4	13			
	S-3	24/21	5-7	1		Gray Silty fine-medium SAND, some Clay, little Gravel,		
6				2		very loose, moist to wet, SM-SC		GLACIAL TILL
				2				
7				2				
8								
9								
10								
	S-4	24/19	10-12	4		Gray Silty fine SAND, some to little Clay, little Gravel,		
11				3		loose, moist, SM-SC		
				6				
12				7				
13								Screen
14								
15								
	S-5	24/19	15-17	3		Gray Silty fine SAND, some to little Clay, little Gravel,		
16				4		loose, moist to wet, SM-SC		
				6				
17				7				
18								
						Hard drilling at 18.5 ft		
19								
20								
	S-6	24/24	20-22	4		Gray Silty fine SAND, some to little Clay, little Gravel,		
21				9		compact, moist to wet, SM-SC		
				9				
22				12	-4			
						End of Boring at 22 ft - No refusal		

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 #: **SB-13**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	25 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/10/2023	Date Completed: 2/10/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/10/2023	7.0 ft	18.0 ft +/-	Estimated in spoon samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					24.5	6" Pavement		PAVEMENT
1						Brown SAND, little asphalt and Gravel, trace brick,		
	S-1	24/16	1-3	6		loose, damp, SP		FILL
2				5		Olive gray Silty fine SAND, little Gravel, trace brick,		
				3		loose, damp, SM		
3				3	22			
	S-2	24/15	3-5	5		Brownish gray Silty fine SAND, some to little Clay and		
4				4		Silty Clay seams, moderately mottled, loose, damp, SM-SC		GLACIAL MARINE
				3				
5				5				
	S-3	24/18	5-7	4		Olive Silty CLAY, trace fine Sand, slightly mottled, stiff,	PP = 4.0 - 4.5 tsf	
6				6		damp to moist, CL		
				6				
7				9	▽			
8								
9								
10								
	S-4	24/24	10-12	1		Olive gray Silty CLAY, some to little fine Sand, strong		
11				2		petroleum odor, firm, damp to moist, CL		
				3				
12				2				
13								
14								
15					10			
	S-5	24/24	15-17	WH		Gray Clayey fine SAND, some Silt, trace Gravel, very		
16				WH		loose, wet, SC-SM		GLACIAL TILL
				3				
17				4				
18								
19								
20								
	S-6	24/21	20-22	3		Gray Silty fine SAND, little Clay and Gravel, loose, moist		
21				4		to wet, SM		
				5				
22				8	3			
						End of Boring at 22 ft - No refusal		

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 #: **SB-14**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	36 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/8/2023	Date Completed: 2/8/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
2/8/2023			None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					35.5	6" Pavement		PAVEMENT
1						Light brown Silty fine SAND, some Clay, trace Gravel,		
	S-1	24/24	1-3	3		loose, moist, SM-SC	PP = 1.8 - 2.8 tsf	GLACIAL TILL
2				5				
				6				
3				5				
	S-2	24/24	3-5	6		Olive brown Silty fine SAND, some to little Clay, little to	PP = 2.0 - 3.0 tsf	
4				6		trace Gravel, moderately mottled, compact, moist, SM-		
				9		SC		
5				11				
	S-3	24/24	5-7	3		Olive gray Silty fine SAND, some Clay, little Gravel,	PP = 3.0 - 4.5 tsf	
6				5		slightly mottled, compact, moist, SM-SC		
				7				
7				8				
8								
9								
10								
	S-4	24/24	10-12	10		Gray Silty fine SAND, little Clay and Gravel, trace	PP > 4.5 tsf	
11				11		weathered rock seams, compact, damp, SM		
				12				
12				12				
13								
						Hard drilling to 15 ft		
14								
15								
	S-5	24/22	15-17	3		Gray Silty fine SAND, little Clay and Gravel, compact,		
16				6		moist, SM		
				6				
17				10				
					18.3			
18						End of Boring at 17.7 ft - Auger refusal		(PROBABLE) BEDROCK
19								
20								
21								
22								

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
5-10	Loose	2-4	Soft
11-30	Compact	5-8	Firm
31-50	Dense	9-15	Stiff
>50	V. Dense	16-30	V. Stiff
		>30	Hard

% Composition ASTM D2487
< 5% Trace
5-15% Little
15-30% Some
> 30% With

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%

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SOIL BORING LOG

Boring #: **SB-15**

Project:	Bayside Development	Project #:	22504
Location:	Lancaster and Elm Street	Sheet:	1 of 1
City, State:	Portland, ME	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation	43 ft +/-
Driller:	S. Floyd	Reference:	Topographic Survey, Bayside Parcels, Owen Haskell Inc., 12/8/22
Summit Staff:	C. Plante, EI	Date started: 2/9/2023	Date Completed: 2/9/2023

DRILLING METHOD		SAMPLER	
Vehicle:	AMS PP	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2 1/4" HSA	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH			
Date	Depth	Elevation	Reference
2/9/2023			None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					42.5	6" Pavement		PAVEMENT
1	S-1	24/19	0.5-2.5	5	42	Lt brn f SAND, sm Silt, tr Gravel & asphalt, loose, moist, SM		FILL
				6		Olive brown Silty fine SAND, little to trace Clay, little		
2				6		Gravel, loose, moist, SM		GLACIAL TILL
				7				
3	S-2	24/24	2.5-4.5	8		Olive brown Silty fine SAND, some to little Clay, little		
				8		Gravel, trace weathered rock, slightly mottled, comact,		
4				9		moist, SM-SC		
				14				
5								
	S-3	24/23	5-7	4		Olive brown Silty fine SAND, some to little Clay, little	PP = 3.0 - 4.0 tsf	
6				6		Gravel, trace coarse Sand seams, slightly mottled,		
				11		compact, moist, SM-SC		
7				14				
8								
9								
10								
	S-4	24/24	10-12	4		Gray Silty fine SAND, some to little Clay, little Gravel,	PP = 1.5 - 4.0 tsf	
11				5		loose, moist, SM-SC		
				4				
12				6				
13								
14								
						Hard drilling at 14.5 ft		
15								
	S-5	24/24	15-17	11		Gray Silty fine SAND, some to little Clay, little Gravel,		
16				12		compact, moist, SM-SC		
				9				
17				7				
18								
19								
20								
	S-6	24/11	20-22	3		Gray Silty fine SAND, little Clay and Gravel, compact,		
21				8	21.9	moist, SM (Gray weathered rock in tip)		
				25 for 1"		End of Boring at 21.1 ft - Spoon refusal		(PROBABLE)
22								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
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%

Appendix C

Laboratory Results

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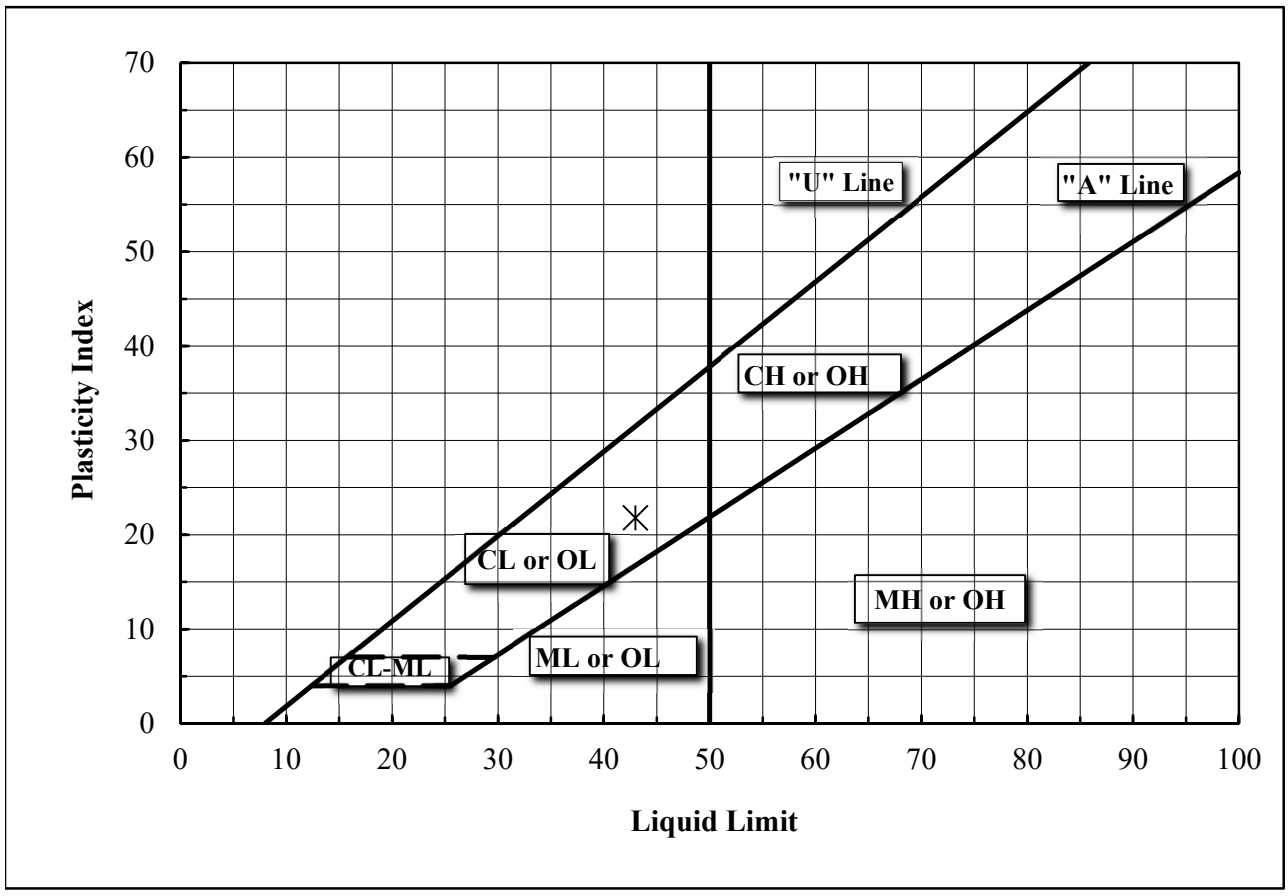
ATTERBERG LIMIT TEST - ASTM D4318

Method "A" (Multi-point)

PROJECT NAME:	Bayside Development	PROJECT NUMBER:	22504
LOCATION:	Lancaster and Elm Street, Portland, ME	SAMPLE NUMBER:	S-4
CLIENT:	Tom Watson & Co.	DEPTH:	15' to 17'
TEST DATE:	3/10/2023	TECHNICIAN:	C. Plante, EI

DATA

Source	Depth	LL	PL	PI	Classification
SB-5	15' to 17'	43	21	22	Gray Silty CLAY, trace fine Sand and organic streaks, very soft, wet, CL



Notes: Moisture Content = 46%

Reviewed By: ELS

Mailing: PO Box 515, Gardiner, ME 04345
Office: 210 Maine Avenue, Farmingdale, ME 04344

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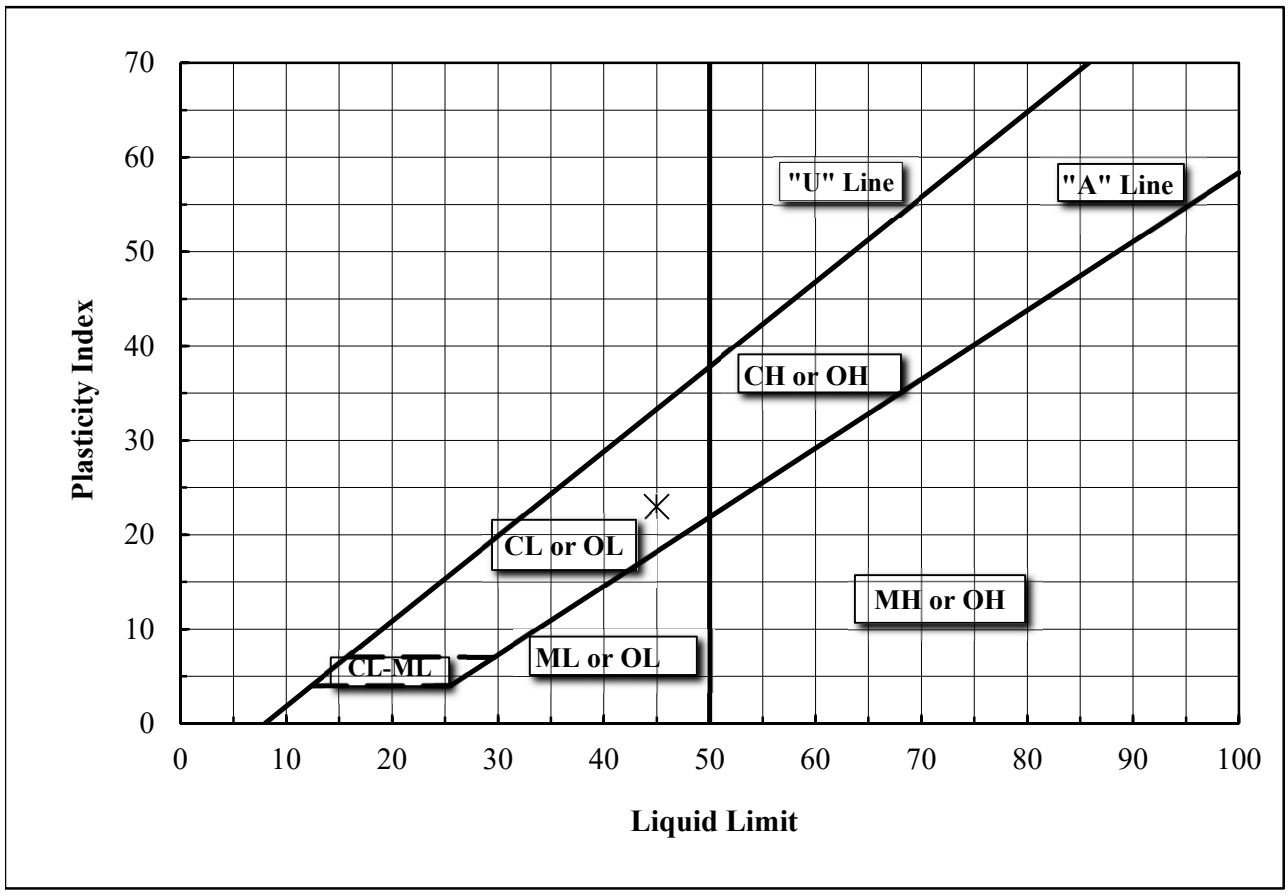
ATTERBERG LIMIT TEST - ASTM D4318

Method "A" (Multi-point)

PROJECT NAME:	Bayside Development	PROJECT NUMBER:	22504
LOCATION:	Lancaster and Elm Street, Portland, ME	SAMPLE NUMBER:	S-6
CLIENT:	Tom Watson & Co.	DEPTH:	20' to 22'
TEST DATE:	3/10/2023	TECHNICIAN:	C. Plante, EI

DATA

Source	Depth	LL	PL	PI	Classification
SB-7	20' to 22'	45	22	23	Gray Silty CLAY, trace fine Sand and organic streaks, very soft, wet, CL



Notes: Moisture Content = 45.8%

Reviewed By: ELS

Mailing: PO Box 515, Gardiner, ME 04345
Office: 210 Maine Avenue, Farmingdale, ME 04344

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Laboratory Determination of Water (Moisture) Content of Soil ASTM D2216

PROJECT NAME:	Bayside Development	PROJECT #:	22504
PROJECT LOCATION:	Lancaster and Elm Street, Portland, ME	DRYING METHOD:	Oven Dried
CLIENT:	Tom Watson & Co.	DESCRIPTION:	Glacial Marine
SOURCE:	Borings	TECHNICIAN:	C. Plante, EI
COLLECTION DATE:	02/09/23	TESTING DATE:	03/10/23

Location	Sample No.	Depth	Moisture Content	Remarks
SB-1	S-4	10 to 12	33.5%	
SB-1	S-5	15 to 17	41.6%	
SB-1	S-6	20 to 22	44.3%	
SB-5	S-3	10 to 12	36.5%	
SB-5	S-4	15 to 17	46.0%	(Atterberg Limit)
SB-7	S-5	15 to 17	38.3%	
SB-7	S-6	20 to 22	45.8%	(Atterberg Limit)

REMARKS:

Reviewed By: ELS

Mailing: PO Box 515, Gardiner, ME 04345
Office: 210 Maine Avenue, Farmingdale, ME 04344

SECTION J

STORMWATER MANAGMENT REPORT

Attachment F: Post-Construction Stormwater Inspection & Maintenance Plan

ACORN ENGINEERING, INC.

POST CONSTRUCTION - STORMWATER INSPECTION & MAINTENANCE PLAN

Prepared For:

89 Elm St. LLC
188 State Street, 3rd Floor
Portland, Maine 04104

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



April 2023

RESPONSIBLE PARTY

The owner, 89 Elm Street LLC, and/or their successor shall be responsible for contracting with a qualified stormwater professional to implement the Inspection and Maintenance Plan. The qualified stormwater professional shall maintain a stormwater log (report) summarizing inspections, maintenance, and corrective action taken. The Qualified Stormwater Professional shall annually submit the Stormwater Log to the Department of Public Services prior to June 30th.

The following is an example of a qualified stormwater professional that the owner may contract through.

Organization: Acorn Engineering, Inc.
Attn: Will Savage, PE
Portland, Maine

Phone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The inspection and maintenance criteria are based upon the Maine DEP - Stormwater Management for Maine, Volume III: BMPs Technical Design Manual. Refer to the Grading and Drainage Plan for the location of the BMPs.

PURPOSE

This Inspection and Maintenance Plan has been individually tailored to this parcel's stormwater infrastructure, site characteristics, and their respective opportunities and limitations related to reducing the pollutant load on the receiving watershed. The maintenance of a parcel's impervious surfaces and stormwater infrastructure is critical to extending the long-term performance and effectiveness of Best Management Practices (BMPs). The Inspection and Maintenance Plan represents the parcel's minimum activities to meet the permit requirements. The parcel shall still be subject to any applicable Civil Site Plans, Permit Applications, Erosion and Sedimentation Control Plans Reports, Stormwater Management Plans, Inspection and Maintenance Manuals, and all Municipal, State, and Federal rules.

OPERATION AND MAINTENANCE ACTIVITY

StormFilter Cartridges:

Inspection and Maintenance shall be conducted per the Contech StormFilter Inspection and Maintenance Procedures manual. General inspection and maintenance information for the StormFilter and StormFilter cartridges is provided below.

StormFilter Systems to be inspected at least once every six months, and filters maintained annually per the manufacturer's guidelines.

- Conducting inspections during a rain event is desirable to observe relative flow through the filter cartridges.
    - If cartridges are plugged with sediment and little flow is being discharged from the drainage pipes, then, maintenance is warranted, and the cartridges need to be replaced.
- In addition to the above circumstance, maintenance may also be warranted based on the following conditions.
    - >4" of sediment* accumulation on vault door.
    - >1/4" of sediment* accumulation on top of cartridge.
    - >4" of static water above cartridge bottom for more than 24 hours after end of rain event.
    - Plugged Media; pore space between media granules is absent.
    - StormFilter remain in bypass condition during average rainfall event.
    - Hazardous material release is reported in or around the StormFilter.
    - Pronounced scum line (>1/4" thick) is present above top cap.

If maintenance is to be performed, maintenance personnel shall follow all applicable OSHA safety regulations including but not limited to confined space entry. Maintenance shall be completed in agreement with the methods outlined in the Contech StormFilter Inspection and Maintenance Procedures. Any inspection or maintenance done to the StormFilter shall be accompanied by a detailed inspection/maintenance report.

*Sediment deposition depths and patterns within the StormFilter are likely to be quite different compared to systems without upstream storage and therefore shouldn't be used exclusively to evaluate a need for maintenance.

Subsurface R-Tank Storage Chambers:

Inspection and Maintenance shall be conducted per the R-Tank Operation, Inspection and Maintenance manual. General inspection and maintenance information for the R-Tank system is provided below.

R-Tank Systems to be inspected at least once annually (six months during the first year of operation). Inspections may be required more frequently for pre-treatment systems.

- All access points shall be examined including to complete a thorough inspection.
    - Inspection ports – Usually located centrally in the R-Tank System, are perorated columns designed to give the user a base-line sediment depth across the system floor.
    - Maintenance ports – Usually located near inlet and outlet connections, will likely have deeper deposits of heavier sediments.

  - Pipes – check for sediment or debris in the pipe connecting to the R-Tank
  - Manholes – Usually located at the inlet and outlet. If there is more than one location where stormwater enters the system than there will be additional manholes to inspect.
    - Manholes often include a sump below the invert of the pipe connecting to the R-Tank. Existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.
- If sediment or debris is observed in any of these structures the depth of the material shall logged and kept on file.
- Maintenance of the R-Tank System should be conducted once sediment accumulation has reached 6" or 15% of the total system height.

If maintenance is to be performed, maintenance personnel shall follow all applicable OSHA safety regulations including but not limited to confined space entry. Maintenance shall be completed in agreement with the methods outlined in the R-Tank Operation, Inspection and Maintenance manual. Any inspection or maintenance done to the R-Tank System shall be accompanied by a detailed inspection/maintenance report.

Sweeping:

Annual sweeping of the driveways and parking areas following the snow melt for accumulated winter sand, if necessary. Appropriately dispose of all collected material.

General Operation:

Facility operations including but not limited to salt storage shall occur within the maintenance building or offsite at an appropriate area. Vehicle oil changes shall be performed inside the building or at an appropriate offsite area.

Catch Basins:

Catch basins shall be inspected to confirm that the structure is operating properly.

- Inspect the presence of accumulated sediment or debris any sediment shall be removed. The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.
- Sediment shall be removed when accumulation is within 12 inches of the outfall pipe invert. Legally dispose of accumulated sediment and debris from the bottom of the basin, inlet grates, and inflow channels to the basin.

Landscaped and Vegetated Areas:

Inspect all landscaped and or vegetated slopes and embankments on an annual basis. Vegetated areas with bare areas or sparse growth (<90% coverage) shall be revegetated. Mulch shall be applied to landscaped areas, as necessary. Dead or decaying landscaping (ground cover, shrubs, trees etc.) shall be replanted in accordance with the contract documents.

Absorbent Boom:

Absorbent booms shall be replaced periodically to ensure effective removal of petroleum oils per manufacturer's recommendations. Ensure booms are secured and anchored upon replacement.

- Inspect and ensure boom systems are secured and anchored in periodically.
- Booms shall be replaced approximately every six months. Replacement and inspection interval dependent on owners' observations of pollutant load in addition to the manufacturer's recommendations of the final product selected.
- Appropriately dispose of all collected material

INSPECTION AND MAINTENANCE TABLE

Inspection and Maintenance Frequency	Spring or Yearly	Summer	Fall	As Necessary
StormFilter Cartridges	X			X
R-Tank	X		X	X
Sweeping	X			X
Catch Basins			X	X
Landscaped/Vegetated Areas	X	X		X

Post-Construction Stormwater BMP Inspection Log

CATCH BASINS:							
Location: 89 Elm Street, Portland Maine 04101					**Latitude:**		
					Longitude:		
Description of Located Point: See Sheet C-20 & C-30					**Inspector:**		
					Date of Inspection:		
					Weather Conditions:		
DOT Region:							
MATS Asset Number:	**WIN:**				**Design Drawings:**		

Maintenance Items	Inspect In Spring	Inspect In Fall	Inspect As Necessary		Maintenance Requested (Date)	Maintenance Completed (Date)	Summary of Maintenance Required
Catch Basins							
Catch basin is working properly and is free of debris and sediment	☑	☑	☑	☐ Yes ☐ No ☐ N/A			
Basin outlet hood (if any) is working properly.	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
Inter-basin storm drain is functioning properly and free of sediment and debris.	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
Sediment sacks and hydrocarbon absorptive pads are working properly.	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
General							
Access to facility is adequate	☑	☐	☐	☐ Yes ☐ No ☐ N/A			
Photographs of most recent site inspection are included	☑	☐	☐				
Additional Comments:							

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.

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).

ACF ENVIRONMENTAL
LET'S GET IT DONE
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Richmond, Virginia, 23234
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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: 89 Elm

Location: 89 Elm Street, Portland, Maine 04101

System Owner: 89 Elm, LLC

Company Responsible for Maintenance:

Contact:

Phone Number:

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

CONTECH®
ENGINEERED SOLUTIONS

StormFilter Inspection and Maintenance Procedures



The Stormwater Management StormFilter®

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. **Inspection**
   - Inspection of the vault interior to determine the need for maintenance.
2. **Maintenance**
   - Cartridge replacement
   - Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.



In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..



Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit and the unit's role, relative to detention or retention facilities onsite.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered).

Please note Stormwater Management StormFilter devices installed downstream of, or integrated within, a stormwater storage facility typically have different operational parameters (i.e. draindown time). In these cases, the inspector must understand the relationship between the retention/detention facility and the treatment system by evaluating site specific civil engineering plans, or contacting the engineer of record, and make adjustments to the below guidance as necessary. Sediment deposition depths and patterns within the StormFilter are likely to be quite different compared to systems without upstream storage and therefore shouldn't be used exclusively to evaluate a need for maintenance.

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
   a. While not required in all cases, inspection of the media within the cartridge may provide valuable additional information.
   b. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.

Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

   Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.



Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood and float.

D. At location under structure access, tip the cartridge on its side.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Related Maintenance Activities - Performed on an as-needed basis

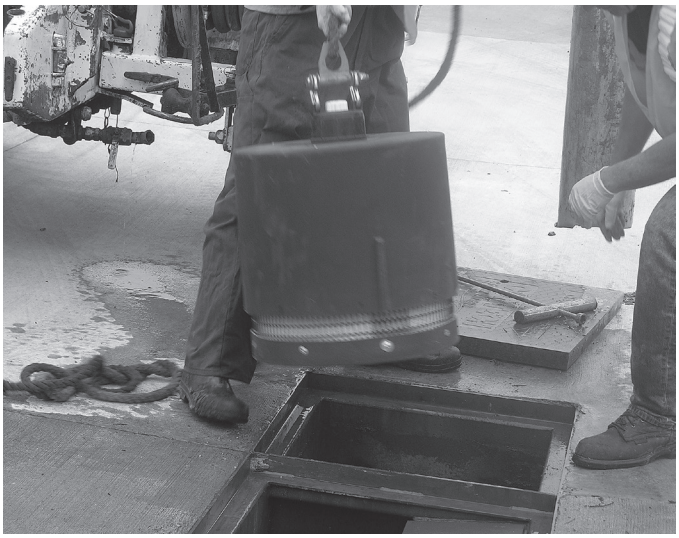
StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.







Inspection Report

Date: _____ Personnel: _____

Location: _____ System Size: _____ Months in Service: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

Sediment Thickness in Forebay: _____ Date: _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Estimated Flow from Drainage Pipes (if available): _____

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water: _____

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal: _____

☐ Minor Structural Repairs: _____

☐ Drainage Area Report _____

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

Items Needing Further Work: _____

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service: _____

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

_____

_____

_____

_____

_____

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Support

- Drawings and specifications are available at www.conteches.com.
- Site-specific design support is available from our engineers.

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ACORN ENGINEERING, INC.

K. EROSION & SEDIMENTATION CONTROL REPORT

Prepared For:

89 Elm Street LLC
188 State Street, 3rd Floor
Portland, Maine 04104

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



April 2023

INTRODUCTION

Acorn Engineering, Inc. has been retained by 89 Elm LLC, to provide civil engineering services for the proposed development at 89 Elm Street in Portland, Maine. The property consists of approximately 0.81 acres of land to be transformed into an 8-story building primarily for residential use with retail and restaurant space on the first floor. The project will reside at Map, Book Lot (033 H006001) whose lot line will be adjusted to encompass the entire development. Parcels 033 H018001 and 033 H009001 will be merged into one parcel whose area will remain outside the building footprint.

The following Erosion and Sedimentation Control Report was developed in accordance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Appendix A and B (1), Amended August 12, 2015. This narrative also meets the standards required in the Maine DEP's Erosion & Sediment Control BMP's Manual, revised in 2016.

1.0 EXISTING CONDITIONS

The project site is bordered by Elm Street, Lancaster Street, Cedar Street, and Oxford Street. A boundary plan has been prepared by Owen Haskell Inc., dated December 8th, 2022, last revised March 29th, 2023.

The applicable zoning districts are B3 Downtown Business and R6 Residential Zone and within the Bayside Height Overlay Zone.

The site currently consists of a .81-acre parcel with approximately .64-acres used as a surface parking lot. Currently the lots pavement slopes ranging up to 9% with From Oxford Street to Lancaster and appears to be primarily draining to the Lancaster and Elm Street intersection.

The site is currently developed greater than 50 percent and does not contain or propose onsite wastewater. Proposed stormwater management features on site are to be lined and will not be infiltration systems. Please refer to the Stormwater Management Report for and plan details for more information on the proposed systems.

It is our understanding that the site is not located within any protected natural resources or within the watershed of an urban impaired stream. Therefore, per City standards this document intends to comply with the Basic standards pursuant to Maine DEP Chapter 500 Stormwater Management Rules.

1.1 Existing Soils

Onsite soil information derived from the following resources:

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County
- United States Department of Agriculture Web Soil Survey
- Geotechnical Report prepared by Summit Geoengineering Services, dated 3/24/23

Summit Geoengineering Services (SGS) conducted a geotechnical investigation for the site concluded on March 24th, 2023. SGS's scope of work consisted of the observations of fifteen test borings, five observation wells, laboratory testing, and the preparation of the attached geotechnical report summarizing their findings. Please refer to the geotechnical report prepared by Summit Geoengineering services analysis and site recommendations. As addressed in SGS's report, an environmental assessment was performed by TRC companies, Companies the report is forthcoming.

The area within and surrounding the project includes soil types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

Table 1 - "K" Value

Soils Type	Subsurface	Substratum
Au Gres Loamy Sand	0.15	0.15
Deerfield Loamy Fine Sand	0.20	0.20
Hinckley loamy Sand	0.17	0.17

The soil "K" value for the soil, listed above, shows a low susceptibility to erosion. The site's susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. Although the soil "K" value shows a low susceptibility to erosion, implementation of the proposed Erosion & Sedimentation Measures by the contractor will be of the utmost importance given the sustained slope throughout the site.

1.2 Existing Erosion Problems

There are no signs of erosion.

1.3 Critical Areas

Critical areas on site that may require special attention during construction would be primarily at locations where existing retaining and block walls are being removed or reconstructed.

1.4 Protected Natural Resource

The client is not aware of the presence of any existing significant natural features located on the site as listed in Section 14-526 (b) 1. of the Land Use Code. The project

is not located within a watershed classified as an Urban Impaired Stream by the Maine DEP.

1.5 Previous Construction Activity (5 years)

Acorn Engineering, Inc. is not aware of any construction related activities within the project limits within the past 5 years.

1.6 Timber Harvesting

Acorn Engineering, Inc. is not aware of any timber harvesting within the past five years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

As part of the site development, the following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas. The following specifications shall be followed at a minimum:

- Stone size shall be 2-3 inches, or reclaimed or recycled concrete equivalent.
- The thickness of the entrance stone layer shall be no less than 6 inches.
- The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.
- Geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
- The entrance/exit shall be maintained to the extent that it will prevent the tracking of sediment onto public road ways.

2.1.2 Siltation fence or erosion control berm shall be installed downgradient of any disturbed areas to trap runoff borne sediments until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. If there are signs of undercutting at the center or the edges or

impounding large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. When time for removal, it is recommended that silt fences be removed by cutting the fence material at ground level to avoid additional soil disturbance.

2.1.3 Hay mulch, including hydroseeding, is intended to provide cover for denuded or seeded areas until revegetation is established. Temporary mulch should be applied to areas that will not be actively worked for more than 14 days (7 days in sensitive areas). Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch placed between November 1st and April 15th on slopes equal to or steeper than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting and anchored with staples in accordance with the manufacturer's recommendation.

2.1.4 At any time of the year, all slopes greater than 3:1 shall be stabilized with Double Net Erosion Control Blanket Bionet SC150BN by North American Green or Approved Equal, or Erosion Control Mix Slope Protection as detailed within the plans.

2.1.5 Elm, Lancaster, Cedar, and Oxford Streets shall be swept to control mud and dust from the construction site as necessary. Add additional stone to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

2.1.6 During demolition, clearing and grubbing operations, stone check dams shall be installed at any areas of concentrated flow. The maximum height of the check dam shall not exceed 2 feet. The center of the check dam shall be 6 inches below the outer edges of the dam. The contractor shall mulch the side slopes and install stone check dams for all newly excavated ditch lines within 24 hours of their creation.

2.1.7 Silt fence stake spacing shall not exceed 6 feet unless the fence is supported with 14-gauge wire in which case the maximum spacing shall not exceed 10 feet. The silt fence shall be "toed" into the ground.

2.1.8 Storm drain inlet protection shall be provided to storm drains using any of the following: hay bale drop inlet structures, silt fence drop inlet sediment filter, gravel and wire mesh drop inlet sediment filter, or curb inlet sediment filter. Barriers shall be inspected after every rainfall event and repaired as necessary. Sediments shall be removed when accumulation has reached ½ the design height.

2.1.9 Dust control shall be accomplished using any of the following: water, calcium chloride, stone, or an approved MDEP product. Dust control shall be applied as needed to accomplish dust control.

2.1.10 Temporary loam, seed, and mulching shall be used in areas where no other erosion control measure is used. Application rates for seeding are provided at the end of this report.

2.1.11 Stockpiles shall be stabilized within 7 days of formation unless a scheduled rain event occurs prior to the 7-day window, in which case the stockpile shall be stabilized prior to the rain event. Methods of stabilization shall be mulch, erosion control mix, or erosion control blankets/mats. Silt fence or a wood waste compost filter berm shall be placed downhill of any soil stockpile location.

2.1.12 For disturbance between November 1 and April 15, please refer to winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.

2.1.13 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed underdrains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

2.2.1 All disturbed areas during construction, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 4.1 of this report.

2.2.2 All stormwater devices shall be installed and tributary areas stabilized prior receiving stormwater.

2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

3.1 The Construction Management & Erosion Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

4.1 Erosion & Sedimentation Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75%

mature vegetation cover or riprap by November 15, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the work area to areas that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible through the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above freezing temperatures finished areas shall be fine graded and

either protected with mulch or temporarily seeded and mulched until the final treatment can be applied. If the date is after November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.

- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes 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.

- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following action shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor 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 contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a "storm event". A "storm event" shall consist 0.5 inches of rain within a 24-hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall inspected in the manner as described.

6.1 Sediment Barriers

Hay bale barriers, silt fences and filter berms shall be inspected and repaired for the following if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier. Filter berms should 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.

6.2 Stabilized Stone Construction Entrances

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 and redistributed on site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at exits, which have experienced mud-tracking on to the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways. All sweeping conducted shall not be sweep into the existing wetland.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control. Frequent reapplication of water may be necessary to mitigate dust occurring on warm sunny days, the distribution of water should not cause turbid runoff. Sweeping of paved road surface should occur during dry conditions and shall be swept from the centerline to the edge of the travel way, and shall not to be swept into a waterbody or wetland. Public roads may also require sweeping when necessary.

6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information, contact:

Contact: Will Savage, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.

7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above described erosion control measures. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Install all other erosion control devices as necessary throughout the remainder of this schedule.
4. Commence installation of drainage infrastructure.
5. Prioritize the downhill side to contain runoff within the site while providing an engineered outlet to the municipal storm drain system within Elm Street.
6. Commence earthwork operations, associated with the parking lot construction.
7. Commence installation of utilities.
8. Continue earthwork and grading to subgrade as necessary for construction.
9. Complete installation of drainage infrastructure, as well as other utility work.
10. Complete remaining earthwork operations.
11. Install sub-base and base gravels in paved areas.
12. Install paving, curbing and brickwork.
13. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
14. Once the site is stabilized and mulching of landscape areas is complete, remove all temporary erosion control measures.
15. Touch up areas without a vigorous catch of grass with loam and seed.
16. Complete site signage and striping.
17. Execute proper maintenance of all temporary and permanent erosion control measures throughout the project.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit to the owner a schedule of the completion of the work. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those areas in which work is expected to be undertaken during the following 30 days.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize the development impact by implementing temporary and permanent erosion control measures. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS

- Temporary Seeding Plan

TEMPORARY SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P2O5-K2O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of temporary seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.	Recommended Seeding Dates
Winter Rye	2.57	Aug-15 to Oct-1
Oats	1.84	Apr-1 to Jul-1 Aug-15 to Sep-15
Annual Ryegrass	0.92	Apr-1 to Jul-1
Sudangrass	0.92	May-15 to Aug-15
Perennial	0.92	Aug-15 to Sep-15

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to temporary seeding and mulching.

ACORN ENGINEERING, INC.

Chief Keith Gautreau
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

April 4, 2023

Subject: 89 Elm Street Redevelopment– Fire Department Checklist
Section L of Application

On behalf of 89 Elm, LLC, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant

   89 Elm, LLC
   188 State Street, 3rd Floor
   Portland, Maine 04101
   (207) 939-5432

2. Name, address, telephone number of architect

   Ryan Senatore Architecture
   500 Congress Street, Suite 2
   Portland, ME 04101
   (207) 650-6414

3. Proposed uses of any structures [NFPA and IBC classification]

   NFPA: Apartments/Mercantile IBC: R2 and M

4. Square footage of all structures, including decks [total and per story]

Proposed Building		
Ground	9,365	sf
2nd Floor	18,156	sf
3rd & 4th Floor	24,882	sf
5th & 6th Floor	24,489	sf
7th Floor	21,801	sf
8th Floor	13,565	sf
Total	**161,629**	**sf**

5. Elevation of all structures

   The proposed building height, based upon IBC's average grade plane method, is 76.54' which is consistent with the Bayside Height Overlay allowance.

6. Proposed fire protection of all structures

   The building will be serviced by an 8" sprinkler service with additional protection per code. Fire flows and requirements for system storage or booster pumping are subject to the fire professional design which will be performed prior the request for a building permit.

7. Hydrant locations

   Existing located along Lancaster Street, one located at the corner of Lancaster and Cedar Street. Hydrant flow data from the Portland Water District once received may be made available to the Fire Department upon request.

8. Water main size and location

   The redevelopment is anticipated to be serviced by the existing water main within Lancaster Street. An 8" fire line, 4" domestic line, and 2" domestic line will serve the proposed development. The building is expected to have internal sprinkler risers and a Fire Department pump connection.

9. Access to all structures [min. 2 sides]

   Access to the structure is provided directly on the public right-of-way along Oxford, Elm, and Lancaster Streets.

10. Code summaries will be provided by the Architects upon request.

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 surrounded by four public streets. The following pavement street width is currently available:

- Lancaster Street: 35.93' wide and 19.93' wide between parking stalls and edge of pavement.
- Cedar Street: 20.7 feet wide and 11.7 feet wide between parking stall and edge of pavement.
- Oxford Street: 31.6 feet and 23.6 feet wide between parking stall and edge of pavement.
- Elm Street: 30.6 feet and 11.6 feet wide between the bike lane and edge of pavement.

Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 feet 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).

Response: 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.

Response: The building is accessible from at least 3 sides.

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.*

Response: The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along a circuitous route through the site 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.

Response: The building will be provided with exterior doors that will be within 50' of a Fire Department access route.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Response: The proposed site maintains the required clearance height of nine feet in all cases.

3.4.6. Elevators shall be sized to accommodate an 80 x 24-inch stretcher.

Response: The proposed elevators will meet 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.

Response: The applicant is currently working with the City's Public Works Division to assign street addresses and numbering to meet City Standards.

Thank you for your review. Please let me know if you have any additional questions or comments.

Sincerely,

Sam Lebel

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

M. Calculation of Wastewater Flowrate

The proposed project will include the redevelopment of a site that is currently occupied by an existing parking lot used for vehicles. The existing parking lot will be redeveloped into a mixed-use 8-story building primarily for affordable residential use with retail and restaurant space on the first floor. Based upon Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following daily flows:

Estimate of Design Flows			
Classification of Water Demand	**Number of Units**	**Gallons per Day per Unit**	**Total Gallons per Day**
Existing- none			
Proposed			
Restaurant: 50 GPD per 100 square feet	4,000 sf restaurant space/ 100 sf = 40	50	2,000
Retail: Employees at place of employment with no showers (12 GPD per employee)	2 retail units (5 employees per unit)	10	120
Studio	40	120	4,800
1-bedroom	138	120	16,560
2-bedroom	23	180	4,140
		Total Existing	**0**
		Total Proposed	**27,620**
		Net Change	**+27,620 GPD**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition			

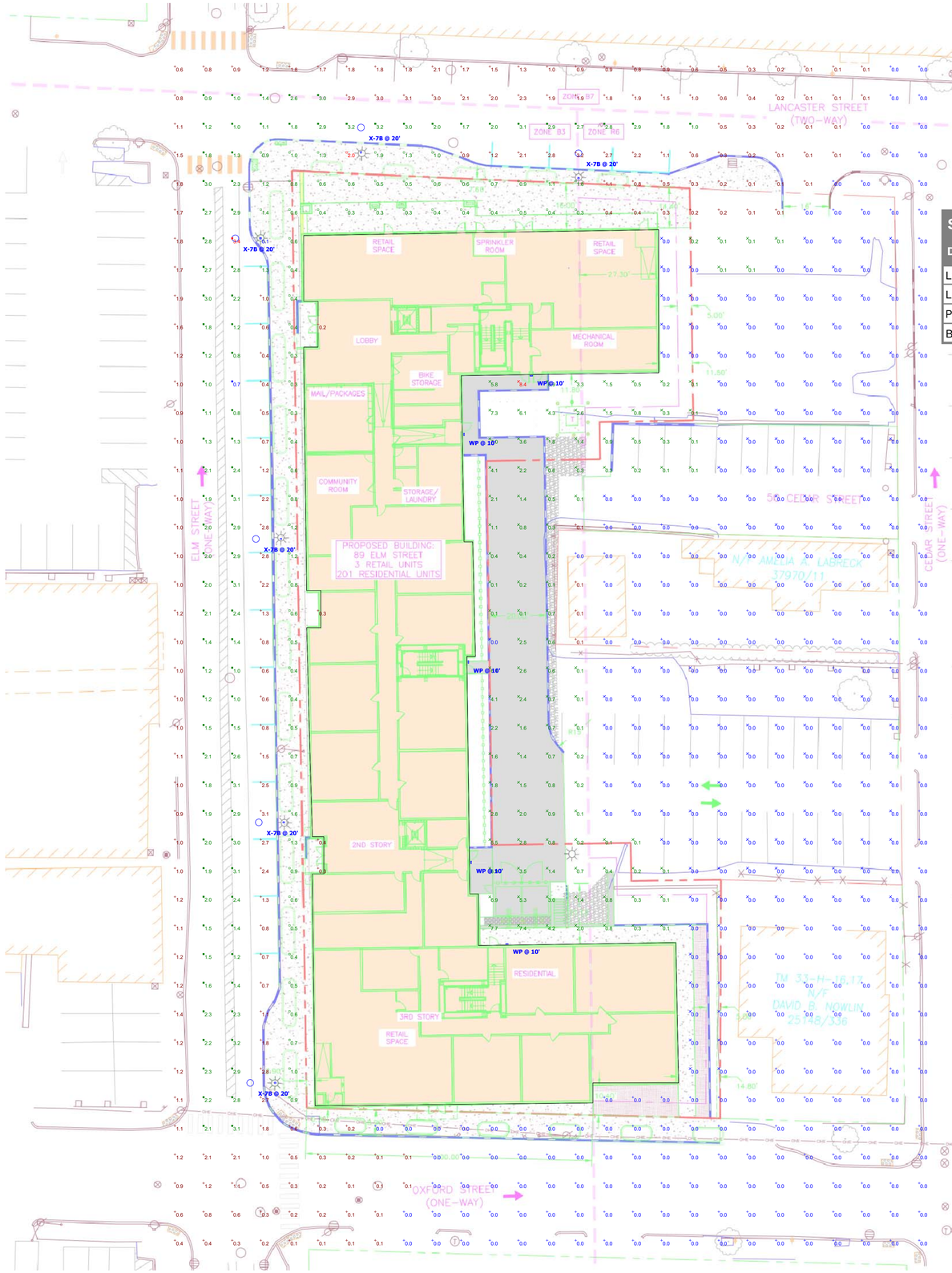
As seen above, the project anticipates an increase in daily flow rate of approximately 27,620 gallons per day. As proposed within the stormwater report, we will be providing onsite detention for an equivalent storage volume. Please see attached for the formal application template.

N. Lighting

The photometric plan and cut sheets for the proposed site lighting are forthcoming. The proposed lighting is to be in accordance with the City's Technical Manual. A photometric Plan and cut sheets are to be provided when available.

N. Lighting

Please find attached the photometric plan and cut sheets for the proposed site lighting.



Plan View

Scale - 1" = 20ft

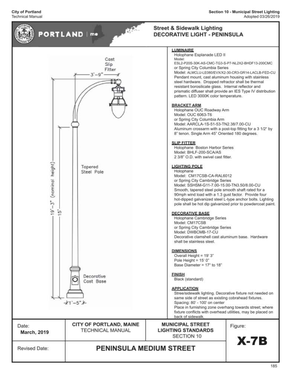
Statistics

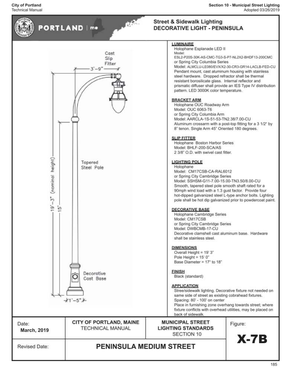
Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min	City of Portland Tech Manual Standard	Note:
Lancaster & Elm Roadway	■	2.1 fc	3.4 fc	0.7 fc	4.9:1	3.0:1	Arterial, Avg 2.0	Type II distibution used
Lancaster & Elm Sidewalk	□	0.7 fc	2.0 fc	0.1 fc	20.0:1	7.0:1		
Project Extents	+	0.7 fc	8.4 fc	0.0 fc	N/A	N/A		
Back of Building	×	0.6 fc	8.4 fc	0.0 fc	N/A	N/A		

Old Part Numbers



New Part Numbers





Acorn Engineering
89 Elm Street
Portland Maine
City Lighting Plan

Designer
Mark Fowler LC
Date
04/06/2023
Scale
Not to Scale
Drawing No.

Summary

1 of 1

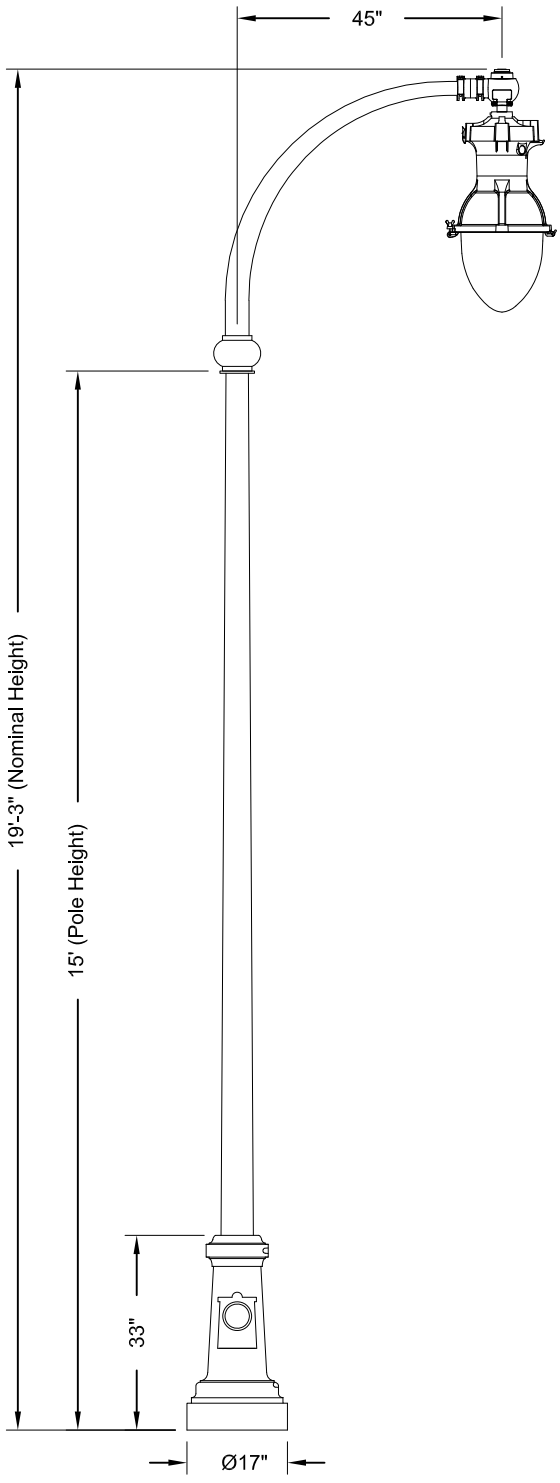
Round Tapered Steel Pole

Smooth Straight Shaft
Tenon: Ø3.5"x8"
(1)Cambridge Cast Alum. Clamshell Base, Black
Less Anchor Bolts

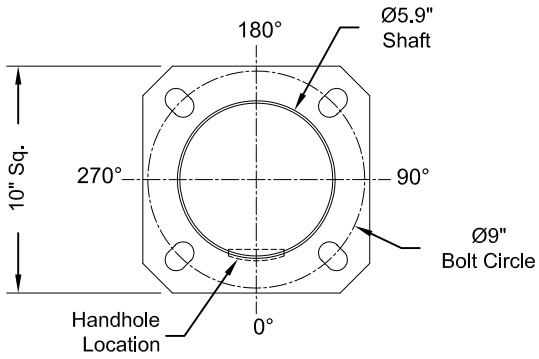
OUC Series Roadway Arm
45" Long for Single Fixture, Black

Boston Harbor Decorative Fitter
QSM Hub for Stem Mtd. Luminaire, Black

Esplanade Teardrop LED 3 Series
P20 Performance Pkg, 3000 Series CCT
120-277V, Black finish
Teardrop Type 3 Optics
Quick Lock Stem Mount
7-Pin NEMA Dimmable Photocontrol External Receptacle
1"x1" NEMA Wattage Label



Anchorage Detail



CUSTOMER NOTES:
1. ***ANCHORAGE DETAIL PROVIDED FOR VISUAL ONLY - DO NOT USE TO SET ANCHOR BOLTS.***
2. SIGNED APPROVAL TO ACCOMPANY PO.

Catalog #'s:
Pole: AORTS1559E08HDGBK **RFD325238**
Anchor Bolts: VAL1ABSET **RFD325238**
Clamshell Base: CM17CSBCARC59BK **RFD325238**
Roadway Arm: OUC45IN1ATNBK
Fitter: BHDFQSMBKPR7E
Fixture: ESL2P20S30KMVOLTTG3QSMBKPR7ENL2X2

Customer SIgnature **Date**

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS
An AcuityBrandsCompany

Portland, Maine

ORDER #:	TYPE: (X-7B POLE/ARM)	DRAWING #:
REVISION: 1	REVISION DATE:	
DRAWN: MAB	ORIGIN DATE:	PAGE: 1 of 1

THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUPPLIED, BUT ONLY AFTER APPROVAL BY THE CUSTOMER IN WRITING, ON POLE ORDERS AN ANCHOR BOLT TEMPLATE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED, THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON EXPRESS CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

ESL3

Esplanade® Tear Drop Large Roadway LED Pendant



Buy American

C SP® US

LED

Description
The Esplanade luminaire is styled to replicate the "teardrop" luminaires that lighted boulevards in the first half of the 1900s. Designed for light control and ease of installation and maintenance, the Esplanade has a precision optical system for true street lighting performance.

Mechanical
The luminaire housing:
- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- IP65 rated housing provides a spring-loaded latch for toolless access and a hinge for easy installation and servicing
- Optic door incorporates a hinge and wing nut enabling toolless access to install and service
- EEI- NEMA twist lock photocontrol receptacle can be mounted in electrical housing or externally; housing contains a tempered glass window to allow light to reach the cell for internally mounting

Electrical
- Certified by UL or CSA for wet locations
- A factory programmable electronic driver with 0-10V dimming control leads meets maximum total harmonic distortion (THD) of 20%, >0.90 Power Factor and are ROHS compliant.
- Minimum operating temperature is -40°C. Electronic driver has an estimated minimum life of 100,000 hours at 25°C.
- Optional DALI driver available
- 20kV/10kA surge protection, fail off, with indicator light meets ANSI/IEEE C62.41.2
- Quick disconnect connectors for ease of installation and maintenance.
- Three pole terminal block is standard, with optional prewired leads for ease of installation
- Configurable with CCT options of 2700K, 3000K, 4000K and 5000K, 70 CRI minimum

Finish
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

Certification
CSA listing suitable for wet location up to 40°C. Consult factory for details.

Optical
The optical system is IP66 rated and consists of a precisely molded thermal resistant borosilicate glass refractor mounted within the borosilicate refractor Teardrop, Bowl, Sag shaped glass optic or the tempered Flat glass retained by the cast aluminum door. Designed for Type 2, 3, 4 & 5 distribution, see performance data table for configurations. For zero uplight options the flat glass option or the decorative shallow or deep skirt used with the bowl or sag glass.

Control Options
The control options shall include, but not limited to, the following:
- Field adjustable output to adjust output to luminaire - A0
- Long life photocontrol, 20 years – PCLL, P34 and P48 with DTL
- 3 and 7 pin receptacles internally in housing (PR3, PR7) or externally mounted on the leveling fitter (PR3E, PR7E)
- On externally mounted options, the photocontrol or shorting cap are selected with the leveling fitter

Mounting Style (Leveling Fitter Options)
Three mounting versions are available.
- An arm mount version which is provided with two U-bolts with washers and nuts and two leveling set screws that lock the housing to a 2 inch nominal (2-3/8" O.D.) horizontal arm and allow a +/- 5 degree adjustment from horizontal to the cover.
- A pendant mount version (either 1.25NPT or 1.5NPT) which threads to a vertical NPT male threaded pipe fitting and is locked in place by a stainless-steel set screw.
- A QSM (Quick Lock Stem Mounting), which consists of a vertical stem with flared top that mounts into a matching QSM fitter or arm. The QSM mount can aid in installation speed as it is a quicker installation than the other mounting methods.

Note: the QSM style is compatible with the following leveling fitters:
- Boston Harbor Decorative Arm Fitter (BHDF)
- GlasWerks Decorative Arm Fitter (GWDF)
- West Liberty Decorative Arm Fitter (WLDF)
- Ball Style Decorative Arm Fitter (BADF)

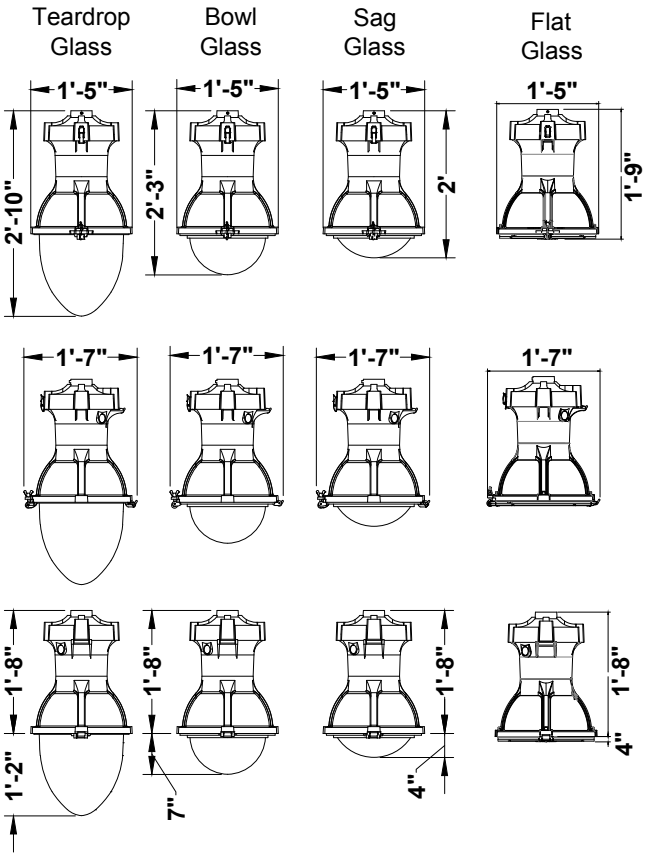
BUY AMERICAN
This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FARS, DFARS and DOT. Please refer to www.acuitybrands.com/resources/buyamerican for additional information.

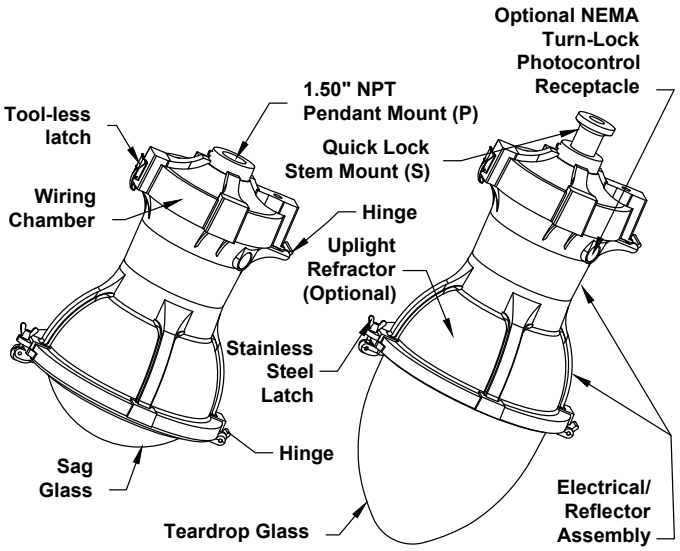
Warranty
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note:
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

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DIMENSIONAL DATA





Maximum Weight - 69 lbs (Up Light Version)
Maximum Weight - 69 lbs (Down Light Version)
Maximum Effective Projected Area - ESL3 2.62 ft², ESL3 SS 2.86 ft², ESL3 DS 3.06 ft²

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ORDERING INFORMATION

Example: ESL3 P30S 30K MVOLT TG3 QSM BK

Series		Lumen/Wattage Package				Color Temperature		Voltage	
ESL3	Esplanade style housings	P10S	Standard housing, 44W	P35S	Standard housing, 112W	27K	2700 series CCT	MVOLT	Auto-sensing voltage (120 thru 277) 50/60 HZ
		P15S	Standard housing, 54W	P40S	Standard housing, 132W	30K	3000 series CCT	HVOLT	Auto-sensing voltage (347 thru 480) 50/60 HZ
		P20S	Standard housing, 73W	P45S	Standard housing, 153W	40K	4000 series CCT		
		P20U	Uplight housing, 94W	P50S	Standard housing, 173W	50K	5000 series CCT		
		P25S	Standard housing, 82W	P55S	Standard housing, 193W				
		P25U	Uplight housing, 109W	P60S	Standard housing, 215W				
		P30S	Standard housing, 92W	P65S	Standard housing, 247W				
		P30U	Uplight housing, 122W						

Optic				Mounting	
TG2	Teardrop Glass & Door: Type 2 application	BG4	Bowl Glass & Door: Type 4 application	NPT	Threaded top opening - 1.50" NPT
TG3	Teardrop Glass & Door: Type 3 application	BG5	Bowl Glass & Door: Type 5 application	QSM	Quick Lock Stem mount
TG4	Teardrop Glass & Door: Type 4 application	SG2	Sag Glass & Door: Type 2 application		
FG3	Flat Glass & Door: Type 3 application	SG3	Sag Glass & Door: Type 3 application		
FG5	Flat Glass & Door: Type 5 application	SG4	Sag Glass & Door: Type 4 application		
BG2	Bowl Glass & Door: Type 2 application	SG5	Sag Glass & Door: Type 5 application		
BG3	Bowl Glass & Door: Type 3 application				

Finish		Options		Prewire Lead Options	
BK	Black	A0	Field Adjustable Output	L1H	1.5 ft. prewired leads
DB	Dark Blue	PR3	NEMA twistlock photocontrol receptacle - 3 pin	L03	3 ft. prewired leads
GR	Grey	PR7	NEMA twistlock dimming photocontrol receptacle - 7 pin	L10	10 ft. prewired leads
GH	Graphite	PR3E	NEMA twistlock photocontrol receptacle - 3 pin (Externally mounted to Fitter)	L20	20 ft. prewired leads
GN	Green	PR7E	NEMA twistlock dimming photocontrol receptacle - 7 pin (Externally mounted to Fitter)	L25	25 ft. prewired leads
PP	Prime Paint	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, MVOLT	L30	30 ft. prewired leads
SL	Silver	P34	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 347V	L35	35 ft. prewired leads
WH	White	P48	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 480V	NEMA Label Options	
BZ	Bronze	SH	Shorting cap	NL1X1	1X1 NEMA Label
CMC	Custom Match Color Finish			NL3X3	3X3 NEMA Label
RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.			Shielding Options	
CTBS	Standard Finish to be determined			DS	Deep Skirt, 30" diameter
				SS	Shallow Skirt, 30" diameter
				HSS90	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 90 degrees
				HSS120	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 120 degrees
				HSS180	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 180 degrees
				HSG90	Factory installed Large Sag Glass House Side Shield 90 degrees
				HSG120	Factory installed Large Sag Glass House Side Shield 120 degrees
				HSG180	Factory installed Large Sag Glass House Side Shield 180 degrees

Accessories: *Order as separate catalog number, ships separately & field installed.*

Shielding Options

LTD3HSS90	Large TearDrop, Bowl & Flat Glass House side shield 90 degree
LTD3HSS120	Large TearDrop, Bowl & Flat Glass House side shield 120 degree
LTD3HSS180	Large TearDrop, Bowl & Flat Glass House side shield 180 degree
LTD3HSG90	Large Sag Glass House side shield 90 degree
LTD3HSG120	Large Sag Glass House side shield 120 degree
LTD3HSG180	Large Sag Glass House side shield 180 degree
LTDSxx	Deep Skirt, 30" Diameter, replace xx with Finish option
LTSSxx	Shallow Skirt, 30" Diameter, replace xx with Finish option

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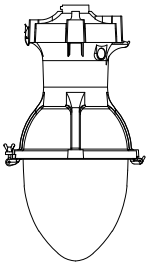
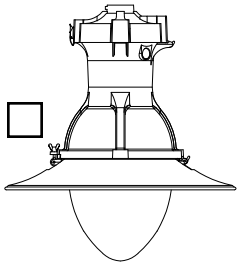
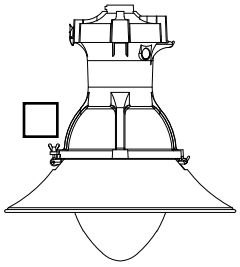
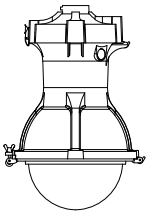
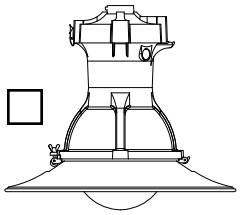
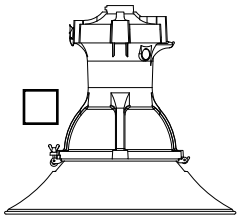
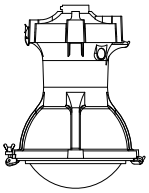
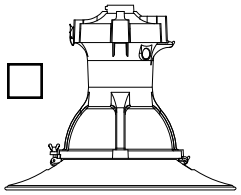
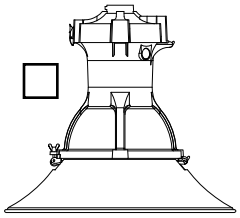
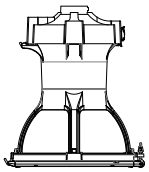
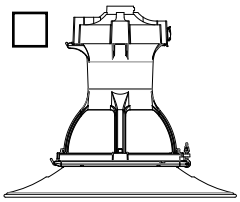
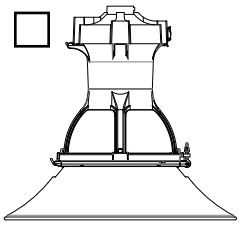
OPTIONS MATRIX

OPTIONS		Performance Package															Voltage		Options							
		P10S	P15S	P20S	P20U	P25S	P25U	P30S	P30U	P35S	P40S	P45S	P50S	P55S	P60S	P65S	MVOLT	HVOLT	AO	PR3	PR7	PR3E	PR7E	PCLL	P34	P48	SH
Performance Package	P10S		N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	N		N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	N	N		N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	N	N	N		N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	N	N	N	N		N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	N	N	N	N	N		N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	N	N	N	N	N	N		N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	N	N	N	N	N	N	N		N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	N	N	N	N	N	N	N	N		N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	N	N	N	N	N	N	N	N	N		N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	N	N	N	N	N	N	N	N	N	N		N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	N	N	N	N	N	N	N	N	N	N	N		N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	N	N	N	N	N	N	N	N	N	N	N	N		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	N	N	N	N	N	N	N	N	N	N	N	N	N		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	N	N	N	N	N	N	N	N	N	N	N	N	N	N		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Voltage	MVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y	Y	N	N	Y
	HVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y	N	Y	Y	Y
Options	AO	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
	PR3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	N	N	Y	Y	Y	Y
	PR7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		N	N	Y	Y	Y	Y
	PR3E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N		N	N	N	N	N
	PR7E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N		N	N	N	N
	PCLL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N		N	N	N
	P34	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N		N	N
	P48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N		N
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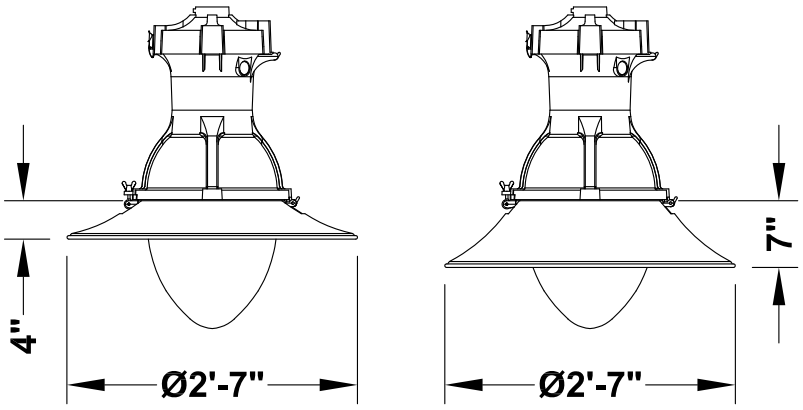
OPTICS by PERFORMANCE PACKAGE		Performance Package												
		TG2	TG3	TG4	FG3	FG5	BG2	BG3	BG4	BG5	SG2	SG3	SG4	SG5
Performance Package	P10S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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MARK APPROPRIATE BOX FOR TRIM OPTIONS

	STANDARD	SHALLOW SKIRT	DEEP SKIRT
TEARDROP GLASS (Asymmetric)	☐ 	☐ 	☐ 
BOWL GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
SAG GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
FLAT GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 

SKIRT DIMENSIONS



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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10S	TG2	44	6,013	137	1	3	3	6,490	148	2	3	3	6,609	150	2	3	3	6,705	152	2	3	3
	TG3		6,033	137	1	3	3	6,511	148	2	3	3	6,630	151	2	3	3	6,727	153	2	3	3
	TG4		5,671	129	1	3	3	6,121	139	1	3	3	6,233	142	1	3	3	6,324	144	1	3	3
	FG3		3,912	89	1	0	1	4,222	96	1	0	1	4,300	98	1	0	1	4,362	99	1	0	1
	FG5		3,846	87	2	0	1	4,150	94	2	0	1	4,227	96	2	0	1	4,288	97	2	0	1
	BG2		5,750	131	2	3	3	6,206	141	2	3	3	6,320	144	2	3	3	6,412	146	2	3	3
	BG3		5,692	129	2	3	3	6,143	140	2	3	4	6,256	142	2	3	4	6,347	144	2	3	4
	BG4		5,389	122	1	3	3	5,816	132	1	3	3	5,923	135	1	3	3	6,009	137	1	3	4
	BG5		6,004	136	3	3	3	6,480	147	3	3	3	6,599	150	3	3	3	6,695	152	3	3	3
	SG2		5,778	131	1	3	3	6,236	142	1	3	3	6,350	144	1	3	3	6,443	146	1	3	3
	SG3		5,773	131	1	3	3	6,231	142	1	3	3	6,346	144	1	3	3	6,438	146	1	3	3
	SG4		5,452	124	1	3	3	5,884	134	1	3	3	5,992	136	1	3	3	6,079	138	1	3	3
	SG5		6,041	137	3	3	2	6,520	148	3	3	2	6,640	151	3	3	2	6,737	153	3	3	2
P15S	TG2	54	7,487	139	2	3	3	8,080	150	2	3	3	8,229	152	2	3	3	8,348	155	2	3	3
	TG3		7,511	139	2	3	3	8,106	150	2	3	3	8,255	153	2	3	3	8,375	155	2	3	3
	TG4		7,061	131	1	3	3	7,621	141	2	3	3	7,761	144	2	3	3	7,874	146	2	3	3
	FG3		4,871	90	1	0	1	5,257	97	2	0	1	5,353	99	2	0	1	5,431	101	2	0	1
	FG5		4,788	89	2	0	1	5,167	96	2	0	1	5,262	97	2	0	1	5,339	99	2	0	1
	BG2		7,159	133	2	3	4	7,727	143	2	3	4	7,869	146	2	3	4	7,983	148	2	3	4
	BG3		7,086	131	2	3	4	7,648	142	2	3	4	7,789	144	2	3	4	7,902	146	2	3	4
	BG4		6,710	124	1	3	4	7,241	134	2	3	4	7,375	137	2	3	4	7,482	139	2	3	4
	BG5		7,475	138	3	3	3	8,068	149	3	3	3	8,216	152	3	3	3	8,335	154	3	3	3
	SG2		7,193	133	2	3	3	7,763	144	2	3	3	7,906	146	2	3	3	8,021	149	2	3	3
	SG3		7,188	133	2	3	3	7,758	144	2	3	3	7,900	146	2	3	3	8,015	148	2	3	3
	SG4		6,788	126	1	3	3	7,326	136	1	3	3	7,460	138	1	3	3	7,569	140	1	3	3
	SG5		7,522	139	3	3	2	8,118	150	3	3	2	8,267	153	3	3	2	8,387	155	3	3	2
P20S	TG2	73	10,290	141	2	3	3	11,106	152	2	3	3	11,310	155	2	3	3	11,474	157	2	3	3
	TG3		10,323	141	2	3	3	11,141	153	2	3	4	11,346	155	2	3	4	11,511	158	2	3	4
	TG4		9,705	133	2	3	3	10,474	143	2	3	3	10,667	146	2	3	3	10,822	148	2	3	3
	FG3		6,694	92	2	0	1	7,225	99	2	0	2	7,358	101	2	0	2	7,465	102	2	0	2
	FG5		6,581	90	2	0	1	7,102	97	2	0	1	7,233	99	2	0	1	7,338	101	2	0	1
	BG2		9,840	135	2	3	4	10,620	145	2	3	5	10,816	148	2	3	5	10,973	150	3	3	5
	BG3		9,740	133	2	3	5	10,512	144	2	3	5	10,705	147	2	3	5	10,861	149	2	3	5
	BG4		9,222	126	2	3	5	9,953	136	2	3	5	10,136	139	2	3	5	10,283	141	2	3	5
	BG5		10,274	141	3	3	4	11,089	152	3	3	4	11,293	155	4	3	4	11,457	157	4	3	4
	SG2		9,887	135	2	3	3	10,671	146	2	3	3	10,867	149	2	3	3	11,025	151	2	3	3
	SG3		9,879	135	2	3	3	10,662	146	2	3	4	10,859	149	2	3	4	11,016	151	2	3	4
	SG4		9,329	128	2	3	3	10,069	138	2	3	3	10,254	140	2	3	3	10,403	143	2	3	3
	SG5		10,338	142	3	3	3	11,158	153	3	3	3	11,363	156	4	3	3	11,528	158	4	3	3
P20U	TG2	94	12,937	138	2	5	3	13,962	149	2	5	3	14,219	151	2	5	3	14,426	153	2	5	3
	TG3		12,978	138	2	5	4	14,006	149	2	5	4	14,264	152	2	5	4	14,471	154	2	5	4
	TG4		12,201	130	2	5	3	13,168	140	2	5	4	13,410	143	2	5	4	13,605	145	2	5	4
	BG2		12,371	132	2	5	4	13,351	142	3	5	5	13,597	145	3	5	5	13,794	147	3	5	5
	BG3		12,245	130	2	5	5	13,216	141	2	5	5	13,459	143	2	5	5	13,654	145	2	5	5
	BG4		11,594	123	2	5	5	12,513	133	2	5	5	12,744	136	2	5	5	12,929	138	2	5	5
	BG5		12,917	137	3	5	4	13,941	148	4	5	4	14,198	151	4	5	4	14,404	153	4	5	4
	SG2		12,430	132	2	5	3	13,415	143	2	5	3	13,662	145	2	5	3	13,861	147	2	5	3
	SG3		12,421	132	2	5	4	13,405	143	2	5	4	13,652	145	2	5	4	13,850	147	2	5	4
	SG4		11,729	125	2	5	3	12,658	135	2	5	4	12,891	137	2	5	4	13,078	139	2	5	4
	SG5		12,997	138	3	5	3	14,028	149	4	5	3	14,286	152	4	5	3	14,493	154	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P25S	TG2	82	11,665	142	2	3	4	12,590	154	3	3	4	12,821	156	3	3	4	13,008	159	3	3	4
	TG3		11,703	143	2	3	4	12,630	154	2	3	4	12,862	157	3	3	4	13,049	159	3	3	4
	TG4		11,002	134	2	3	3	11,874	145	2	3	4	12,092	147	2	3	4	12,268	150	2	3	4
	FG3		7,589	93	2	0	2	8,190	100	2	0	2	8,341	102	2	0	2	8,462	103	2	0	2
	FG5		7,460	91	2	0	1	8,051	98	3	0	1	8,199	100	3	0	1	8,319	101	3	0	1
	BG2		11,155	136	3	3	5	12,039	147	3	3	5	12,261	150	3	3	5	12,439	152	3	3	5
	BG3		11,042	135	2	3	5	11,917	145	3	3	5	12,136	148	3	3	5	12,312	150	3	3	5
	BG4		10,454	127	2	3	5	11,283	138	2	3	5	11,491	140	2	3	5	11,658	142	2	3	5
	BG5		11,647	142	4	3	4	12,570	153	4	3	4	12,802	156	4	3	4	12,988	158	4	3	4
	SG2		11,208	137	2	3	3	12,096	148	2	3	4	12,319	150	2	3	4	12,498	152	2	3	4
	SG3		11,200	137	2	3	4	12,087	147	2	3	4	12,310	150	2	3	4	12,488	152	2	3	4
	SG4		10,576	129	2	3	4	11,414	139	2	3	4	11,624	142	2	3	4	11,793	144	2	3	4
	SG5		11,720	143	4	3	3	12,649	154	4	3	3	12,881	157	4	3	3	13,069	159	4	3	3
P25U	TG2	109	14,701	135	2	5	4	15,866	146	3	5	4	16,158	148	3	5	4	16,393	150	3	5	4
	TG3		14,747	135	2	5	4	15,916	146	3	5	4	16,209	149	3	5	4	16,445	151	3	5	4
	TG4		13,865	127	2	5	4	14,964	137	2	5	4	15,239	140	2	5	4	15,460	142	2	5	4
	BG2		14,058	129	3	5	5	15,172	139	3	5	5	15,451	142	3	5	5	15,675	144	3	5	5
	BG3		13,915	128	3	5	5	15,018	138	3	5	5	15,294	140	3	5	5	15,516	142	3	5	5
	BG4		13,176	121	2	5	5	14,220	130	2	5	5	14,481	133	2	5	5	14,692	135	2	5	5
	BG5		14,679	135	4	5	4	15,842	145	4	5	4	16,134	148	4	5	4	16,368	150	4	5	4
	SG2		14,125	130	2	5	4	15,245	140	2	5	4	15,525	142	2	5	4	15,751	145	2	5	4
	SG3		14,115	129	2	5	4	15,233	140	2	5	4	15,514	142	2	5	4	15,739	144	2	5	4
	SG4		13,328	122	2	5	4	14,384	132	2	5	4	14,649	134	2	5	4	14,862	136	2	5	4
	SG5		14,770	136	4	5	3	15,941	146	4	5	3	16,234	149	4	5	3	16,470	151	4	5	3
P30S	TG2	92	12,968	141	3	3	4	13,996	152	3	3	4	14,254	155	3	3	4	14,461	157	3	3	4
	TG3		13,010	141	3	3	4	14,041	153	3	3	4	14,300	155	3	3	4	14,507	158	3	3	4
	TG4		12,231	133	2	3	4	13,201	143	2	3	4	13,443	146	2	3	4	13,639	148	2	3	4
	FG3		8,437	92	2	0	2	9,106	99	2	0	2	9,273	101	2	0	2	9,408	102	2	0	2
	FG5		8,294	90	3	0	1	8,951	97	3	0	1	9,116	99	3	0	1	9,248	101	3	0	2
	BG2		12,402	135	3	3	5	13,385	145	3	3	5	13,631	148	3	3	5	13,829	150	3	3	5
	BG3		12,275	133	3	3	5	13,248	144	3	3	5	13,492	147	3	3	5	13,688	149	3	3	5
	BG4		11,623	126	2	3	5	12,544	136	2	3	5	12,774	139	2	3	5	12,960	141	2	3	5
	BG5		12,949	141	4	3	4	13,975	152	4	3	4	14,232	155	4	3	4	14,439	157	4	3	4
	SG2		12,460	135	2	3	4	13,448	146	2	3	4	13,695	149	2	3	4	13,894	151	2	3	4
	SG3		12,451	135	2	3	4	13,438	146	2	3	4	13,685	149	2	3	4	13,884	151	3	3	4
	SG4		11,758	128	2	3	4	12,690	138	2	3	4	12,923	140	2	3	4	13,111	143	2	3	4
	SG5		13,029	142	4	3	3	14,062	153	4	3	3	14,321	156	4	3	3	14,529	158	4	3	3
P30U	TG2	122	16,481	135	3	5	4	17,787	146	3	5	4	18,115	148	3	5	4	18,378	151	3	5	4
	TG3		16,533	136	3	5	4	17,843	146	3	5	4	18,172	149	3	5	5	18,436	151	3	5	5
	TG4		15,543	127	2	5	4	16,775	138	2	5	4	17,084	140	2	5	4	17,332	142	2	5	4
	BG2		15,760	129	3	5	5	17,009	139	3	5	5	17,322	142	3	5	5	17,573	144	3	5	5
	BG3		15,600	128	3	5	5	16,836	138	3	5	5	17,146	141	3	5	5	17,395	143	3	5	5
	BG4		14,771	121	2	5	5	15,942	131	2	5	5	16,235	133	2	5	5	16,471	135	3	5	5
	BG5		16,456	135	4	5	4	17,760	146	4	5	5	18,087	148	4	5	5	18,350	150	4	5	5
	SG2		15,836	130	2	5	4	17,091	140	3	5	4	17,405	143	3	5	4	17,658	145	3	5	4
	SG3		15,824	130	2	5	4	17,078	140	3	5	4	17,392	143	3	5	4	17,645	145	3	5	4
	SG4		14,942	122	2	5	4	16,126	132	2	5	4	16,423	135	2	5	4	16,661	137	2	5	4
	SG5		16,558	136	4	5	3	17,871	146	4	5	3	18,199	149	4	5	3	18,464	151	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P35S	TG2	112	15,526	139	3	3	4	16,757	150	3	3	4	17,065	152	3	3	4	17,313	155	3	3	4
	TG3		15,576	139	3	3	4	16,810	150	3	3	5	17,120	153	3	3	5	17,368	155	3	3	5
	TG4		14,643	131	3	3	4	15,804	141	3	3	4	16,095	144	3	3	4	16,328	146	3	3	4
	FG3		10,101	90	3	0	2	10,901	97	3	0	2	11,102	99	3	0	2	11,263	101	3	0	2
	FG5		9,929	89	3	0	2	10,716	96	3	0	2	10,913	97	3	0	2	11,072	99	3	0	2
	BG2		14,847	133	3	3	5	16,024	143	3	3	5	16,319	146	3	3	5	16,556	148	3	3	5
	BG3		14,696	131	3	3	5	15,861	142	3	4	5	16,153	144	3	4	5	16,388	146	3	4	5
	BG4		13,915	124	2	3	5	15,018	134	3	3	5	15,294	137	3	3	5	15,516	139	3	3	5
	BG5		15,502	138	4	3	5	16,731	149	4	3	5	17,039	152	4	3	5	17,286	154	4	3	5
	SG2		14,918	133	3	3	4	16,100	144	3	3	4	16,396	146	3	3	4	16,634	149	3	3	4
	SG3		14,906	133	3	3	4	16,088	144	3	3	5	16,384	146	3	3	5	16,622	148	3	3	5
	SG4		14,076	126	2	3	4	15,192	136	2	3	4	15,472	138	2	3	4	15,696	140	2	3	4
	SG5		15,599	139	4	3	3	16,835	150	4	3	3	17,145	153	4	3	3	17,394	155	4	3	3
P40S	TG2	132	18,148	137	3	3	5	19,586	148	3	3	5	19,947	151	3	3	5	20,236	153	3	3	5
	TG3		18,206	138	3	3	5	19,649	149	3	3	5	20,011	152	3	3	5	20,301	154	3	3	5
	TG4		17,116	130	3	3	4	18,473	140	3	3	5	18,812	143	3	3	5	19,086	145	3	3	5
	FG3		11,806	89	3	0	2	12,742	97	3	0	2	12,977	98	3	0	2	13,165	100	3	0	2
	FG5		11,606	88	3	0	2	12,526	95	3	0	2	12,756	97	3	0	2	12,941	98	3	0	2
	BG2		17,355	131	3	4	5	18,730	142	3	4	5	19,075	145	3	4	5	19,352	147	3	4	5
	BG3		17,178	130	3	4	5	18,539	140	3	4	5	18,880	143	3	4	5	19,155	145	3	4	5
	BG4		16,264	123	3	3	5	17,553	133	3	4	5	17,876	135	3	4	5	18,136	137	3	4	5
	BG5		18,120	137	4	3	5	19,556	148	4	3	5	19,916	151	4	4	5	20,205	153	4	4	5
	SG2		17,437	132	3	3	5	18,819	143	3	3	5	19,165	145	3	3	5	19,443	147	3	3	5
	SG3		17,424	132	3	3	5	18,805	142	3	3	5	19,151	145	3	3	5	19,429	147	3	3	5
	SG4		16,453	125	2	3	5	17,758	135	3	3	5	18,084	137	3	3	5	18,347	139	3	3	5
	SG5		18,233	138	4	3	3	19,678	149	4	3	3	20,040	152	4	3	3	20,331	154	4	3	3
P45S	TG2	153	20,508	134	3	3	5	22,134	145	3	3	5	22,541	147	3	3	5	22,868	149	3	3	5
	TG3		20,574	134	3	3	5	22,205	145	3	3	5	22,613	148	3	3	5	22,942	150	3	3	5
	TG4		19,342	126	3	3	5	20,875	136	3	3	5	21,259	139	3	3	5	21,568	141	3	3	5
	FG3		13,342	87	3	0	2	14,399	94	3	0	3	14,664	96	3	0	3	14,877	97	3	0	3
	FG5		13,115	86	3	0	2	14,155	93	3	0	2	14,415	94	3	0	2	14,625	96	3	0	2
	BG2		19,612	128	3	4	5	21,166	138	3	4	5	21,555	141	3	4	5	21,869	143	3	4	5
	BG3		19,412	127	3	4	5	20,951	137	3	4	5	21,336	139	3	4	5	21,646	141	3	4	5
	BG4		18,380	120	3	4	5	19,836	130	3	4	5	20,201	132	3	4	5	20,495	134	3	4	5
	BG5		20,477	134	4	4	5	22,100	144	4	4	5	22,506	147	5	4	5	22,833	149	5	4	5
	SG2		19,705	129	3	3	5	21,266	139	3	3	5	21,658	142	3	3	5	21,972	144	3	3	5
	SG3		19,690	129	3	3	5	21,250	139	3	3	5	21,641	141	3	3	5	21,956	144	3	3	5
	SG4		18,593	122	3	3	5	20,067	131	3	3	5	20,436	134	3	3	5	20,733	136	3	3	5
	SG5		20,604	135	4	3	3	22,238	145	4	3	3	22,647	148	5	3	3	22,976	150	5	3	4
P50S	TG2	173	22,698	131	3	3	5	24,497	142	3	3	5	24,948	144	3	4	5	25,310	146	3	4	5
	TG3		22,771	132	3	3	5	24,576	142	3	3	5	25,028	145	3	3	5	25,392	147	3	4	5
	TG4		21,408	124	3	3	5	23,104	134	3	3	5	23,529	136	3	3	5	23,871	138	3	3	5
	FG3		14,767	85	3	0	3	15,937	92	3	0	3	16,230	94	3	0	3	16,466	95	3	0	3
	FG5		14,516	84	3	0	2	15,666	91	3	0	2	15,955	92	3	0	2	16,186	94	3	0	2
	BG2		21,706	125	3	4	5	23,426	135	3	4	5	23,857	138	3	4	5	24,204	140	3	4	5
	BG3		21,485	124	3	4	5	23,188	134	3	4	5	23,615	137	3	4	5	23,958	138	3	4	5
	BG4		20,342	118	3	4	5	21,955	127	3	4	5	22,359	129	3	4	5	22,684	131	3	4	5
	BG5		22,663	131	5	4	5	24,460	141	5	4	5	24,910	144	5	4	5	25,272	146	5	4	5
	SG2		21,809	126	3	3	5	23,537	136	3	3	5	23,970	139	3	3	5	24,319	141	3	3	5
	SG3		21,792	126	3	3	5	23,520	136	3	3	5	23,952	138	3	3	5	24,300	140	3	3	5
	SG4		20,579	119	3	3	5	22,210	128	3	3	5	22,619	131	3	3	5	22,947	133	3	3	5
	SG5		22,805	132	5	3	4	24,612	142	5	3	4	25,065	145	5	3	4	25,429	147	5	3	4

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LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P55S	TG2	193	24,807	129	3	3	5	26,773	139	3	4	5	27,266	141	3	4	5	27,662	143	3	4	5
	TG3		24,887	129	3	3	5	26,859	139	3	4	5	27,353	142	3	4	5	27,751	144	3	4	5
	TG4		23,397	121	3	3	5	25,251	131	3	3	5	25,716	133	3	3	5	26,089	135	3	4	5
	FG3		16,139	84	3	0	3	17,418	90	3	0	3	17,738	92	3	0	3	17,996	93	3	0	3
	FG5		15,865	82	3	0	2	17,122	89	3	0	2	17,437	90	3	0	2	17,690	92	3	0	2
	BG2		23,723	123	3	4	5	25,603	133	3	4	5	26,074	135	3	4	5	26,453	137	3	4	5
	BG3		23,481	122	3	4	5	25,342	131	3	4	5	25,809	134	3	4	5	26,184	136	3	4	5
	BG4		22,232	115	3	4	5	23,995	124	3	4	5	24,436	127	3	4	5	24,791	128	3	4	5
	BG5		24,769	128	5	4	5	26,732	139	5	4	5	27,224	141	5	4	5	27,620	143	5	4	5
	SG2		23,835	123	3	3	5	25,724	133	3	3	5	26,198	136	3	3	5	26,578	138	3	3	5
	SG3		23,817	123	3	3	5	25,705	133	3	3	5	26,178	136	3	3	5	26,558	138	3	3	5
	SG4		22,491	117	3	3	5	24,274	126	3	3	5	24,720	128	3	3	5	25,079	130	3	3	5
	SG5		24,924	129	5	3	4	26,899	139	5	3	4	27,394	142	5	3	4	27,792	144	5	3	4
P60S	TG2	215	27,208	127	3	4	5	29,364	137	3	4	5	29,905	139	3	4	5	30,339	141	3	4	5
	TG3		27,295	127	3	4	5	29,459	137	3	4	5	30,001	140	3	4	5	30,437	142	3	4	5
	TG4		25,661	119	3	3	5	27,695	129	3	4	5	28,204	131	3	4	5	28,614	133	3	4	5
	FG3		17,701	82	3	0	3	19,104	89	3	0	3	19,455	90	3	0	3	19,738	92	3	0	3
	FG5		17,400	81	3	0	2	18,779	87	4	0	2	19,124	89	4	0	2	19,402	90	4	0	2
	BG2		26,019	121	3	4	5	28,081	131	4	4	5	28,597	133	4	4	5	29,013	135	4	4	5
	BG3		25,754	120	3	4	5	27,795	129	4	4	5	28,306	132	4	4	5	28,718	134	4	4	5
	BG4		24,384	113	3	4	5	26,317	122	3	4	5	26,801	125	3	4	5	27,190	126	3	4	5
	BG5		27,166	126	5	4	5	29,319	136	5	4	5	29,859	139	5	4	5	30,293	141	5	4	5
	SG2		26,142	122	3	3	5	28,214	131	3	3	5	28,733	134	3	3	5	29,150	136	3	3	5
	SG3		26,122	121	3	3	5	28,193	131	3	3	5	28,711	134	3	3	5	29,128	135	3	3	5
	SG4		24,668	115	3	3	5	26,623	124	3	3	5	27,113	126	3	3	5	27,506	128	3	3	5
	SG5		27,336	127	5	3	4	29,502	137	5	3	4	30,045	140	5	3	4	30,481	142	5	3	4
P65S	TG2	247	30,354	123	3	4	5	32,760	133	4	4	5	33,363	135	4	4	5	33,848	137	4	4	5
	TG3		30,452	123	3	4	5	32,866	133	4	4	5	33,470	136	4	4	5	33,956	137	4	4	5
	TG4		28,629	116	3	4	5	30,898	125	3	4	5	31,466	127	3	4	5	31,923	129	3	4	5
	FG3		19,748	80	3	0	3	21,313	86	3	0	3	21,705	88	3	0	3	22,020	89	3	0	3
	FG5		19,412	79	4	0	2	20,951	85	4	0	3	21,336	86	4	0	3	21,646	88	4	0	3
	BG2		29,028	118	4	4	5	31,328	127	4	4	5	31,905	129	4	4	5	32,368	131	4	4	5
	BG3		28,732	116	4	4	5	31,009	126	4	5	5	31,580	128	4	5	5	32,039	130	4	5	5
	BG4		27,204	110	3	4	5	29,360	119	3	4	5	29,900	121	3	4	5	30,335	123	3	4	5
	BG5		30,308	123	5	4	5	32,710	132	5	4	5	33,312	135	5	4	5	33,796	137	5	4	5
	SG2		29,165	118	3	3	5	31,477	127	3	3	5	32,056	130	3	4	5	32,522	132	3	4	5
	SG3		29,143	118	3	3	5	31,453	127	3	4	5	32,032	130	3	4	5	32,497	132	3	4	5
	SG4		27,520	111	3	3	5	29,702	120	3	3	5	30,248	122	3	3	5	30,688	124	3	3	5
	SG5		30,497	123	5	3	4	32,914	133	5	3	4	33,520	136	5	3	4	34,007	138	5	3	4

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LUMEN AMBIENT TEMPERATURE (LAT) MULTIPLIERS

Use the factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F)

Ambient Temp.		Lumen Multiplier (by Performance Package)			
°C	°F	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	P55S	P60S	P65S
0	32	1.03	1.04	1.04	1.04
5	41	1.03	1.03	1.03	1.04
10	50	1.02	1.02	1.03	1.03
15	59	1.01	1.02	1.02	1.02
20	68	1.01	1.01	1.01	1.01
25	77	1.00	1.00	1.00	1.00
30	86	0.99	0.99	0.99	0.99
35	95	0.99	0.98	0.98	0.98
40	104	0.98	0.97	0.97	0.97

PROJECTED LED LUMEN MAINTENANCE

Data references the extrapolated performance projections for the platforms noted in 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11). To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Lumen Maintenance - LLD (by Performance Package)									
Hours		0	25,000	36,000	50,000	60,000	67,500	75,000	100,000
Factor for:	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	1.00	0.95	0.94	0.91	0.90	0.89	0.88	0.84
	P55S	1.00	0.95	0.93	0.91	0.90	0.89	0.87	0.84
	P60S & P65S	1.00	0.95	0.93	0.90	0.89	0.87	0.86	0.82

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FIELD ADJUSTABLE OUTPUT (AO option)
The data is the same for MVOLT & HVOLT.

Performance Package	FAO Position	% Lumen Output	% Wattage
P10S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	41%	42%
	2	28%	29%
	1	13%	15%
P15S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	42%	42%
	2	28%	29%
	1	14%	15%
P20S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	42%	41%
	2	29%	29%
	1	14%	15%
P20U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	55%
	3	43%	42%
	2	29%	29%
	1	15%	15%
P25S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	29%	28%
	1	15%	15%

Performance Package	FAO Position	% Lumen Output	% Wattage
P25U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	43%	41%
	2	30%	29%
	1	15%	15%
P30S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	30%	28%
	1	15%	15%
P30U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	29%
	1	15%	15%
P35S	8	100%	100%
	7	94%	94%
	6	81%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	28%
	1	15%	15%
P40S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	31%	28%
	1	16%	15%

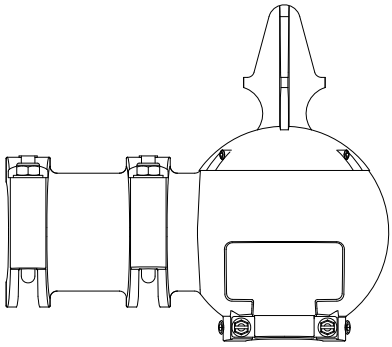
Performance Package	FAO Position	% Lumen Output	% Wattage
P45S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	58%	54%
	3	45%	41%
	2	31%	28%
	1	16%	14%
P50S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	59%	54%
	3	45%	41%
	2	32%	28%
	1	16%	14%
P55S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	59%	54%
	3	46%	41%
	2	32%	28%
	1	17%	14%
P60S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	60%	54%
	3	47%	41%
	2	33%	28%
	1	17%	14%
P65S	8	100%	100%
	7	95%	94%
	6	84%	79%
	5	73%	67%
	4	61%	53%
	3	48%	40%
	2	33%	28%
	1	18%	14%

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

BHDF SERIES
BOSTON HARBOUR STYLE

Decorative Arm Fitter



Specifications

General Description
The Boston Harbour style decorative arm fitter is designed to replicate the look of period cast arm mounts.

Materials
The fitter body, top cover, and door assembly shall be heavy wall cast aluminum. All mounting and locking hardware shall be stainless steel.

Function
The fitter is designed to be used on 2" horizontal arms with pendant luminaires having either a quick stem mount (QSM) or a 1.5NPT (NPT) as the selected mounting method.

Mounting Options
- QSM: The quick stem mount significantly simplify installation, ensures that the luminaire is hanging properly and does not require pipe dope. The swivel action on the stem allows for +/- 4 degree adjustment from vertical. The contoured door (with integral lanyard) is removed to allow the stem to engage inside the fitter. The door is replaced to the capture the luminaire stem.
- NPT15S or NPT15R: The 1.5NPT requires pipe dope. There are two NPT mounting options, the swivel (NPT15S) and the rigid (NPT15R)

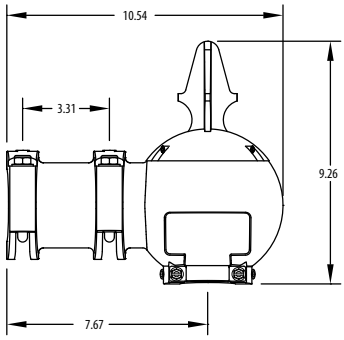
Installation
The fitter is provided with (2) U-bolts, washers and nuts and (2) leveling set screws that lock the fitter to a nominal 2" horizontal arm and allow a +/- 5 degree adjustment from horizontal to the fitter. (3) set screws lock either the QSM stem or NPT15S threaded male connector in place. The cast top cover can be removed to allow access to the inside of the fitter to facilitate wire connections. (3) set screws lock the cover to the fitter.

Finish
- Utilize a polyester powder coat paint to ensure maximum durability.
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

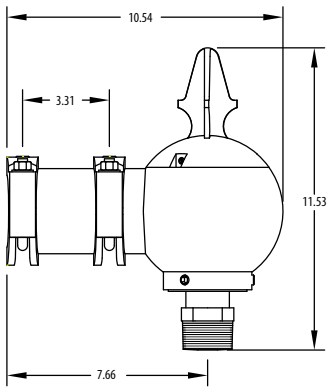
Warranty
1-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

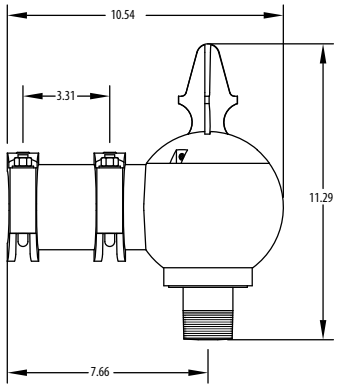
DIMENSIONAL DATA



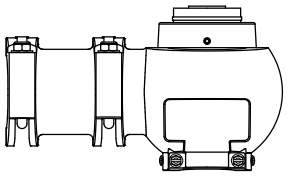
QSM Mounting



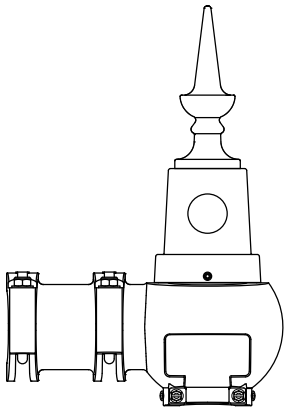
NPT15S Mounting



NPT15R Mounting



QSM Mounting with PR3E or PR7E option



TPRCSXX Accessory

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BHDF SERIES
BOSTON HARBOUR STYLE
Decorative Arm Fitter

ORDERING INFORMATION

Example: BHDF QSM BK PR7E PCLL

Series		Size		Finish		Options	
BHDF	Harbor Decorative Arm Fitter	NPT15S	Pendant 1.50 NPT Swivel	BK	Black	PR3E	External Mounted NEMA Twist Lock Photocontrol Receptacle - 3 PIN
		NPT15R	Pendant 1.50 NPT Rigid	BZ	Bronze	PR7E	External Mounted NEMA Twist Lock Dimming Photocontrol Receptacle - 7 PIN
		QSM	Quick Stem Mount	DB	Dark Blue	SH	Shorting cap
				GH	Graphite	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, MVOLT
				GN	Green	P34	Long Life DTL Twistlock Photocontrol for Solid State, 347V
				GR	Gray	P48	Long Life DTL Twistlock Photocontrol for Solid State, 480V
				PP	Prime Painted		
				SL	Silver		
				WH	White		
				CMC	Customer matching color		
				CTBS	Standard color to be selected		
				RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.		

Accessories	
TPRCSXX	Twistlock Photocontrol Cover Assembly with Spike Finial

Note:
Cover will only work with PR3E or PR73 with Acuity's PCLL, P34, P48, SH or other like devices equal in dimension.

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

HLWPC2

Wallpack® Full Cutoff LED





Mechanical

- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering
- Mounts to a standard junction box
- Wet location listed
- IP65 rated housing, down light only
- ¾" painted threaded entry(¾" - 14 NPT) on each side and on top, accepts ¾" and ½" conduit
- ¾" threaded plugs are painted on each side
- Vibration tested to 1.5G per ANSI C136.31.

Electrical

- Certified by UL or CSA
- Rated for -40°C (-40°F) minimum ambient
- A programmable electronic driver with 0-10V control leads
- Available in: 120-277V 50/60 Hz and 347-480V 50/60 Hz,
- Standard: 3000K, 4000K and 5000K CCT (>70 CRI)
- Optional >80 CRI (3000K, 4000K and 5000K CCT)
- Internally mounted emergency battery backup for operation in an ambient temperature ranging from -20°C (-4°F) to 30°C (86°F), available with P10 thru P40 performance packages, non CEC compliant
- All surge protection meets ANSI/IEEE C62.41.2 10kV/10kA
- Standard surge protection is 20kV/10kA per ANSI C136.2
- Optional surge protection is 10kV/5kA per ANSI C136.2

Optical

- Light engine housing is IP66 rated
- Acrylic optical system
- Type V: E (entry), M (medium), R (rectangle) & W (wide)
- Asymmetric

Controls

- Field adjustable output (AO)
- Button style photocontrol (PE)
- Motion sensor & ambient photocontrol combination for mounting low (8-15') (MASL) and high (15-30') (MASH) mounting heights

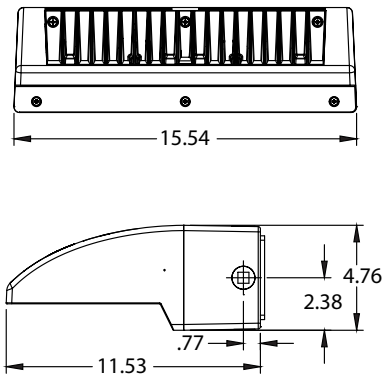
Certification and Standards

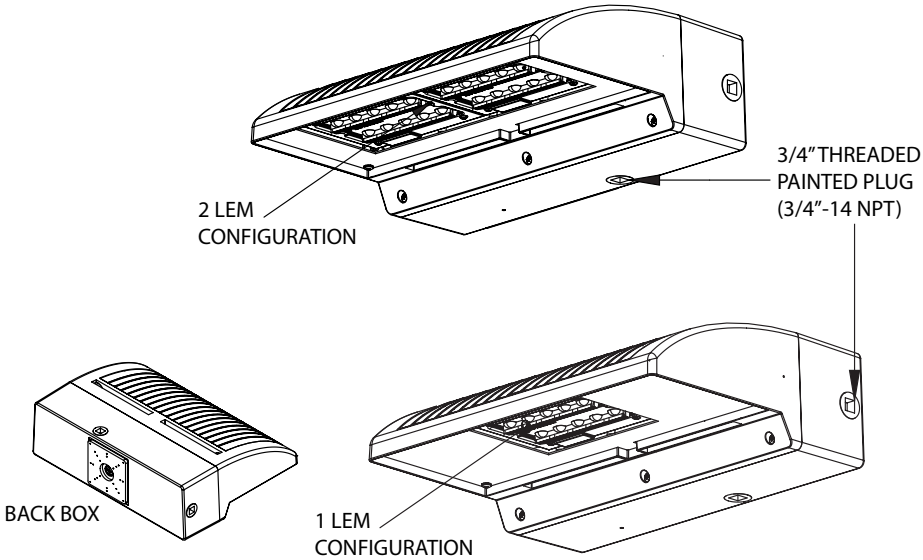
- Luminaire is CSA listed, US and Canada
- Suitable for operation in an ambient temperature up to 40°C/104°F per UL or CSA certification
- Design lights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- LM-79 compliant
- The projected LED Lumen Maintenance shall be based only on IES LM-80-08 and TM-21

Warranty

5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions.

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.





Note: Maximum weight 22 lbs.

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HLWPC2

Wallpack® Full Cutoff LED

ORDERING INFORMATION

Example: HLWPC2 P20 40K AS T3M BZSDP

Series	Lumen Package	Color Temperature	Voltage	Optics	Color	CRI
HLWPC2 Wallpack Full Cutoff LED	1 LEM Package P10 3,100 lm P20 5,600 lm 2 LEM Package P30 7,800 lm P40 9,900 lm P50 11,700 lm (Nominal Lumens, 4000K)	AMB True Amber 30K 3,000 K CCT 40K 4,000 K CCT 50K 5,000 K CCT	120 120 volts 208 208 volts 240 240 volts 277 277 volts 347 347 volts 480 480 volts HVOLT 347/480 volts MVOLT 120-277 volts	T2S Type 2 Short T2M Type 2 Medium T3S Type 3 Short T3M Type 3 Medium T4M Type 4 Medium TFTM Forward Throw Medium ASYDF Asymmetric Diffuse SYMDF Symmetric Diffuse	BKSDP Black BZSDP Bronze GYSDP Grey WHSDP White	Blank 70 CRI (STD) 80CRI 80 CRI

Options:

Adjustable/Programmable Options

AO Field Adjustable Output

Circuit Options

2CI 2 Independent Circuits

Control - Motion Sensor Options

MASL Motion / Ambient Sensor, 8-15' Mounting Height Ambient Sensor Enabled at 1 FC

MASH Motion / Ambient Sensor, 15-30' Mounting Height Ambient Sensor Enabled at 1 FC

Control - Photocontrol Options

PE Button Style Photocontrol

P3 N.E.M.A. Twistlock Receptacle Mount -3 PIN

P7 N.E.M.A. Twistlock Receptacle Mount -7 PIN

PCLL DTL Long Life Twistlock Photocontrol for Solid State

PSC Shorting Cap

Fuse Option

SF Single Fuse

DF Double Fuse

Safety Option

EM Integral Emergency Battery

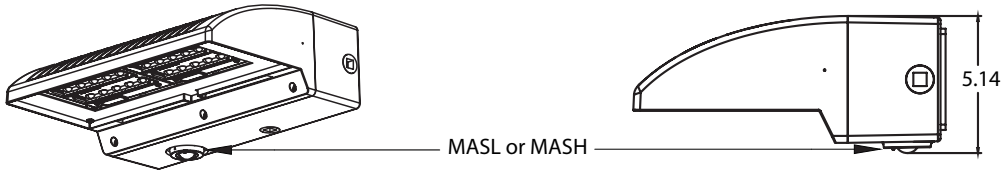
TP Tamper Resistant Hardware

Surge Protection Option - 20kV/10kA is Standard

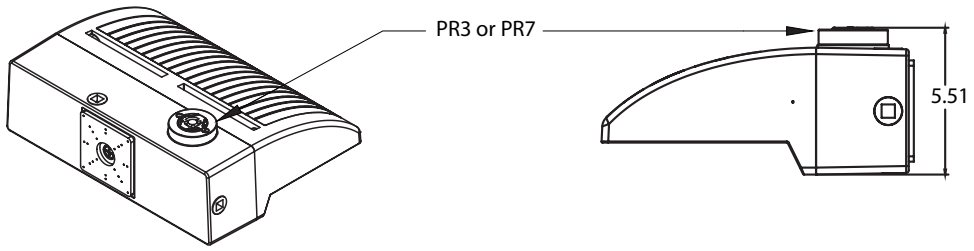
10KV 10kV/5kA Surge Protection, in place of 20kV/10kA

Options Location

Motion/Ambient Sensor mount options for Low (8-15') (MASL) and Height (15-30') (MASH) applications

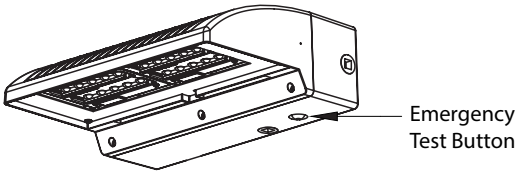


N.E.M.A. Twistlock Receptacle P3 and P7 Options, P7 Shown

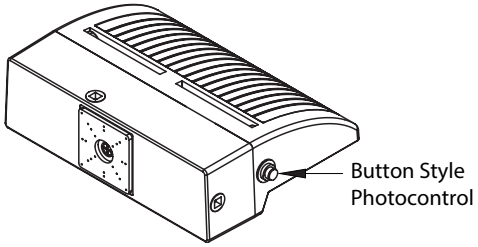


Internal Emergency Battery Test Button - EM Option

Test Button - EM Option



Button Style Photocontrol - PE Option

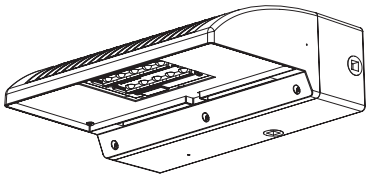


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Driver & LEM Configuration Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)		Two Circuit (2CI option)	
		LEMs	Drivers	LEMs	Drivers
Lumen Maintenance Factor	P10	1	1	-	-
	P20	1	1	2	2
	P30	2	1	2	2
	P40	2	1	2	2
	P50	2	1	-	-

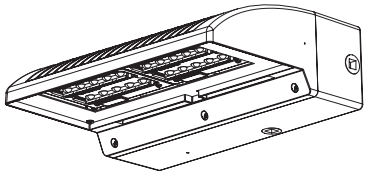
1 LEM Luminaire



SPD Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)				Two Circuit (2CI option)			
		LEMs	Drivers	No. of SPDs	SPD	LEMs	Drivers	No. of SPDs	SPD
Lumen Maintenance Factor	P10	1	1	1	20kV/10kA	-	-	-	-
	P20	1	1	1	20kV/10kA	2	2	2	10kV/5kA
	P30	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P40	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P50	2	1	1	20kV/10kA	-	-	-	-

2 LEM Luminaire



Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platform noted in a 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

The italicized data is extrapolated beyond the TM-21 standard.

E = (LM) x (CU) x (LAT) x (LLD)
LM and CU are obtained from published photometry.

Operating Hours (Standard)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P20	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85
	P30	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P40	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85

Operating Hours (2CI Option)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P20	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P30	1	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
	P40	1	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Single Circuit Application

Ambient		P10	P20	P30	P40	P50
0°C	32°F	1.02	1.03	1.03	1.04	1.05
10°C	50°F	1.01	1.02	1.02	1.03	1.03
20°C	68°F	1.01	1.01	1.01	1.01	1.01
25°C	77°F	1.00	1.00	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99	0.99	0.99
40°C	104°F	0.98	0.97	0.98	0.97	0.97

Optional Two Independent Circuit (2CI) Application

Ambient		P20	P30	P40
0°C	32°F	1.02	1.02	1.02
10°C	50°F	1.01	1.01	1.02
20°C	68°F	1.00	1.01	1.01
25°C	77°F	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99
40°C	104°F	0.98	0.98	0.98

Electrical Load

Single Circuit Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	700	28	0.23	0.13	0.12	0.10	0.08	0.06
P20	1400	47	0.41	0.24	0.20	0.18	0.14	0.10
P30	1050	71	0.63	0.37	0.32	0.29	0.22	0.18
P40	1420	95	0.78	0.45	0.40	0.35	0.27	0.20
P50	1720	115	0.95	0.55	0.48	0.42	0.33	0.24

Optional Two Independent Circuit (2CI) Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	-	-	-	-	-	-	-	-
P20	700	22	0.10	0.06	0.05	0.04	-	-
P30	1000	32	0.14	0.08	0.07	0.06	-	-
P40	1250	47	0.18	0.10	0.09	0.08	-	-
P50	-	-	-	-	-	-	-	-

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Operating Characteristics

LED Package	Distribution	System Watts	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10	T2S	28	2,904	104	1	0	1	3,128	112	1	0	1	3,168	113	1	0	1
	T2M	28	2,887	103	1	0	1	3,110	111	1	0	1	3,149	112	1	0	1
	T3S	28	2,964	106	1	0	1	3,194	114	1	0	1	3,234	116	1	0	1
	T3M	28	2,801	100	1	0	1	3,017	108	1	0	1	3,055	109	1	0	1
	T4M	28	2,858	102	1	0	1	3,079	110	1	0	1	3,118	111	1	0	1
	TFTM	28	2,979	106	1	0	1	3,209	115	1	0	1	3,250	116	1	0	1
	SYMDF	28	2,771	99	1	0	1	2,986	107	1	0	1	3,023	108	1	0	1
	ASYDF	28	2,756	98	1	0	1	2,969	106	1	0	1	3,007	107	1	0	1
P20	T2S	47	5,303	113	1	0	1	5,713	122	1	0	1	5,785	123	1	0	1
	T2M	47	5,272	112	1	0	2	5,680	121	1	0	2	5,751	122	1	0	2
	T3S	47	5,414	115	1	0	2	5,832	124	1	0	2	5,906	126	1	0	2
	T3M	47	5,115	109	1	0	2	5,510	117	1	0	2	5,580	119	1	0	2
	T4M	47	5,220	111	1	0	2	5,623	120	1	0	2	5,694	121	1	0	2
	TFTM	47	5,440	116	1	0	2	5,861	125	1	0	2	5,935	126	1	0	2
	SYMDF	47	5,062	108	2	0	2	5,453	116	2	0	2	5,522	117	2	0	2
	ASYDF	47	5,033	107	1	0	1	5,422	115	2	0	1	5,491	117	2	0	1
P30	T2S	71	7,319	103	2	0	2	7,884	111	2	0	2	7,984	112	2	0	2
	T2M	71	7,276	102	2	0	2	7,838	110	2	0	2	7,937	112	2	0	2
	T3S	71	7,472	105	1	0	2	8,049	113	2	0	2	8,151	115	2	0	2
	T3M	71	7,059	99	2	0	2	7,604	107	2	0	2	7,700	108	2	0	2
	T4M	71	7,203	101	2	0	2	7,760	109	2	0	2	7,858	111	2	0	2
	TFTM	71	7,508	106	1	0	2	8,088	114	2	0	2	8,190	115	2	0	2
	SYMDF	71	6,985	98	2	0	2	7,525	106	3	0	3	7,620	107	3	0	3
	ASYDF	71	6,946	98	2	0	2	7,483	105	2	0	2	7,578	107	2	0	2
P40	T2S	95	9,320	98	2	0	2	10,041	106	2	0	2	10,168	107	2	0	2
	T2M	95	9,266	98	2	0	2	9,982	105	2	0	3	10,108	106	2	0	3
	T3S	95	9,515	100	2	0	2	10,251	108	2	0	2	10,381	109	2	0	2
	T3M	95	8,989	95	2	0	2	9,684	102	2	0	2	9,807	103	2	0	2
	T4M	95	9,174	97	2	0	2	9,883	104	2	0	3	10,008	105	2	0	3
	TFTM	95	9,561	101	2	0	2	10,300	108	2	0	2	10,431	110	2	0	2
	SYMDF	95	8,896	94	3	0	3	9,583	101	3	0	3	9,705	102	3	0	3
	ASYDF	95	8,846	93	2	0	2	9,530	100	2	0	2	9,650	102	2	0	2
P50	T2S	115	10,972	95	2	0	2	11,820	103	2	0	2	11,969	104	2	0	2
	T2M	115	10,908	95	2	0	3	11,751	102	2	0	3	11,900	103	2	0	3
	T3S	115	11,202	97	2	0	2	12,067	105	2	0	2	12,220	106	2	0	2
	T3M	115	10,582	92	2	0	2	11,400	99	2	0	3	11,544	100	2	0	3
	T4M	115	10,799	94	2	0	3	11,634	101	2	0	3	11,781	102	2	0	3
	TFTM	115	11,256	98	2	0	2	12,126	105	2	0	2	12,279	107	2	0	2
	SYMDF	115	10,472	91	3	0	3	11,282	98	3	0	3	11,424	99	3	0	3
	ASYDF	115	10,414	91	2	0	2	11,219	98	3	0	2	11,361	99	3	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

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Operating Characteristics (continued)

LED Package	Distribution	System Watts	30K + 2CI Option (3000K, 70 CRI)					40K + 2CI Option (4000K, 70 CRI)					50K + 2CI Option (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P20	T2S	49	5,015	102	1	0	1	5,402	110	1	0	1	5,471	112	1	0	1
	T2M	49	4,985	102	1	0	2	5,371	110	1	0	2	5,439	111	1	0	2
	T3S	49	5,120	104	1	0	1	5,515	113	1	0	2	5,585	114	1	0	2
	T3M	49	4,837	99	1	0	2	5,210	106	1	0	2	5,276	108	1	0	2
	T4M	49	4,936	101	1	0	2	5,317	109	1	0	2	5,385	110	1	0	2
	TFTM	49	5,144	105	1	0	2	5,542	113	1	0	2	5,612	115	1	0	2
	SYMDF	49	4,786	98	2	0	2	5,156	105	2	0	2	5,222	107	2	0	2
	ASYDF	49	4,760	97	1	0	1	5,127	105	1	0	1	5,192	106	1	0	1
P30	T2S	70	6,769	97	1	0	1	7,293	104	2	0	2	7,385	106	2	0	2
	T2M	70	6,730	96	2	0	2	7,250	104	2	0	2	7,342	105	2	0	2
	T3S	70	6,911	99	1	0	2	7,445	106	1	0	2	7,539	108	1	0	2
	T3M	70	6,529	93	2	0	2	7,033	100	2	0	2	7,123	102	2	0	2
	T4M	70	6,663	95	2	0	2	7,178	103	2	0	2	7,269	104	2	0	2
	TFTM	70	6,945	99	1	0	2	7,481	107	1	0	2	7,576	108	2	0	2
	SYMDF	70	6,461	92	2	0	2	6,960	99	2	0	2	7,049	101	2	0	2
	ASYDF	70	6,425	92	2	0	2	6,922	99	2	0	2	7,009	100	2	0	2
P40	T2S	89	8,370	94	2	0	2	9,017	101	2	0	2	9,131	103	2	0	2
	T2M	89	8,321	93	2	0	2	8,964	101	2	0	2	9,078	102	2	0	2
	T3S	89	8,545	96	2	0	2	9,205	103	2	0	2	9,322	105	2	0	2
	T3M	89	8,073	91	2	0	2	8,696	98	2	0	2	8,807	99	2	0	2
	T4M	89	8,238	93	2	0	2	8,875	100	2	0	2	8,987	101	2	0	2
	TFTM	89	8,586	96	2	0	2	9,250	104	2	0	2	9,367	105	2	0	2
	SYMDF	89	7,989	90	3	0	3	8,606	97	3	0	3	8,715	98	3	0	3
	ASYDF	89	7,944	89	2	0	2	8,558	96	2	0	2	8,666	97	2	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

LED Package	Distribution	System Watts	AMB (Wavelength)					LED Package	Distribution	System Watts	AMB (Wavelength)				
			Lumens	LPW	B	U	G				Lumens	LPW	B	U	G
P10	T2S	28	1,061	38	0	0	1	P30	T2S	28	1,975	71	0	0	1
	T2M	28	1,054	38	0	0	1		T2M	28	1,964	70	0	0	1
	T3S	28	1,083	39	0	0	1		T3S	28	2,016	72	0	0	1
	T3M	28	1,023	37	0	0	1		T3M	28	1,905	68	0	0	1
	T4M	28	1,044	37	0	0	1		T4M	28	1,944	69	0	0	1
	TFTM	28	1,088	39	0	0	1		TFTM	28	2,026	72	0	0	1
	SYMDF	28	1,012	36	1	0	1		SYMDF	28	1,885	67	1	0	1
	ASYDF	28	1,007	36	0	0	1		ASYDF	28	1,875	67	0	0	1

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Options Matrix

Parameters		LED AMB	Options (Start with SF, DF, 2CI or EM if being used)													
			PE	P3	P7	PSC	PCLL	MASH	MASL	SF	DF	TP	10kV	AO	2CI	EM
LED Performance Package	P10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	P20	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Voltage	AS	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
	AH	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	N
	12	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	20	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	24	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	27	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	34	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	N
	48	Y	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	N	N
Options	PE	Y		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y
	P3	Y	N		N	M	Y	N	N	Y	Y	Y	Y	N	N	N
	P7	Y	N	N		M	Y	N	N	Y	Y	Y	Y	N	N	N
	PSC	Y	N	M	M		N	N	N	Y	Y	Y	Y	N	N	N
	PCLL	Y	N	Y	Y	N		N	N	Y	Y	Y	Y	N	N	N
	MASH	Y	N	N	N	N	N		N	Y	Y	Y	Y	N	N	N
	MASL	Y	N	N	N	N	N	N		Y	Y	Y	Y	N	N	N
	SF	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y
	DF	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y
	TP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	10kV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	M	M
	AO	Y	Y	N	N	N	N	N	N	Y	Y	Y	Y		N	N
	2CI	P30	N	N	N	N	N	N	N	Y	Y	Y	M	N		N
	EM	Y	Y	N	N	N	N	N	N	Y	Y	Y	M	N	N	

Notes
I = Included with option
M = Must have: one of these must be installed for the luminaire to operate
N = Combination Not available
P30 = Valid Option Combination, not available with P10 Performance Packabe
Y = Valid Option Combination

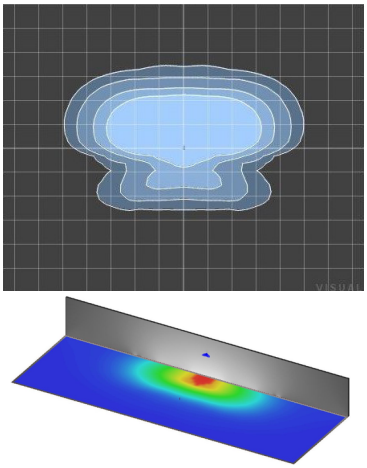
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Photometric Diagrams

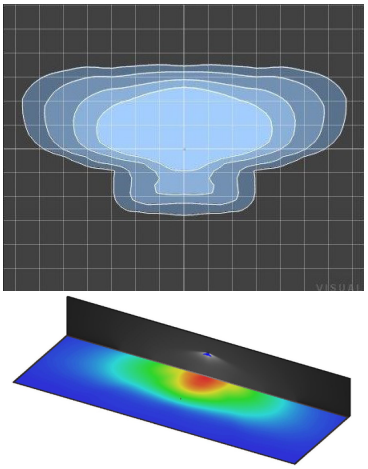
To see complete photometric reports or download .ies files for this product, visit the Holophane's Wallpack FCO LED homepage. Isofootcandle plots for the HLWPC2 P30 40K. Distance are in units of mounting height (12"). Grid is 10'x10'.

0.1 fc	1 fc	0.2 fc	0.5 fc

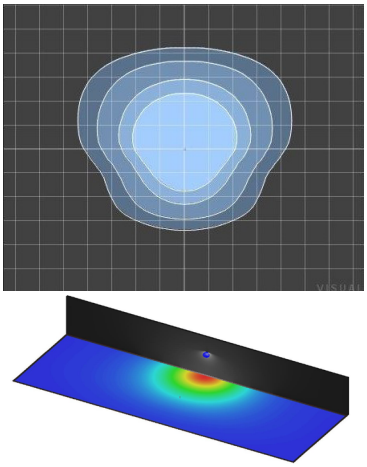
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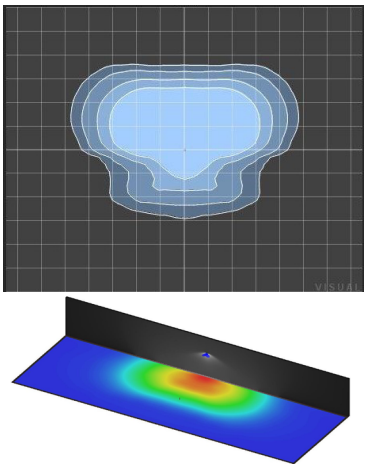
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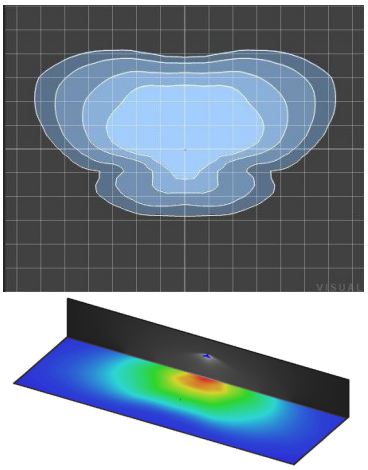
HLWPC2 P30 40K XX ASYDF



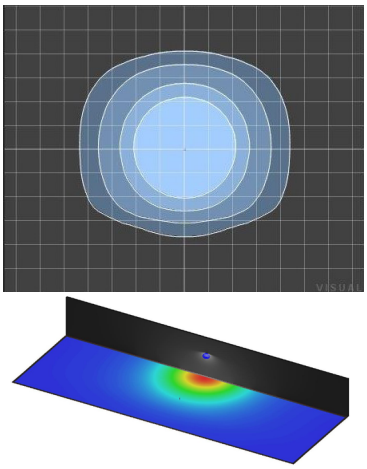
HLWPC2 P30 40K XX T3S



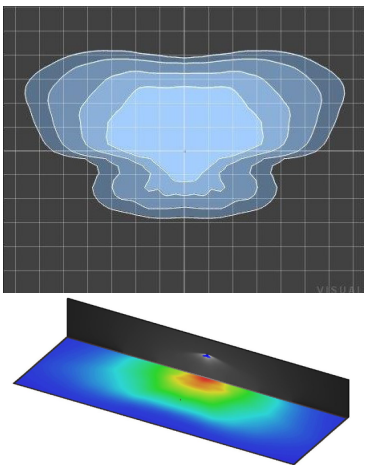
HLWPC2 P30 40K XX T3M



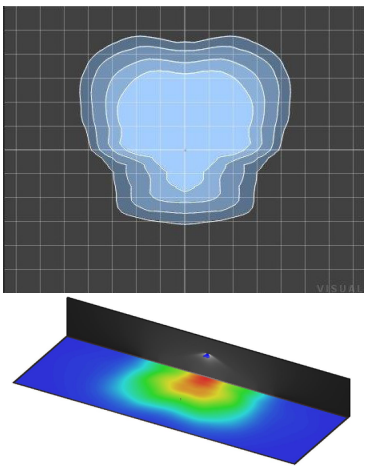
HLWPC2 P30 40K XX SYMDF



HLWPC2 P30 40K XX T4M



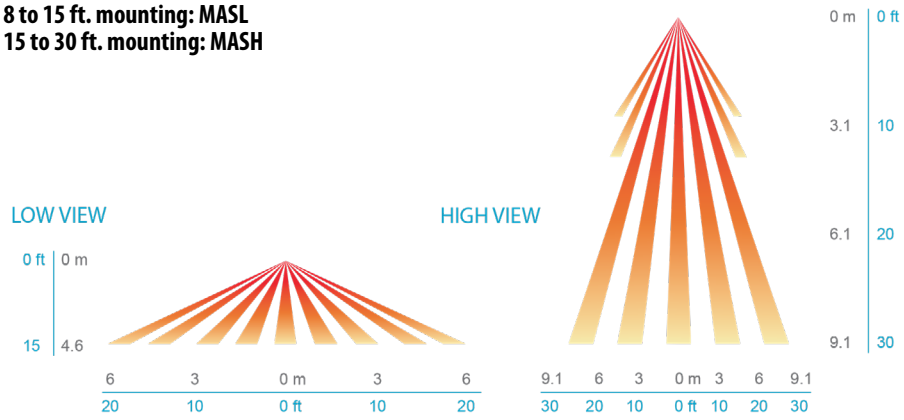
HLWPC2 P30 40K XX TFTM



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Coverage Pattern

8 to 15 ft. mounting: MASL
15 to 30 ft. mounting: MASH



Control Options

Button Style Photocontrol

PE



N.E.M.A. Receptacle

P3



P7



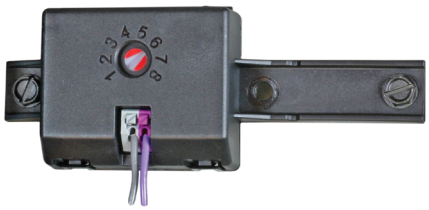
Motion & Ambient Combined Sensor

MASL/MASH



Field Adjustable Output Module

The Field Adjustable Output (AO) module is an onboard device that adjusts the light output and input voltage to meet specific requirements, allowing a single fixture configuration to be flexibly applied in many different applications. The AO option is available on the HLWPC2 series.



P10 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	94%	95%
6	83%	82%
5	71%	69%
4	59%	57%
3	46%	45%
2	34%	33%
1	21%	21%

P20 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P30 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P40 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	95%
6	85%	82%
5	74%	68%
4	62%	55%
3	49%	43%
2	36%	30%
1	21%	17%

P50 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	96%	95%
6	86%	81%
5	75%	68%
4	64%	55%
3	51%	42%
2	37%	29%
1	22%	17%

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N. Lighting

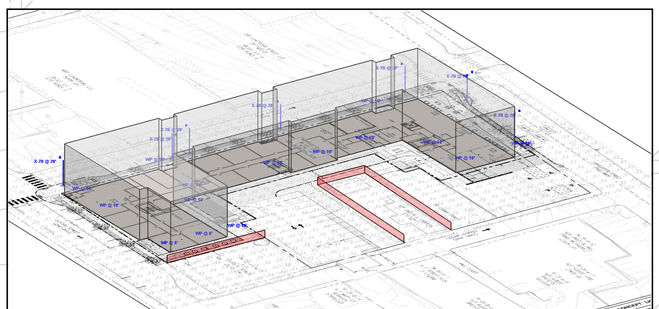
Please find attached the photometric plan and cut sheets for the proposed site lighting.

Statistics

Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min	City of Portland Tech Manual Standard	Note:
Lancaster & Elm Roadway	■	2.2 fc	3.6 fc	0.8 fc	4.5:1	2.8:1	Arterial, Avg 2.0	Type II distibution used
Lancaster & Elm Sidewalk	□	1.1 fc	4.1 fc	0.3 fc	13.7:1	3.7:1		
Project Extents	+	0.8 fc	5.9 fc	0.0 fc	N/A	N/A		
Back of Building	×	0.6 fc	4.2 fc	0.0 fc	N/A	N/A		

Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	LLF	Input Power
○	X-7B		7	Holophane	ESL3 P20S 30K XXXXX TG2	Esplanade style housings Standard housing, 3000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard) or Type III, Short, (Uplight)	0.9	72.77
▭	WP		15	Holophane	HLWPC2 P10 30K XX T3M	Wallpack Full Cutoff LED, LED Performance Package P10, 3000 series CCT, Voltage, Type III Medium	0.9	28



View #1

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 5/4/23
PRELIM SITE	SJL 6/13/23
SITE PLAN	SJL 7/5/23
COMMENT RESPONSE	SJL 8/19/23
COMMENT RESPONSE	SJL 8/16/23

DRAWING NAME: **CONCEPT LIGHTING PLAN**

PROJECT NAME: **89 ELM STREET REDEVELOPMENT – PORTLAND**

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

THIS PLAN SHALL NOT BE ASSIGNED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, ANY REUSE OF THIS PLAN FOR OTHER PROJECTS SHALL BE WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
8/16/23

DRAWING NO.

EX

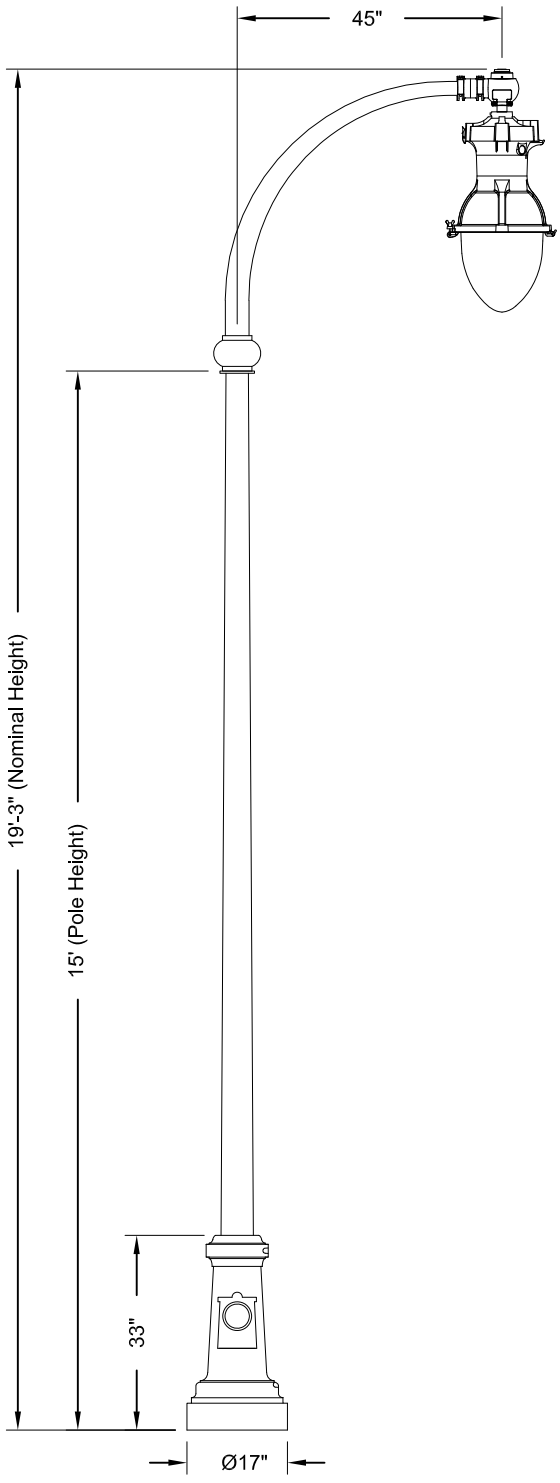
Round Tapered Steel Pole

Smooth Straight Shaft
Tenon: Ø3.5"x8"
(1)Cambridge Cast Alum. Clamshell Base, Black
Less Anchor Bolts

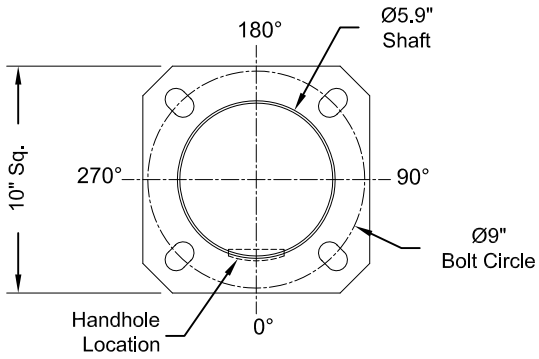
OUC Series Roadway Arm
45" Long for Single Fixture, Black

Boston Harbor Decorative Fitter
QSM Hub for Stem Mtd. Luminaire, Black

Esplanade Teardrop LED 3 Series
P20 Performance Pkg, 3000 Series CCT
120-277V, Black finish
Teardrop Type 3 Optics
Quick Lock Stem Mount
7-Pin NEMA Dimmable Photocontrol External Receptacle
1"x1" NEMA Wattage Label



Anchorage Detail



CUSTOMER NOTES:
1. ***ANCHORAGE DETAIL PROVIDED FOR VISUAL ONLY - DO NOT USE TO SET ANCHOR BOLTS.***
2. SIGNED APPROVAL TO ACCOMPANY PO.

Catalog #'s:
Pole: AORTS1559E08HDGBK **RFD325238**
Anchor Bolts: VAL1ABSET **RFD325238**
Clamshell Base: CM17CSBCARC59BK **RFD325238**
Roadway Arm: OUC45IN1ATNBK
Fitter: BHDFQSMBKPR7E
Fixture: ESL2P20S30KMVOLTTG3QSMBKPR7ENL2X2

Customer SIgnature **Date**

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS
An AcuityBrandsCompany

Portland, Maine

ORDER #:	TYPE: (X-7B POLE/ARM)	DRAWING #:
REVISION: 1	REVISION DATE:	
DRAWN: MAB	ORIGIN DATE:	PAGE: 1 of 1

THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUPPLIED, BUT ONLY AFTER APPROVAL BY THE CUSTOMER IN WRITING, ON POLE ORDERS AN ANCHOR BOLT TEMPLATE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED, THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON EXPRESS CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes: Teardrop Glass & Door: Type 2 application	Type: X-7B FIXTURE

ESL3

Esplanade® Tear Drop Large Roadway LED Pendant



Buy American

Description
The Esplanade luminaire is styled to replicate the "teardrop" luminaires that lighted boulevards in the first half of the 1900s. Designed for light control and ease of installation and maintenance, the Esplanade has a precision optical system for true street lighting performance.

Mechanical
The luminaire housing:
- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- IP65 rated housing provides a spring-loaded latch for toolless access and a hinge for easy installation and servicing
- Optic door incorporates a hinge and wing nut enabling toolless access to install and service
- EEI- NEMA twist lock photocontrol receptacle can be mounted in electrical housing or externally; housing contains a tempered glass window to allow light to reach the cell for internally mounting

Electrical
- Certified by UL or CSA for wet locations
- A factory programmable electronic driver with 0-10V dimming control leads meets maximum total harmonic distortion (THD) of 20%, >0.90 Power Factor and are ROHS compliant.
- Minimum operating temperature is -40°C. Electronic driver has an estimated minimum life of 100,000 hours at 25°C.
- Optional DALI driver available
- 20kV/10kA surge protection, fail off, with indicator light meets ANSI/IEEE C62.41.2
- Quick disconnect connectors for ease of installation and maintenance.
- Three pole terminal block is standard, with optional prewired leads for ease of installation
- Configurable with CCT options of 2700K, 3000K, 4000K and 5000K, 70 CRI minimum

Finish
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

Certification
CSA listing suitable for wet location up to 40°C. Consult factory for details.

Optical
The optical system is IP66 rated and consists of a precisely molded thermal resistant borosilicate glass refractor mounted within the borosilicate refractor Teardrop, Bowl, Sag shaped glass optic or the tempered Flat glass retained by the cast aluminum door. Designed for Type 2, 3, 4 & 5 distribution, see performance data table for configurations. For zero uplight options the flat glass option or the decorative shallow or deep skirt used with the bowl or sag glass.

Control Options
The control options shall include, but not limited to, the following:
- Field adjustable output to adjust output to luminaire - A0
- Long life photocontrol, 20 years – PCLL, P34 and P48 with DTL
- 3 and 7 pin receptacles internally in housing (PR3, PR7) or externally mounted on the leveling fitter (PR3E, PR7E)
- On externally mounted options, the photocontrol or shorting cap are selected with the leveling fitter

Mounting Style (Leveling Fitter Options)
Three mounting versions are available.
- An arm mount version which is provided with two U-bolts with washers and nuts and two leveling set screws that lock the housing to a 2 inch nominal (2-3/8" O.D.) horizontal arm and allow a +/- 5 degree adjustment from horizontal to the cover.
- A pendant mount version (either 1.25NPT or 1.5NPT) which threads to a vertical NPT male threaded pipe fitting and is locked in place by a stainless-steel set screw.
- A QSM (Quick Lock Stem Mounting), which consists of a vertical stem with flared top that mounts into a matching QSM fitter or arm. The QSM mount can aid in installation speed as it is a quicker installation than the other mounting methods.

Note: the QSM style is compatible with the following leveling fitters:
- Boston Harbor Decorative Arm Fitter (BHDF)
- GlasWerks Decorative Arm Fitter (GWDF)
- West Liberty Decorative Arm Fitter (WLDF)
- Ball Style Decorative Arm Fitter (BADF)

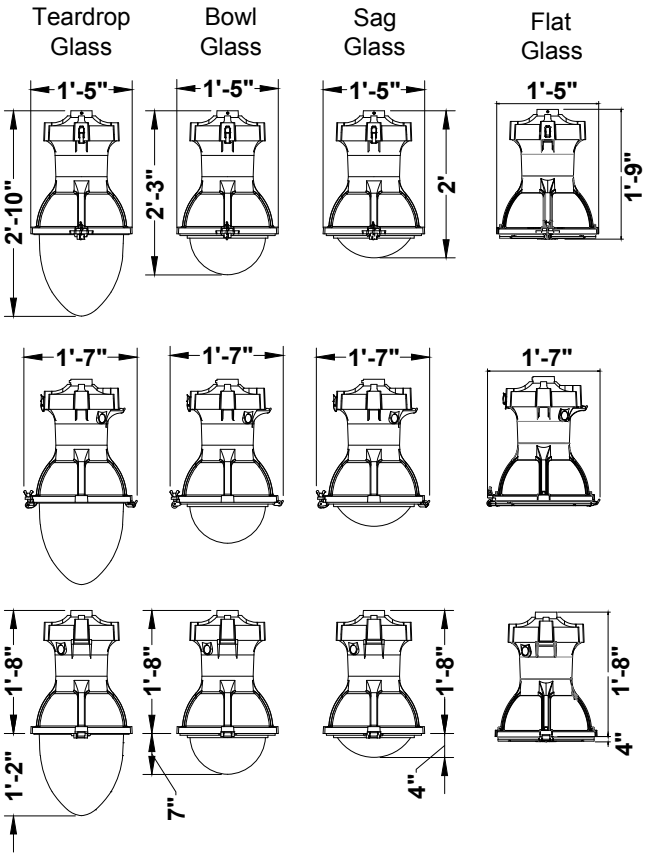
BUY AMERICAN
This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FARS, DFARS and DOT. Please refer to www.acuitybrands.com/resources/buyamerican for additional information.

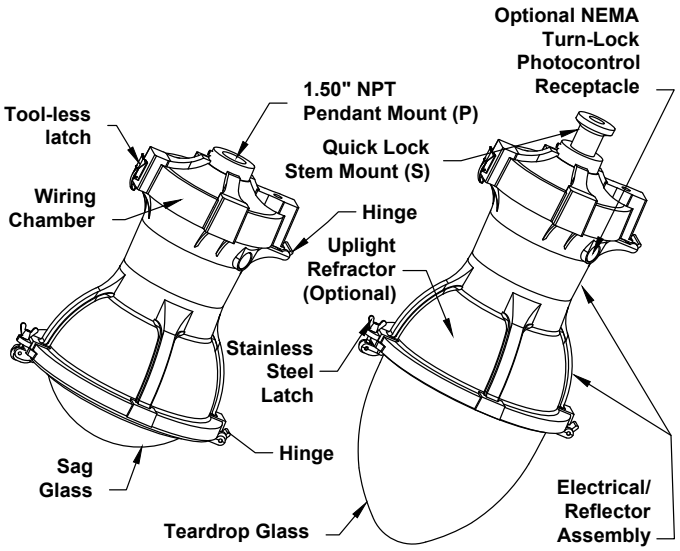
Warranty
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note:
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

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DIMENSIONAL DATA





Maximum Weight - 69 lbs (Up Light Version)
Maximum Weight - 69 lbs (Down Light Version)
Maximum Effective Projected Area - ESL3 2.62 ft², ESL3 SS 2.86 ft², ESL3 DS 3.06 ft²

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ESL3

Esplanade® Tear Drop Large Roadway LED Pendant

ORDERING INFORMATION

Example: ESL3 P30S 30K MVOLT TG3 QSM BK

Series		Lumen/Wattage Package				Color Temperature		Voltage	
ESL3	Esplanade style housings	P10S	Standard housing, 44W	P35S	Standard housing, 112W	27K	2700 series CCT	MVOLT	Auto-sensing voltage (120 thru 277) 50/60 HZ
		P15S	Standard housing, 54W	P40S	Standard housing, 132W	30K	3000 series CCT	HVOLT	Auto-sensing voltage (347 thru 480) 50/60 HZ
		P20S	Standard housing, 73W	P45S	Standard housing, 153W	40K	4000 series CCT		
		P20U	Uplight housing, 94W	P50S	Standard housing, 173W	50K	5000 series CCT		
		P25S	Standard housing, 82W	P55S	Standard housing, 193W				
		P25U	Uplight housing, 109W	P60S	Standard housing, 215W				
		P30S	Standard housing, 92W	P65S	Standard housing, 247W				
		P30U	Uplight housing, 122W						

Optic				Mounting	
TG2	Teardrop Glass & Door: Type 2 application	BG4	Bowl Glass & Door: Type 4 application	NPT	Threaded top opening - 1.50" NPT
TG3	Teardrop Glass & Door: Type 3 application	BG5	Bowl Glass & Door: Type 5 application	QSM	Quick Lock Stem mount
TG4	Teardrop Glass & Door: Type 4 application	SG2	Sag Glass & Door: Type 2 application		
FG3	Flat Glass & Door: Type 3 application	SG3	Sag Glass & Door: Type 3 application		
FG5	Flat Glass & Door: Type 5 application	SG4	Sag Glass & Door: Type 4 application		
BG2	Bowl Glass & Door: Type 2 application	SG5	Sag Glass & Door: Type 5 application		
BG3	Bowl Glass & Door: Type 3 application				

Finish		Options		Prewire Lead Options	
BK	Black	A0	Field Adjustable Output	L1H	1.5 ft. prewired leads
DB	Dark Blue	PR3	NEMA twistlock photocontrol receptacle - 3 pin	L03	3 ft. prewired leads
GR	Grey	PR7	NEMA twistlock dimming photocontrol receptacle - 7 pin	L10	10 ft. prewired leads
GH	Graphite	PR3E	NEMA twistlock photocontrol receptacle - 3 pin (Externally mounted to Fitter)	L20	20 ft. prewired leads
GN	Green	PR7E	NEMA twistlock dimming photocontrol receptacle - 7 pin (Externally mounted to Fitter)	L25	25 ft. prewired leads
PP	Prime Paint	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, MVOLT	L30	30 ft. prewired leads
SL	Silver	P34	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 347V	L35	35 ft. prewired leads
WH	White	P48	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 480V	NEMA Label Options	
BZ	Bronze	SH	Shorting cap	NL1X1	1X1 NEMA Label
CMC	Custom Match Color Finish			NL3X3	3X3 NEMA Label
RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.			Shielding Options	
CTBS	Standard Finish to be determined			DS	Deep Skirt, 30" diameter
				SS	Shallow Skirt, 30" diameter
				HSS90	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 90 degrees
				HSS120	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 120 degrees
				HSS180	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 180 degrees
				HSG90	Factory installed Large Sag Glass House Side Shield 90 degrees
				HSG120	Factory installed Large Sag Glass House Side Shield 120 degrees
				HSG180	Factory installed Large Sag Glass House Side Shield 180 degrees

Accessories: *Order as separate catalog number, ships separately & field installed.*

Shielding Options	
LTD3HSS90	Large TearDrop, Bowl & Flat Glass House side shield 90 degree
LTD3HSS120	Large TearDrop, Bowl & Flat Glass House side shield 120 degree
LTD3HSS180	Large TearDrop, Bowl & Flat Glass House side shield 180 degree
LTD3HSG90	Large Sag Glass House side shield 90 degree
LTD3HSG120	Large Sag Glass House side shield 120 degree
LTD3HSG180	Large Sag Glass House side shield 180 degree
LTDSxx	Deep Skirt, 30" Diameter, replace xx with Finish option
LTSSxx	Shallow Skirt, 30" Diameter, replace xx with Finish option

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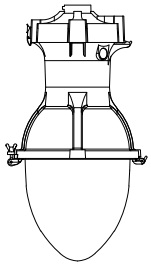
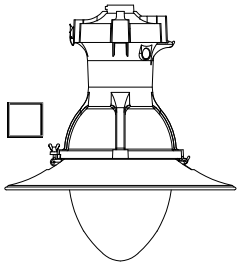
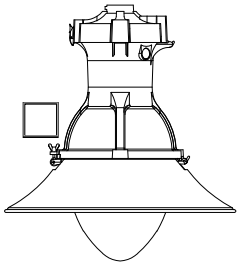
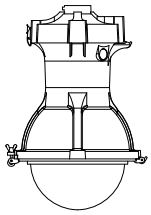
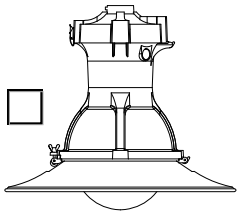
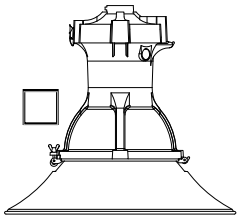
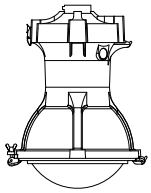
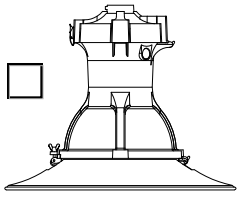
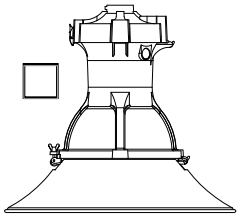
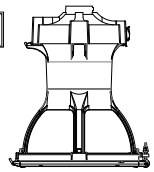
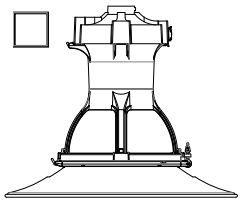
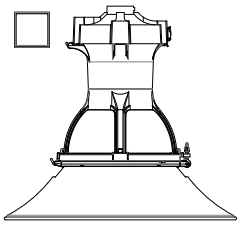
OPTIONS MATRIX

OPTIONS		Performance Package															Voltage		Options							
		P10S	P15S	P20S	P20U	P25S	P25U	P30S	P30U	P35S	P40S	P45S	P50S	P55S	P60S	P65S	MVOLT	HVOLT	AO	PR3	PR7	PR3E	PR7E	PCLL	P34	P48	SH
Performance Package	P10S		N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	N		N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	N	N		N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	N	N	N		N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	N	N	N	N		N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	N	N	N	N	N		N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	N	N	N	N	N	N		N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	N	N	N	N	N	N	N		N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	N	N	N	N	N	N	N	N		N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	N	N	N	N	N	N	N	N	N		N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	N	N	N	N	N	N	N	N	N	N		N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	N	N	N	N	N	N	N	N	N	N	N		N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	N	N	N	N	N	N	N	N	N	N	N	N		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	N	N	N	N	N	N	N	N	N	N	N	N	N		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	N	N	N	N	N	N	N	N	N	N	N	N	N	N		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Voltage	MVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y	Y	N	N	Y
	HVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y	N	Y	Y	Y
Options	AO	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
	PR3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	N	N	Y	Y	Y	Y
	PR7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		N	N	Y	Y	Y	Y
	PR3E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N		N	N	N	N	N
	PR7E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N		N	N	N	N
	PCLL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N		N	N	N
	P34	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N		N	N
	P48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N		N
	SH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	

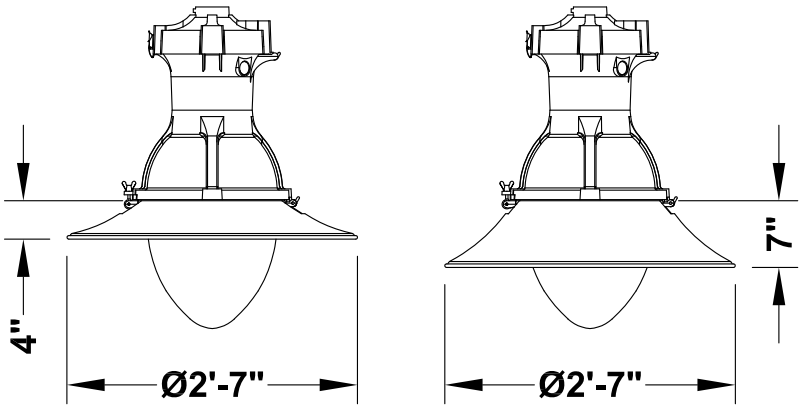
OPTICS by PERFORMANCE PACKAGE		Performance Package												
		TG2	TG3	TG4	FG3	FG5	BG2	BG3	BG4	BG5	SG2	SG3	SG4	SG5
Performance Package	P10S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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MARK APPROPRIATE BOX FOR TRIM OPTIONS

	STANDARD	SHALLOW SKIRT	DEEP SKIRT
TEARDROP GLASS (Asymmetric)	☐ 	☐ 	☐ 
BOWL GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
SAG GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
FLAT GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 

SKIRT DIMENSIONS



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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10S	TG2	44	6,013	137	1	3	3	6,490	148	2	3	3	6,609	150	2	3	3	6,705	152	2	3	3
	TG3		6,033	137	1	3	3	6,511	148	2	3	3	6,630	151	2	3	3	6,727	153	2	3	3
	TG4		5,671	129	1	3	3	6,121	139	1	3	3	6,233	142	1	3	3	6,324	144	1	3	3
	FG3		3,912	89	1	0	1	4,222	96	1	0	1	4,300	98	1	0	1	4,362	99	1	0	1
	FG5		3,846	87	2	0	1	4,150	94	2	0	1	4,227	96	2	0	1	4,288	97	2	0	1
	BG2		5,750	131	2	3	3	6,206	141	2	3	3	6,320	144	2	3	3	6,412	146	2	3	3
	BG3		5,692	129	2	3	3	6,143	140	2	3	4	6,256	142	2	3	4	6,347	144	2	3	4
	BG4		5,389	122	1	3	3	5,816	132	1	3	3	5,923	135	1	3	3	6,009	137	1	3	4
	BG5		6,004	136	3	3	3	6,480	147	3	3	3	6,599	150	3	3	3	6,695	152	3	3	3
	SG2		5,778	131	1	3	3	6,236	142	1	3	3	6,350	144	1	3	3	6,443	146	1	3	3
	SG3		5,773	131	1	3	3	6,231	142	1	3	3	6,346	144	1	3	3	6,438	146	1	3	3
	SG4		5,452	124	1	3	3	5,884	134	1	3	3	5,992	136	1	3	3	6,079	138	1	3	3
	SG5		6,041	137	3	3	2	6,520	148	3	3	2	6,640	151	3	3	2	6,737	153	3	3	2
P15S	TG2	54	7,487	139	2	3	3	8,080	150	2	3	3	8,229	152	2	3	3	8,348	155	2	3	3
	TG3		7,511	139	2	3	3	8,106	150	2	3	3	8,255	153	2	3	3	8,375	155	2	3	3
	TG4		7,061	131	1	3	3	7,621	141	2	3	3	7,761	144	2	3	3	7,874	146	2	3	3
	FG3		4,871	90	1	0	1	5,257	97	2	0	1	5,353	99	2	0	1	5,431	101	2	0	1
	FG5		4,788	89	2	0	1	5,167	96	2	0	1	5,262	97	2	0	1	5,339	99	2	0	1
	BG2		7,159	133	2	3	4	7,727	143	2	3	4	7,869	146	2	3	4	7,983	148	2	3	4
	BG3		7,086	131	2	3	4	7,648	142	2	3	4	7,789	144	2	3	4	7,902	146	2	3	4
	BG4		6,710	124	1	3	4	7,241	134	2	3	4	7,375	137	2	3	4	7,482	139	2	3	4
	BG5		7,475	138	3	3	3	8,068	149	3	3	3	8,216	152	3	3	3	8,335	154	3	3	3
	SG2		7,193	133	2	3	3	7,763	144	2	3	3	7,906	146	2	3	3	8,021	149	2	3	3
	SG3		7,188	133	2	3	3	7,758	144	2	3	3	7,900	146	2	3	3	8,015	148	2	3	3
	SG4		6,788	126	1	3	3	7,326	136	1	3	3	7,460	138	1	3	3	7,569	140	1	3	3
	SG5		7,522	139	3	3	2	8,118	150	3	3	2	8,267	153	3	3	2	8,387	155	3	3	2
P20S	TG2	73	10,290	141	2	3	3	11,106	152	2	3	3	11,310	155	2	3	3	11,474	157	2	3	3
	TG3		10,323	141	2	3	3	11,141	153	2	3	4	11,346	155	2	3	4	11,511	158	2	3	4
	TG4		9,705	133	2	3	3	10,474	143	2	3	3	10,667	146	2	3	3	10,822	148	2	3	3
	FG3		6,694	92	2	0	1	7,225	99	2	0	2	7,358	101	2	0	2	7,465	102	2	0	2
	FG5		6,581	90	2	0	1	7,102	97	2	0	1	7,233	99	2	0	1	7,338	101	2	0	1
	BG2		9,840	135	2	3	4	10,620	145	2	3	5	10,816	148	2	3	5	10,973	150	3	3	5
	BG3		9,740	133	2	3	5	10,512	144	2	3	5	10,705	147	2	3	5	10,861	149	2	3	5
	BG4		9,222	126	2	3	5	9,953	136	2	3	5	10,136	139	2	3	5	10,283	141	2	3	5
	BG5		10,274	141	3	3	4	11,089	152	3	3	4	11,293	155	4	3	4	11,457	157	4	3	4
	SG2		9,887	135	2	3	3	10,671	146	2	3	3	10,867	149	2	3	3	11,025	151	2	3	3
	SG3		9,879	135	2	3	3	10,662	146	2	3	4	10,859	149	2	3	4	11,016	151	2	3	4
	SG4		9,329	128	2	3	3	10,069	138	2	3	3	10,254	140	2	3	3	10,403	143	2	3	3
	SG5		10,338	142	3	3	3	11,158	153	3	3	3	11,363	156	4	3	3	11,528	158	4	3	3
P20U	TG2	94	12,937	138	2	5	3	13,962	149	2	5	3	14,219	151	2	5	3	14,426	153	2	5	3
	TG3		12,978	138	2	5	4	14,006	149	2	5	4	14,264	152	2	5	4	14,471	154	2	5	4
	TG4		12,201	130	2	5	3	13,168	140	2	5	4	13,410	143	2	5	4	13,605	145	2	5	4
	BG2		12,371	132	2	5	4	13,351	142	3	5	5	13,597	145	3	5	5	13,794	147	3	5	5
	BG3		12,245	130	2	5	5	13,216	141	2	5	5	13,459	143	2	5	5	13,654	145	2	5	5
	BG4		11,594	123	2	5	5	12,513	133	2	5	5	12,744	136	2	5	5	12,929	138	2	5	5
	BG5		12,917	137	3	5	4	13,941	148	4	5	4	14,198	151	4	5	4	14,404	153	4	5	4
	SG2		12,430	132	2	5	3	13,415	143	2	5	3	13,662	145	2	5	3	13,861	147	2	5	3
	SG3		12,421	132	2	5	4	13,405	143	2	5	4	13,652	145	2	5	4	13,850	147	2	5	4
	SG4		11,729	125	2	5	3	12,658	135	2	5	4	12,891	137	2	5	4	13,078	139	2	5	4
	SG5		12,997	138	3	5	3	14,028	149	4	5	3	14,286	152	4	5	3	14,493	154	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P25S	TG2	82	11,665	142	2	3	4	12,590	154	3	3	4	12,821	156	3	3	4	13,008	159	3	3	4
	TG3		11,703	143	2	3	4	12,630	154	2	3	4	12,862	157	3	3	4	13,049	159	3	3	4
	TG4		11,002	134	2	3	3	11,874	145	2	3	4	12,092	147	2	3	4	12,268	150	2	3	4
	FG3		7,589	93	2	0	2	8,190	100	2	0	2	8,341	102	2	0	2	8,462	103	2	0	2
	FG5		7,460	91	2	0	1	8,051	98	3	0	1	8,199	100	3	0	1	8,319	101	3	0	1
	BG2		11,155	136	3	3	5	12,039	147	3	3	5	12,261	150	3	3	5	12,439	152	3	3	5
	BG3		11,042	135	2	3	5	11,917	145	3	3	5	12,136	148	3	3	5	12,312	150	3	3	5
	BG4		10,454	127	2	3	5	11,283	138	2	3	5	11,491	140	2	3	5	11,658	142	2	3	5
	BG5		11,647	142	4	3	4	12,570	153	4	3	4	12,802	156	4	3	4	12,988	158	4	3	4
	SG2		11,208	137	2	3	3	12,096	148	2	3	4	12,319	150	2	3	4	12,498	152	2	3	4
	SG3		11,200	137	2	3	4	12,087	147	2	3	4	12,310	150	2	3	4	12,488	152	2	3	4
	SG4		10,576	129	2	3	4	11,414	139	2	3	4	11,624	142	2	3	4	11,793	144	2	3	4
	SG5		11,720	143	4	3	3	12,649	154	4	3	3	12,881	157	4	3	3	13,069	159	4	3	3
P25U	TG2	109	14,701	135	2	5	4	15,866	146	3	5	4	16,158	148	3	5	4	16,393	150	3	5	4
	TG3		14,747	135	2	5	4	15,916	146	3	5	4	16,209	149	3	5	4	16,445	151	3	5	4
	TG4		13,865	127	2	5	4	14,964	137	2	5	4	15,239	140	2	5	4	15,460	142	2	5	4
	BG2		14,058	129	3	5	5	15,172	139	3	5	5	15,451	142	3	5	5	15,675	144	3	5	5
	BG3		13,915	128	3	5	5	15,018	138	3	5	5	15,294	140	3	5	5	15,516	142	3	5	5
	BG4		13,176	121	2	5	5	14,220	130	2	5	5	14,481	133	2	5	5	14,692	135	2	5	5
	BG5		14,679	135	4	5	4	15,842	145	4	5	4	16,134	148	4	5	4	16,368	150	4	5	4
	SG2		14,125	130	2	5	4	15,245	140	2	5	4	15,525	142	2	5	4	15,751	145	2	5	4
	SG3		14,115	129	2	5	4	15,233	140	2	5	4	15,514	142	2	5	4	15,739	144	2	5	4
	SG4		13,328	122	2	5	4	14,384	132	2	5	4	14,649	134	2	5	4	14,862	136	2	5	4
	SG5		14,770	136	4	5	3	15,941	146	4	5	3	16,234	149	4	5	3	16,470	151	4	5	3
P30S	TG2	92	12,968	141	3	3	4	13,996	152	3	3	4	14,254	155	3	3	4	14,461	157	3	3	4
	TG3		13,010	141	3	3	4	14,041	153	3	3	4	14,300	155	3	3	4	14,507	158	3	3	4
	TG4		12,231	133	2	3	4	13,201	143	2	3	4	13,443	146	2	3	4	13,639	148	2	3	4
	FG3		8,437	92	2	0	2	9,106	99	2	0	2	9,273	101	2	0	2	9,408	102	2	0	2
	FG5		8,294	90	3	0	1	8,951	97	3	0	1	9,116	99	3	0	1	9,248	101	3	0	2
	BG2		12,402	135	3	3	5	13,385	145	3	3	5	13,631	148	3	3	5	13,829	150	3	3	5
	BG3		12,275	133	3	3	5	13,248	144	3	3	5	13,492	147	3	3	5	13,688	149	3	3	5
	BG4		11,623	126	2	3	5	12,544	136	2	3	5	12,774	139	2	3	5	12,960	141	2	3	5
	BG5		12,949	141	4	3	4	13,975	152	4	3	4	14,232	155	4	3	4	14,439	157	4	3	4
	SG2		12,460	135	2	3	4	13,448	146	2	3	4	13,695	149	2	3	4	13,894	151	2	3	4
	SG3		12,451	135	2	3	4	13,438	146	2	3	4	13,685	149	2	3	4	13,884	151	3	3	4
	SG4		11,758	128	2	3	4	12,690	138	2	3	4	12,923	140	2	3	4	13,111	143	2	3	4
	SG5		13,029	142	4	3	3	14,062	153	4	3	3	14,321	156	4	3	3	14,529	158	4	3	3
P30U	TG2	122	16,481	135	3	5	4	17,787	146	3	5	4	18,115	148	3	5	4	18,378	151	3	5	4
	TG3		16,533	136	3	5	4	17,843	146	3	5	4	18,172	149	3	5	5	18,436	151	3	5	5
	TG4		15,543	127	2	5	4	16,775	138	2	5	4	17,084	140	2	5	4	17,332	142	2	5	4
	BG2		15,760	129	3	5	5	17,009	139	3	5	5	17,322	142	3	5	5	17,573	144	3	5	5
	BG3		15,600	128	3	5	5	16,836	138	3	5	5	17,146	141	3	5	5	17,395	143	3	5	5
	BG4		14,771	121	2	5	5	15,942	131	2	5	5	16,235	133	2	5	5	16,471	135	3	5	5
	BG5		16,456	135	4	5	4	17,760	146	4	5	5	18,087	148	4	5	5	18,350	150	4	5	5
	SG2		15,836	130	2	5	4	17,091	140	3	5	4	17,405	143	3	5	4	17,658	145	3	5	4
	SG3		15,824	130	2	5	4	17,078	140	3	5	4	17,392	143	3	5	4	17,645	145	3	5	4
	SG4		14,942	122	2	5	4	16,126	132	2	5	4	16,423	135	2	5	4	16,661	137	2	5	4
	SG5		16,558	136	4	5	3	17,871	146	4	5	3	18,199	149	4	5	3	18,464	151	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P35S	TG2	112	15,526	139	3	3	4	16,757	150	3	3	4	17,065	152	3	3	4	17,313	155	3	3	4
	TG3		15,576	139	3	3	4	16,810	150	3	3	5	17,120	153	3	3	5	17,368	155	3	3	5
	TG4		14,643	131	3	3	4	15,804	141	3	3	4	16,095	144	3	3	4	16,328	146	3	3	4
	FG3		10,101	90	3	0	2	10,901	97	3	0	2	11,102	99	3	0	2	11,263	101	3	0	2
	FG5		9,929	89	3	0	2	10,716	96	3	0	2	10,913	97	3	0	2	11,072	99	3	0	2
	BG2		14,847	133	3	3	5	16,024	143	3	3	5	16,319	146	3	3	5	16,556	148	3	3	5
	BG3		14,696	131	3	3	5	15,861	142	3	4	5	16,153	144	3	4	5	16,388	146	3	4	5
	BG4		13,915	124	2	3	5	15,018	134	3	3	5	15,294	137	3	3	5	15,516	139	3	3	5
	BG5		15,502	138	4	3	5	16,731	149	4	3	5	17,039	152	4	3	5	17,286	154	4	3	5
	SG2		14,918	133	3	3	4	16,100	144	3	3	4	16,396	146	3	3	4	16,634	149	3	3	4
	SG3		14,906	133	3	3	4	16,088	144	3	3	5	16,384	146	3	3	5	16,622	148	3	3	5
	SG4		14,076	126	2	3	4	15,192	136	2	3	4	15,472	138	2	3	4	15,696	140	2	3	4
	SG5		15,599	139	4	3	3	16,835	150	4	3	3	17,145	153	4	3	3	17,394	155	4	3	3
P40S	TG2	132	18,148	137	3	3	5	19,586	148	3	3	5	19,947	151	3	3	5	20,236	153	3	3	5
	TG3		18,206	138	3	3	5	19,649	149	3	3	5	20,011	152	3	3	5	20,301	154	3	3	5
	TG4		17,116	130	3	3	4	18,473	140	3	3	5	18,812	143	3	3	5	19,086	145	3	3	5
	FG3		11,806	89	3	0	2	12,742	97	3	0	2	12,977	98	3	0	2	13,165	100	3	0	2
	FG5		11,606	88	3	0	2	12,526	95	3	0	2	12,756	97	3	0	2	12,941	98	3	0	2
	BG2		17,355	131	3	4	5	18,730	142	3	4	5	19,075	145	3	4	5	19,352	147	3	4	5
	BG3		17,178	130	3	4	5	18,539	140	3	4	5	18,880	143	3	4	5	19,155	145	3	4	5
	BG4		16,264	123	3	3	5	17,553	133	3	4	5	17,876	135	3	4	5	18,136	137	3	4	5
	BG5		18,120	137	4	3	5	19,556	148	4	3	5	19,916	151	4	4	5	20,205	153	4	4	5
	SG2		17,437	132	3	3	5	18,819	143	3	3	5	19,165	145	3	3	5	19,443	147	3	3	5
	SG3		17,424	132	3	3	5	18,805	142	3	3	5	19,151	145	3	3	5	19,429	147	3	3	5
	SG4		16,453	125	2	3	5	17,758	135	3	3	5	18,084	137	3	3	5	18,347	139	3	3	5
	SG5		18,233	138	4	3	3	19,678	149	4	3	3	20,040	152	4	3	3	20,331	154	4	3	3
P45S	TG2	153	20,508	134	3	3	5	22,134	145	3	3	5	22,541	147	3	3	5	22,868	149	3	3	5
	TG3		20,574	134	3	3	5	22,205	145	3	3	5	22,613	148	3	3	5	22,942	150	3	3	5
	TG4		19,342	126	3	3	5	20,875	136	3	3	5	21,259	139	3	3	5	21,568	141	3	3	5
	FG3		13,342	87	3	0	2	14,399	94	3	0	3	14,664	96	3	0	3	14,877	97	3	0	3
	FG5		13,115	86	3	0	2	14,155	93	3	0	2	14,415	94	3	0	2	14,625	96	3	0	2
	BG2		19,612	128	3	4	5	21,166	138	3	4	5	21,555	141	3	4	5	21,869	143	3	4	5
	BG3		19,412	127	3	4	5	20,951	137	3	4	5	21,336	139	3	4	5	21,646	141	3	4	5
	BG4		18,380	120	3	4	5	19,836	130	3	4	5	20,201	132	3	4	5	20,495	134	3	4	5
	BG5		20,477	134	4	4	5	22,100	144	4	4	5	22,506	147	5	4	5	22,833	149	5	4	5
	SG2		19,705	129	3	3	5	21,266	139	3	3	5	21,658	142	3	3	5	21,972	144	3	3	5
	SG3		19,690	129	3	3	5	21,250	139	3	3	5	21,641	141	3	3	5	21,956	144	3	3	5
	SG4		18,593	122	3	3	5	20,067	131	3	3	5	20,436	134	3	3	5	20,733	136	3	3	5
	SG5		20,604	135	4	3	3	22,238	145	4	3	3	22,647	148	5	3	3	22,976	150	5	3	4
P50S	TG2	173	22,698	131	3	3	5	24,497	142	3	3	5	24,948	144	3	4	5	25,310	146	3	4	5
	TG3		22,771	132	3	3	5	24,576	142	3	3	5	25,028	145	3	3	5	25,392	147	3	4	5
	TG4		21,408	124	3	3	5	23,104	134	3	3	5	23,529	136	3	3	5	23,871	138	3	3	5
	FG3		14,767	85	3	0	3	15,937	92	3	0	3	16,230	94	3	0	3	16,466	95	3	0	3
	FG5		14,516	84	3	0	2	15,666	91	3	0	2	15,955	92	3	0	2	16,186	94	3	0	2
	BG2		21,706	125	3	4	5	23,426	135	3	4	5	23,857	138	3	4	5	24,204	140	3	4	5
	BG3		21,485	124	3	4	5	23,188	134	3	4	5	23,615	137	3	4	5	23,958	138	3	4	5
	BG4		20,342	118	3	4	5	21,955	127	3	4	5	22,359	129	3	4	5	22,684	131	3	4	5
	BG5		22,663	131	5	4	5	24,460	141	5	4	5	24,910	144	5	4	5	25,272	146	5	4	5
	SG2		21,809	126	3	3	5	23,537	136	3	3	5	23,970	139	3	3	5	24,319	141	3	3	5
	SG3		21,792	126	3	3	5	23,520	136	3	3	5	23,952	138	3	3	5	24,300	140	3	3	5
	SG4		20,579	119	3	3	5	22,210	128	3	3	5	22,619	131	3	3	5	22,947	133	3	3	5
	SG5		22,805	132	5	3	4	24,612	142	5	3	4	25,065	145	5	3	4	25,429	147	5	3	4

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P55S	TG2	193	24,807	129	3	3	5	26,773	139	3	4	5	27,266	141	3	4	5	27,662	143	3	4	5
	TG3		24,887	129	3	3	5	26,859	139	3	4	5	27,353	142	3	4	5	27,751	144	3	4	5
	TG4		23,397	121	3	3	5	25,251	131	3	3	5	25,716	133	3	3	5	26,089	135	3	4	5
	FG3		16,139	84	3	0	3	17,418	90	3	0	3	17,738	92	3	0	3	17,996	93	3	0	3
	FG5		15,865	82	3	0	2	17,122	89	3	0	2	17,437	90	3	0	2	17,690	92	3	0	2
	BG2		23,723	123	3	4	5	25,603	133	3	4	5	26,074	135	3	4	5	26,453	137	3	4	5
	BG3		23,481	122	3	4	5	25,342	131	3	4	5	25,809	134	3	4	5	26,184	136	3	4	5
	BG4		22,232	115	3	4	5	23,995	124	3	4	5	24,436	127	3	4	5	24,791	128	3	4	5
	BG5		24,769	128	5	4	5	26,732	139	5	4	5	27,224	141	5	4	5	27,620	143	5	4	5
	SG2		23,835	123	3	3	5	25,724	133	3	3	5	26,198	136	3	3	5	26,578	138	3	3	5
	SG3		23,817	123	3	3	5	25,705	133	3	3	5	26,178	136	3	3	5	26,558	138	3	3	5
	SG4		22,491	117	3	3	5	24,274	126	3	3	5	24,720	128	3	3	5	25,079	130	3	3	5
	SG5		24,924	129	5	3	4	26,899	139	5	3	4	27,394	142	5	3	4	27,792	144	5	3	4
P60S	TG2	215	27,208	127	3	4	5	29,364	137	3	4	5	29,905	139	3	4	5	30,339	141	3	4	5
	TG3		27,295	127	3	4	5	29,459	137	3	4	5	30,001	140	3	4	5	30,437	142	3	4	5
	TG4		25,661	119	3	3	5	27,695	129	3	4	5	28,204	131	3	4	5	28,614	133	3	4	5
	FG3		17,701	82	3	0	3	19,104	89	3	0	3	19,455	90	3	0	3	19,738	92	3	0	3
	FG5		17,400	81	3	0	2	18,779	87	4	0	2	19,124	89	4	0	2	19,402	90	4	0	2
	BG2		26,019	121	3	4	5	28,081	131	4	4	5	28,597	133	4	4	5	29,013	135	4	4	5
	BG3		25,754	120	3	4	5	27,795	129	4	4	5	28,306	132	4	4	5	28,718	134	4	4	5
	BG4		24,384	113	3	4	5	26,317	122	3	4	5	26,801	125	3	4	5	27,190	126	3	4	5
	BG5		27,166	126	5	4	5	29,319	136	5	4	5	29,859	139	5	4	5	30,293	141	5	4	5
	SG2		26,142	122	3	3	5	28,214	131	3	3	5	28,733	134	3	3	5	29,150	136	3	3	5
	SG3		26,122	121	3	3	5	28,193	131	3	3	5	28,711	134	3	3	5	29,128	135	3	3	5
	SG4		24,668	115	3	3	5	26,623	124	3	3	5	27,113	126	3	3	5	27,506	128	3	3	5
	SG5		27,336	127	5	3	4	29,502	137	5	3	4	30,045	140	5	3	4	30,481	142	5	3	4
P65S	TG2	247	30,354	123	3	4	5	32,760	133	4	4	5	33,363	135	4	4	5	33,848	137	4	4	5
	TG3		30,452	123	3	4	5	32,866	133	4	4	5	33,470	136	4	4	5	33,956	137	4	4	5
	TG4		28,629	116	3	4	5	30,898	125	3	4	5	31,466	127	3	4	5	31,923	129	3	4	5
	FG3		19,748	80	3	0	3	21,313	86	3	0	3	21,705	88	3	0	3	22,020	89	3	0	3
	FG5		19,412	79	4	0	2	20,951	85	4	0	3	21,336	86	4	0	3	21,646	88	4	0	3
	BG2		29,028	118	4	4	5	31,328	127	4	4	5	31,905	129	4	4	5	32,368	131	4	4	5
	BG3		28,732	116	4	4	5	31,009	126	4	5	5	31,580	128	4	5	5	32,039	130	4	5	5
	BG4		27,204	110	3	4	5	29,360	119	3	4	5	29,900	121	3	4	5	30,335	123	3	4	5
	BG5		30,308	123	5	4	5	32,710	132	5	4	5	33,312	135	5	4	5	33,796	137	5	4	5
	SG2		29,165	118	3	3	5	31,477	127	3	3	5	32,056	130	3	4	5	32,522	132	3	4	5
	SG3		29,143	118	3	3	5	31,453	127	3	4	5	32,032	130	3	4	5	32,497	132	3	4	5
	SG4		27,520	111	3	3	5	29,702	120	3	3	5	30,248	122	3	3	5	30,688	124	3	3	5
	SG5		30,497	123	5	3	4	32,914	133	5	3	4	33,520	136	5	3	4	34,007	138	5	3	4

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LUMEN AMBIENT TEMPERATURE (LAT) MULTIPLIERS

Use the factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F)

Ambient Temp.		Lumen Multiplier (by Performance Package)			
°C	°F	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	P55S	P60S	P65S
0	32	1.03	1.04	1.04	1.04
5	41	1.03	1.03	1.03	1.04
10	50	1.02	1.02	1.03	1.03
15	59	1.01	1.02	1.02	1.02
20	68	1.01	1.01	1.01	1.01
25	77	1.00	1.00	1.00	1.00
30	86	0.99	0.99	0.99	0.99
35	95	0.99	0.98	0.98	0.98
40	104	0.98	0.97	0.97	0.97

PROJECTED LED LUMEN MAINTENANCE

Data references the extrapolated performance projections for the platforms noted in 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11). To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Lumen Maintenance - LLD (by Performance Package)									
Hours		0	25,000	36,000	50,000	60,000	67,500	75,000	100,000
Factor for:	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	1.00	0.95	0.94	0.91	0.90	0.89	0.88	0.84
	P55S	1.00	0.95	0.93	0.91	0.90	0.89	0.87	0.84
	P60S & P65S	1.00	0.95	0.93	0.90	0.89	0.87	0.86	0.82

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FIELD ADJUSTABLE OUTPUT (AO option)
The data is the same for MVOLT & HVOLT.

Performance Package	FAO Position	% Lumen Output	% Wattage
P10S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	41%	42%
	2	28%	29%
	1	13%	15%
P15S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	42%	42%
	2	28%	29%
	1	14%	15%
P20S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	42%	41%
	2	29%	29%
	1	14%	15%
P20U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	55%
	3	43%	42%
	2	29%	29%
	1	15%	15%
P25S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	29%	28%
	1	15%	15%

Performance Package	FAO Position	% Lumen Output	% Wattage
P25U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	43%	41%
	2	30%	29%
	1	15%	15%
P30S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	30%	28%
	1	15%	15%
P30U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	29%
	1	15%	15%
P35S	8	100%	100%
	7	94%	94%
	6	81%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	28%
	1	15%	15%
P40S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	31%	28%
	1	16%	15%

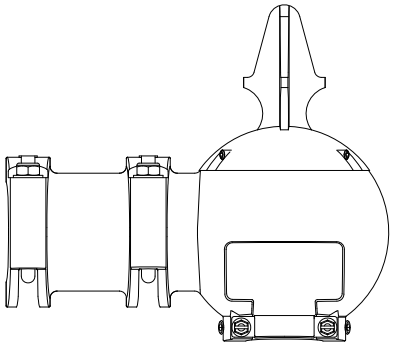
Performance Package	FAO Position	% Lumen Output	% Wattage
P45S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	58%	54%
	3	45%	41%
	2	31%	28%
	1	16%	14%
P50S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	59%	54%
	3	45%	41%
	2	32%	28%
	1	16%	14%
P55S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	59%	54%
	3	46%	41%
	2	32%	28%
	1	17%	14%
P60S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	60%	54%
	3	47%	41%
	2	33%	28%
	1	17%	14%
P65S	8	100%	100%
	7	95%	94%
	6	84%	79%
	5	73%	67%
	4	61%	53%
	3	48%	40%
	2	33%	28%
	1	18%	14%

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

BHDF SERIES
BOSTON HARBOUR STYLE

Decorative Arm Fitter



Specifications

General Description
The Boston Harbour style decorative arm fitter is designed to replicate the look of period cast arm mounts.

Materials
The fitter body, top cover, and door assembly shall be heavy wall cast aluminum. All mounting and locking hardware shall be stainless steel.

Function
The fitter is designed to be used on 2" horizontal arms with pendant luminaires having either a quick stem mount (QSM) or a 1.5NPT (NPT) as the selected mounting method.

Mounting Options
- QSM: The quick stem mount significantly simplify installation, ensures that the luminaire is hanging properly and does not require pipe dope. The swivel action on the stem allows for +/- 4 degree adjustment from vertical. The contoured door (with integral lanyard) is removed to allow the stem to engage inside the fitter. The door is replaced to the capture the luminaire stem.
- NPT15S or NPT15R: The 1.5NPT requires pipe dope. There are two NPT mounting options, the swivel (NPT15S) and the rigid (NPT15R)

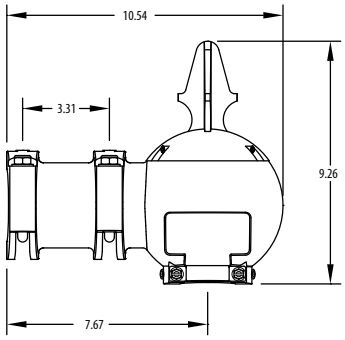
Installation
The fitter is provided with (2) U-bolts, washers and nuts and (2) leveling set screws that lock the fitter to a nominal 2" horizontal arm and allow a +/- 5 degree adjustment from horizontal to the fitter. (3) set screws lock either the QSM stem or NPT15S threaded male connector in place. The cast top cover can be removed to allow access to the inside of the fitter to facilitate wire connections. (3) set screws lock the cover to the fitter.

Finish
- Utilize a polyester powder coat paint to ensure maximum durability.
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

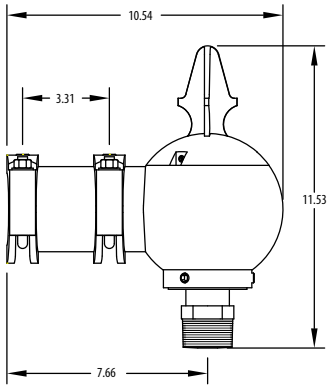
Warranty
1-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
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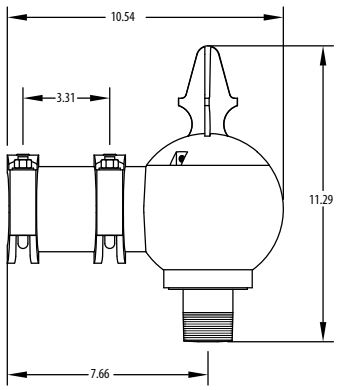
DIMENSIONAL DATA



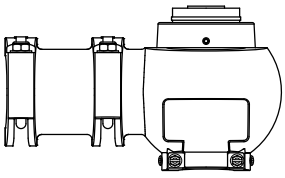
QSM Mounting



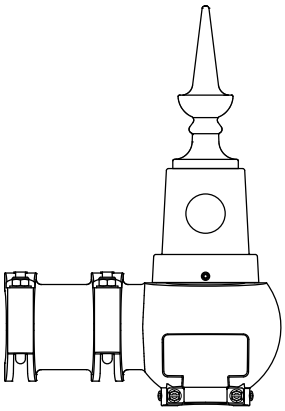
NPT15S Mounting



NPT15R Mounting



QSM Mounting with PR3E or PR7E option



TPRCSXX Accessory

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BHDF SERIES
BOSTON HARBOUR STYLE
Decorative Arm Fitter

ORDERING INFORMATION

Example: BHDF QSM BK PR7E PCLL

Series		Size		Finish		Options	
BHDF	Harbor Decorative Arm Fitter	NPT15S	Pendant 1.50 NPT Swivel	BK	Black	PR3E	External Mounted NEMA Twist Lock Photocontrol Receptacle - 3 PIN
		NPT15R	Pendant 1.50 NPT Rigid	BZ	Bronze	PR7E	External Mounted NEMA Twist Lock Dimming Photocontrol Receptacle - 7 PIN
		QSM	Quick Stem Mount	DB	Dark Blue	SH	Shorting cap
				GH	Graphite	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, MVOLT
				GN	Green	P34	Long Life DTL Twistlock Photocontrol for Solid State, 347V
				GR	Gray	P48	Long Life DTL Twistlock Photocontrol for Solid State, 480V
				PP	Prime Painted		
				SL	Silver		
				WH	White		
				CMC	Customer matching color		
				CTBS	Standard color to be selected		
				RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.		

Accessories	
TPRCSXX	Twistlock Photocontrol Cover Assembly with Spike Finial

Note:
Cover will only work with PR3E or PR73 with Acuity's PCLL, P34, P48, SH or other like devices equal in dimension.

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

HLWPC2

Wallpack® Full Cutoff LED





Mechanical

- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering
- Mounts to a standard junction box
- Wet location listed
- IP65 rated housing, down light only
- ¾" painted threaded entry(¾" - 14 NPT) on each side and on top, accepts ¾" and ½" conduit
- ¾" threaded plugs are painted on each side
- Vibration tested to 1.5G per ANSI C136.31.

Electrical

- Certified by UL or CSA
- Rated for -40°C (-40°F) minimum ambient
- A programmable electronic driver with 0-10V control leads
- Available in: 120-277V 50/60 Hz and 347-480V 50/60 Hz,
- Standard: 3000K, 4000K and 5000K CCT (>70 CRI)
- Optional >80 CRI (3000K, 4000K and 5000K CCT)
- Internally mounted emergency battery backup for operation in an ambient temperature ranging from -20°C (-4°F) to 30°C (86°F), available with P10 thru P40 performance packages, non CEC compliant
- All surge protection meets ANSI/IEEE C62.41.2 10kV/10kA
- Standard surge protection is 20kV/10kA per ANSI C136.2
- Optional surge protection is 10kV/5kA per ANSI C136.2

Optical

- Light engine housing is IP66 rated
- Acrylic optical system
- Type V: E (entry), M (medium), R (rectangle) & W (wide)
- Asymmetric

Controls

- Field adjustable output (AO)
- Button style photocontrol (PE)
- Motion sensor & ambient photocontrol combination for mounting low (8-15') (MASL) and high (15-30') (MASH) mounting heights

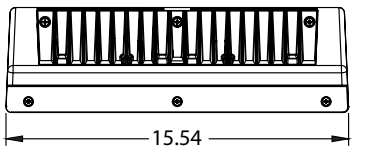
Certification and Standards

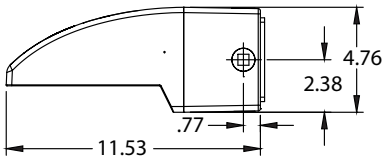
- Luminaire is CSA listed, US and Canada
- Suitable for operation in an ambient temperature up to 40°C/104°F per UL or CSA certification
- Design lights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- LM-79 compliant
- The projected LED Lumen Maintenance shall be based only on IES LM-80-08 and TM-21

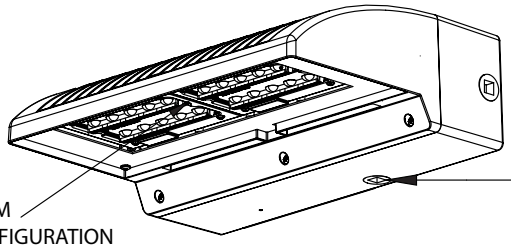
Warranty

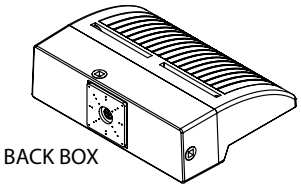
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions.

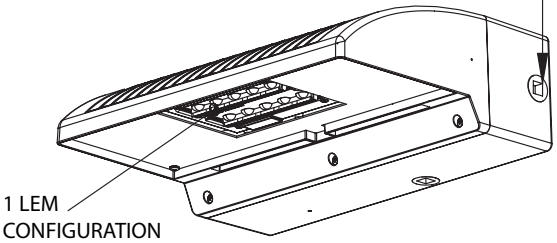
Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.











Note: Maximum weight 22 lbs.

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HLWPC2

Wallpack® Full Cutoff LED

ORDERING INFORMATION

Example: HLWPC2 P20 40K AS T3M BZSDP

Series	Lumen Package	Color Temperature	Voltage	Optics	Color	CRI
HLWPC2 Wallpack Full Cutoff LED	1 LEM Package P10 3,100 lm P20 5,600 lm 2 LEM Package P30 7,800 lm P40 9,900 lm P50 11,700 lm (Nominal Lumens, 4000K)	AMB True Amber 30K 3,000 K CCT 40K 4,000 K CCT 50K 5,000 K CCT	120 120 volts 208 208 volts 240 240 volts 277 277 volts 347 347 volts 480 480 volts HVOLT 347/480 volts MVOLT 120-277 volts	T2S Type 2 Short T2M Type 2 Medium T3S Type 3 Short T3M Type 3 Medium T4M Type 4 Medium TFTM Forward Throw Medium ASYDF Asymmetric Diffuse SYMDF Symmetric Diffuse	BKSDP Black BZSDP Bronze GYSDP Grey WHSDP White	Blank 70 CRI (STD) 80CRI 80 CRI

Options:

Adjustable/Programmable Options

AO Field Adjustable Output

Circuit Options

2CI 2 Independent Circuits

Control - Motion Sensor Options

MASL Motion / Ambient Sensor, 8-15' Mounting Height Ambient Sensor Enabled at 1 FC

MASH Motion / Ambient Sensor, 15-30' Mounting Height Ambient Sensor Enabled at 1 FC

Control - Photocontrol Options

PE Button Style Photocontrol

P3 N.E.M.A. Twistlock Receptacle Mount -3 PIN

P7 N.E.M.A. Twistlock Receptacle Mount -7 PIN

PCLL DTL Long Life Twistlock Photocontrol for Solid State

PSC Shorting Cap

Fuse Option

SF Single Fuse

DF Double Fuse

Safety Option

EM Integral Emergency Battery

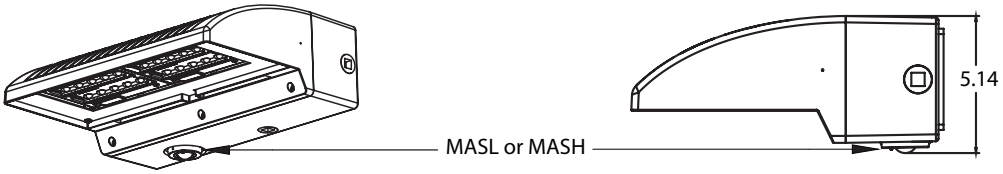
TP Tamper Resistant Hardware

Surge Protection Option - 20kV/10kA is Standard

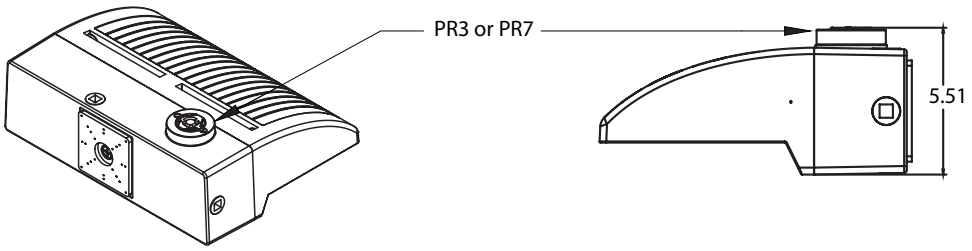
10KV 10kV/5kA Surge Protection, in place of 20kV/10kA

Options Location

Motion/Ambient Sensor mount options for Low (8-15') (MASL) and Height (15-30') (MASH) applications

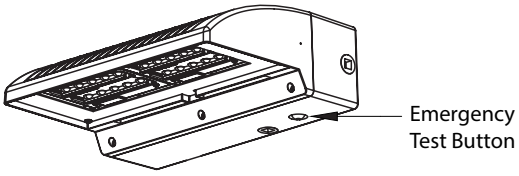


N.E.M.A. Twistlock Receptacle P3 and P7 Options, P7 Shown

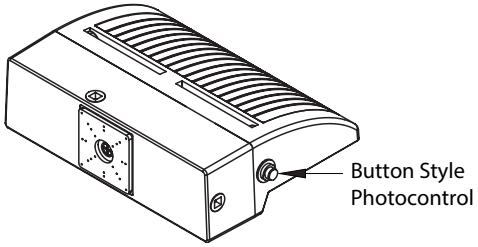


Internal Emergency Battery Test Button - EM Option

Test Button - EM Option



Button Style Photocontrol - PE Option

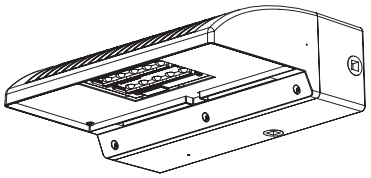


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Driver & LEM Configuration Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)		Two Circuit (2CI option)	
		LEMs	Drivers	LEMs	Drivers
Lumen Maintenance Factor	P10	1	1	-	-
	P20	1	1	2	2
	P30	2	1	2	2
	P40	2	1	2	2
	P50	2	1	-	-

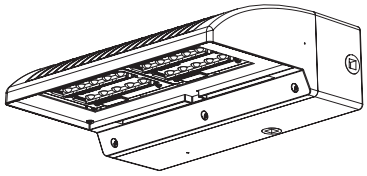
1 LEM Luminaire



SPD Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)				Two Circuit (2CI option)			
		LEMs	Drivers	No. of SPDs	SPD	LEMs	Drivers	No. of SPDs	SPD
Lumen Maintenance Factor	P10	1	1	1	20kV/10kA	-	-	-	-
	P20	1	1	1	20kV/10kA	2	2	2	10kV/5kA
	P30	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P40	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P50	2	1	1	20kV/10kA	-	-	-	-

2 LEM Luminaire



Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platform noted in a 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

The italicized data is extrapolated beyond the TM-21 standard.

E = (LM) x (CU) x (LAT) x (LLD)
LM and CU are obtained from published photometry.

Operating Hours (Standard)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P20	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85
	P30	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P40	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85

Operating Hours (2CI Option)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P20	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P30	1	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
	P40	1	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Single Circuit Application

Ambient		P10	P20	P30	P40	P50
0°C	32°F	1.02	1.03	1.03	1.04	1.05
10°C	50°F	1.01	1.02	1.02	1.03	1.03
20°C	68°F	1.01	1.01	1.01	1.01	1.01
25°C	77°F	1.00	1.00	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99	0.99	0.99
40°C	104°F	0.98	0.97	0.98	0.97	0.97

Optional Two Independent Circuit (2CI) Application

Ambient		P20	P30	P40
0°C	32°F	1.02	1.02	1.02
10°C	50°F	1.01	1.01	1.02
20°C	68°F	1.00	1.01	1.01
25°C	77°F	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99
40°C	104°F	0.98	0.98	0.98

Electrical Load

Single Circuit Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	700	28	0.23	0.13	0.12	0.10	0.08	0.06
P20	1400	47	0.41	0.24	0.20	0.18	0.14	0.10
P30	1050	71	0.63	0.37	0.32	0.29	0.22	0.18
P40	1420	95	0.78	0.45	0.40	0.35	0.27	0.20
P50	1720	115	0.95	0.55	0.48	0.42	0.33	0.24

Optional Two Independent Circuit (2CI) Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	-	-	-	-	-	-	-	-
P20	700	22	0.10	0.06	0.05	0.04	-	-
P30	1000	32	0.14	0.08	0.07	0.06	-	-
P40	1250	47	0.18	0.10	0.09	0.08	-	-
P50	-	-	-	-	-	-	-	-

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Operating Characteristics

LED Package	Distribution	System Watts	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10	T2S	28	2,904	104	1	0	1	3,128	112	1	0	1	3,168	113	1	0	1
	T2M	28	2,887	103	1	0	1	3,110	111	1	0	1	3,149	112	1	0	1
	T3S	28	2,964	106	1	0	1	3,194	114	1	0	1	3,234	116	1	0	1
	T3M	28	2,801	100	1	0	1	3,017	108	1	0	1	3,055	109	1	0	1
	T4M	28	2,858	102	1	0	1	3,079	110	1	0	1	3,118	111	1	0	1
	TFTM	28	2,979	106	1	0	1	3,209	115	1	0	1	3,250	116	1	0	1
	SYMDF	28	2,771	99	1	0	1	2,986	107	1	0	1	3,023	108	1	0	1
	ASYDF	28	2,756	98	1	0	1	2,969	106	1	0	1	3,007	107	1	0	1
P20	T2S	47	5,303	113	1	0	1	5,713	122	1	0	1	5,785	123	1	0	1
	T2M	47	5,272	112	1	0	2	5,680	121	1	0	2	5,751	122	1	0	2
	T3S	47	5,414	115	1	0	2	5,832	124	1	0	2	5,906	126	1	0	2
	T3M	47	5,115	109	1	0	2	5,510	117	1	0	2	5,580	119	1	0	2
	T4M	47	5,220	111	1	0	2	5,623	120	1	0	2	5,694	121	1	0	2
	TFTM	47	5,440	116	1	0	2	5,861	125	1	0	2	5,935	126	1	0	2
	SYMDF	47	5,062	108	2	0	2	5,453	116	2	0	2	5,522	117	2	0	2
	ASYDF	47	5,033	107	1	0	1	5,422	115	2	0	1	5,491	117	2	0	1
P30	T2S	71	7,319	103	2	0	2	7,884	111	2	0	2	7,984	112	2	0	2
	T2M	71	7,276	102	2	0	2	7,838	110	2	0	2	7,937	112	2	0	2
	T3S	71	7,472	105	1	0	2	8,049	113	2	0	2	8,151	115	2	0	2
	T3M	71	7,059	99	2	0	2	7,604	107	2	0	2	7,700	108	2	0	2
	T4M	71	7,203	101	2	0	2	7,760	109	2	0	2	7,858	111	2	0	2
	TFTM	71	7,508	106	1	0	2	8,088	114	2	0	2	8,190	115	2	0	2
	SYMDF	71	6,985	98	2	0	2	7,525	106	3	0	3	7,620	107	3	0	3
	ASYDF	71	6,946	98	2	0	2	7,483	105	2	0	2	7,578	107	2	0	2
P40	T2S	95	9,320	98	2	0	2	10,041	106	2	0	2	10,168	107	2	0	2
	T2M	95	9,266	98	2	0	2	9,982	105	2	0	3	10,108	106	2	0	3
	T3S	95	9,515	100	2	0	2	10,251	108	2	0	2	10,381	109	2	0	2
	T3M	95	8,989	95	2	0	2	9,684	102	2	0	2	9,807	103	2	0	2
	T4M	95	9,174	97	2	0	2	9,883	104	2	0	3	10,008	105	2	0	3
	TFTM	95	9,561	101	2	0	2	10,300	108	2	0	2	10,431	110	2	0	2
	SYMDF	95	8,896	94	3	0	3	9,583	101	3	0	3	9,705	102	3	0	3
	ASYDF	95	8,846	93	2	0	2	9,530	100	2	0	2	9,650	102	2	0	2
P50	T2S	115	10,972	95	2	0	2	11,820	103	2	0	2	11,969	104	2	0	2
	T2M	115	10,908	95	2	0	3	11,751	102	2	0	3	11,900	103	2	0	3
	T3S	115	11,202	97	2	0	2	12,067	105	2	0	2	12,220	106	2	0	2
	T3M	115	10,582	92	2	0	2	11,400	99	2	0	3	11,544	100	2	0	3
	T4M	115	10,799	94	2	0	3	11,634	101	2	0	3	11,781	102	2	0	3
	TFTM	115	11,256	98	2	0	2	12,126	105	2	0	2	12,279	107	2	0	2
	SYMDF	115	10,472	91	3	0	3	11,282	98	3	0	3	11,424	99	3	0	3
	ASYDF	115	10,414	91	2	0	2	11,219	98	3	0	2	11,361	99	3	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

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Operating Characteristics (continued)

LED Package	Distribution	System Watts	30K + 2CI Option (3000K, 70 CRI)					40K + 2CI Option (4000K, 70 CRI)					50K + 2CI Option (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P20	T2S	49	5,015	102	1	0	1	5,402	110	1	0	1	5,471	112	1	0	1
	T2M	49	4,985	102	1	0	2	5,371	110	1	0	2	5,439	111	1	0	2
	T3S	49	5,120	104	1	0	1	5,515	113	1	0	2	5,585	114	1	0	2
	T3M	49	4,837	99	1	0	2	5,210	106	1	0	2	5,276	108	1	0	2
	T4M	49	4,936	101	1	0	2	5,317	109	1	0	2	5,385	110	1	0	2
	TFTM	49	5,144	105	1	0	2	5,542	113	1	0	2	5,612	115	1	0	2
	SYMDF	49	4,786	98	2	0	2	5,156	105	2	0	2	5,222	107	2	0	2
	ASYDF	49	4,760	97	1	0	1	5,127	105	1	0	1	5,192	106	1	0	1
P30	T2S	70	6,769	97	1	0	1	7,293	104	2	0	2	7,385	106	2	0	2
	T2M	70	6,730	96	2	0	2	7,250	104	2	0	2	7,342	105	2	0	2
	T3S	70	6,911	99	1	0	2	7,445	106	1	0	2	7,539	108	1	0	2
	T3M	70	6,529	93	2	0	2	7,033	100	2	0	2	7,123	102	2	0	2
	T4M	70	6,663	95	2	0	2	7,178	103	2	0	2	7,269	104	2	0	2
	TFTM	70	6,945	99	1	0	2	7,481	107	1	0	2	7,576	108	2	0	2
	SYMDF	70	6,461	92	2	0	2	6,960	99	2	0	2	7,049	101	2	0	2
	ASYDF	70	6,425	92	2	0	2	6,922	99	2	0	2	7,009	100	2	0	2
P40	T2S	89	8,370	94	2	0	2	9,017	101	2	0	2	9,131	103	2	0	2
	T2M	89	8,321	93	2	0	2	8,964	101	2	0	2	9,078	102	2	0	2
	T3S	89	8,545	96	2	0	2	9,205	103	2	0	2	9,322	105	2	0	2
	T3M	89	8,073	91	2	0	2	8,696	98	2	0	2	8,807	99	2	0	2
	T4M	89	8,238	93	2	0	2	8,875	100	2	0	2	8,987	101	2	0	2
	TFTM	89	8,586	96	2	0	2	9,250	104	2	0	2	9,367	105	2	0	2
	SYMDF	89	7,989	90	3	0	3	8,606	97	3	0	3	8,715	98	3	0	3
	ASYDF	89	7,944	89	2	0	2	8,558	96	2	0	2	8,666	97	2	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

LED Package	Distribution	System Watts	AMB (Wavelength)					LED Package	Distribution	System Watts	AMB (Wavelength)				
			Lumens	LPW	B	U	G				Lumens	LPW	B	U	G
P10	T2S	28	1,061	38	0	0	1	P30	T2S	28	1,975	71	0	0	1
	T2M	28	1,054	38	0	0	1		T2M	28	1,964	70	0	0	1
	T3S	28	1,083	39	0	0	1		T3S	28	2,016	72	0	0	1
	T3M	28	1,023	37	0	0	1		T3M	28	1,905	68	0	0	1
	T4M	28	1,044	37	0	0	1		T4M	28	1,944	69	0	0	1
	TFTM	28	1,088	39	0	0	1		TFTM	28	2,026	72	0	0	1
	SYMDF	28	1,012	36	1	0	1		SYMDF	28	1,885	67	1	0	1
	ASYDF	28	1,007	36	0	0	1		ASYDF	28	1,875	67	0	0	1

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Options Matrix

Parameters		LED AMB	Options (Start with SF, DF, 2CI or EM if being used)													
			PE	P3	P7	PSC	PCLL	MASH	MASL	SF	DF	TP	10kV	AO	2CI	EM
LED Performance Package	P10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	P20	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Voltage	AS	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
	AH	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	N
	12	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	20	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	24	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	27	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	34	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	N
	48	Y	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	N	N
Options	PE	Y		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y
	P3	Y	N		N	M	Y	N	N	Y	Y	Y	Y	N	N	N
	P7	Y	N	N		M	Y	N	N	Y	Y	Y	Y	N	N	N
	PSC	Y	N	M	M		N	N	N	Y	Y	Y	Y	N	N	N
	PCLL	Y	N	Y	Y	N		N	N	Y	Y	Y	Y	N	N	N
	MASH	Y	N	N	N	N	N		N	Y	Y	Y	Y	N	N	N
	MASL	Y	N	N	N	N	N	N		Y	Y	Y	Y	N	N	N
	SF	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y
	DF	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y
	TP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	10kV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	M	M
	AO	Y	Y	N	N	N	N	N	N	Y	Y	Y	Y		N	N
	2CI	P30	N	N	N	N	N	N	N	Y	Y	Y	M	N		N
	EM	Y	Y	N	N	N	N	N	N	Y	Y	Y	M	N	N	

Notes
I = Included with option
M = Must have: one of these must be installed for the luminaire to operate
N = Combination Not available
P30 = Valid Option Combination, not available with P10 Performance Packabe
Y = Valid Option Combination

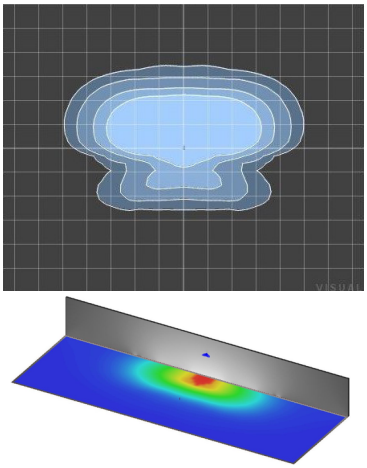
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Photometric Diagrams

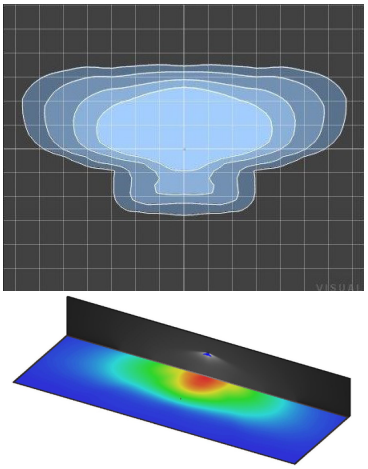
To see complete photometric reports or download .ies files for this product, visit the Holophane's Wallpack FCO LED homepage. Isofootcandle plots for the HLWPC2 P30 40K. Distance are in units of mounting height (12"). Grid is 10'x10'.

0.1 fc	1 fc	0.2 fc	0.5 fc

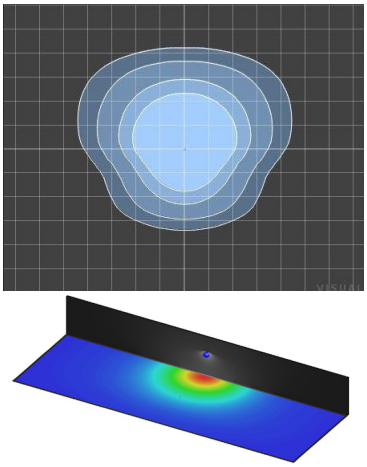
HLWPC2 P30 40K XX T2S



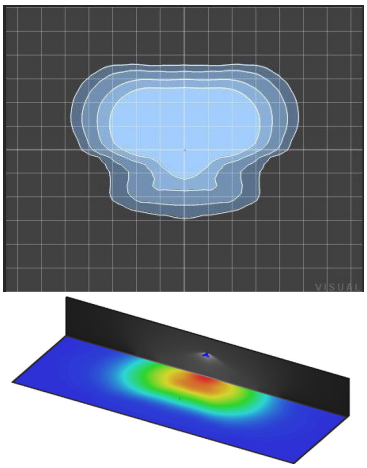
HLWPC2 P30 40K XX T2M



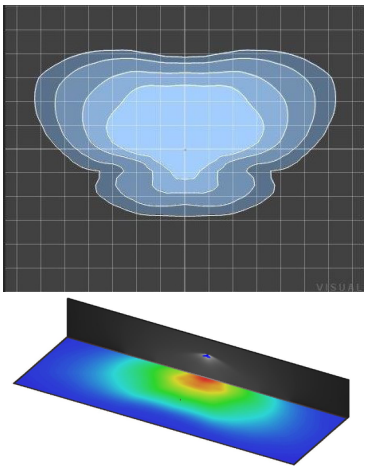
HLWPC2 P30 40K XX ASYDF



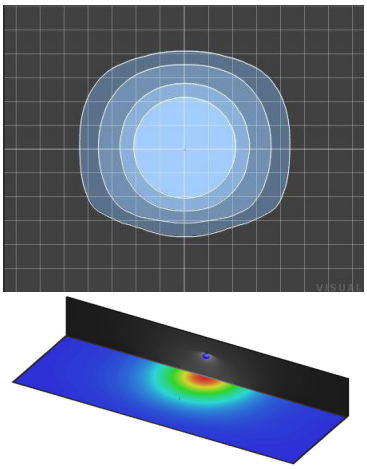
HLWPC2 P30 40K XX T3S



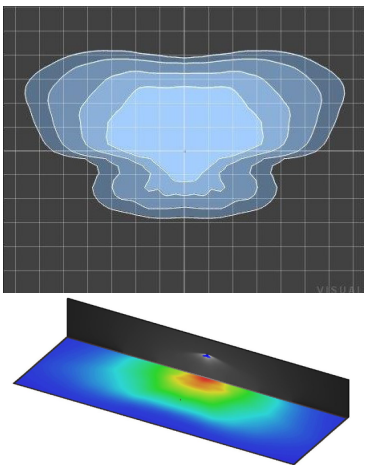
HLWPC2 P30 40K XX T3M



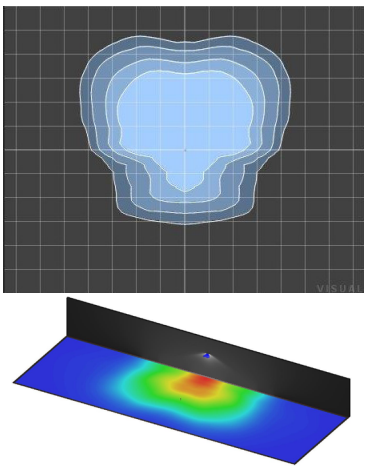
HLWPC2 P30 40K XX SYMDF



HLWPC2 P30 40K XX T4M



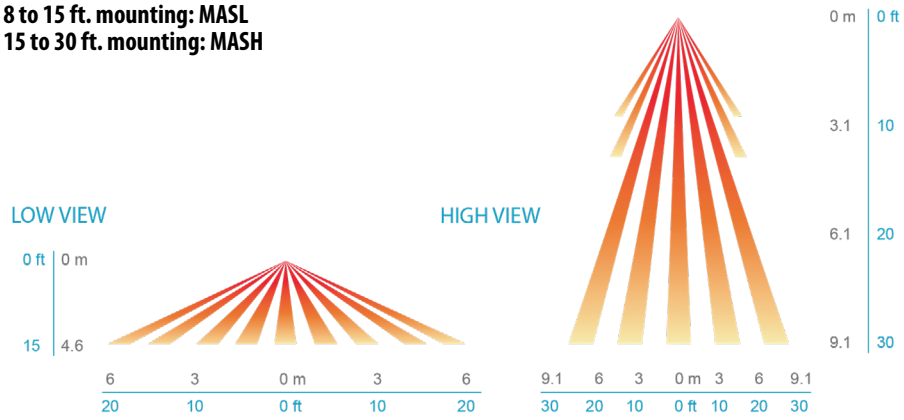
HLWPC2 P30 40K XX TFTM



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Coverage Pattern

8 to 15 ft. mounting: MASL
15 to 30 ft. mounting: MASH



Control Options

Button Style Photocontrol

PE



N.E.M.A. Receptacle

P3



P7



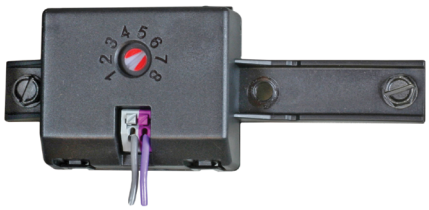
Motion & Ambient Combined Sensor

MASL/MASH



Field Adjustable Output Module

The Field Adjustable Output (AO) module is an onboard device that adjusts the light output and input voltage to meet specific requirements, allowing a single fixture configuration to be flexibly applied in many different applications. The AO option is available on the HLWPC2 series.



P10 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	94%	95%
6	83%	82%
5	71%	69%
4	59%	57%
3	46%	45%
2	34%	33%
1	21%	21%

P20 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P30 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P40 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	95%
6	85%	82%
5	74%	68%
4	62%	55%
3	49%	43%
2	36%	30%
1	21%	17%

P50 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	96%	95%
6	86%	81%
5	75%	68%
4	64%	55%
3	51%	42%
2	37%	29%
1	22%	17%

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N. Lighting

Please find attached the photometric plan and cut sheets for the proposed site lighting.

Statistics

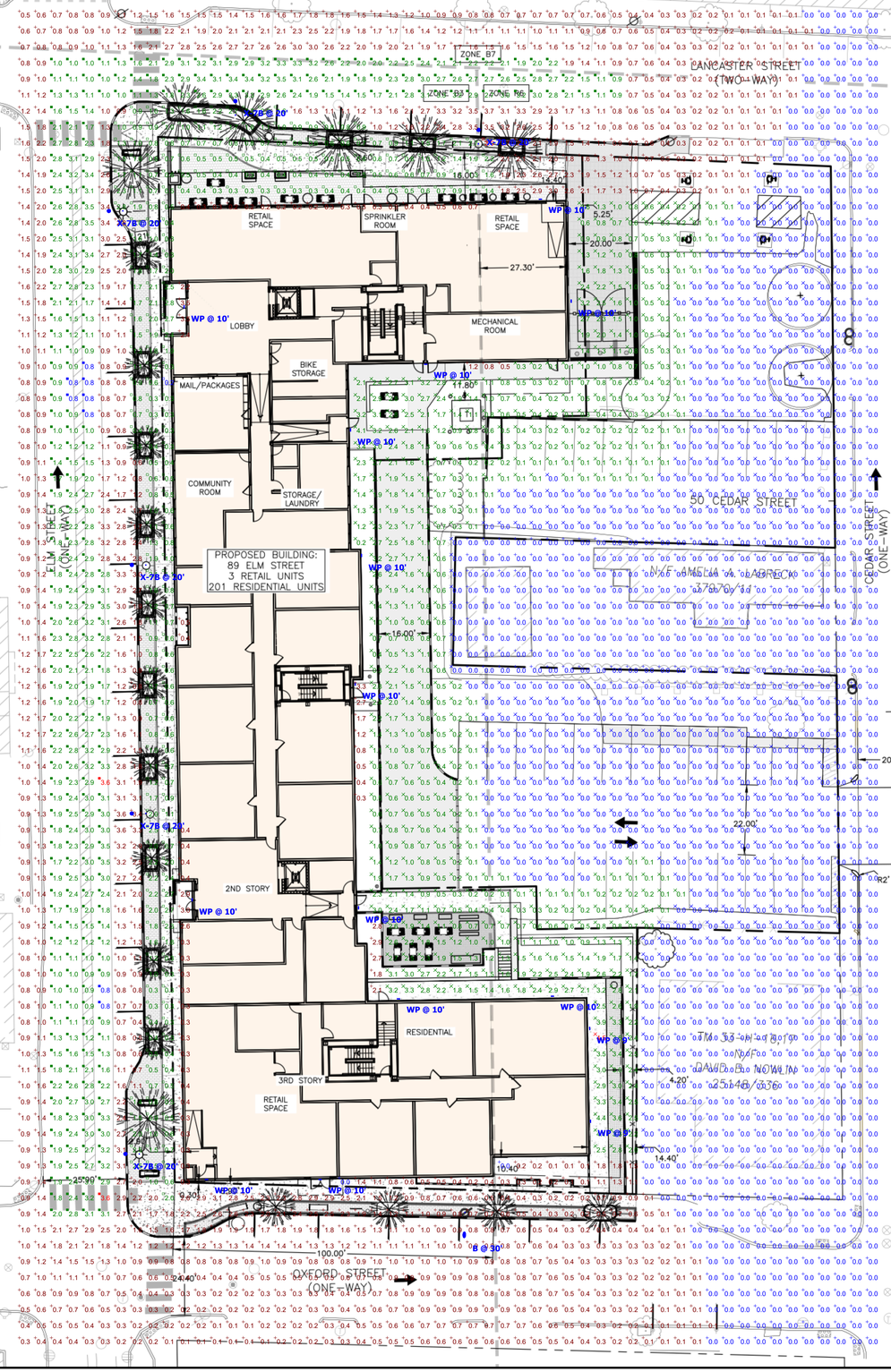
Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min	City of Portland Tech Manual Standard	Note:
Lancaster & Elm Roadway	■	2.2 fc	3.6 fc	0.8 fc	4.5:1	2.8:1	Arterial, Avg 2.0	Type II distibution used
Lancaster & Elm Sidewalk	□	1.0 fc	3.0 fc	0.2 fc	15.0:1	5.0:1		
Project Extents	+	0.8 fc	4.5 fc	0.0 fc	N/A	N/A		
Back of Building	×	0.5 fc	4.5 fc	0.0 fc	N/A	N/A		

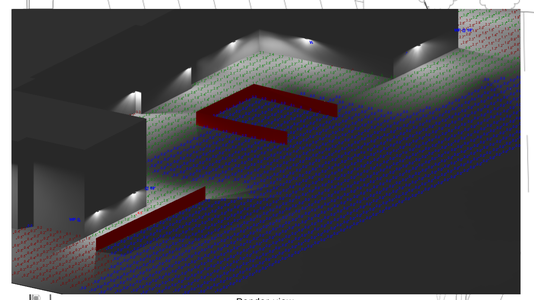
Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	LLF	Input Power
○	X-7B		6	Holophane	ESL3 P20S 30K XXXXX TG2	Esplanade style housings Standard housing, 3000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard) or Type III, Short, (Uplight)	0.9	72.77
▭	WP		15	Holophane	HLWPC2 P10 30K XX T3M	Wallpack Full Cutoff LED, LED Performance Package P10, 3000 series CCT, Voltage, Type III Medium	0.9	28
○	B		1	Cree Lighting	RSWS-B-HT-3ME-5L-30K7-UL-xx-N CONFIGURED FROM RSWS-B-HT-3ME-7L-40K7-UL-GY-N	CONFIGURED FROM RSW Small Luminaire, Type III Medium Distribution, 7L Lumen Package, 4000K, 70CRI	0.9	42

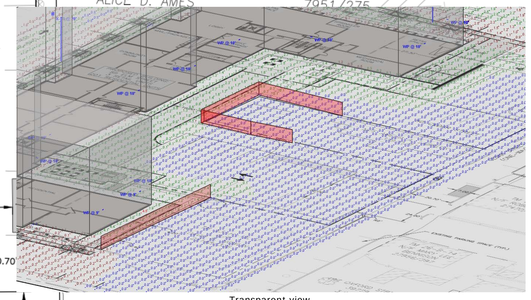
196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±





Render view



Transparent view

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: SITE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE USED BY THE OWNER OR OTHERWISE, SHALL BE AT THE OWNER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

DRAWING NO.

C-10

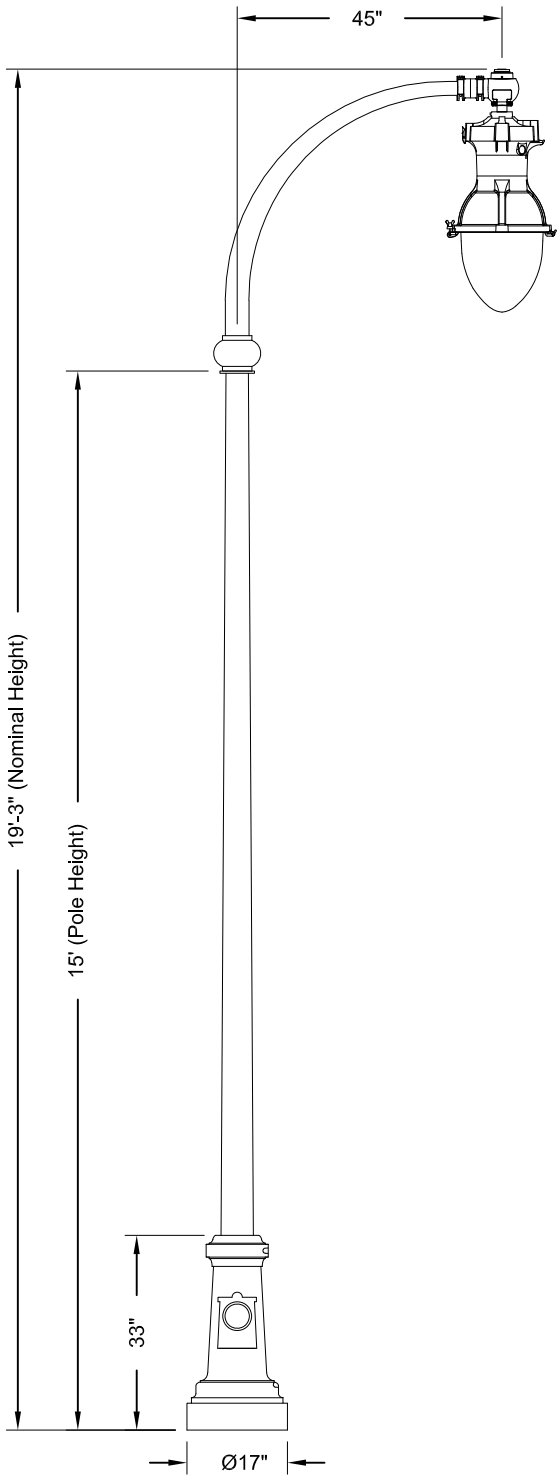
Round Tapered Steel Pole

Smooth Straight Shaft
Tenon: Ø3.5"x8"
(1)Cambridge Cast Alum. Clamshell Base, Black
Less Anchor Bolts

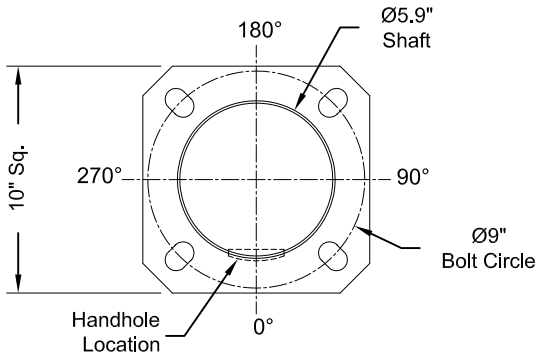
OUC Series Roadway Arm
45" Long for Single Fixture, Black

Boston Harbor Decorative Fitter
QSM Hub for Stem Mtd. Luminaire, Black

Esplanade Teardrop LED 3 Series
P20 Performance Pkg, 3000 Series CCT
120-277V, Black finish
Teardrop Type 3 Optics
Quick Lock Stem Mount
7-Pin NEMA Dimmable Photocontrol External Receptacle
1"x1" NEMA Wattage Label



Anchorage Detail



CUSTOMER NOTES:
1. ***ANCHORAGE DETAIL PROVIDED FOR VISUAL ONLY - DO NOT USE TO SET ANCHOR BOLTS.***
2. SIGNED APPROVAL TO ACCOMPANY PO.

Catalog #'s:
Pole: AORTS1559E08HDGBK **RFD325238**
Anchor Bolts: VAL1ABSET **RFD325238**
Clamshell Base: CM17CSBCARC59BK **RFD325238**
Roadway Arm: OUC45IN1ATNBK
Fitter: BHDFQSMBKPR7E
Fixture: ESL2P20S30KMVOLTTG3QSMBKPR7ENL2X2

Customer SIgnature **Date**

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS
An AcuityBrandsCompany

Portland, Maine

ORDER #:	TYPE: (X-7B POLE/ARM)	DRAWING #:
REVISION: 1	REVISION DATE:	
DRAWN: MAB	ORIGIN DATE:	PAGE: 1 of 1

THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUPPLIED, BUT ONLY AFTER APPROVAL BY THE CUSTOMER IN WRITING, ON POLE ORDERS AN ANCHOR BOLT TEMPLATE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED, THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON EXPRESS CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes: Teardrop Glass & Door: Type 2 application	Type: X-7B FIXTURE

ESL3

Esplanade® Tear Drop Large Roadway LED Pendant



Buy American

Description
The Esplanade luminaire is styled to replicate the "teardrop" luminaires that lighted boulevards in the first half of the 1900s. Designed for light control and ease of installation and maintenance, the Esplanade has a precision optical system for true street lighting performance.

Mechanical
The luminaire housing:
- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- IP65 rated housing provides a spring-loaded latch for toolless access and a hinge for easy installation and servicing
- Optic door incorporates a hinge and wing nut enabling toolless access to install and service
- EEI- NEMA twist lock photocontrol receptacle can be mounted in electrical housing or externally; housing contains a tempered glass window to allow light to reach the cell for internally mounting

Electrical
- Certified by UL or CSA for wet locations
- A factory programmable electronic driver with 0-10V dimming control leads meets maximum total harmonic distortion (THD) of 20%, >0.90 Power Factor and are ROHS compliant.
- Minimum operating temperature is -40°C. Electronic driver has an estimated minimum life of 100,000 hours at 25°C.
- Optional DALI driver available
- 20kV/10kA surge protection, fail off, with indicator light meets ANSI/IEEE C62.41.2
- Quick disconnect connectors for ease of installation and maintenance.
- Three pole terminal block is standard, with optional prewired leads for ease of installation
- Configurable with CCT options of 2700K, 3000K, 4000K and 5000K, 70 CRI minimum

Finish
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

Certification
CSA listing suitable for wet location up to 40°C. Consult factory for details.

Optical
The optical system is IP66 rated and consists of a precisely molded thermal resistant borosilicate glass refractor mounted within the borosilicate refractor Teardrop, Bowl, Sag shaped glass optic or the tempered Flat glass retained by the cast aluminum door. Designed for Type 2, 3, 4 & 5 distribution, see performance data table for configurations. For zero uplight options the flat glass option or the decorative shallow or deep skirt used with the bowl or sag glass.

Control Options
The control options shall include, but not limited to, the following:
- Field adjustable output to adjust output to luminaire - A0
- Long life photocontrol, 20 years – PCLL, P34 and P48 with DTL
- 3 and 7 pin receptacles internally in housing (PR3, PR7) or externally mounted on the leveling fitter (PR3E, PR7E)
- On externally mounted options, the photocontrol or shorting cap are selected with the leveling fitter

Mounting Style (Leveling Fitter Options)
Three mounting versions are available.
- An arm mount version which is provided with two U-bolts with washers and nuts and two leveling set screws that lock the housing to a 2 inch nominal (2-3/8" O.D.) horizontal arm and allow a +/- 5 degree adjustment from horizontal to the cover.
- A pendant mount version (either 1.25NPT or 1.5NPT) which threads to a vertical NPT male threaded pipe fitting and is locked in place by a stainless-steel set screw.
- A QSM (Quick Lock Stem Mounting), which consists of a vertical stem with flared top that mounts into a matching QSM fitter or arm. The QSM mount can aid in installation speed as it is a quicker installation than the other mounting methods.

Note: the QSM style is compatible with the following leveling fitters:
- Boston Harbor Decorative Arm Fitter (BHDF)
- GlasWerks Decorative Arm Fitter (GWDF)
- West Liberty Decorative Arm Fitter (WLDF)
- Ball Style Decorative Arm Fitter (BADF)

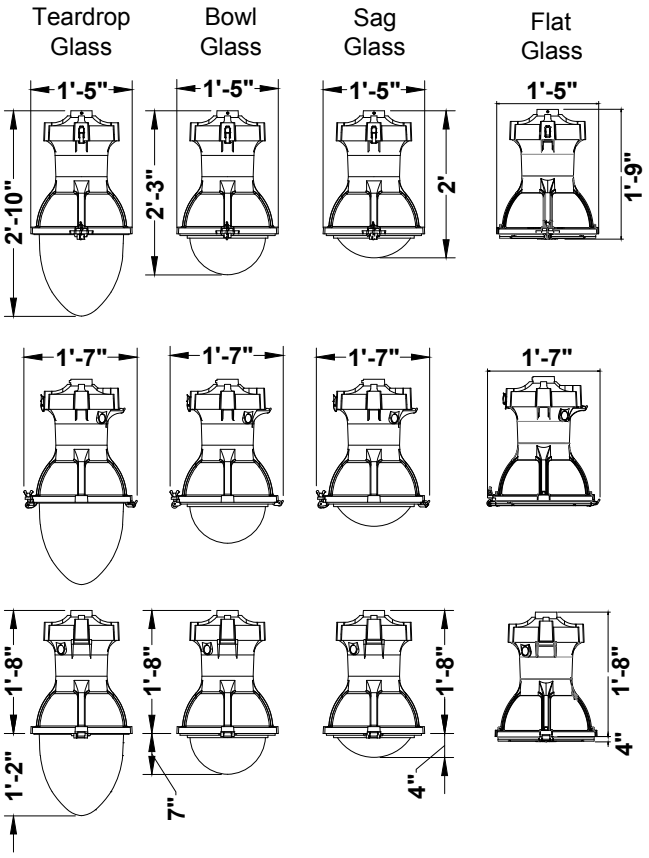
BUY AMERICAN
This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FARS, DFARS and DOT. Please refer to www.acuitybrands.com/resources/buyamerican for additional information.

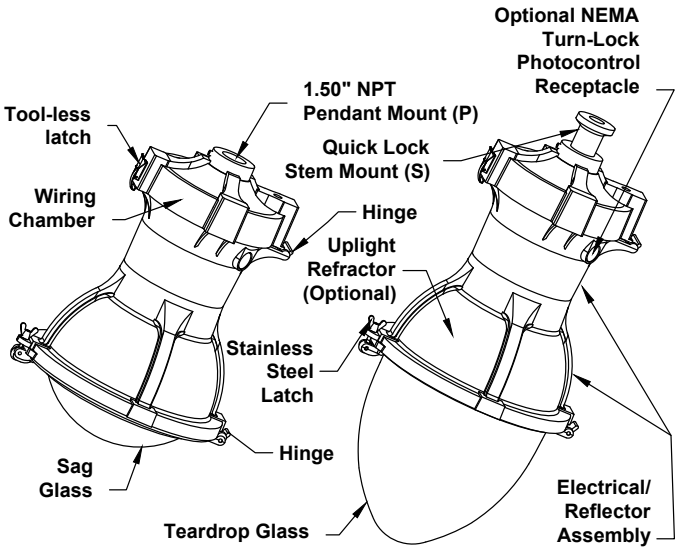
Warranty
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note:
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

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DIMENSIONAL DATA





Maximum Weight - 69 lbs (Up Light Version)
Maximum Weight - 69 lbs (Down Light Version)
Maximum Effective Projected Area - ESL3 2.62 ft², ESL3 SS 2.86 ft², ESL3 DS 3.06 ft²

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ORDERING INFORMATION

Example: ESL3 P30S 30K MVOLT TG3 QSM BK

Series		Lumen/Wattage Package				Color Temperature		Voltage	
ESL3	Esplanade style housings	P10S	Standard housing, 44W	P35S	Standard housing, 112W	27K	2700 series CCT	MVOLT	Auto-sensing voltage (120 thru 277) 50/60 HZ
		P15S	Standard housing, 54W	P40S	Standard housing, 132W	30K	3000 series CCT	HVOLT	Auto-sensing voltage (347 thru 480) 50/60 HZ
		P20S	Standard housing, 73W	P45S	Standard housing, 153W	40K	4000 series CCT		
		P20U	Uplight housing, 94W	P50S	Standard housing, 173W	50K	5000 series CCT		
		P25S	Standard housing, 82W	P55S	Standard housing, 193W				
		P25U	Uplight housing, 109W	P60S	Standard housing, 215W				
		P30S	Standard housing, 92W	P65S	Standard housing, 247W				
		P30U	Uplight housing, 122W						

Optic				Mounting	
TG2	Teardrop Glass & Door: Type 2 application	BG4	Bowl Glass & Door: Type 4 application	NPT	Threaded top opening - 1.50" NPT
TG3	Teardrop Glass & Door: Type 3 application	BG5	Bowl Glass & Door: Type 5 application	QSM	Quick Lock Stem mount
TG4	Teardrop Glass & Door: Type 4 application	SG2	Sag Glass & Door: Type 2 application		
FG3	Flat Glass & Door: Type 3 application	SG3	Sag Glass & Door: Type 3 application		
FG5	Flat Glass & Door: Type 5 application	SG4	Sag Glass & Door: Type 4 application		
BG2	Bowl Glass & Door: Type 2 application	SG5	Sag Glass & Door: Type 5 application		
BG3	Bowl Glass & Door: Type 3 application				

Finish		Options		Prewire Lead Options	
BK	Black	A0	Field Adjustable Output	L1H	1.5 ft. prewired leads
DB	Dark Blue	PR3	NEMA twistlock photocontrol receptacle - 3 pin	L03	3 ft. prewired leads
GR	Grey	PR7	NEMA twistlock dimming photocontrol receptacle - 7 pin	L10	10 ft. prewired leads
GH	Graphite	PR3E	NEMA twistlock photocontrol receptacle - 3 pin (Externally mounted to Fitter)	L20	20 ft. prewired leads
GN	Green	PR7E	NEMA twistlock dimming photocontrol receptacle - 7 pin (Externally mounted to Fitter)	L25	25 ft. prewired leads
PP	Prime Paint	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, MVOLT	L30	30 ft. prewired leads
SL	Silver	P34	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 347V	L35	35 ft. prewired leads
WH	White	P48	Long Life DTL Twistlock Photocontrol for Solid State, Fail Off, 480V	**NEMA Label Options**	
BZ	Bronze	SH	Shorting cap	NL1X1	1X1 NEMA Label
CMC	Custom Match Color Finish			NL3X3	3X3 NEMA Label
RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.			**Shielding Options**	
CTBS	Standard Finish to be determined			DS	Deep Skirt, 30" diameter
				SS	Shallow Skirt, 30" diameter
				HSS90	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 90 degrees
				HSS120	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 120 degrees
				HSS180	Factory installed Large TearDrop, Bowl & Flat Glass House Side Shield 180 degrees
				HSG90	Factory installed Large Sag Glass House Side Shield 90 degrees
				HSG120	Factory installed Large Sag Glass House Side Shield 120 degrees
				HSG180	Factory installed Large Sag Glass House Side Shield 180 degrees

Accessories: *Order as separate catalog number, ships separately & field installed.*

Shielding Options	
LTD3HSS90	Large TearDrop, Bowl & Flat Glass House side shield 90 degree
LTD3HSS120	Large TearDrop, Bowl & Flat Glass House side shield 120 degree
LTD3HSS180	Large TearDrop, Bowl & Flat Glass House side shield 180 degree
LTD3HSG90	Large Sag Glass House side shield 90 degree
LTD3HSG120	Large Sag Glass House side shield 120 degree
LTD3HSG180	Large Sag Glass House side shield 180 degree
LTDSxx	Deep Skirt, 30" Diameter, replace xx with Finish option
LTSSxx	Shallow Skirt, 30" Diameter, replace xx with Finish option

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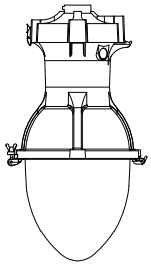
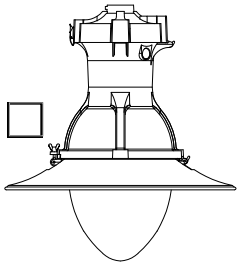
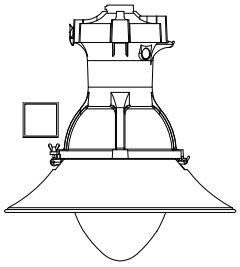
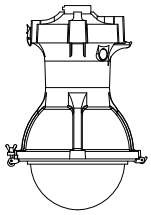
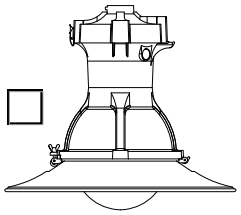
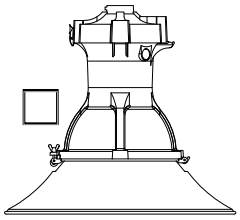
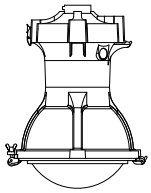
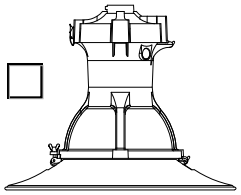
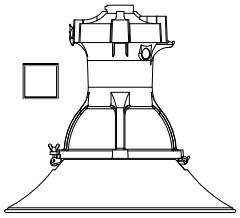
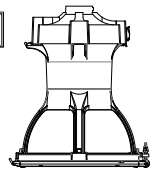
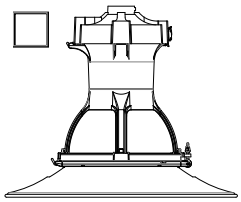
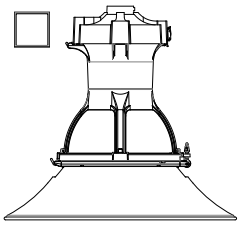
OPTIONS MATRIX

OPTIONS		Performance Package															Voltage		Options							
		P10S	P15S	P20S	P20U	P25S	P25U	P30S	P30U	P35S	P40S	P45S	P50S	P55S	P60S	P65S	MVOLT	HVOLT	AO	PR3	PR7	PR3E	PR7E	PCLL	P34	P48	SH
Performance Package	P10S		N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	N		N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	N	N		N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	N	N	N		N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	N	N	N	N		N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	N	N	N	N	N		N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	N	N	N	N	N	N		N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	N	N	N	N	N	N	N		N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	N	N	N	N	N	N	N	N		N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	N	N	N	N	N	N	N	N	N		N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	N	N	N	N	N	N	N	N	N	N		N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	N	N	N	N	N	N	N	N	N	N	N		N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	N	N	N	N	N	N	N	N	N	N	N	N		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	N	N	N	N	N	N	N	N	N	N	N	N	N		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	N	N	N	N	N	N	N	N	N	N	N	N	N	N		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Voltage	MVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y	Y	N	N	Y
	HVOLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y	N	Y	Y	Y
Options	AO	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
	PR3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	N	N	Y	Y	Y	Y
	PR7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		N	N	Y	Y	Y	Y
	PR3E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N		N	N	N	N	N
	PR7E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N		N	N	N	N
	PCLL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N		N	N	N
	P34	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N		N	N
	P48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N		N
	SH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	

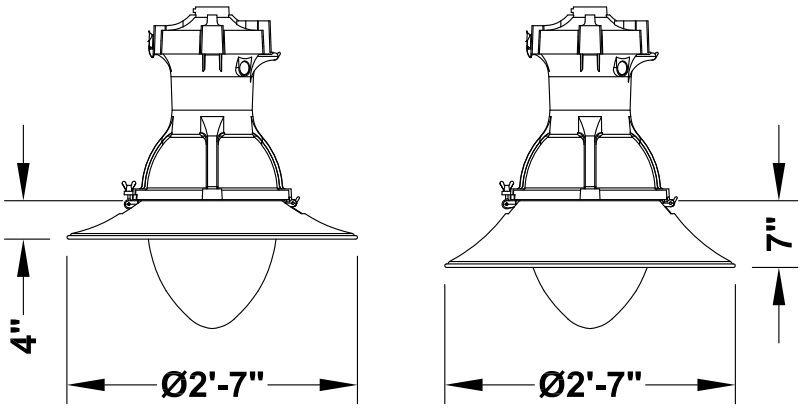
OPTICS by PERFORMANCE PACKAGE		Performance Package												
		TG2	TG3	TG4	FG3	FG5	BG2	BG3	BG4	BG5	SG2	SG3	SG4	SG5
Performance Package	P10S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P15S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P20U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P25S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P25U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P30S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30U	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	P35S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P45S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P55S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P60S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P65S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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MARK APPROPRIATE BOX FOR TRIM OPTIONS

	STANDARD	SHALLOW SKIRT	DEEP SKIRT
TEARDROP GLASS (Asymmetric)	☐ 	☐ 	☐ 
BOWL GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
SAG GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
FLAT GLASS (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 

SKIRT DIMENSIONS



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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10S	TG2	44	6,013	137	1	3	3	6,490	148	2	3	3	6,609	150	2	3	3	6,705	152	2	3	3
	TG3		6,033	137	1	3	3	6,511	148	2	3	3	6,630	151	2	3	3	6,727	153	2	3	3
	TG4		5,671	129	1	3	3	6,121	139	1	3	3	6,233	142	1	3	3	6,324	144	1	3	3
	FG3		3,912	89	1	0	1	4,222	96	1	0	1	4,300	98	1	0	1	4,362	99	1	0	1
	FG5		3,846	87	2	0	1	4,150	94	2	0	1	4,227	96	2	0	1	4,288	97	2	0	1
	BG2		5,750	131	2	3	3	6,206	141	2	3	3	6,320	144	2	3	3	6,412	146	2	3	3
	BG3		5,692	129	2	3	3	6,143	140	2	3	4	6,256	142	2	3	4	6,347	144	2	3	4
	BG4		5,389	122	1	3	3	5,816	132	1	3	3	5,923	135	1	3	3	6,009	137	1	3	4
	BG5		6,004	136	3	3	3	6,480	147	3	3	3	6,599	150	3	3	3	6,695	152	3	3	3
	SG2		5,778	131	1	3	3	6,236	142	1	3	3	6,350	144	1	3	3	6,443	146	1	3	3
	SG3		5,773	131	1	3	3	6,231	142	1	3	3	6,346	144	1	3	3	6,438	146	1	3	3
	SG4		5,452	124	1	3	3	5,884	134	1	3	3	5,992	136	1	3	3	6,079	138	1	3	3
	SG5		6,041	137	3	3	2	6,520	148	3	3	2	6,640	151	3	3	2	6,737	153	3	3	2
P15S	TG2	54	7,487	139	2	3	3	8,080	150	2	3	3	8,229	152	2	3	3	8,348	155	2	3	3
	TG3		7,511	139	2	3	3	8,106	150	2	3	3	8,255	153	2	3	3	8,375	155	2	3	3
	TG4		7,061	131	1	3	3	7,621	141	2	3	3	7,761	144	2	3	3	7,874	146	2	3	3
	FG3		4,871	90	1	0	1	5,257	97	2	0	1	5,353	99	2	0	1	5,431	101	2	0	1
	FG5		4,788	89	2	0	1	5,167	96	2	0	1	5,262	97	2	0	1	5,339	99	2	0	1
	BG2		7,159	133	2	3	4	7,727	143	2	3	4	7,869	146	2	3	4	7,983	148	2	3	4
	BG3		7,086	131	2	3	4	7,648	142	2	3	4	7,789	144	2	3	4	7,902	146	2	3	4
	BG4		6,710	124	1	3	4	7,241	134	2	3	4	7,375	137	2	3	4	7,482	139	2	3	4
	BG5		7,475	138	3	3	3	8,068	149	3	3	3	8,216	152	3	3	3	8,335	154	3	3	3
	SG2		7,193	133	2	3	3	7,763	144	2	3	3	7,906	146	2	3	3	8,021	149	2	3	3
	SG3		7,188	133	2	3	3	7,758	144	2	3	3	7,900	146	2	3	3	8,015	148	2	3	3
	SG4		6,788	126	1	3	3	7,326	136	1	3	3	7,460	138	1	3	3	7,569	140	1	3	3
	SG5		7,522	139	3	3	2	8,118	150	3	3	2	8,267	153	3	3	2	8,387	155	3	3	2
P20S	TG2	73	10,290	141	2	3	3	11,106	152	2	3	3	11,310	155	2	3	3	11,474	157	2	3	3
	TG3		10,323	141	2	3	3	11,141	153	2	3	4	11,346	155	2	3	4	11,511	158	2	3	4
	TG4		9,705	133	2	3	3	10,474	143	2	3	3	10,667	146	2	3	3	10,822	148	2	3	3
	FG3		6,694	92	2	0	1	7,225	99	2	0	2	7,358	101	2	0	2	7,465	102	2	0	2
	FG5		6,581	90	2	0	1	7,102	97	2	0	1	7,233	99	2	0	1	7,338	101	2	0	1
	BG2		9,840	135	2	3	4	10,620	145	2	3	5	10,816	148	2	3	5	10,973	150	3	3	5
	BG3		9,740	133	2	3	5	10,512	144	2	3	5	10,705	147	2	3	5	10,861	149	2	3	5
	BG4		9,222	126	2	3	5	9,953	136	2	3	5	10,136	139	2	3	5	10,283	141	2	3	5
	BG5		10,274	141	3	3	4	11,089	152	3	3	4	11,293	155	4	3	4	11,457	157	4	3	4
	SG2		9,887	135	2	3	3	10,671	146	2	3	3	10,867	149	2	3	3	11,025	151	2	3	3
	SG3		9,879	135	2	3	3	10,662	146	2	3	4	10,859	149	2	3	4	11,016	151	2	3	4
	SG4		9,329	128	2	3	3	10,069	138	2	3	3	10,254	140	2	3	3	10,403	143	2	3	3
	SG5		10,338	142	3	3	3	11,158	153	3	3	3	11,363	156	4	3	3	11,528	158	4	3	3
P20U	TG2	94	12,937	138	2	5	3	13,962	149	2	5	3	14,219	151	2	5	3	14,426	153	2	5	3
	TG3		12,978	138	2	5	4	14,006	149	2	5	4	14,264	152	2	5	4	14,471	154	2	5	4
	TG4		12,201	130	2	5	3	13,168	140	2	5	4	13,410	143	2	5	4	13,605	145	2	5	4
	BG2		12,371	132	2	5	4	13,351	142	3	5	5	13,597	145	3	5	5	13,794	147	3	5	5
	BG3		12,245	130	2	5	5	13,216	141	2	5	5	13,459	143	2	5	5	13,654	145	2	5	5
	BG4		11,594	123	2	5	5	12,513	133	2	5	5	12,744	136	2	5	5	12,929	138	2	5	5
	BG5		12,917	137	3	5	4	13,941	148	4	5	4	14,198	151	4	5	4	14,404	153	4	5	4
	SG2		12,430	132	2	5	3	13,415	143	2	5	3	13,662	145	2	5	3	13,861	147	2	5	3
	SG3		12,421	132	2	5	4	13,405	143	2	5	4	13,652	145	2	5	4	13,850	147	2	5	4
	SG4		11,729	125	2	5	3	12,658	135	2	5	4	12,891	137	2	5	4	13,078	139	2	5	4
	SG5		12,997	138	3	5	3	14,028	149	4	5	3	14,286	152	4	5	3	14,493	154	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P25S	TG2	82	11,665	142	2	3	4	12,590	154	3	3	4	12,821	156	3	3	4	13,008	159	3	3	4
	TG3		11,703	143	2	3	4	12,630	154	2	3	4	12,862	157	3	3	4	13,049	159	3	3	4
	TG4		11,002	134	2	3	3	11,874	145	2	3	4	12,092	147	2	3	4	12,268	150	2	3	4
	FG3		7,589	93	2	0	2	8,190	100	2	0	2	8,341	102	2	0	2	8,462	103	2	0	2
	FG5		7,460	91	2	0	1	8,051	98	3	0	1	8,199	100	3	0	1	8,319	101	3	0	1
	BG2		11,155	136	3	3	5	12,039	147	3	3	5	12,261	150	3	3	5	12,439	152	3	3	5
	BG3		11,042	135	2	3	5	11,917	145	3	3	5	12,136	148	3	3	5	12,312	150	3	3	5
	BG4		10,454	127	2	3	5	11,283	138	2	3	5	11,491	140	2	3	5	11,658	142	2	3	5
	BG5		11,647	142	4	3	4	12,570	153	4	3	4	12,802	156	4	3	4	12,988	158	4	3	4
	SG2		11,208	137	2	3	3	12,096	148	2	3	4	12,319	150	2	3	4	12,498	152	2	3	4
	SG3		11,200	137	2	3	4	12,087	147	2	3	4	12,310	150	2	3	4	12,488	152	2	3	4
	SG4		10,576	129	2	3	4	11,414	139	2	3	4	11,624	142	2	3	4	11,793	144	2	3	4
	SG5		11,720	143	4	3	3	12,649	154	4	3	3	12,881	157	4	3	3	13,069	159	4	3	3
P25U	TG2	109	14,701	135	2	5	4	15,866	146	3	5	4	16,158	148	3	5	4	16,393	150	3	5	4
	TG3		14,747	135	2	5	4	15,916	146	3	5	4	16,209	149	3	5	4	16,445	151	3	5	4
	TG4		13,865	127	2	5	4	14,964	137	2	5	4	15,239	140	2	5	4	15,460	142	2	5	4
	BG2		14,058	129	3	5	5	15,172	139	3	5	5	15,451	142	3	5	5	15,675	144	3	5	5
	BG3		13,915	128	3	5	5	15,018	138	3	5	5	15,294	140	3	5	5	15,516	142	3	5	5
	BG4		13,176	121	2	5	5	14,220	130	2	5	5	14,481	133	2	5	5	14,692	135	2	5	5
	BG5		14,679	135	4	5	4	15,842	145	4	5	4	16,134	148	4	5	4	16,368	150	4	5	4
	SG2		14,125	130	2	5	4	15,245	140	2	5	4	15,525	142	2	5	4	15,751	145	2	5	4
	SG3		14,115	129	2	5	4	15,233	140	2	5	4	15,514	142	2	5	4	15,739	144	2	5	4
	SG4		13,328	122	2	5	4	14,384	132	2	5	4	14,649	134	2	5	4	14,862	136	2	5	4
	SG5		14,770	136	4	5	3	15,941	146	4	5	3	16,234	149	4	5	3	16,470	151	4	5	3
P30S	TG2	92	12,968	141	3	3	4	13,996	152	3	3	4	14,254	155	3	3	4	14,461	157	3	3	4
	TG3		13,010	141	3	3	4	14,041	153	3	3	4	14,300	155	3	3	4	14,507	158	3	3	4
	TG4		12,231	133	2	3	4	13,201	143	2	3	4	13,443	146	2	3	4	13,639	148	2	3	4
	FG3		8,437	92	2	0	2	9,106	99	2	0	2	9,273	101	2	0	2	9,408	102	2	0	2
	FG5		8,294	90	3	0	1	8,951	97	3	0	1	9,116	99	3	0	1	9,248	101	3	0	2
	BG2		12,402	135	3	3	5	13,385	145	3	3	5	13,631	148	3	3	5	13,829	150	3	3	5
	BG3		12,275	133	3	3	5	13,248	144	3	3	5	13,492	147	3	3	5	13,688	149	3	3	5
	BG4		11,623	126	2	3	5	12,544	136	2	3	5	12,774	139	2	3	5	12,960	141	2	3	5
	BG5		12,949	141	4	3	4	13,975	152	4	3	4	14,232	155	4	3	4	14,439	157	4	3	4
	SG2		12,460	135	2	3	4	13,448	146	2	3	4	13,695	149	2	3	4	13,894	151	2	3	4
	SG3		12,451	135	2	3	4	13,438	146	2	3	4	13,685	149	2	3	4	13,884	151	3	3	4
	SG4		11,758	128	2	3	4	12,690	138	2	3	4	12,923	140	2	3	4	13,111	143	2	3	4
	SG5		13,029	142	4	3	3	14,062	153	4	3	3	14,321	156	4	3	3	14,529	158	4	3	3
P30U	TG2	122	16,481	135	3	5	4	17,787	146	3	5	4	18,115	148	3	5	4	18,378	151	3	5	4
	TG3		16,533	136	3	5	4	17,843	146	3	5	4	18,172	149	3	5	5	18,436	151	3	5	5
	TG4		15,543	127	2	5	4	16,775	138	2	5	4	17,084	140	2	5	4	17,332	142	2	5	4
	BG2		15,760	129	3	5	5	17,009	139	3	5	5	17,322	142	3	5	5	17,573	144	3	5	5
	BG3		15,600	128	3	5	5	16,836	138	3	5	5	17,146	141	3	5	5	17,395	143	3	5	5
	BG4		14,771	121	2	5	5	15,942	131	2	5	5	16,235	133	2	5	5	16,471	135	3	5	5
	BG5		16,456	135	4	5	4	17,760	146	4	5	5	18,087	148	4	5	5	18,350	150	4	5	5
	SG2		15,836	130	2	5	4	17,091	140	3	5	4	17,405	143	3	5	4	17,658	145	3	5	4
	SG3		15,824	130	2	5	4	17,078	140	3	5	4	17,392	143	3	5	4	17,645	145	3	5	4
	SG4		14,942	122	2	5	4	16,126	132	2	5	4	16,423	135	2	5	4	16,661	137	2	5	4
	SG5		16,558	136	4	5	3	17,871	146	4	5	3	18,199	149	4	5	3	18,464	151	4	5	3

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PERFORMANCE DATA. FOR SKIRT AND HOUSE SIDE SHIELD OPTIONS, CONSULT FACTORY OR WEBSITE.

LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P35S	TG2	112	15,526	139	3	3	4	16,757	150	3	3	4	17,065	152	3	3	4	17,313	155	3	3	4
	TG3		15,576	139	3	3	4	16,810	150	3	3	5	17,120	153	3	3	5	17,368	155	3	3	5
	TG4		14,643	131	3	3	4	15,804	141	3	3	4	16,095	144	3	3	4	16,328	146	3	3	4
	FG3		10,101	90	3	0	2	10,901	97	3	0	2	11,102	99	3	0	2	11,263	101	3	0	2
	FG5		9,929	89	3	0	2	10,716	96	3	0	2	10,913	97	3	0	2	11,072	99	3	0	2
	BG2		14,847	133	3	3	5	16,024	143	3	3	5	16,319	146	3	3	5	16,556	148	3	3	5
	BG3		14,696	131	3	3	5	15,861	142	3	4	5	16,153	144	3	4	5	16,388	146	3	4	5
	BG4		13,915	124	2	3	5	15,018	134	3	3	5	15,294	137	3	3	5	15,516	139	3	3	5
	BG5		15,502	138	4	3	5	16,731	149	4	3	5	17,039	152	4	3	5	17,286	154	4	3	5
	SG2		14,918	133	3	3	4	16,100	144	3	3	4	16,396	146	3	3	4	16,634	149	3	3	4
	SG3		14,906	133	3	3	4	16,088	144	3	3	5	16,384	146	3	3	5	16,622	148	3	3	5
	SG4		14,076	126	2	3	4	15,192	136	2	3	4	15,472	138	2	3	4	15,696	140	2	3	4
	SG5		15,599	139	4	3	3	16,835	150	4	3	3	17,145	153	4	3	3	17,394	155	4	3	3
P40S	TG2	132	18,148	137	3	3	5	19,586	148	3	3	5	19,947	151	3	3	5	20,236	153	3	3	5
	TG3		18,206	138	3	3	5	19,649	149	3	3	5	20,011	152	3	3	5	20,301	154	3	3	5
	TG4		17,116	130	3	3	4	18,473	140	3	3	5	18,812	143	3	3	5	19,086	145	3	3	5
	FG3		11,806	89	3	0	2	12,742	97	3	0	2	12,977	98	3	0	2	13,165	100	3	0	2
	FG5		11,606	88	3	0	2	12,526	95	3	0	2	12,756	97	3	0	2	12,941	98	3	0	2
	BG2		17,355	131	3	4	5	18,730	142	3	4	5	19,075	145	3	4	5	19,352	147	3	4	5
	BG3		17,178	130	3	4	5	18,539	140	3	4	5	18,880	143	3	4	5	19,155	145	3	4	5
	BG4		16,264	123	3	3	5	17,553	133	3	4	5	17,876	135	3	4	5	18,136	137	3	4	5
	BG5		18,120	137	4	3	5	19,556	148	4	3	5	19,916	151	4	4	5	20,205	153	4	4	5
	SG2		17,437	132	3	3	5	18,819	143	3	3	5	19,165	145	3	3	5	19,443	147	3	3	5
	SG3		17,424	132	3	3	5	18,805	142	3	3	5	19,151	145	3	3	5	19,429	147	3	3	5
	SG4		16,453	125	2	3	5	17,758	135	3	3	5	18,084	137	3	3	5	18,347	139	3	3	5
	SG5		18,233	138	4	3	3	19,678	149	4	3	3	20,040	152	4	3	3	20,331	154	4	3	3
P45S	TG2	153	20,508	134	3	3	5	22,134	145	3	3	5	22,541	147	3	3	5	22,868	149	3	3	5
	TG3		20,574	134	3	3	5	22,205	145	3	3	5	22,613	148	3	3	5	22,942	150	3	3	5
	TG4		19,342	126	3	3	5	20,875	136	3	3	5	21,259	139	3	3	5	21,568	141	3	3	5
	FG3		13,342	87	3	0	2	14,399	94	3	0	3	14,664	96	3	0	3	14,877	97	3	0	3
	FG5		13,115	86	3	0	2	14,155	93	3	0	2	14,415	94	3	0	2	14,625	96	3	0	2
	BG2		19,612	128	3	4	5	21,166	138	3	4	5	21,555	141	3	4	5	21,869	143	3	4	5
	BG3		19,412	127	3	4	5	20,951	137	3	4	5	21,336	139	3	4	5	21,646	141	3	4	5
	BG4		18,380	120	3	4	5	19,836	130	3	4	5	20,201	132	3	4	5	20,495	134	3	4	5
	BG5		20,477	134	4	4	5	22,100	144	4	4	5	22,506	147	5	4	5	22,833	149	5	4	5
	SG2		19,705	129	3	3	5	21,266	139	3	3	5	21,658	142	3	3	5	21,972	144	3	3	5
	SG3		19,690	129	3	3	5	21,250	139	3	3	5	21,641	141	3	3	5	21,956	144	3	3	5
	SG4		18,593	122	3	3	5	20,067	131	3	3	5	20,436	134	3	3	5	20,733	136	3	3	5
	SG5		20,604	135	4	3	3	22,238	145	4	3	3	22,647	148	5	3	3	22,976	150	5	3	4
P50S	TG2	173	22,698	131	3	3	5	24,497	142	3	3	5	24,948	144	3	4	5	25,310	146	3	4	5
	TG3		22,771	132	3	3	5	24,576	142	3	3	5	25,028	145	3	3	5	25,392	147	3	4	5
	TG4		21,408	124	3	3	5	23,104	134	3	3	5	23,529	136	3	3	5	23,871	138	3	3	5
	FG3		14,767	85	3	0	3	15,937	92	3	0	3	16,230	94	3	0	3	16,466	95	3	0	3
	FG5		14,516	84	3	0	2	15,666	91	3	0	2	15,955	92	3	0	2	16,186	94	3	0	2
	BG2		21,706	125	3	4	5	23,426	135	3	4	5	23,857	138	3	4	5	24,204	140	3	4	5
	BG3		21,485	124	3	4	5	23,188	134	3	4	5	23,615	137	3	4	5	23,958	138	3	4	5
	BG4		20,342	118	3	4	5	21,955	127	3	4	5	22,359	129	3	4	5	22,684	131	3	4	5
	BG5		22,663	131	5	4	5	24,460	141	5	4	5	24,910	144	5	4	5	25,272	146	5	4	5
	SG2		21,809	126	3	3	5	23,537	136	3	3	5	23,970	139	3	3	5	24,319	141	3	3	5
	SG3		21,792	126	3	3	5	23,520	136	3	3	5	23,952	138	3	3	5	24,300	140	3	3	5
	SG4		20,579	119	3	3	5	22,210	128	3	3	5	22,619	131	3	3	5	22,947	133	3	3	5
	SG5		22,805	132	5	3	4	24,612	142	5	3	4	25,065	145	5	3	4	25,429	147	5	3	4

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LED Package	Glass / Optic	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P55S	TG2	193	24,807	129	3	3	5	26,773	139	3	4	5	27,266	141	3	4	5	27,662	143	3	4	5
	TG3		24,887	129	3	3	5	26,859	139	3	4	5	27,353	142	3	4	5	27,751	144	3	4	5
	TG4		23,397	121	3	3	5	25,251	131	3	3	5	25,716	133	3	3	5	26,089	135	3	4	5
	FG3		16,139	84	3	0	3	17,418	90	3	0	3	17,738	92	3	0	3	17,996	93	3	0	3
	FG5		15,865	82	3	0	2	17,122	89	3	0	2	17,437	90	3	0	2	17,690	92	3	0	2
	BG2		23,723	123	3	4	5	25,603	133	3	4	5	26,074	135	3	4	5	26,453	137	3	4	5
	BG3		23,481	122	3	4	5	25,342	131	3	4	5	25,809	134	3	4	5	26,184	136	3	4	5
	BG4		22,232	115	3	4	5	23,995	124	3	4	5	24,436	127	3	4	5	24,791	128	3	4	5
	BG5		24,769	128	5	4	5	26,732	139	5	4	5	27,224	141	5	4	5	27,620	143	5	4	5
	SG2		23,835	123	3	3	5	25,724	133	3	3	5	26,198	136	3	3	5	26,578	138	3	3	5
	SG3		23,817	123	3	3	5	25,705	133	3	3	5	26,178	136	3	3	5	26,558	138	3	3	5
	SG4		22,491	117	3	3	5	24,274	126	3	3	5	24,720	128	3	3	5	25,079	130	3	3	5
	SG5		24,924	129	5	3	4	26,899	139	5	3	4	27,394	142	5	3	4	27,792	144	5	3	4
P60S	TG2	215	27,208	127	3	4	5	29,364	137	3	4	5	29,905	139	3	4	5	30,339	141	3	4	5
	TG3		27,295	127	3	4	5	29,459	137	3	4	5	30,001	140	3	4	5	30,437	142	3	4	5
	TG4		25,661	119	3	3	5	27,695	129	3	4	5	28,204	131	3	4	5	28,614	133	3	4	5
	FG3		17,701	82	3	0	3	19,104	89	3	0	3	19,455	90	3	0	3	19,738	92	3	0	3
	FG5		17,400	81	3	0	2	18,779	87	4	0	2	19,124	89	4	0	2	19,402	90	4	0	2
	BG2		26,019	121	3	4	5	28,081	131	4	4	5	28,597	133	4	4	5	29,013	135	4	4	5
	BG3		25,754	120	3	4	5	27,795	129	4	4	5	28,306	132	4	4	5	28,718	134	4	4	5
	BG4		24,384	113	3	4	5	26,317	122	3	4	5	26,801	125	3	4	5	27,190	126	3	4	5
	BG5		27,166	126	5	4	5	29,319	136	5	4	5	29,859	139	5	4	5	30,293	141	5	4	5
	SG2		26,142	122	3	3	5	28,214	131	3	3	5	28,733	134	3	3	5	29,150	136	3	3	5
	SG3		26,122	121	3	3	5	28,193	131	3	3	5	28,711	134	3	3	5	29,128	135	3	3	5
	SG4		24,668	115	3	3	5	26,623	124	3	3	5	27,113	126	3	3	5	27,506	128	3	3	5
	SG5		27,336	127	5	3	4	29,502	137	5	3	4	30,045	140	5	3	4	30,481	142	5	3	4
P65S	TG2	247	30,354	123	3	4	5	32,760	133	4	4	5	33,363	135	4	4	5	33,848	137	4	4	5
	TG3		30,452	123	3	4	5	32,866	133	4	4	5	33,470	136	4	4	5	33,956	137	4	4	5
	TG4		28,629	116	3	4	5	30,898	125	3	4	5	31,466	127	3	4	5	31,923	129	3	4	5
	FG3		19,748	80	3	0	3	21,313	86	3	0	3	21,705	88	3	0	3	22,020	89	3	0	3
	FG5		19,412	79	4	0	2	20,951	85	4	0	3	21,336	86	4	0	3	21,646	88	4	0	3
	BG2		29,028	118	4	4	5	31,328	127	4	4	5	31,905	129	4	4	5	32,368	131	4	4	5
	BG3		28,732	116	4	4	5	31,009	126	4	5	5	31,580	128	4	5	5	32,039	130	4	5	5
	BG4		27,204	110	3	4	5	29,360	119	3	4	5	29,900	121	3	4	5	30,335	123	3	4	5
	BG5		30,308	123	5	4	5	32,710	132	5	4	5	33,312	135	5	4	5	33,796	137	5	4	5
	SG2		29,165	118	3	3	5	31,477	127	3	3	5	32,056	130	3	4	5	32,522	132	3	4	5
	SG3		29,143	118	3	3	5	31,453	127	3	4	5	32,032	130	3	4	5	32,497	132	3	4	5
	SG4		27,520	111	3	3	5	29,702	120	3	3	5	30,248	122	3	3	5	30,688	124	3	3	5
	SG5		30,497	123	5	3	4	32,914	133	5	3	4	33,520	136	5	3	4	34,007	138	5	3	4

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LUMEN AMBIENT TEMPERATURE (LAT) MULTIPLIERS

Use the factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F)

Ambient Temp.		Lumen Multiplier (by Performance Package)			
°C	°F	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	P55S	P60S	P65S
0	32	1.03	1.04	1.04	1.04
5	41	1.03	1.03	1.03	1.04
10	50	1.02	1.02	1.03	1.03
15	59	1.01	1.02	1.02	1.02
20	68	1.01	1.01	1.01	1.01
25	77	1.00	1.00	1.00	1.00
30	86	0.99	0.99	0.99	0.99
35	95	0.99	0.98	0.98	0.98
40	104	0.98	0.97	0.97	0.97

PROJECTED LED LUMEN MAINTENANCE

Data references the extrapolated performance projections for the platforms noted in 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11). To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Lumen Maintenance - LLD (by Performance Package)									
Hours		0	25,000	36,000	50,000	60,000	67,500	75,000	100,000
Factor for:	P10S, P15S, P20S, P20U, P25S, P25U, P30S, P30U, P35S, P40S, P45S & P50S	1.00	0.95	0.94	0.91	0.90	0.89	0.88	0.84
	P55S	1.00	0.95	0.93	0.91	0.90	0.89	0.87	0.84
	P60S & P65S	1.00	0.95	0.93	0.90	0.89	0.87	0.86	0.82

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FIELD ADJUSTABLE OUTPUT (AO option)
The data is the same for MVOLT & HVOLT.

Performance Package	FAO Position	% Lumen Output	% Wattage
P10S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	41%	42%
	2	28%	29%
	1	13%	15%
P15S	8	100%	100%
	7	94%	94%
	6	80%	80%
	5	68%	68%
	4	55%	55%
	3	42%	42%
	2	28%	29%
	1	14%	15%
P20S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	42%	41%
	2	29%	29%
	1	14%	15%
P20U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	55%
	3	43%	42%
	2	29%	29%
	1	15%	15%
P25S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	29%	28%
	1	15%	15%

Performance Package	FAO Position	% Lumen Output	% Wattage
P25U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	68%
	4	56%	54%
	3	43%	41%
	2	30%	29%
	1	15%	15%
P30S	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	69%	67%
	4	56%	54%
	3	43%	41%
	2	30%	28%
	1	15%	15%
P30U	8	100%	100%
	7	94%	94%
	6	81%	80%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	29%
	1	15%	15%
P35S	8	100%	100%
	7	94%	94%
	6	81%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	30%	28%
	1	15%	15%
P40S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	70%	67%
	4	57%	54%
	3	44%	41%
	2	31%	28%
	1	16%	15%

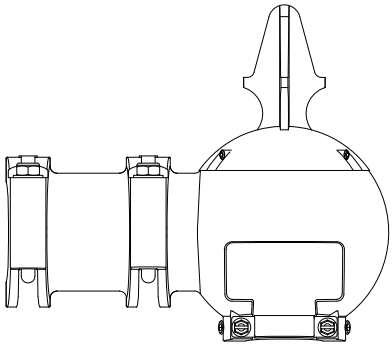
Performance Package	FAO Position	% Lumen Output	% Wattage
P45S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	58%	54%
	3	45%	41%
	2	31%	28%
	1	16%	14%
P50S	8	100%	100%
	7	95%	94%
	6	82%	79%
	5	71%	67%
	4	59%	54%
	3	45%	41%
	2	32%	28%
	1	16%	14%
P55S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	59%	54%
	3	46%	41%
	2	32%	28%
	1	17%	14%
P60S	8	100%	100%
	7	95%	94%
	6	83%	79%
	5	72%	67%
	4	60%	54%
	3	47%	41%
	2	33%	28%
	1	17%	14%
P65S	8	100%	100%
	7	95%	94%
	6	84%	79%
	5	73%	67%
	4	61%	53%
	3	48%	40%
	2	33%	28%
	1	18%	14%

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

BHDF SERIES
BOSTON HARBOUR STYLE

Decorative Arm Fitter



Specifications

General Description
The Boston Harbour style decorative arm fitter is designed to replicate the look of period cast arm mounts.

Materials
The fitter body, top cover, and door assembly shall be heavy wall cast aluminum. All mounting and locking hardware shall be stainless steel.

Function
The fitter is designed to be used on 2" horizontal arms with pendant luminaires having either a quick stem mount (QSM) or a 1.5NPT (NPT) as the selected mounting method.

Mounting Options
- QSM: The quick stem mount significantly simplify installation, ensures that the luminaire is hanging properly and does not require pipe dope. The swivel action on the stem allows for +/- 4 degree adjustment from vertical. The contoured door (with integral lanyard) is removed to allow the stem to engage inside the fitter. The door is replaced to the capture the luminaire stem.
- NPT15S or NPT15R: The 1.5NPT requires pipe dope. There are two NPT mounting options, the swivel (NPT15S) and the rigid (NPT15R)

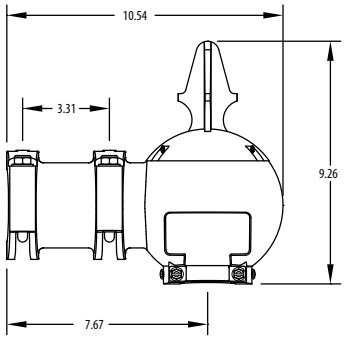
Installation
The fitter is provided with (2) U-bolts, washers and nuts and (2) leveling set screws that lock the fitter to a nominal 2" horizontal arm and allow a +/- 5 degree adjustment from horizontal to the fitter. (3) set screws lock either the QSM stem or NPT15S threaded male connector in place. The cast top cover can be removed to allow access to the inside of the fitter to facilitate wire connections. (3) set screws lock the cover to the fitter.

Finish
- Utilize a polyester powder coat paint to ensure maximum durability.
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

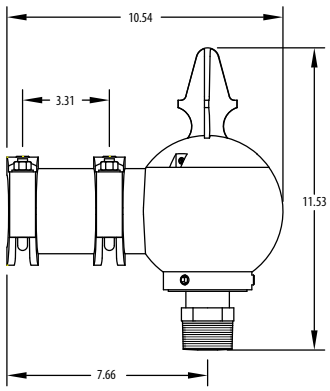
Warranty
1-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

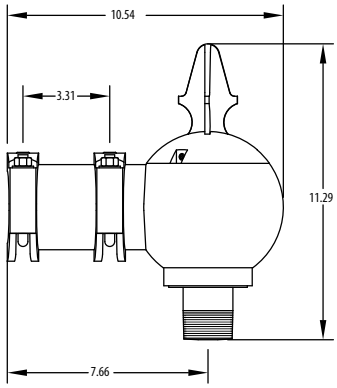
DIMENSIONAL DATA



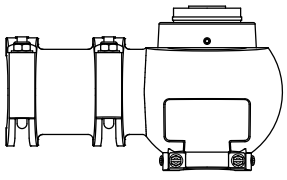
QSM Mounting



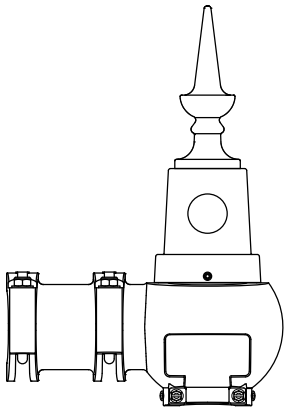
NPT15S Mounting



NPT15R Mounting



QSM Mounting with PR3E or PR7E option



TPRCSXX Accessory

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BHDF SERIES
BOSTON HARBOUR STYLE
Decorative Arm Fitter

ORDERING INFORMATION

Example: BHDF QSM BK PR7E PCLL

Series		Size		Finish		Options	
BHDF	Harbor Decorative Arm Fitter	NPT15S	Pendant 1.50 NPT Swivel	BK	Black	PR3E	External Mounted NEMA Twist Lock Photocontrol Receptacle - 3 PIN
		NPT15R	Pendant 1.50 NPT Rigid	BZ	Bronze	PR7E	External Mounted NEMA Twist Lock Dimming Photocontrol Receptacle - 7 PIN
		QSM	Quick Stem Mount	DB	Dark Blue	SH	Shorting cap
				GH	Graphite	PCLL	Long Life DTL Twistlock Photocontrol for Solid State, MVOLT
				GN	Green	P34	Long Life DTL Twistlock Photocontrol for Solid State, 347V
				GR	Gray	P48	Long Life DTL Twistlock Photocontrol for Solid State, 480V
				PP	Prime Painted		
				SL	Silver		
				WH	White		
				CMC	Customer matching color		
				CTBS	Standard color to be selected		
				RALxxxxSDCR	RAL Super Durable Corrosion Resistant, 80% Gloss Paint, replace xxxx with RAL number.		

Accessories	
TPRCSXX	Twistlock Photocontrol Cover Assembly with Spike Finial

Note:
Cover will only work with PR3E or PR73 with Acuity's PCLL, P34, P48, SH or other like devices equal in dimension.

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Catalog Number	ESL3 P20S 30K MVOLT TG2 QSM RAL PR7E NL1X1	
Notes	Teardrop Glass & Door: Type 2 application	Type X-7B FIXTURE

HLWPC2

Wallpack® Full Cutoff LED





Mechanical

- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering
- Mounts to a standard junction box
- Wet location listed
- IP65 rated housing, down light only
- ¾" painted threaded entry(¾" - 14 NPT) on each side and on top, accepts ¾" and ½" conduit
- ¾" threaded plugs are painted on each side
- Vibration tested to 1.5G per ANSI C136.31.

Electrical

- Certified by UL or CSA
- Rated for -40°C (-40°F) minimum ambient
- A programmable electronic driver with 0-10V control leads
- Available in: 120-277V 50/60 Hz and 347-480V 50/60 Hz,
- Standard: 3000K, 4000K and 5000K CCT (>70 CRI)
- Optional >80 CRI (3000K, 4000K and 5000K CCT)
- Internally mounted emergency battery backup for operation in an ambient temperature ranging from -20°C (-4°F) to 30°C (86°F), available with P10 thru P40 performance packages, non CEC compliant
- All surge protection meets ANSI/IEEE C62.41.2 10kV/10kA
- Standard surge protection is 20kV/10kA per ANSI C136.2
- Optional surge protection is 10kV/5kA per ANSI C136.2

Optical

- Light engine housing is IP66 rated
- Acrylic optical system
- Type V: E (entry), M (medium), R (rectangle) & W (wide)
- Asymmetric

Controls

- Field adjustable output (AO)
- Button style photocontrol (PE)
- Motion sensor & ambient photocontrol combination for mounting low (8-15') (MASL) and high (15-30') (MASH) mounting heights

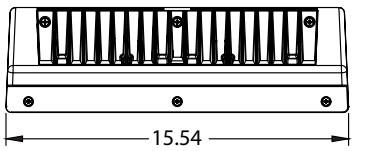
Certification and Standards

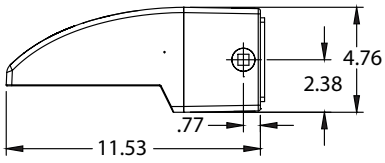
- Luminaire is CSA listed, US and Canada
- Suitable for operation in an ambient temperature up to 40°C/104°F per UL or CSA certification
- Design lights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- LM-79 compliant
- The projected LED Lumen Maintenance shall be based only on IES LM-80-08 and TM-21

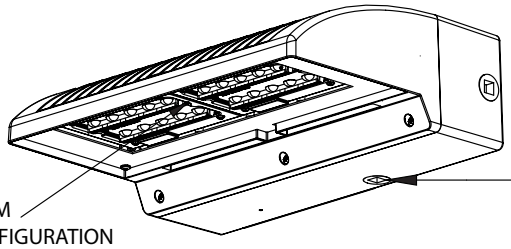
Warranty

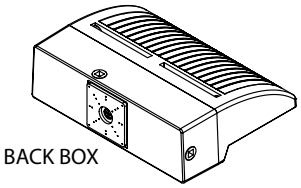
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions.

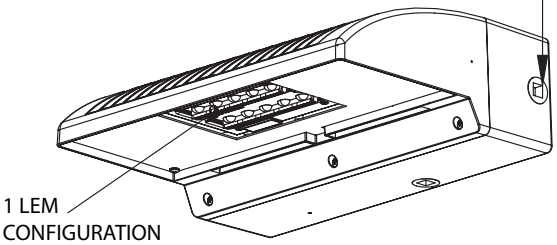
Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.











Note: Maximum weight 22 lbs.

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HLWPC2

Wallpack® Full Cutoff LED

ORDERING INFORMATION

Example: HLWPC2 P20 40K AS T3M BZSDP

Series	Lumen Package	Color Temperature	Voltage	Optics	Color	CRI
HLWPC2 Wallpack Full Cutoff LED	1 LEM Package P10 3,100 lm P20 5,600 lm 2 LEM Package P30 7,800 lm P40 9,900 lm P50 11,700 lm (Nominal Lumens, 4000K)	AMB True Amber 30K 3,000 K CCT 40K 4,000 K CCT 50K 5,000 K CCT	120 120 volts 208 208 volts 240 240 volts 277 277 volts 347 347 volts 480 480 volts HVOLT 347/480 volts MVOLT 120-277 volts	T2S Type 2 Short T2M Type 2 Medium T3S Type 3 Short T3M Type 3 Medium T4M Type 4 Medium TFTM Forward Throw Medium ASYDF Asymmetric Diffuse SYMDF Symmetric Diffuse	BKSDP Black BZSDP Bronze GYSDP Grey WHSDP White	Blank 70 CRI (STD) 80CRI 80 CRI

Options:

Adjustable/Programmable Options

AO Field Adjustable Output

Circuit Options

2CI 2 Independent Circuits

Control - Motion Sensor Options

MASL Motion / Ambient Sensor, 8-15' Mounting Height Ambient Sensor Enabled at 1 FC

MASH Motion / Ambient Sensor, 15-30' Mounting Height Ambient Sensor Enabled at 1 FC

Control - Photocontrol Options

PE Button Style Photocontrol

P3 N.E.M.A. Twistlock Receptacle Mount -3 PIN

P7 N.E.M.A. Twistlock Receptacle Mount -7 PIN

PCLL DTL Long Life Twistlock Photocontrol for Solid State

PSC Shorting Cap

Fuse Option

SF Single Fuse

DF Double Fuse

Safety Option

EM Integral Emergency Battery

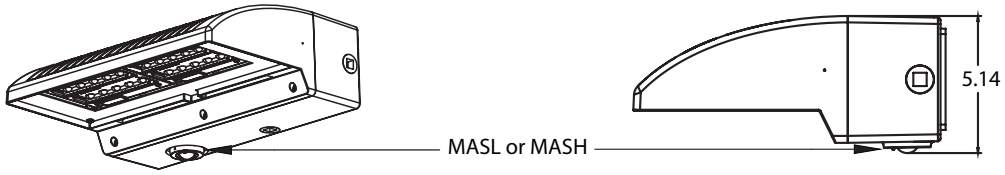
TP Tamper Resistant Hardware

Surge Protection Option - 20kV/10kA is Standard

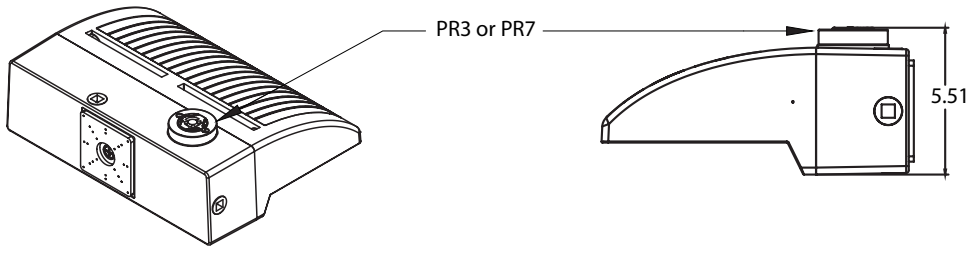
10KV 10kV/5kA Surge Protection, in place of 20kV/10kA

Options Location

Motion/Ambient Sensor mount options for Low (8-15') (MASL) and Height (15-30') (MASH) applications

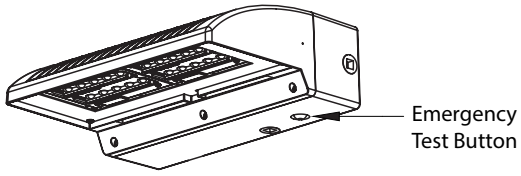


N.E.M.A. Twistlock Receptacle P3 and P7 Options, P7 Shown

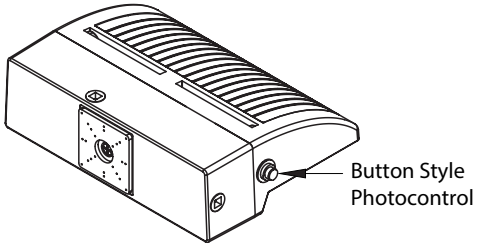


Internal Emergency Battery Test Button - EM Option

Test Button - EM Option



Button Style Photocontrol - PE Option

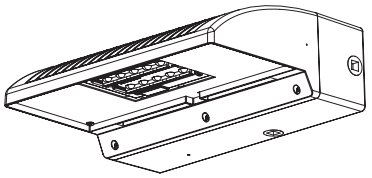


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Driver & LEM Configuration Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)		Two Circuit (2CI option)	
		LEMs	Drivers	LEMs	Drivers
Lumen Maintenance Factor	P10	1	1	-	-
	P20	1	1	2	2
	P30	2	1	2	2
	P40	2	1	2	2
	P50	2	1	-	-

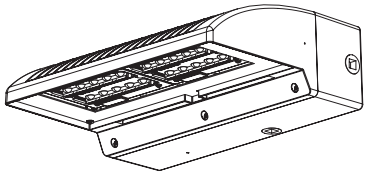
1 LEM Luminaire



SPD Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)				Two Circuit (2CI option)			
		LEMs	Drivers	No. of SPDs	SPD	LEMs	Drivers	No. of SPDs	SPD
Lumen Maintenance Factor	P10	1	1	1	20kV/10kA	-	-	-	-
	P20	1	1	1	20kV/10kA	2	2	2	10kV/5kA
	P30	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P40	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P50	2	1	1	20kV/10kA	-	-	-	-

2 LEM Luminaire



Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platform noted in a 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

The italicized data is extrapolated beyond the TM-21 standard.

E = (LM) x (CU) x (LAT) x (LLD)
LM and CU are obtained from published photometry.

Operating Hours (Standard)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P20	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85
	P30	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P40	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85

Operating Hours (2CI Option)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P20	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P30	1	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
	P40	1	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Single Circuit Application

Ambient		P10	P20	P30	P40	P50
0°C	32°F	1.02	1.03	1.03	1.04	1.05
10°C	50°F	1.01	1.02	1.02	1.03	1.03
20°C	68°F	1.01	1.01	1.01	1.01	1.01
25°C	77°F	1.00	1.00	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99	0.99	0.99
40°C	104°F	0.98	0.97	0.98	0.97	0.97

Optional Two Independent Circuit (2CI) Application

Ambient		P20	P30	P40
0°C	32°F	1.02	1.02	1.02
10°C	50°F	1.01	1.01	1.02
20°C	68°F	1.00	1.01	1.01
25°C	77°F	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99
40°C	104°F	0.98	0.98	0.98

Electrical Load

Single Circuit Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	700	28	0.23	0.13	0.12	0.10	0.08	0.06
P20	1400	47	0.41	0.24	0.20	0.18	0.14	0.10
P30	1050	71	0.63	0.37	0.32	0.29	0.22	0.18
P40	1420	95	0.78	0.45	0.40	0.35	0.27	0.20
P50	1720	115	0.95	0.55	0.48	0.42	0.33	0.24

Optional Two Independent Circuit (2CI) Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	-	-	-	-	-	-	-	-
P20	700	22	0.10	0.06	0.05	0.04	-	-
P30	1000	32	0.14	0.08	0.07	0.06	-	-
P40	1250	47	0.18	0.10	0.09	0.08	-	-
P50	-	-	-	-	-	-	-	-

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Operating Characteristics

LED Package	Distribution	System Watts	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10	T2S	28	2,904	104	1	0	1	3,128	112	1	0	1	3,168	113	1	0	1
	T2M	28	2,887	103	1	0	1	3,110	111	1	0	1	3,149	112	1	0	1
	T3S	28	2,964	106	1	0	1	3,194	114	1	0	1	3,234	116	1	0	1
	T3M	28	2,801	100	1	0	1	3,017	108	1	0	1	3,055	109	1	0	1
	T4M	28	2,858	102	1	0	1	3,079	110	1	0	1	3,118	111	1	0	1
	TFTM	28	2,979	106	1	0	1	3,209	115	1	0	1	3,250	116	1	0	1
	SYMDF	28	2,771	99	1	0	1	2,986	107	1	0	1	3,023	108	1	0	1
	ASYDF	28	2,756	98	1	0	1	2,969	106	1	0	1	3,007	107	1	0	1
P20	T2S	47	5,303	113	1	0	1	5,713	122	1	0	1	5,785	123	1	0	1
	T2M	47	5,272	112	1	0	2	5,680	121	1	0	2	5,751	122	1	0	2
	T3S	47	5,414	115	1	0	2	5,832	124	1	0	2	5,906	126	1	0	2
	T3M	47	5,115	109	1	0	2	5,510	117	1	0	2	5,580	119	1	0	2
	T4M	47	5,220	111	1	0	2	5,623	120	1	0	2	5,694	121	1	0	2
	TFTM	47	5,440	116	1	0	2	5,861	125	1	0	2	5,935	126	1	0	2
	SYMDF	47	5,062	108	2	0	2	5,453	116	2	0	2	5,522	117	2	0	2
	ASYDF	47	5,033	107	1	0	1	5,422	115	2	0	1	5,491	117	2	0	1
P30	T2S	71	7,319	103	2	0	2	7,884	111	2	0	2	7,984	112	2	0	2
	T2M	71	7,276	102	2	0	2	7,838	110	2	0	2	7,937	112	2	0	2
	T3S	71	7,472	105	1	0	2	8,049	113	2	0	2	8,151	115	2	0	2
	T3M	71	7,059	99	2	0	2	7,604	107	2	0	2	7,700	108	2	0	2
	T4M	71	7,203	101	2	0	2	7,760	109	2	0	2	7,858	111	2	0	2
	TFTM	71	7,508	106	1	0	2	8,088	114	2	0	2	8,190	115	2	0	2
	SYMDF	71	6,985	98	2	0	2	7,525	106	3	0	3	7,620	107	3	0	3
	ASYDF	71	6,946	98	2	0	2	7,483	105	2	0	2	7,578	107	2	0	2
P40	T2S	95	9,320	98	2	0	2	10,041	106	2	0	2	10,168	107	2	0	2
	T2M	95	9,266	98	2	0	2	9,982	105	2	0	3	10,108	106	2	0	3
	T3S	95	9,515	100	2	0	2	10,251	108	2	0	2	10,381	109	2	0	2
	T3M	95	8,989	95	2	0	2	9,684	102	2	0	2	9,807	103	2	0	2
	T4M	95	9,174	97	2	0	2	9,883	104	2	0	3	10,008	105	2	0	3
	TFTM	95	9,561	101	2	0	2	10,300	108	2	0	2	10,431	110	2	0	2
	SYMDF	95	8,896	94	3	0	3	9,583	101	3	0	3	9,705	102	3	0	3
	ASYDF	95	8,846	93	2	0	2	9,530	100	2	0	2	9,650	102	2	0	2
P50	T2S	115	10,972	95	2	0	2	11,820	103	2	0	2	11,969	104	2	0	2
	T2M	115	10,908	95	2	0	3	11,751	102	2	0	3	11,900	103	2	0	3
	T3S	115	11,202	97	2	0	2	12,067	105	2	0	2	12,220	106	2	0	2
	T3M	115	10,582	92	2	0	2	11,400	99	2	0	3	11,544	100	2	0	3
	T4M	115	10,799	94	2	0	3	11,634	101	2	0	3	11,781	102	2	0	3
	TFTM	115	11,256	98	2	0	2	12,126	105	2	0	2	12,279	107	2	0	2
	SYMDF	115	10,472	91	3	0	3	11,282	98	3	0	3	11,424	99	3	0	3
	ASYDF	115	10,414	91	2	0	2	11,219	98	3	0	2	11,361	99	3	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

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Operating Characteristics (continued)

LED Package	Distribution	System Watts	30K + 2CI Option (3000K, 70 CRI)					40K + 2CI Option (4000K, 70 CRI)					50K + 2CI Option (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P20	T2S	49	5,015	102	1	0	1	5,402	110	1	0	1	5,471	112	1	0	1
	T2M	49	4,985	102	1	0	2	5,371	110	1	0	2	5,439	111	1	0	2
	T3S	49	5,120	104	1	0	1	5,515	113	1	0	2	5,585	114	1	0	2
	T3M	49	4,837	99	1	0	2	5,210	106	1	0	2	5,276	108	1	0	2
	T4M	49	4,936	101	1	0	2	5,317	109	1	0	2	5,385	110	1	0	2
	TFTM	49	5,144	105	1	0	2	5,542	113	1	0	2	5,612	115	1	0	2
	SYMDF	49	4,786	98	2	0	2	5,156	105	2	0	2	5,222	107	2	0	2
	ASYDF	49	4,760	97	1	0	1	5,127	105	1	0	1	5,192	106	1	0	1
P30	T2S	70	6,769	97	1	0	1	7,293	104	2	0	2	7,385	106	2	0	2
	T2M	70	6,730	96	2	0	2	7,250	104	2	0	2	7,342	105	2	0	2
	T3S	70	6,911	99	1	0	2	7,445	106	1	0	2	7,539	108	1	0	2
	T3M	70	6,529	93	2	0	2	7,033	100	2	0	2	7,123	102	2	0	2
	T4M	70	6,663	95	2	0	2	7,178	103	2	0	2	7,269	104	2	0	2
	TFTM	70	6,945	99	1	0	2	7,481	107	1	0	2	7,576	108	2	0	2
	SYMDF	70	6,461	92	2	0	2	6,960	99	2	0	2	7,049	101	2	0	2
	ASYDF	70	6,425	92	2	0	2	6,922	99	2	0	2	7,009	100	2	0	2
P40	T2S	89	8,370	94	2	0	2	9,017	101	2	0	2	9,131	103	2	0	2
	T2M	89	8,321	93	2	0	2	8,964	101	2	0	2	9,078	102	2	0	2
	T3S	89	8,545	96	2	0	2	9,205	103	2	0	2	9,322	105	2	0	2
	T3M	89	8,073	91	2	0	2	8,696	98	2	0	2	8,807	99	2	0	2
	T4M	89	8,238	93	2	0	2	8,875	100	2	0	2	8,987	101	2	0	2
	TFTM	89	8,586	96	2	0	2	9,250	104	2	0	2	9,367	105	2	0	2
	SYMDF	89	7,989	90	3	0	3	8,606	97	3	0	3	8,715	98	3	0	3
	ASYDF	89	7,944	89	2	0	2	8,558	96	2	0	2	8,666	97	2	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

LED Package	Distribution	System Watts	AMB (Wavelength)					LED Package	Distribution	System Watts	AMB (Wavelength)				
			Lumens	LPW	B	U	G				Lumens	LPW	B	U	G
P10	T2S	28	1,061	38	0	0	1	P30	T2S	28	1,975	71	0	0	1
	T2M	28	1,054	38	0	0	1		T2M	28	1,964	70	0	0	1
	T3S	28	1,083	39	0	0	1		T3S	28	2,016	72	0	0	1
	T3M	28	1,023	37	0	0	1		T3M	28	1,905	68	0	0	1
	T4M	28	1,044	37	0	0	1		T4M	28	1,944	69	0	0	1
	TFTM	28	1,088	39	0	0	1		TFTM	28	2,026	72	0	0	1
	SYMDF	28	1,012	36	1	0	1		SYMDF	28	1,885	67	1	0	1
	ASYDF	28	1,007	36	0	0	1		ASYDF	28	1,875	67	0	0	1

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Options Matrix

Parameters		LED AMB	Options (Start with SF, DF, 2CI or EM if being used)													
			PE	P3	P7	PSC	PCLL	MASH	MASL	SF	DF	TP	10kV	AO	2CI	EM
LED Performance Package	P10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	P20	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Voltage	AS	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
	AH	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	N
	12	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	20	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	24	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	27	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	34	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	N
	48	Y	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	N	N
Options	PE	Y		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y
	P3	Y	N		N	M	Y	N	N	Y	Y	Y	Y	N	N	N
	P7	Y	N	N		M	Y	N	N	Y	Y	Y	Y	N	N	N
	PSC	Y	N	M	M		N	N	N	Y	Y	Y	Y	N	N	N
	PCLL	Y	N	Y	Y	N		N	N	Y	Y	Y	Y	N	N	N
	MASH	Y	N	N	N	N	N		N	Y	Y	Y	Y	N	N	N
	MASL	Y	N	N	N	N	N	N		Y	Y	Y	Y	N	N	N
	SF	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y
	DF	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y
	TP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	10kV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	M	M
	AO	Y	Y	N	N	N	N	N	N	Y	Y	Y	Y		N	N
	2CI	P30	N	N	N	N	N	N	N	Y	Y	Y	M	N		N
	EM	Y	Y	N	N	N	N	N	N	Y	Y	Y	M	N	N	

Notes
I = Included with option
M = Must have: one of these must be installed for the luminaire to operate
N = Combination Not available
P30 = Valid Option Combination, not available with P10 Performance Packabe
Y = Valid Option Combination

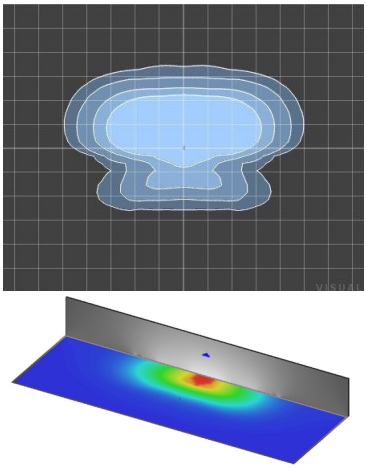
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Photometric Diagrams

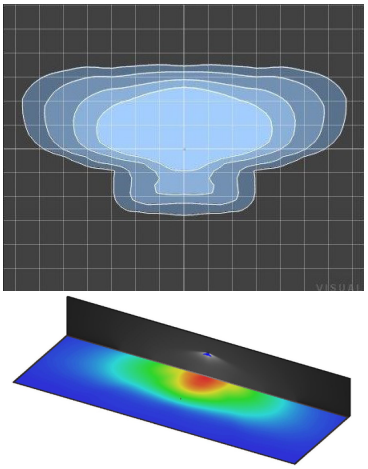
To see complete photometric reports or download .ies files for this product, visit the Holophane's Wallpack FCO LED homepage. Isofootcandle plots for the HLWPC2 P30 40K. Distance are in units of mounting height (12"). Grid is 10'x10'.

0.1 fc	1 fc	0.2 fc	0.5 fc

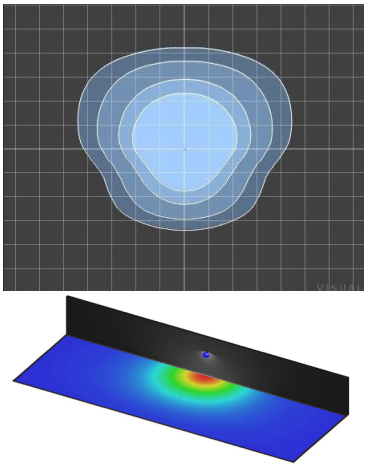
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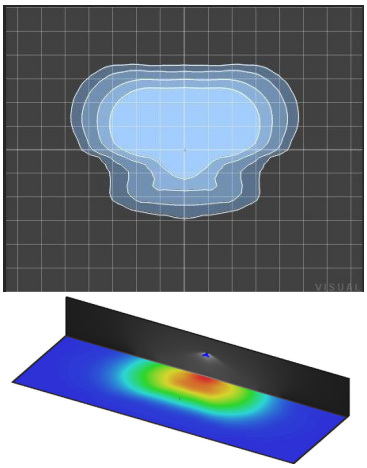
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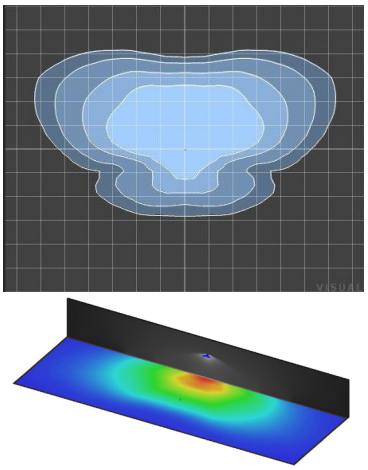
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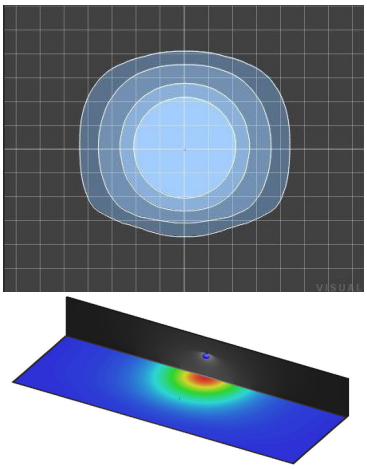
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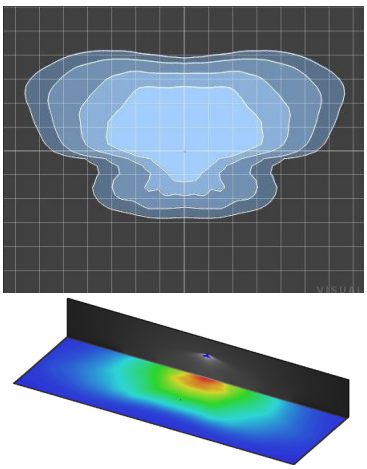
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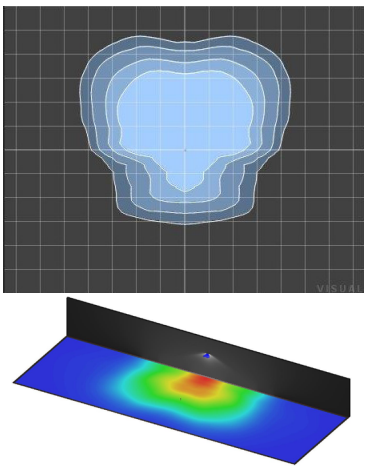
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HLWPC2 P30 40K XX T4M



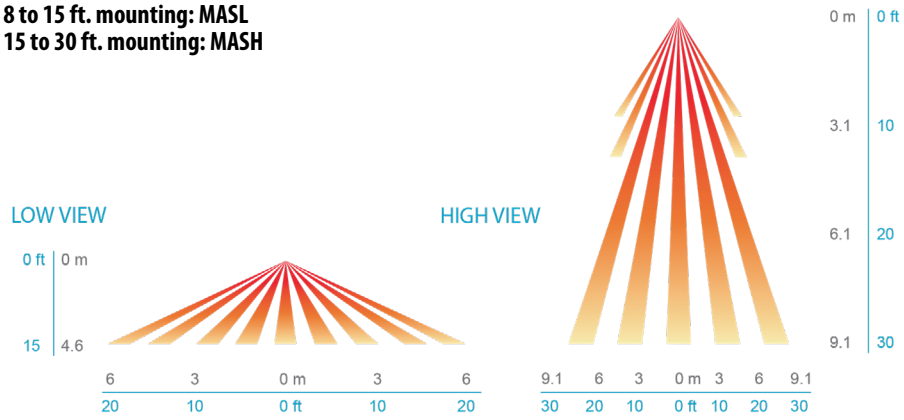
HLWPC2 P30 40K XX TFTM



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Coverage Pattern

8 to 15 ft. mounting: MASL
15 to 30 ft. mounting: MASH



Control Options

Button Style Photocontrol

PE



N.E.M.A. Receptacle

P3



P7



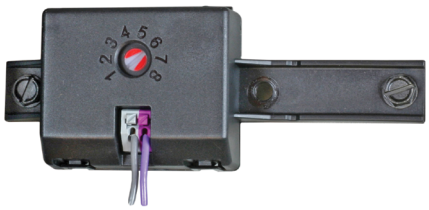
Motion & Ambient Combined Sensor

MASL/MASH



Field Adjustable Output Module

The Field Adjustable Output (AO) module is an onboard device that adjusts the light output and input voltage to meet specific requirements, allowing a single fixture configuration to be flexibly applied in many different applications. The AO option is available on the HLWPC2 series.



P10 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	94%	95%
6	83%	82%
5	71%	69%
4	59%	57%
3	46%	45%
2	34%	33%
1	21%	21%

P20 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P30 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

P40 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	95%
6	85%	82%
5	74%	68%
4	62%	55%
3	49%	43%
2	36%	30%
1	21%	17%

P50 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	96%	95%
6	86%	81%
5	75%	68%
4	64%	55%
3	51%	42%
2	37%	29%
1	22%	17%

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O. Architectural Design Narrative

Please find attached the design narrative completed by Ryan Senatore Architecture.

March 28, 2023

Christine Gramando
Planning and Urban Development Department Director
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Re: 89 Elm Street Apartments - Design Narrative

Dear Christine,

The proposed building to be located at 89 Elm Street in Portland's Bayside Neighborhood consists of 201 affordable residential apartment units.

Prior to developing the building concept we spent time walking the surrounding streets, analyzing existing streetscapes, building massing, forms, materials and textures. This approach allowed us to develop a design concept that is grounded by the existing neighborhood context but reflects our contemporary time.

The neighborhood is comprised of a diverse palate of Architectural forms, and time periods of design and construction. The surrounding streets contain residential structures with sloped roofs, large commercial buildings with flat roofs, brick exterior walls, lap siding, concrete exterior walls, and metal panel siding.

We designed the building using color, massing and texture to scale the building as reflected on the attached elevations. The facades utilize punched openings in pairs with horizontal metal siding that reference residential vernacular Architecture. The facade is organized into bays that work their way down Elm street, these bays are broken by recesses and contrasting dark panel siding. The windows in these vertical breaks are single windows versus the paired windows to provide a bit more differentiation. The building has a brick base in a contemporary buff color, this base is a durable material at pedestrian level that references the historic brick buildings in the neighborhood.

207-747-5159

senatorearchitecture.com

ryan@senatorearchitecture.com

500 Congress Street, Suite 2
Portland, Maine 04101

The massing of the building steps in height along Elm Street as well as along Oxford and Lancaster toward the Eastern existing residential structures.

The siding materials proposed are factory finished metal corrugated siding, metal panel siding and brick, chosen for their crisp appearance and long term durability. The windows proposed are dark in color to compliment the siding colors and also further reinforce the crisp simplicity of the design. The roofing proposed is an EPDM roof membrane.

We look forward to discussing the project at the upcoming Planning Board workshop.

Sincerely,



Ryan Senatore, AIA LEED AP

Principal

207-747-5159

senatorearchitecture.com

ryan@senatorearchitecture.com

500 Congress Street, Suite 2
Portland, Maine 04101

P. Utilities

The proposed project will include installation of multiple utility services to the proposed building.

Water:

Based on the City archive plans, there is an existing 8" water main within Lancaster Street and 6" water main within Elm Street. It is proposed to connect into the existing 8" water main along Lancaster Street with three services to feed the proposed building. The connections include a 2" and 4" domestic service, and an 8" fire service line.

Sewer:

An existing 15" sewer exists in Elm Street. It is proposed to connect a new 8" PVC lateral into the existing SMH-4 on Elm Street. A backflow preventer is proposed at the property line before connecting into the existing manhole.

Stormwater:

Overall, the impervious area on site will decrease due to the current site use being a surface parking lot. The relatively large amount of roof area and additional green space will result in a more favorable pollutant ranking as compared to the existing condition.

Treatment will be accomplished using Storm-filter cartridges to further discharge into a proposed R-Tank subsurface detention system. Per the City comments received in part of the West Bayside Master development plan, it is requested that we provide storage on site for the greater volume out of the following; either the sanitary flows generated from the proposed development or 1" of rainfall over the entire developed area.

Based on the city archive plans, there is an existing 10" clay sewer "feeder" pipe. from 1904 within the frontage of 89 Elm Street along Lancaster Street. Based on discussions with DPW, there is potential to abandon this pipe in place and install a new separated 12" storm drain within the same corridor. It is proposed to tie 89 Elm's stormwater discharge into this proposed 12" line. This new storm drain will run within Lancaster Street and tie into the existing MS4 at the intersection of Preble and Lancaster. Please refer to the Grading & Drainage plans as well as the Stormwater Management Report for more information.

Electric/Communications:

The development currently proposes to extend 3-phase power from Elm Street and route the overhead lines to a new proposed utility pole along the frontage of 89 Elm within the Lancaster Street ROW. Currently it is proposed to drop 3-phase underground from the newly proposed utility pole into a pull box/ manhole and route

to the proposed transformer on site. Depending on the final building design and proposed loads to be generated, this design may change. Potential improvements and temporary routing to the existing network and the proposed, are to be coordinated with the appropriate utility companies.

Gas:

It is our understanding that a 2" gas main exists within Elm, Oxford, and Cedar Street. It is proposed to connect a new gas line to the 2" gas main within Oxford Street and is proposed to serve the development. See Sheet C-20, Utility Plan, for more information.

Ability to serve letters have been sent out to the respective utility companies in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use. Responses from the utility companies are forthcoming.

Q. Construction Management Plan

Project Address: 89 Elm Street, Portland Maine, 04101

Project Description:

The project proposes to redevelop the current parcel consisting of a surface level parking lot into a proposed 8-story building. The building will be utilized by primarily residential space with retail and restaurant space on the first floor. The project will be providing a paved travel way for internal circulation, reduce overall impervious area on site, in addition to including stormwater management features to reduce stormwater runoff.

Project Team Summary:

Owner:	89 Elm Street, LLC
General Contractor:	TBD
Civil & Environmental Engineer:	Acorn Engineering, Inc.
Architect:	Ryan Senatore Architecture
Structural Engineer:	Structural Integrity Consulting Engineers
Geotechnical Engineer:	Summit Geoengineering Services

The Owner/GC and all subcontractors will work with the City of Portland and adjacent landowners to minimize any project impacts.

The GC will remain responsible for enforcement of all compliance with 1) all contract plans and specifications in their scope of work and 2) all site working conditions and safety requirements, day and night, for both persons and property, in each case for the duration of their work. These include OSHA, NIOSH, U.S. EPA, local ordinance and any other applicable governmental regulations. Both the Owner/GC and any subcontractors will remain responsible for safeguarding the general public.

The GC shall review all permits and conditions associated with the project. Refer to the Civil/Site Plan Set, Sheet C-03 Construction Management Plan for visual representation of the measures to be taken during construction.

The following outline has been developed in accordance with the City of Portland Construction Management Plan General Template and shall be referenced by the GC during construction.

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction related factors will be of utmost importance. Care shall be taken to minimize these effects in the best interest of neighbors and the general public. GC to ensure that work hours conform to the City of Portland's Ordinance.

B. Development Review of Construction Management Plan

Logistics and safety program shall be submitted at or prior to the preconstruction meeting by the GC with all pertinent information required by the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Guarantees and fees will be paid at the time of the respective application. Sections 14-11 will be complied with all necessary permits will be obtained prior to work.

1. Street Opening and Street Occupancy Permits:

   Required permits regarding street opening and occupancy will be obtained from the Department of Public Works. The requests shall conform to the approved Construction Management Plan.

2. Blasting:

   Although not anticipated, if blasting occurs, it shall conform to Article VIII. In Chapter 14 of the City Code and Section 3.7 in the City's Technical Manual.

3. Building Code:

   Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code. In addition to the best practices set forth in the Inclusionary Zoning Guidelines for Developers of rental housing.

D. Construction Administration and Communication

The Contractor will work closely with adjacent abutters, businesses, and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. Communication in order to comply with all agreements, ordinances, and special permits will be of the utmost importance. Contractor and Subcontractor contact information shall be posted somewhere along the project's street frontage. Additional signage necessary for communication shall be provided but will be temporary and removed upon completion of the project.

E. Construction Schedule

The GC shall submit a construction timeline at or prior to the preconstruction meeting. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and City Code Section 25-129, Noise, dust and debris. Between September 1 and May 31, the following year, no person shall engage in construction activities generating noise exceeding 50 decibels, between the hours of 7 pm and 7 am of the following day within 500 feet of any buildings. From

June 1 to August 31, construction activity may continue until 8 pm. No construction activity shall begin before 8 am on a Saturday, Sunday, or legal holiday. Extended hours or night work may be requested for special circumstances and street utility work if needed. These requests will be subject to approval by the Public Works Authority. Deliveries will be scheduled between 7 am and 5 pm.

The estimated timeframe of the proposed project is outlined below:

Project Start Date:	Spring 2024
Project End Date:	Spring 2026

A more detailed work schedule shall be provided by the GC at or before the pre-construction meeting with the City.

F. Security

1. The Construction Management Plan, Sheet C-03, depicts all proposed fencing and other barriers, with the intent of separating pedestrian and vehicle circulation from the construction site. Construction entrances per detail shall be installed.

2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*

3. Fire Safety Program: Prior to construction, an overall construction and demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting from previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations.

4. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

5. Temporary security lighting shall be shown on the Construction Management Plan, and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets

   Construction activity in the public right-of-way shall be compliant with Chapter 25 Article VII of the City Code. At no time will it be permissible for construction activity including delivery vehicle to 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 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. The contractor shall submit a satisfactory "Maintenance of Traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

   The MOT will address the work required for utility connections in Lancaster and Oxford Street. Traffic will be channelized utilizing drums and cones. Proper signage will be installed prior to the through work zone. Alternating traffic will be controlled with flaggers. Trenches will be patched with pavement daily.

   The MOT plan shall provide for the safe passage of the public through or along the construction work zone. It may be permissible to close a portion of the street during utility connections and/or detour a mode of traffic when absolutely necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

   - Construction speed signing may be used as needed to slow traffic.
   - Traffic Control signs shall not be placed where they would create any obstructions to bicycles or pedestrians.
   - Flaggers will be utilized when necessary.

   All existing modes of travel in the work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning and laying out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses

and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance in all capacities shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

H. Site Management and Controls

1. Regular trash and debris shall be managed appropriately, and its removal shall comply with all local, state, and federal regulations.

2. Street cleaning and sweeping shall be followed as outlined in the erosion and sedimentation control notes and report. Damage to the street shall be avoided and shall be the responsibility of the contractor.

3. Dust shall be controlled and shall comply with Section 25-129 and the erosion and sedimentation control notes, plan, and details.

4. Noise shall be controlled and shall comply with Section 17-18 and Section 25-129.

5. Rodent Control shall be provided, if applicable, by a professional exterminator and shall be consistent with Chapter 22 of the City Code.

6. Snow and Ice Removal shall be provided. Pursuant to Section 25-173, the Contractor shall ensure a safe means of travel within the work zone by the following steps:

    a. Snow/ice removal or commence automatically from 1" or greater of snow or ice
    b. Remove snow as needed within the work zone, including parking spaces. Driveways and site lines shall not be blocked by piles of snow.
    c. Clear all walks and ramps within the work zone
    d. Sand or salt as needed
    e. Clear all basin or drainage to help snow melt
    f. The above steps shall be carried out Sunday-Saturday including holidays.

I. Erosion & Sedimentation Control

1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved Construction Management Plan, C-03, and the approved erosion and sedimentation control report, 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 storm events (0.5" or more in 24 hours). Additionally, temporary or permanent stormwater management systems shall be inspected and maintained to ensure 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 (MDEP) or the U.S. Environmental Protection Agency (EPA) upon request.

2. Due to the existing, sparse landscaping on site, no protection during construction will be necessary.

3. Stored materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the pre-construction meeting. Any open storage areas shall be shown on the plan.

2. Delivery Truck Holding Areas On-Site: The majority of materials delivered to the site will be scheduled such that they are able to be off-loaded immediately. 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 trucks until they can be unloaded. Once at the site all vehicles will be brought within the fence line and will make every attempt to avoid queuing on public streets. If, for any reason, on-site holding of trucks is not feasible, an off-site location must be designated and shown on the submitted plan referenced above in J.1.

3. All deliveries for materials shall comply with the City's noise requirements.

K. Parking During Construction

1. Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided.

2. Truck Routes and Volumes: The following quantities are estimated as part of the reconstruction:

    - Gravel & Stone – 3,640 CY. Earthwork subcontractor(s) pit to project site.

- Hot Mix Asphalt – 460 Tons. Paving subcontractor pit to project site.

L. Dewatering Plans

1. A basic dewatering plan for any construction work is required and shall be submitted by the Contractor. The plan must cover construction sites where groundwater is not expected but the impact of rainwater may require dewatering. The plan must include operating procedures, equipment to be used, including filters, erosion and sediment control measures, or other methods of removing sediment from approved discharges.

2. For construction work that will require frequent dewatering of groundwater from site, a dewatering plan must be prepared by the Contractor and approved by the Department of Public Works. Groundwater and/or soil testing may be required to determine course of action if treatment is necessary. Approval for all discharges to City infrastructure is required. The proposed plan must address the following:

    - Project duration, discharge location, storage equipment on-site, dewatering schematic, and emergency contact.
    - General requirements include trained staff on-site for all approve discharges and required site log for documentation of all discharges.
    - Storage and/or treatment process should include proper settling time and maintain proper use of filtering medium as required.
    - Contingency/maintenance plan for all dewatering equipment devices and filtration mediums.

    Any water that is removed from an excavation must be pumped from a perforated device buried in crush stone prior discharge and/or prior to storage and treatment. There will be no discharge allowed during precipitation events.

M. Special Measures as Necessary

No special measures are necessary for the proposed reconstruction.

EXISTING UNDERGROUND ELECTRICAL CONDUIT

EXISTING SMH 2

EXISTING 44" COMBINED SEWER L=250' S=0.005

EXISTING SMH-1

EXISTING 18" COMBINED SEWER

EXISTING SMH-4

LANCASTER STREET

EXISTING 8" WATER MAIN TO BE REPLACED. SEE SHEET C-20 FOR MORE INFORMATION.

EXISTING 10" V.I.T. COMBINED SEWER TO BE CAPPED, FILLED WITH FLOWABLE FILL, AND ABANDONED IN PLACE BETWEEN MANHOLES. COORDINATE WITH DPW.

EXISTING SMH 3

REMOVE EX. TREE

APPLICANT TO COORDINATE WITH CITY ON RELOCATING BIKE RACKS

CATCH BASIN INLET PROTECTION PER DETAIL, TYP. OF ALL STRUCTURES DOWN GRADIENT OF CONSTRUCTION

REMOVE EX. GRAVEL

EX. CATCH BASIN TO BE REMOVED

UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP

EX. UTILITY POLE TO BE RELOCATED IN COORDINATION WITH CMP, TYP.

EXISTING 2" PVC GAS MAIN

APPROX. EXTENTS OF SIDEWALK TO BE REMOVED TEMPORARILY AND REPLACED. SEE SHEET C-10. CONTRACTOR TO PROVIDE TRAFFIC AND PEDESTRIAN CONTROL PLAN TO DPW PRIOR TO BUILDING PERMIT ISSUANCE.

EXISITNG 15" CMP SEWER

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

EX. UT POLE AND OVERHEAD WIRES TO BE REMOVED

EXISTING 6" WATER MAIN

EXISTING CENTERLINE PAINT AND BIKE LANE

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

REMOVE EX. GUARDRAIL

REMOVE EX. CURBING & SIDEWALK FOR PR. CURB CUT

TM 26-A-11
N/F ROBERT HYDE
27470/68

EXISTING STREET TREES ALONG PROJECT FRONTAGE TO BE TEMPORARILY REMOVED. REFER TO SHEET C-10 AND THE LANDSCAPE PLAN FOR MORE INFORMATION ON THE PROPOSED STREET TREE CONDITION.

PREBLE STREET

ELM STREET

89 ELM STREET
35,282 SF±
0.81 AC ±

50 CEDAR STREET

CEDAR STREET

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

EX. POLE OVERHEAD WIRE AND STREET LIGHT TO BE REMOVED

N/F AMELIA A. LABRECK
37970/11

HALL COURT

CONSTRUCTION MANAGER TO PROVIDE TRAFFIC CONTROL PLAN TO DPW FOR REVIEW PRIOR TO ISSUANCE OF BUILDING PERMIT.

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

LIGHT POLES TO BE TEMPORARILY REMOVED. SEE SHEET C-10 FOR PROPOSED RELOCATED LIGHTING. TYP. OF ALL LIGHT POLES

APPROX. EXTENTS OF ESC BARRIER AND CONSTRUCTION FENCE. CONTRACTOR TO DEFINE FINAL FENCING AND GATE(S) WITH KNOX BOX.

EXISTING CONCRETE RETAINING WALL TO BE REMOVED, TYP.

EXISTING GUARDRAIL TO BE REMOVED

EX. LILAC TO REMAIN AND BE PROTECTED DURING CONSTRUCTION.

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

APPROXIMATE LOCATION OF EXISTING UNDERGROUND ELECTRICAL BOX AND CONDUIT TO BE REMOVED AND REPLACED IN COORDINATION WITH RESPECTIVE UTILITY COMPANY.

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

EXISTING OVERHEAD UTILITY LINE FROM CMP POLE #9 TO #33 ON OXFORD AND CEDAR STREET TO BE REROUTED AS PART OF THIS PROJECT. SEE SHEET C-20 FOR MORE INFORMATION.

EXISTING 21" DBH TREE TO BE REMOVED

OXFORD STREET

EX. 2" GAS MAIN

EX. UNDERGROUND ELECTRIC

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE FOLLOWING:
    - 12.1. REQUEST AND REVIEW RELEVANT DOCUMENTS THAT SUMMARIZE FINDINGS FROM INITIAL ENVIRONMENTAL DUE DILIGENCE ACTIVITIES COMPLETED AT THE SITE PERFORMED BY TRC COMPANIES INC.
    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
    - 12.4. COMMUNICATE AND COORDINATE WITH AN EP TO REQUEST, REVIEW AND ADHERE TO RELEVANT DOCUMENTS PREPARED FOR THE SITE DESCRIBING BEST MANAGEMENT PRACTICES FOR IMPACTED OR POTENTIALLY IMPACTED MEDIA THAT MAY BE ENCOUNTERED AS PART OF THE CONTRACTOR'S WORK INCLUDING BUT NOT LIMITED TO THE SOIL MANAGEMENT PLAN & EMMP.
    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: CONSTRUCTION MANAGEMENT AND EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT THE WRITTEN AUTHORIZATION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 COMMERCIAL STREET, SUITE 104
PO BOX 3392 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.

C-03

R. Solid Waste Disposal

The property management company or Owner shall be responsible for locating the solid waste and recyclable material to the spaces allocated for solid waste storage as noted on the Site Plan (C-10).

A private hauler will be contracted for removal. The solid waste containers will be fully enclosed and screened from the public view. The waste containers will have trash chutes installed at the owner's discretion and is proposed to have a door accessible for tenants/pedestrian use.

S. Parking Analysis

Parking requirements for the project are to be determined by the Planning Board. A Transportation Demand Management (TDM) Plan has been prepared for the project per the requirements of Chapter 17 of the City of Portland Technical Manual. The project is within a quarter mile of a transit facility, and therefore with a TDM plan, no parking is required or provided on site (Table 19-B within the Zoning Ordinance).

T. Transportation Demand Management Plan

See attached to this section Transportation Demand Management Plan for 89 Elm Street prepared by Levine Planning Strategies, LLC.

TRANSPORTATION DEMAND MANAGEMENT PLAN

89 ELM STREET, PORTLAND, MAINE

Submitted for West Bayside Partners, LLC

by Levine Planning Strategies, LLC

February 2023



LEVINE PLANNING STRATEGIES
Tools for Building Communities

Project Overview

On behalf of West Bayside Partners, LLC and Port Property, we are pleased to submit a Transportation Demand Management (TDM) Plan for the proposed redevelopment project at 89 Elm Street. The portion that is proposed for redevelopment is in the B-3 zone.

The project proposes to convert the western portion of this lot from a surface parking lot into a deed-restricted affordable housing development. This new building will provide homes for approximately 200 Portland households that earn 60% or less of the area median income. The building as planned will have eight stories, with housing units on the second through eighth floors and two commercial spaces and common areas on the first floor. No site work is expected outside the limits of the existing building except for utility connections. Due to the change of use at the property exceeding 20,000 square feet, the project is subject to a Major Site Plan Development Application and approval from the Planning Board.

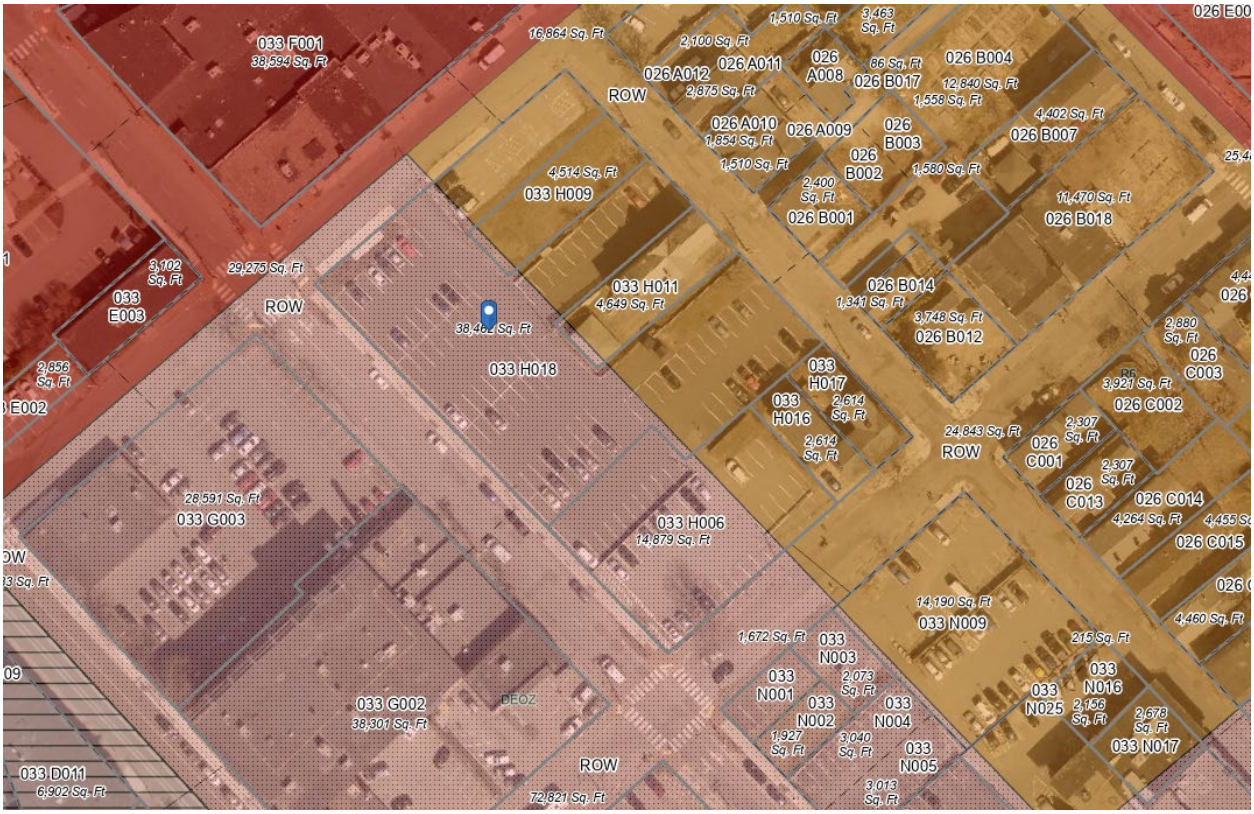
According to the October 2022 City Parking Survey of Downtown Garages and Lots, nearby parking spaces rent for between $125 and $160 a month. By providing a robust TDM plan, this project aims to significantly reduce the number of tenants who choose to rent off-site spaces. In addition, by not incorporating on-site parking into the cost of the development will allow financial feasibility within the cost constraints of affordable housing finance programs.

As this project is within ¼ mile of a transit line, it does not need to provide parking, provided it submits a Transportation Demand Management Plan (Portland Land Use Code Table 19-B.) This project is an excellent opportunity to provide an alternative to automobile ownership and leverage the walkability, bikeability, and transit access of its downtown location.

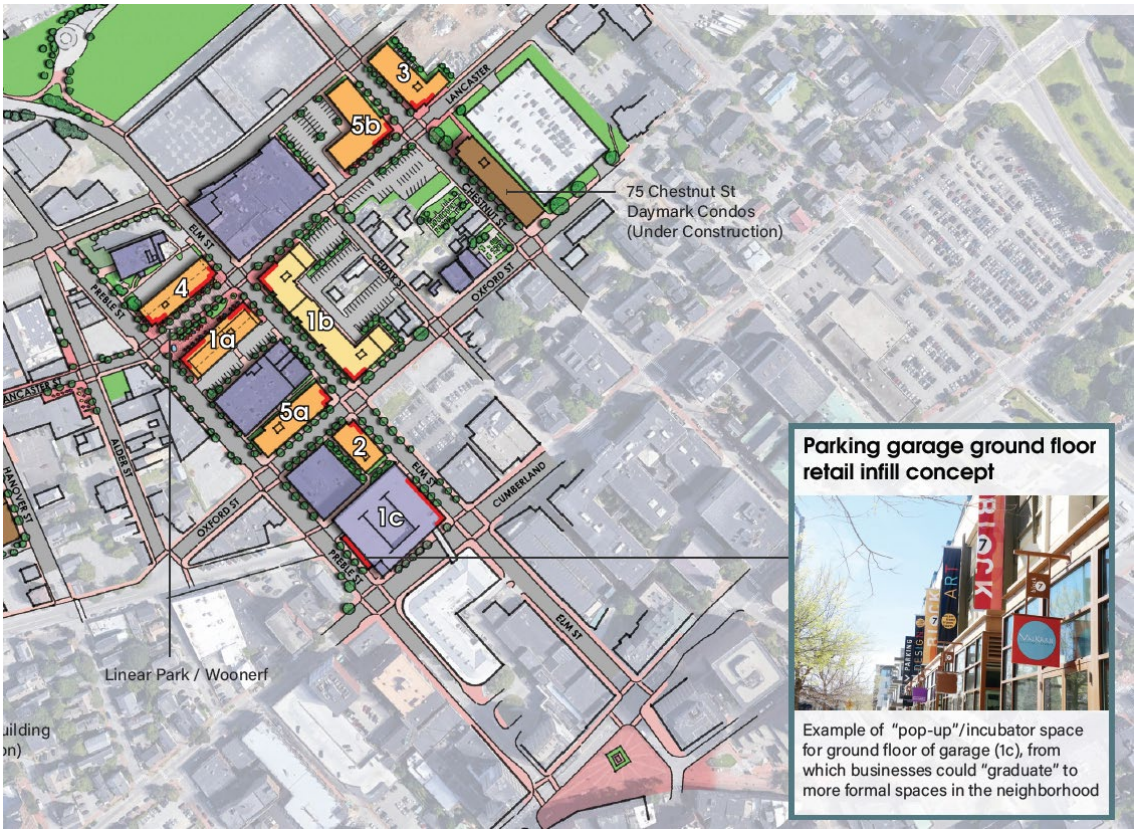
We are confident that, with this TDM plan in place, this project will not require on-site parking, nor will it have an undue burden on other parking supply in the area.

For ease of review, we have drafted this TDM plan generally following the format of the City's Technical Manual Section 17.3. ("Transportation Demand Management.)

Expected 89 Elm Unit Mix				
Floor	**Studios**	**1 BR**	**2 BR**	**TOTAL**
2	4	14	3	21
3	4	19	6	29
4	6	22	6	34
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TOTAL	**34**	**135**	**32**	**201**



Figures 1a and 1b: 89 Elm Street on City Parcel Maps and in the Context of Buildings Planned Nearby (89 Elm is labelled "1b")



Transportation Narrative

This project is in a location with a myriad of transportation options that lend themselves towards transportation demand management. It is located on Elm Street along a section identified as a "priority corridor" as well as being located in the Bayside development "enhance" node identified in *Portland's Plan*.

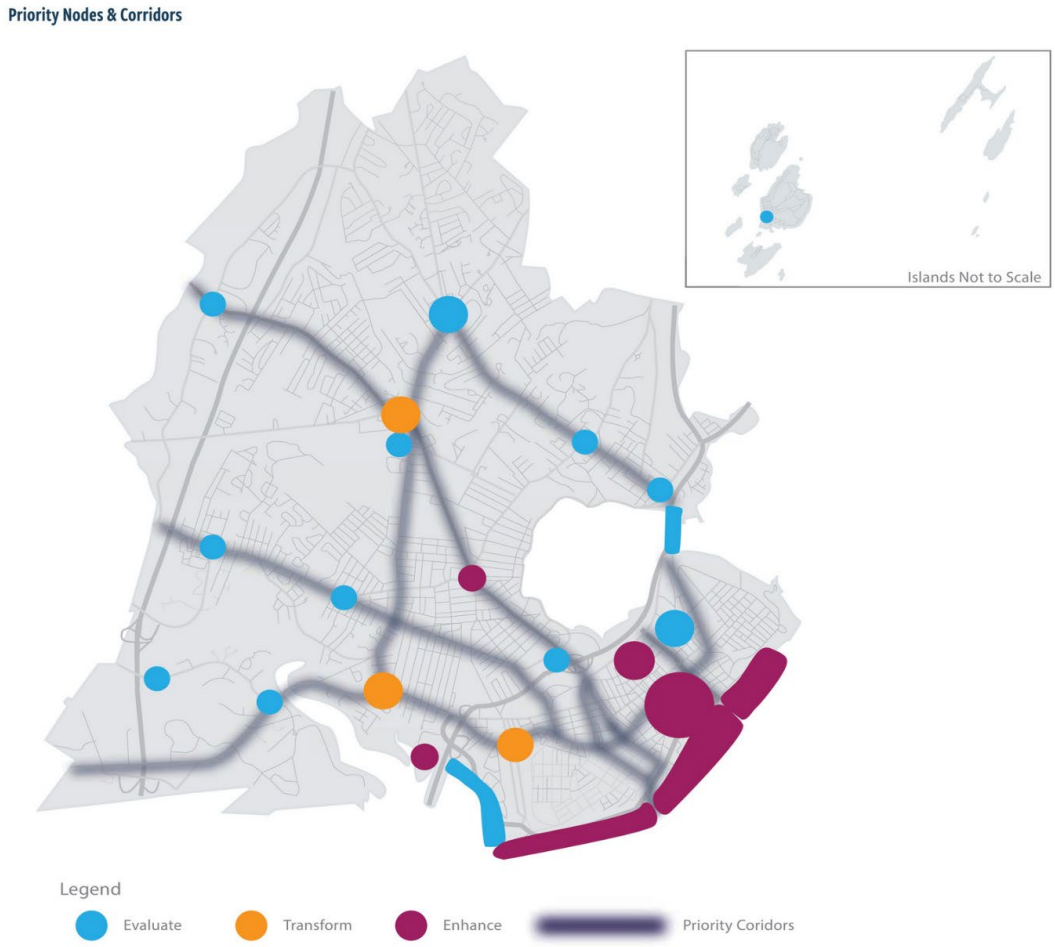


Figure 2: Priority Development Nodes and Corridors from Portland's Plan 2030

Roadways

As mentioned above, this project is located on Elm Street, between the intersections with Cumberland Avenue and Marginal Way. These streets are designed to provide multimodal access, with good sidewalk connections that are generally compliant with accessibility standards. Bicycle accommodations, while good, could be improved along all these corridors, though new bike lanes on Elm and Preble Streets as well as the extension of the Bayside Trail have provided significant new options for bikers.

Transit

Very few developments are in as good a position as this one to take advantage of existing transit.

This project is in the heart of the Greater Portland Transit District's system. The METRO Pulse is just a few short blocks away and several bus lines stop nearby. The Route 8 provides service on Elm Street. In addition, in response to the *Transit Together* study recently completed by the Portland Area Comprehensive Transportation System, Greater Portland METRO is considering options to modify the Route 8 and other Peninsula bus services to provide better options for users. Some of this work began prior to the COVID-19 pandemic but was paused due to various factors and will be reconsidered in light of the *Transit Together* recommendations.

In addition, the South Portland Bus Service operates routes from this area to destinations across the Casco Bay Bridge, including Southern Maine Community College and services and offices in South Portland.

Congress Street was recently modified to prioritize transit access, through provision of in-line stops along the street as well as shelters. METRO service also provides easy access to the Portland Transportation Center, where intercity bus and train service provides connections as far as New York City, and to the Portland International Jetport for those going farther afield.



Figure 3: Existing METRO bus routes servicing the area, from the Bayside Transportation Master Plan

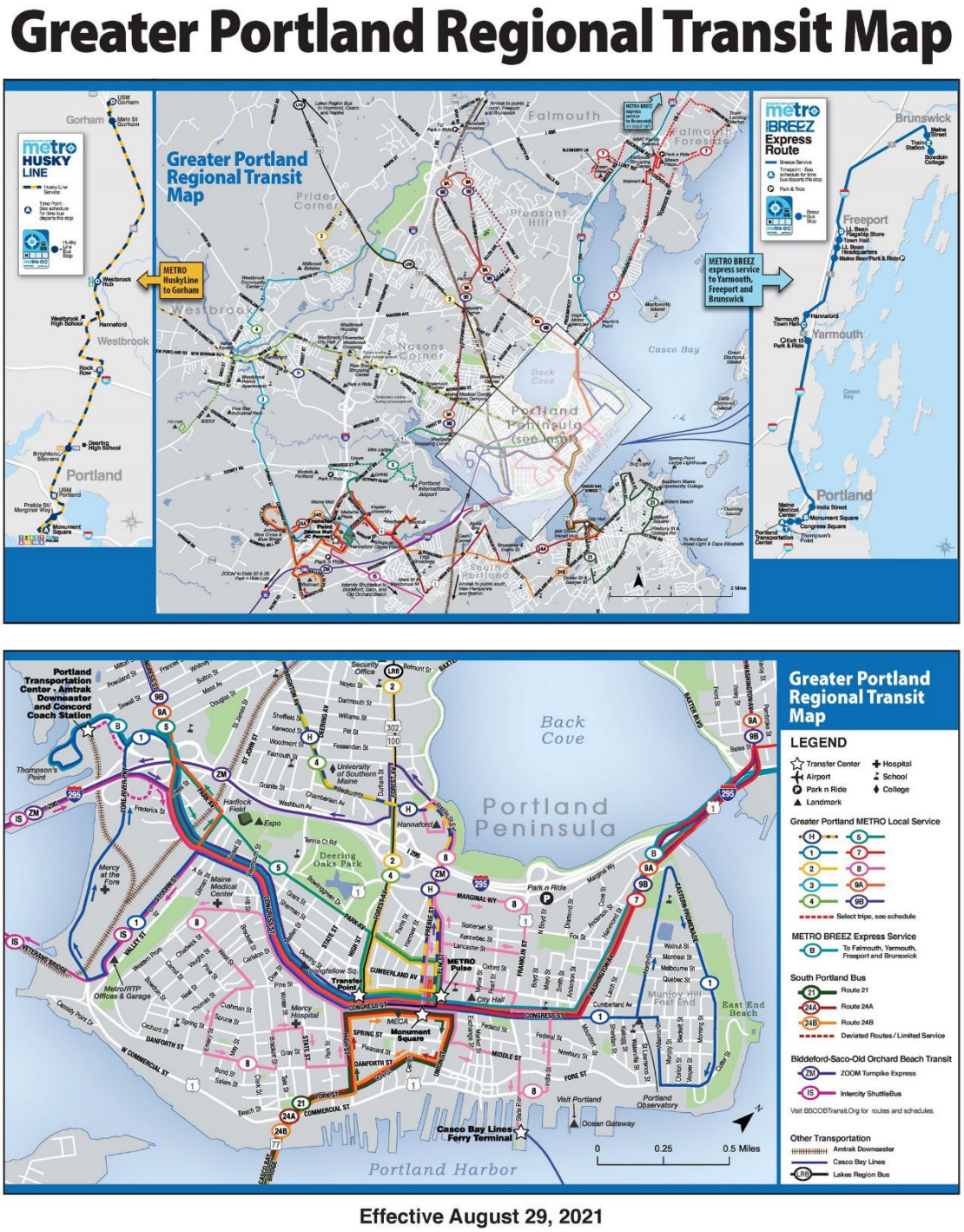


Figure 4: Greater Portland METRO's transit network, from METRO

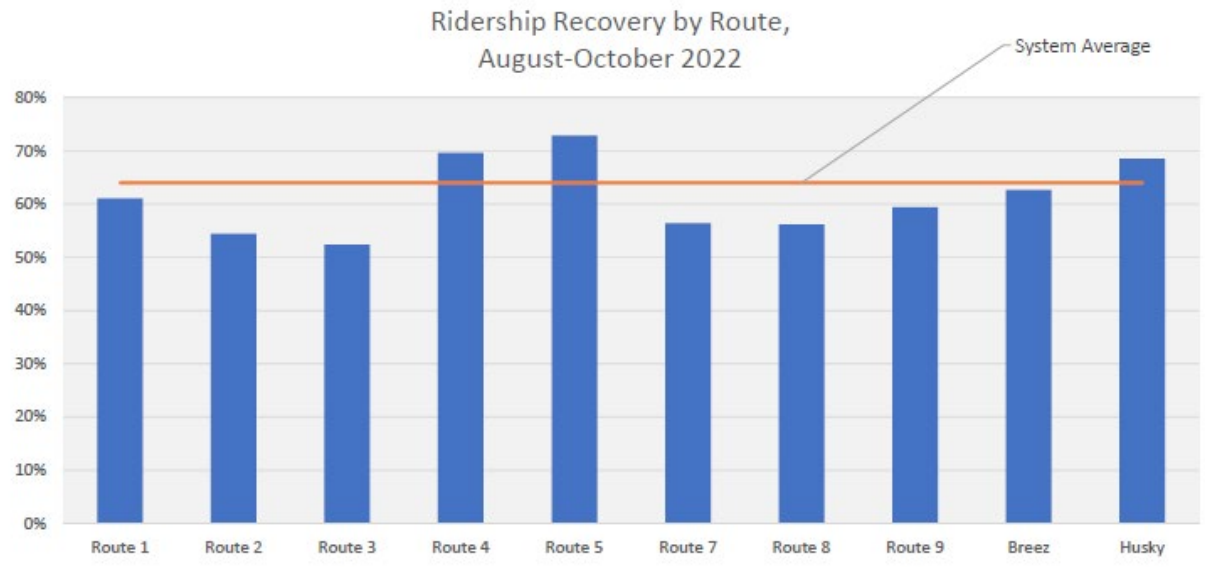
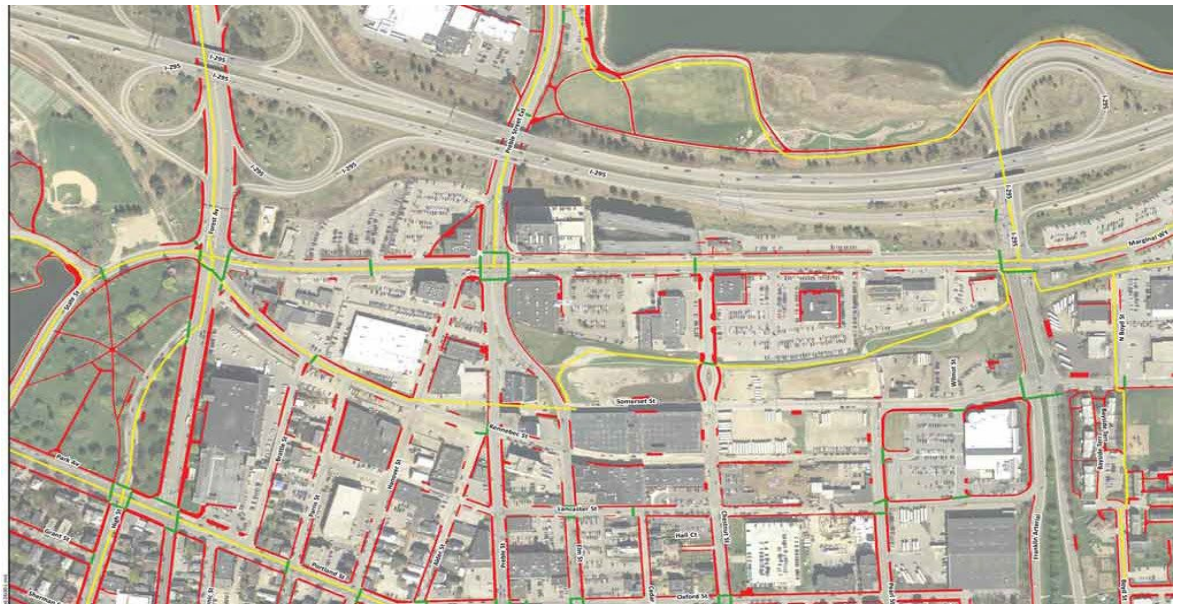


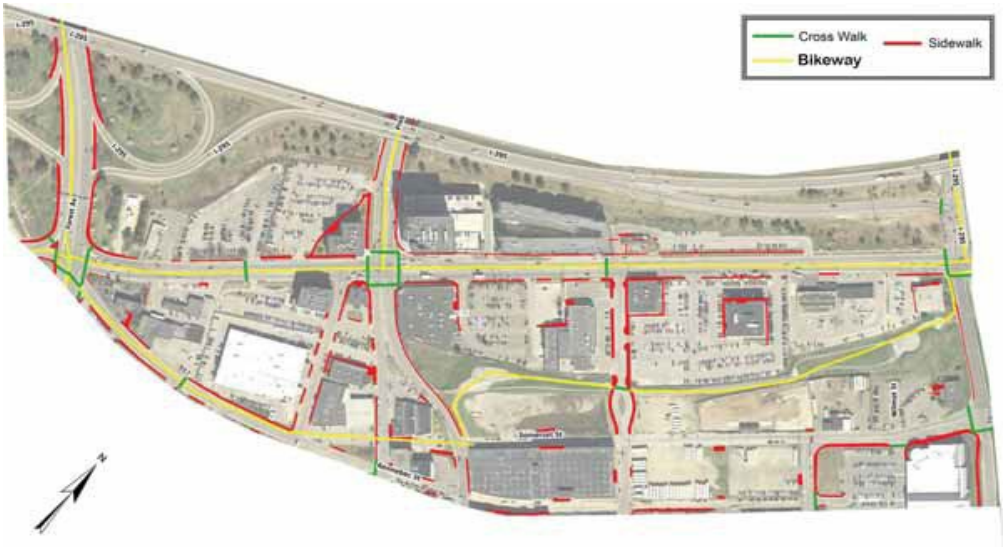
Figure 5: Ridership recovery on METRO routes since the start of the pandemic

Bicycle and Pedestrian Facilities

As mentioned above, all the nearby roadways have sidewalks on both sides. Accessibility is generally acceptable on these sidewalks, with tip downs generally provided. Many of these sidewalks are cleared in the winter as part of Portland Downtown's services. Some of the brick surfaces are not ideal in the rain or snow for those with limited mobility, making Portland Downtown's services particularly important.

The area has excellent bike facilities. The Bayside Trail is nearby, as is the Back Cove Trail and additional dedicated bicycle/pedestrian facilities that circle much of the downtown peninsula. In addition, the City recently partnered with Tandem Mobility to launch a bike sharing system. That system offers both conventional and e-bikes for general use. In 2022, there were two Portland Bikeshare stations in close walking distance of 89 Elm Street, one at Marginal Way and Elm Street and the other at Hanover Street and Lancaster Street.





Figures 6a and 5b: Existing Pedestrian and Bicycle Facilities, from the Bayside Transportation Master Plan. Note that improvements have been made since this map was prepared, included recommended bike lanes and sidewalk improvements on Elm & Preble Streets.

Bayside Transportation Master Plan

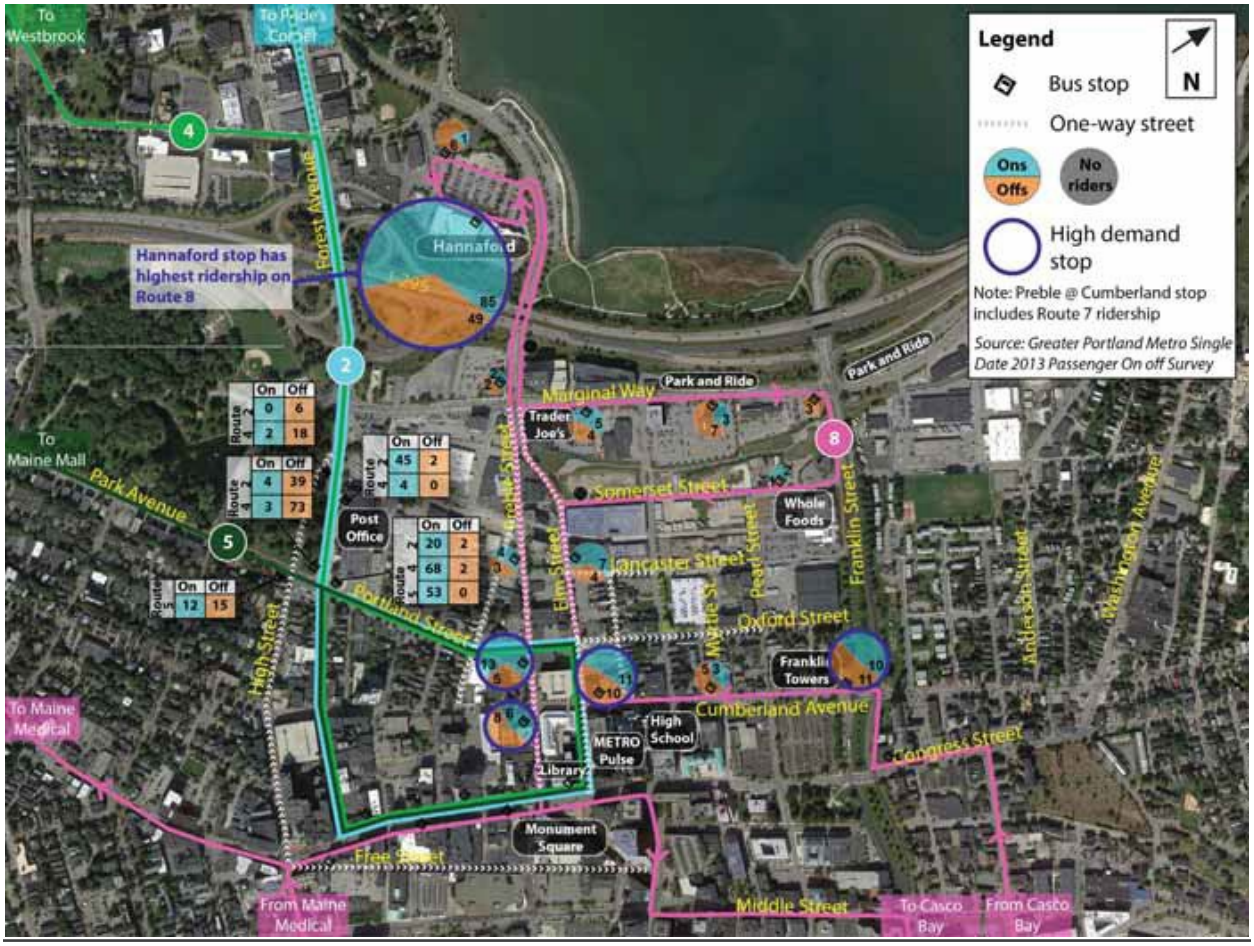


Figure 7: Ridership at Bayside METRO stops from the Bayside Transportation Master Plan

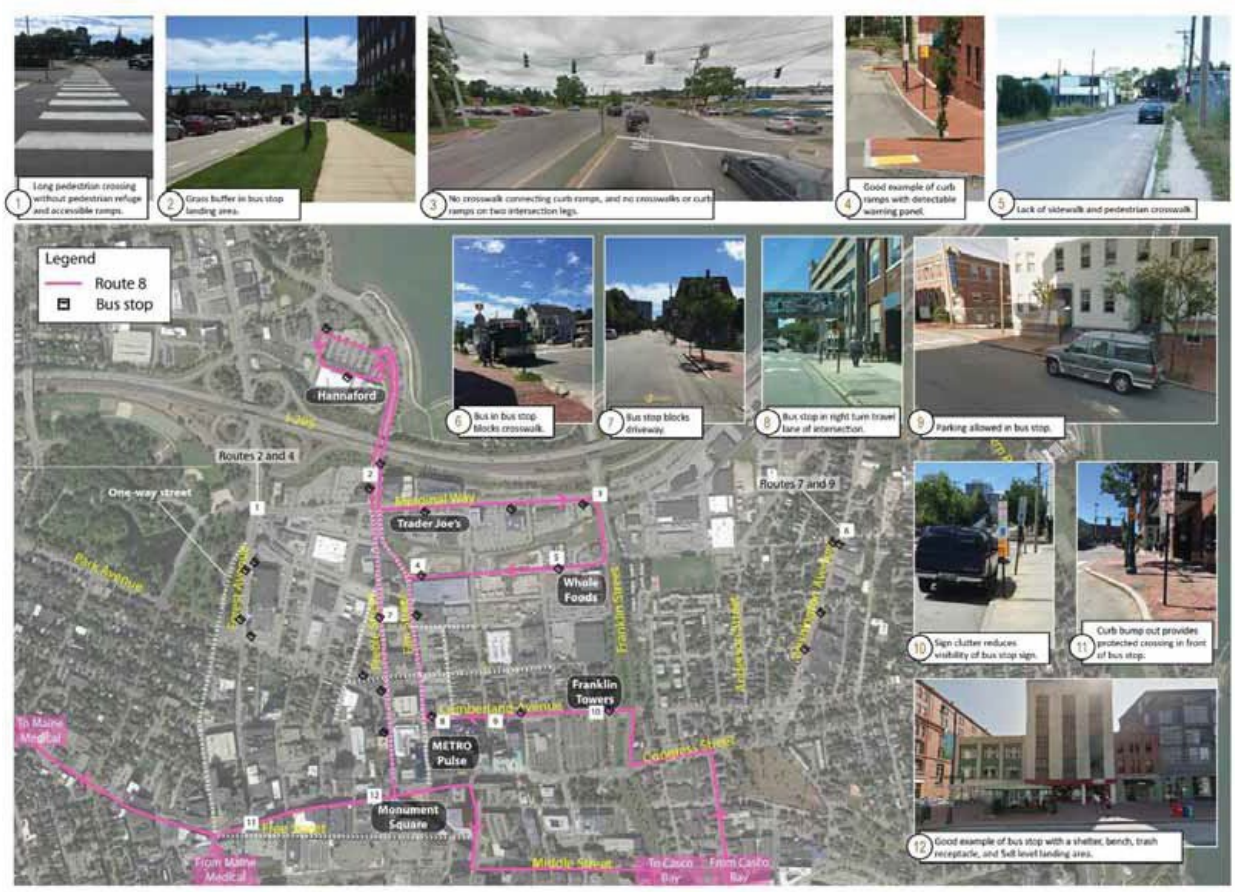


Figure 8: Issues and Opportunities at Bayside bus stops from the Bayside Transportation Master Plan

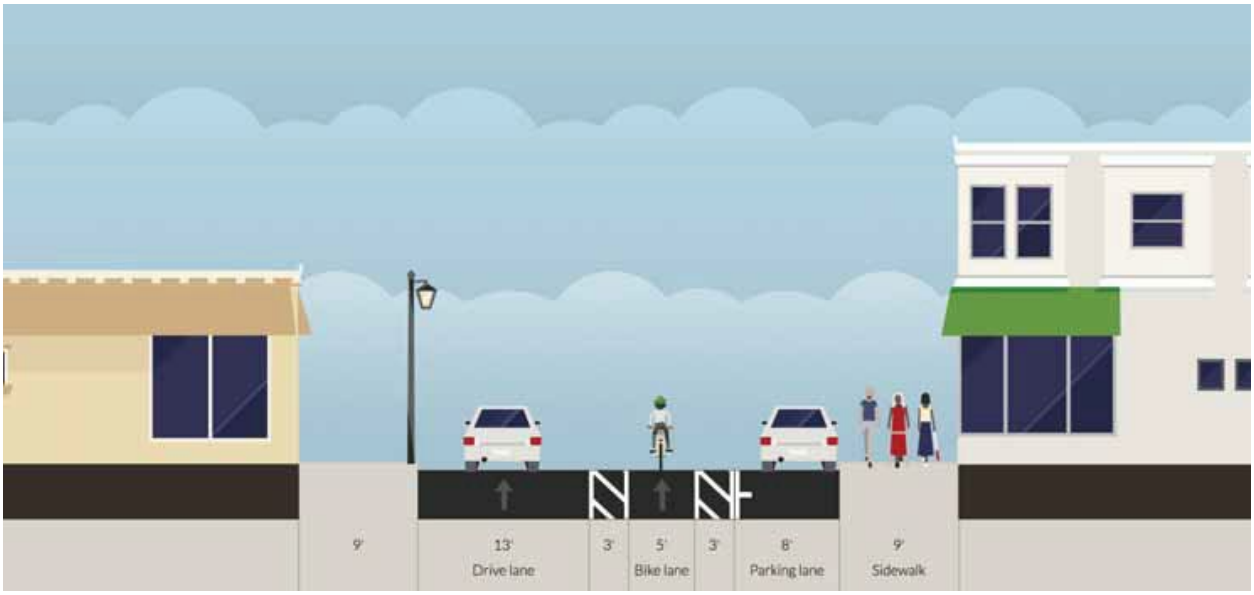


Figure 9: Long-term recommendation for Elm Street at Lancaster Street from the Bayside Transportation Master Plan (since implemented)

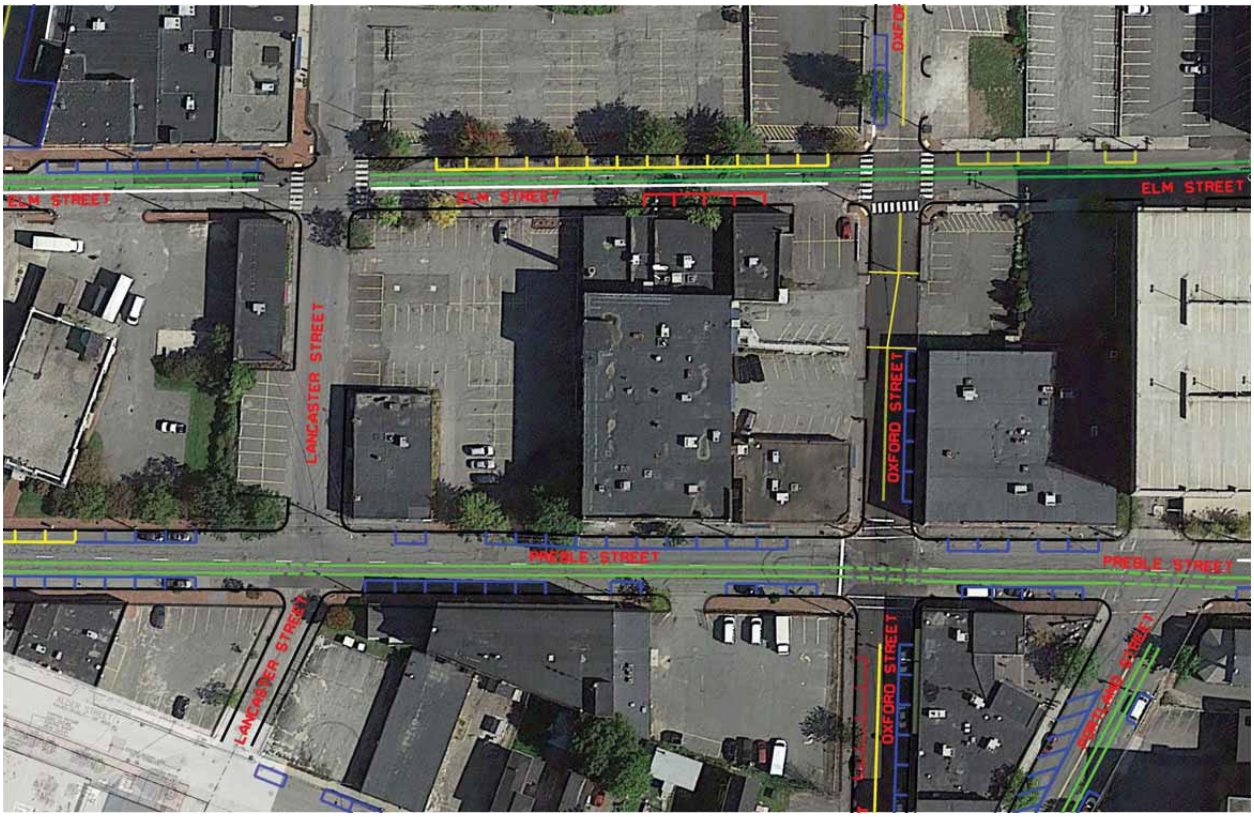


Figure 10: Preble and Elm Streets as planned in the Bayside Transportation Master Plan (this layout has since been implemented)

Characteristics of Likely Residents

In thinking through who may be likely to live in this building, it makes sense to first look at who currently lives in the neighborhood. Census Tract 6 includes much of the surrounding neighborhood in west Bayside. For that reason, we've looked at data from the 2021 American Community Survey 5-year data from the U.S. Census. That data provides a sense of some key characteristics of likely residents, with respect to car ownership, household size and commuting patterns. This data informs the best TDM strategies for this development.

In this tract, the average household size is 1.74, and one third of households have no vehicle available. In fact, almost half of single-person household have no available vehicles, and almost half of all households have just one vehicle available. The proximity of key assets, such as downtown amenities, jobs, and supermarkets, make this a good place to live car-free, or car-light.

As shown in Figure 11 below, many workers in this Census tract walk to work, work from home, or use alternative modes to get to work. Less than half of the workers in this tract drive to work. When you look at young workers (under age 25) you find that over 2/3 walk to work, and almost 3/4 get to work by alternative modes. The addition of Portland Bikeshare and the redesign of the Route 8 are likely to increase these numbers further.

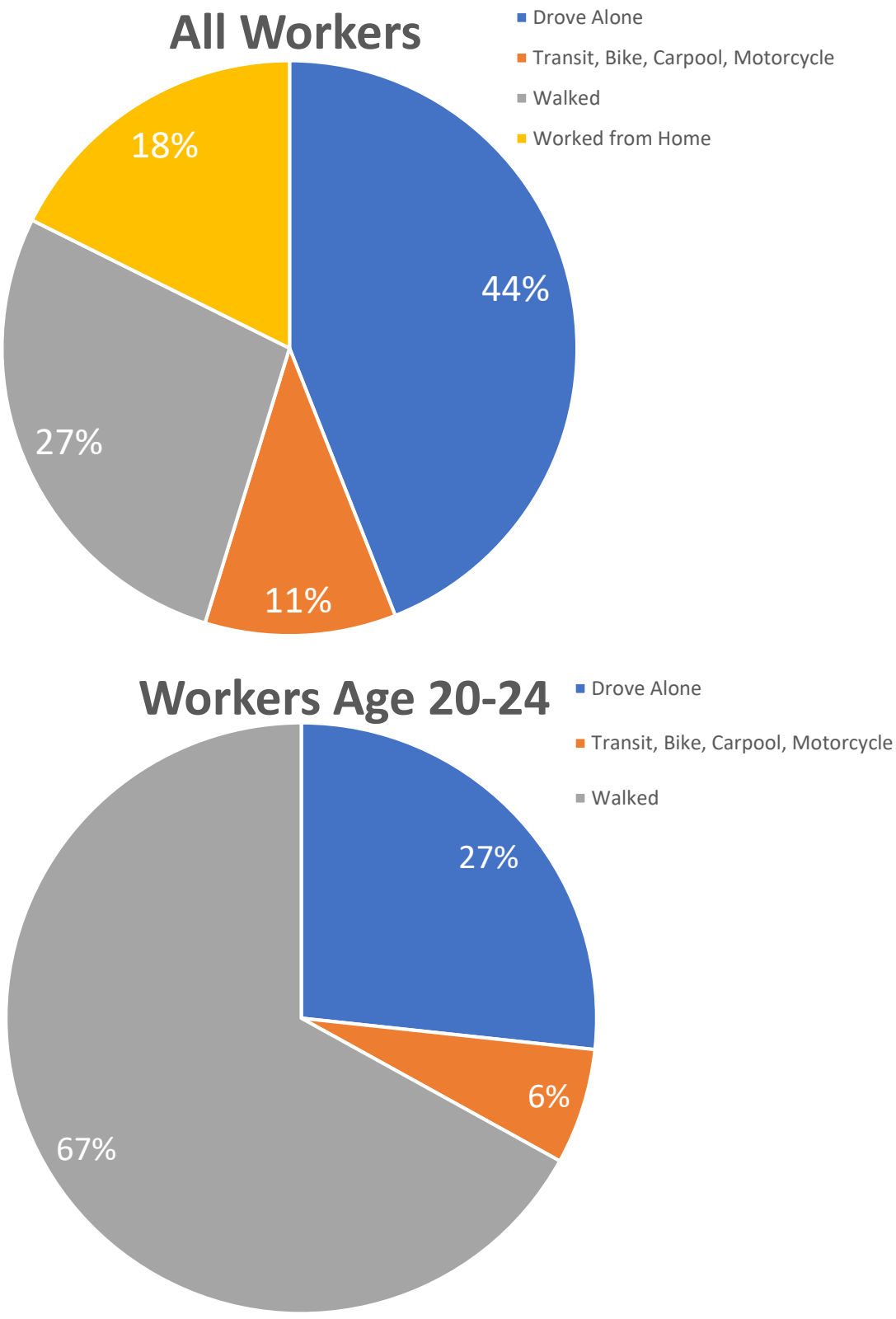
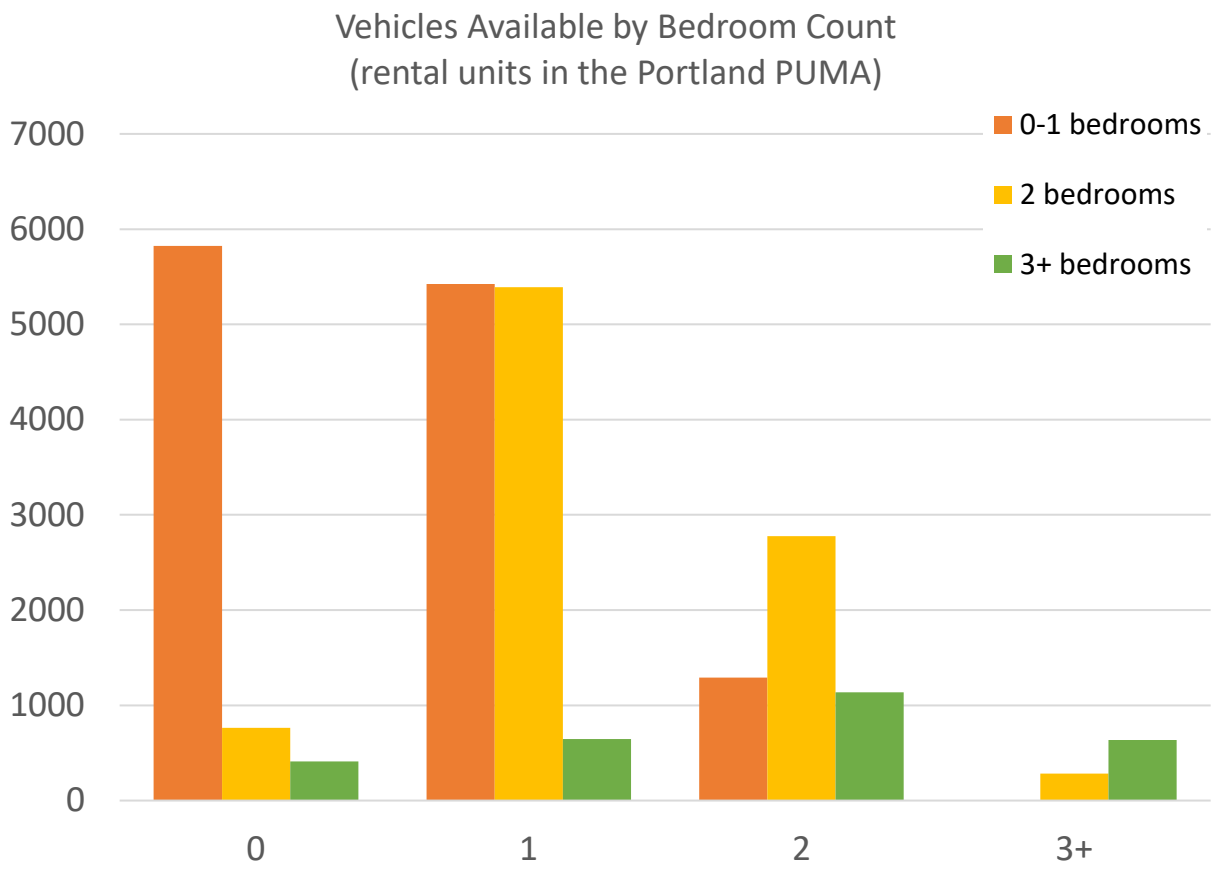


Figure 11: Commuting modes for all workers and workers age 20-40 (2021 5-Year American Community Survey)

Looking at vehicle availability by unit size reveals similar data. Overall, for the Portland Public Use Microdata Area, vehicle availability identified in the 2021 American Community Survey 1-year data is low. As seen in the chart below, small units (0-1 bedrooms) have an average of 0.64 vehicles available, and two-bedroom units have an average of 1.28 vehicles available. Given that having a vehicle available does not necessarily mean owning a vehicle, these numbers would likely be even lower for vehicle ownership.



TDM Administrator

The TDM Administrator for this project will be:

Jen Munroe, Property Manager
Port Property Management
82 Hanover Street, Suite 5
Portland, ME 04101
jennifer@portpropmgt.com
(207) 233-8418

Ms. Munroe will also serve as the TDM Coordinator for the 52 Hanover Street building under construction, so she will be able to apply best practices across the two buildings. Ms. Munroe may work

with property management to implement details of this TDM plan but will be the one-stop contact when needed.

Resident Survey

In order to gauge the effectiveness of this TDM plan – and to adjust it if needed – the TDM Administrator will conduct an annual survey of residents in the building. This survey will be conducted electronically using contact information on file with the management office for each unit. It will be include questions on:

- Vehicle ownership and parking location
- Modes of transportation for commuting, household chores, and recreation
- Interest in carpooling or otherwise sharing transportation expenses with other tenants to reduce trips
- Barriers to vehicle trip reduction best practices, such as bicycle use and transit ridership, and
- Other transportation needs and/or interests of tenants.

Those tenants that express interest in sharing information for carpooling or other trip reduction purposes will have their information provided to other tenants who have expressed a similar interest.

The results of this survey will be provided to the City's Planning & Urban Development Department using a form similar to the one provided on the City's web site (see Attachment.) The survey will remain substantively consistent from year to year, in order to allow the results to be used to monitor the effectiveness of this TDM plan and allow for adjustments as needed.

Trip Reduction Targets

Trip Generation and Reduction

This project's trip generation rates were determined using the following ITE Trip Generation Land Use Codes:

- ✓ LUC 223 Affordable housing (201 units)
- ✓ LUC 932 High Turnover sit down restaurant (2,000 sf)
- ✓ LUC 822 Strip retail plaza (<40k) (2,500 sf)

In total, the development is expected to generate 132 trips at morning peak hour and 139 at evening peak hour. Those figures are based on a typical affordable housing development with few transit, pedestrian or bicycle options. For this project, there is likely to be some trip-chaining, or combining of separate trips.

What is particularly different about this project is the mode and distance of these trips. In many cases, most of the trips generated would involve individual vehicle trips. However, in this case, with good TDM strategies in place, most of the expected trips will be on foot, on bike, or on transit.

The development will have a target vehicle trip reduction of 25% within three years, increasing to 50% over seven years. That would mean 99 AM vehicle trips and 104 PM vehicle trips within three to five

years. These targets would go to 66 AM vehicle trips and 70 PM vehicle trips after seven years. This will be accomplished by setting mode targets as shown.

Trip Generation Reduction Targets

	Project Baseline	3-5 Year Target	7 Year Target
Vehicle Trips (AM)	132	99 (25%)	66 (50%)
Vehicle Trips (PM)	139	104 (25%)	70 (50%)

Mode Split Targets

	Baseline	3-5 Year Target	7 Year Target
Drive Alone	44%	33%	22%
Carpool/Vanpool	3%	3%	3%
Transit	4%	8%	12%
Bicycle	4%	8%	12%
Walk	27%	30%	33%
Work from Home	18%	18%	18%

Parking Need and Reduction

Research has shown that parking demand in transit-oriented developments such as this one can be as little as one-fifth the ITE supply guideline (see, for example, Ewing et al, *Landscape & Urban Planning* 160 (2017) 69-78.) Given the project's location, the decoupling of parking costs from rents, and the robust measures proposed in this TDM plan, the parking generation of this project can be entirely accommodated in nearby lots and overnight on-street parking with limited negative impacts.

Parking & Trip Reduction Strategies

As a primarily residential building with units best suited to one to three persons, this project will have different parking and trip reduction strategies than commercial buildings, or even residential buildings with larger units. The parking and trip reduction strategies for this development are focused on the needs of likely tenants, including younger workers in a variety of fields and older single persons seeking the convenience of a downtown location.

These strategies are designed to respond to the following needs:

- Convenience
- Cost-effectiveness
- Leverage of downtown location, and
- Pushing of information to users rather than expecting them to pull information from on-line sources.

Education

A key part of this TDM plan is to convey clear, compelling and accurate information to tenants and visitors as to the transportation options available other than driving. As part of a welcome packet, all new tenants will be provided information including the following:

- Transit maps, schedules, and information about real-time transit trackers
- Information about transportation providers, including transit operators, transportation-as-a-service (TAAS) companies, and other options to avoid driving
- A building-wide ride board to allow tenants to share trips, and
- Information on bike routes, parking infrastructure, and other incentives.

This educational packet will be provided online as well, so tenants and visitors can refer to it at any time.

Monitoring

As mentioned above, there is a TDM Administrator designated for this development who will be responsible for monitoring this plan. Following an annual survey of residents, the TDM Administrator will report results to the City's Department of Planning & Urban Development and propose modifications to this plan to make it more effective, if need. This reporting will also be helpful in reviewing future TDM plans, as we expect that additional developments will propose using the option in Table 19-B in the future.

The report for this development will include, at a minimum, the following:

1. Building occupation.
2. Mode split by trip type.
3. Automobile ownership of tenants.
4. Parking locations utilized by tenants, and
5. Suggested enhancements to transit, bicycle and pedestrian infrastructure.

TDM Action Steps

The core actions of this TDM Plan are consistent with, and in many cases exceed, the recommended actions in the Technical Manual. These action steps will result in trip and parking demand reductions that meet or exceed the goals listed. In addition, by providing residents with transportation options that reduce per-capita emissions, these steps will have external benefits that will improve the quality of the air in downtown Portland and help address the goals of the *One Climate Future* plan. Finally, by reducing vehicle trips in individual vehicles, this TDM Plan will save the City and state money by reducing the wear and tear on city streets.

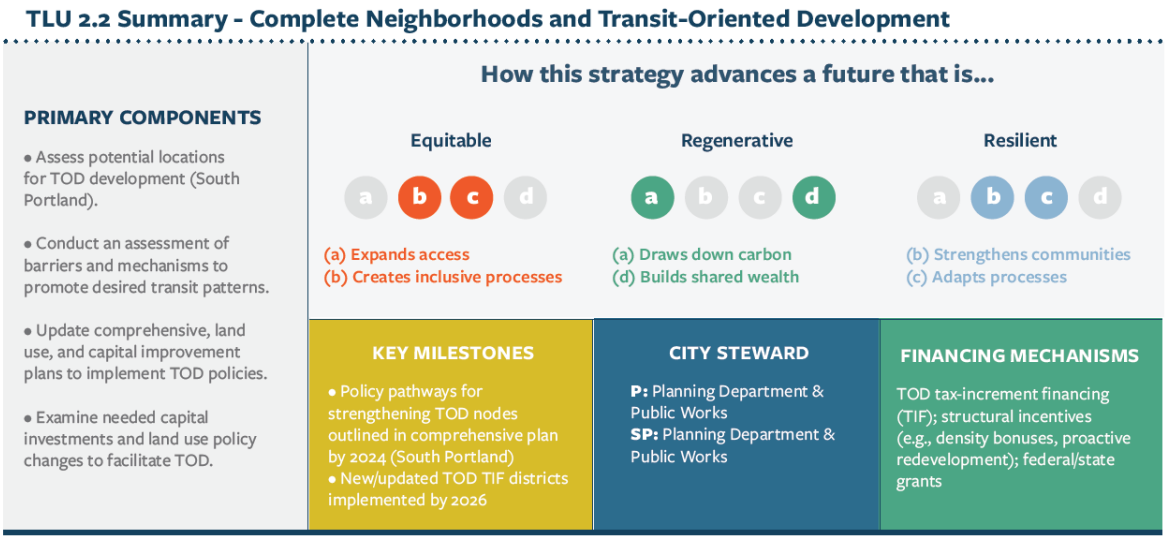


Figure 12: Portland's Climate Action Plan calls for iinfill development such as this project (Source: One Climate Future, p. 151)

1. **Infrastructure**
    a. Transit Lounge: With the closest transit stops outside the door, and others feet away, it will be easy for tenants to access several bus lines just up the street at the METRO Pulse. The developer will work with METRO to develop a "transit lounge" in the lobby that provides a comfortable place to wait for buses, with posted schedules and, as noted below, potentially real-time transit arrival information.
    b. Transit Information: As has become a best practice in transit-oriented developments in other cities, real-time transit information is key. The developer will work to provide either a real-time transit information screen in the transit lounge, with a comfortable waiting area, or develop a kiosk working with other buildings under development in the area and METRO staff that provides transit information and shelter in a common space.
    c. Bicycle Parking: This development will provide at least 40 indoor bicycle parking spaces in a dedicated bike room in the building.
    d. Bike Repair Station: The development will offer a bike repair station for the use of residents, located conveniently in a common area.

2. Incentives

a. Unbundled Parking: As mentioned above, the cost of parking has been "unbundled" from the cost of developing and operating the building. Tenants who choose not to own their own vehicle are then able to enjoy the full benefit of a reduction in their housing and transportation cost by not having to pay for a parking space.

b. Transit Incentives: Research has shown that moving into a new home is a chance for residents to try new transportation options. In order to make sure that new tenants are aware of, and have incentives to try, transit, will provide all new tenants with easy access to the Umo app for use on METRO, BSOOB Transit and/or South Portland Bus Service. All new tenants will also receive $50 pre-loaded onto their Umo account to allow them to try transit options and develop new habits (or continue previous ones) in this location. For tenants without smartphones, a METRO fare card loaded with $50 will be provided.

c. Car and Bike Sharing: While Portland currently does not have a car-sharing vendor, should one become available, the owners commit to working with the City to provide a carsharing vehicle nearby. Similarly, they are interested in working with the City as it seeks to expand Portland Bikeshare and will sponsor a station nearby if appropriate.

d. Telecommuting: This building will be wired broadband infrastructure that meets the build-to standard of the Maine Connectivity Authority and ConnectMaine, in order to encourage telecommuting as a trip reduction strategy.

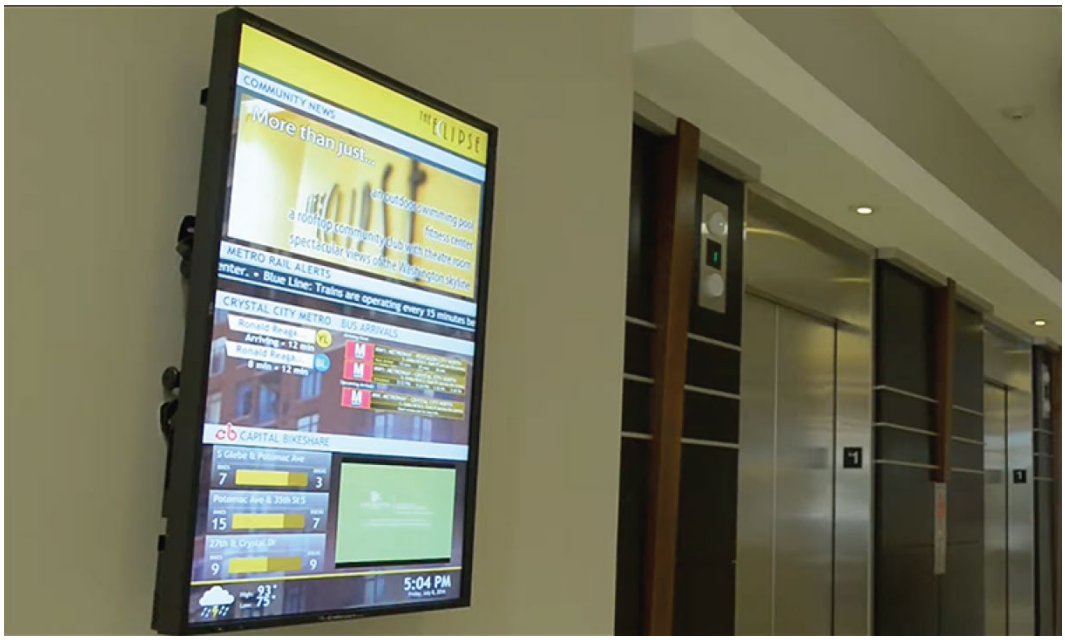


Figure 13: A real-time transit display in an apartment lobby
(Source: https://www.redmon.com/expertise/transit-display/)

3. Education

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   - This educational packet will be provided online as well, so tenants and visitors can refer to it at any time.

b. Recognition: In order to recognize and provide positive reinforcement for resident TDM efforts, the building management will also provide an annual recognition of leaders in trip reduction from the building.

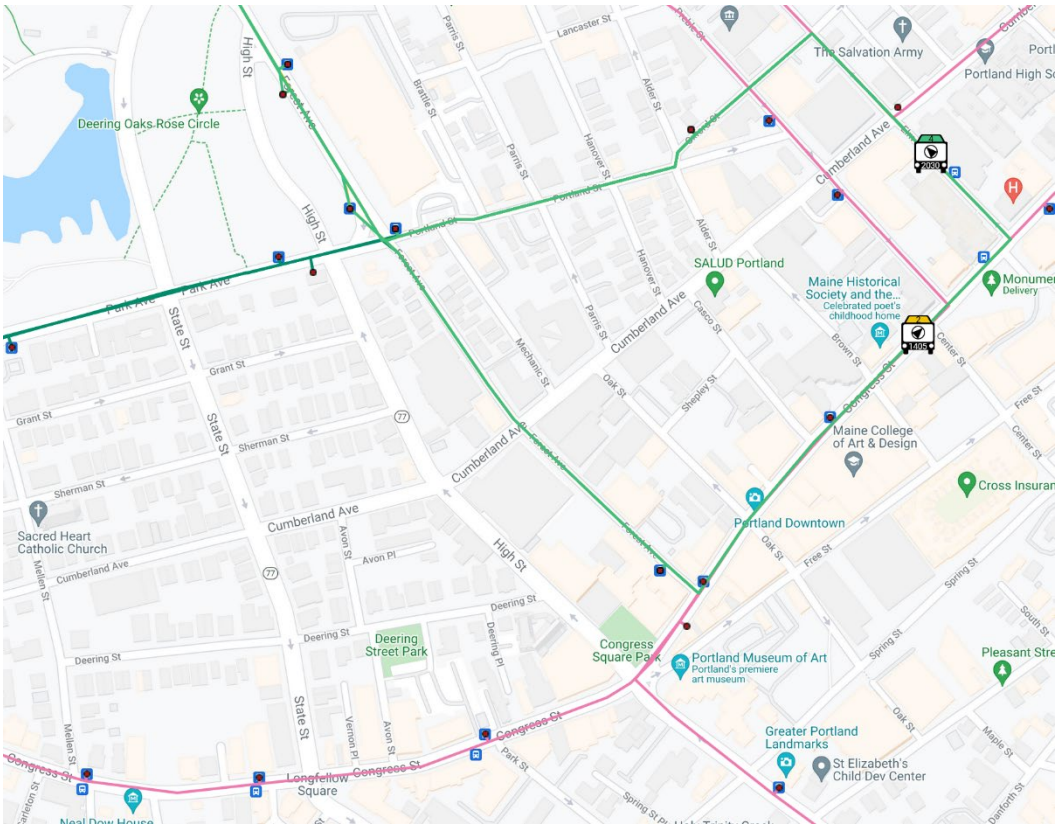


Figure 14: Transit tracking in downtown Portland that can be utilized in a lobby screen system (Source: http://bustimeweb.smttracker.com/bustime/map/displaymap.jsp)

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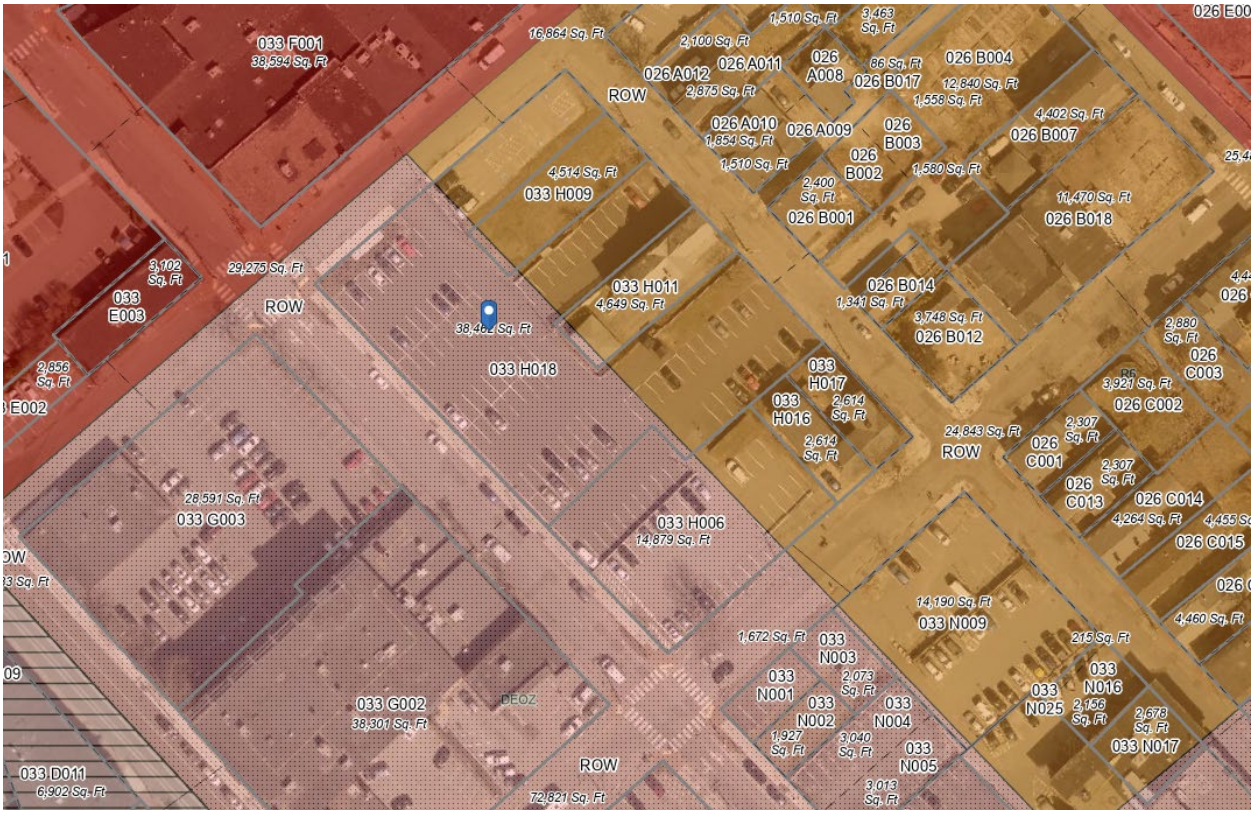
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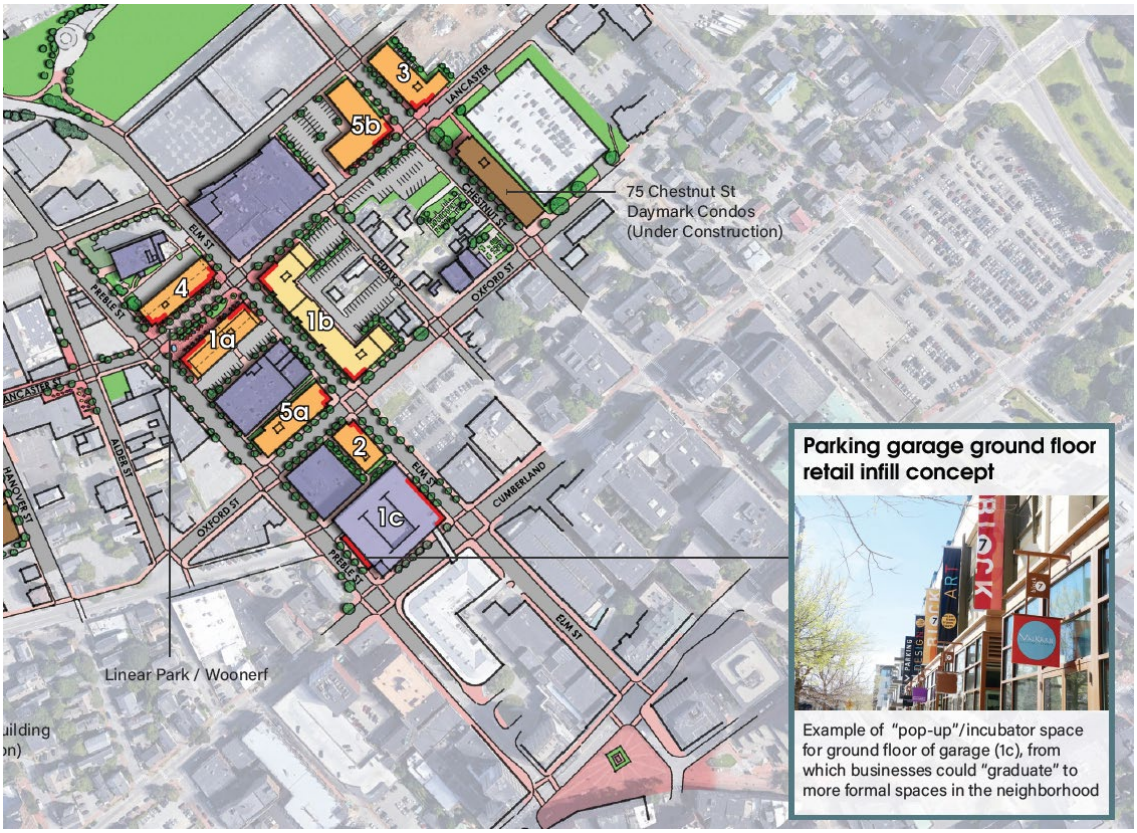
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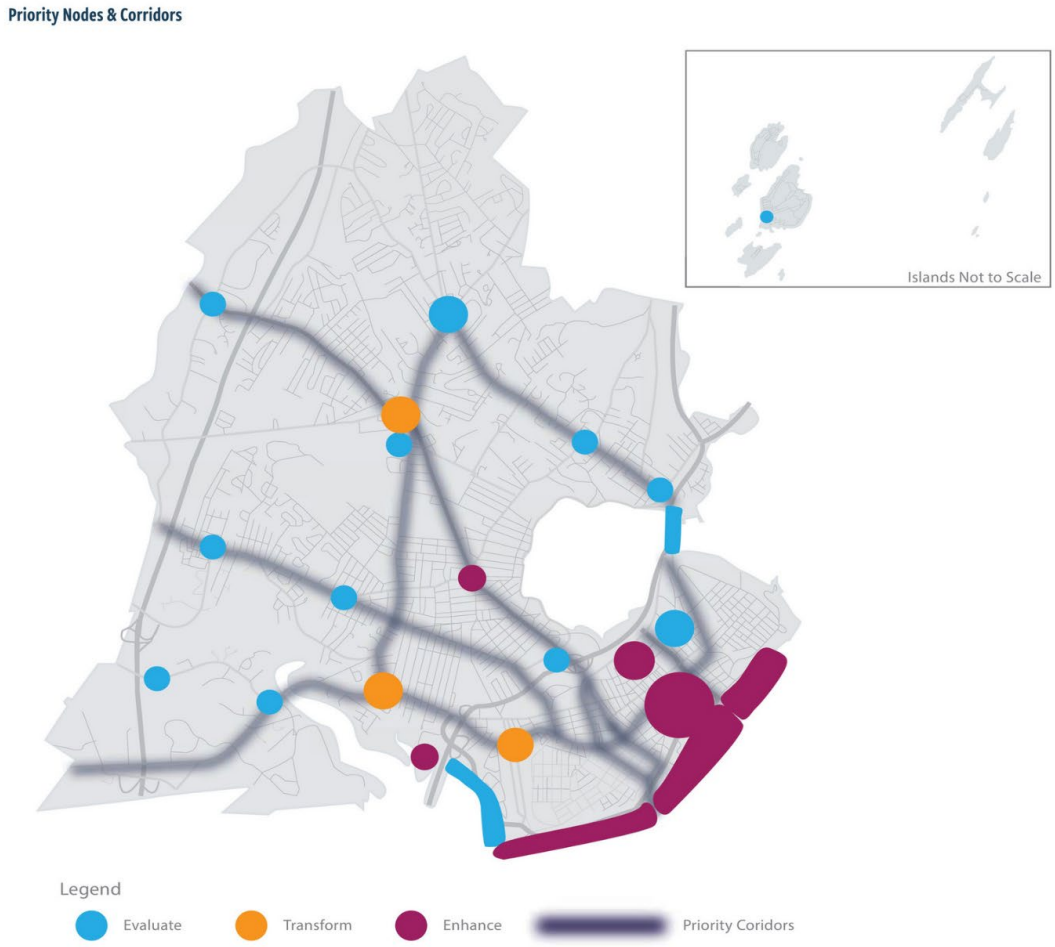


Figure 2: Priority Development Nodes and Corridors from Portland's Plan 2030

Roadways

As mentioned above, this project is located on Elm Street, between the intersections with Cumberland Avenue and Marginal Way. These streets are designed to provide multimodal access, with good sidewalk connections that are generally compliant with accessibility standards. Bicycle accommodations, while good, could be improved along all these corridors, though new bike lanes on Elm and Preble Streets as well as the extension of the Bayside Trail have provided significant new options for bikers.

Transit

Very few developments are in as good a position as this one to take advantage of existing transit.

This project is in the heart of the Greater Portland Transit District's system. The METRO Pulse is just a few short blocks away and several bus lines stop nearby. The Route 8 provides service on Elm Street. In addition, in response to the *Transit Together* study recently completed by the Portland Area Comprehensive Transportation System, Greater Portland METRO is considering options to modify the Route 8 and other Peninsula bus services to provide better options for users. Some of this work began prior to the COVID-19 pandemic but was paused due to various factors and will be reconsidered in light of the *Transit Together* recommendations.

In addition, the South Portland Bus Service operates routes from this area to destinations across the Casco Bay Bridge, including Southern Maine Community College and services and offices in South Portland.

Congress Street was recently modified to prioritize transit access, through provision of in-line stops along the street as well as shelters. METRO service also provides easy access to the Portland Transportation Center, where intercity bus and train service provides connections as far as New York City, and to the Portland International Jetport for those going farther afield.



Figure 3: Existing METRO bus routes servicing the area, from the Bayside Transportation Master Plan

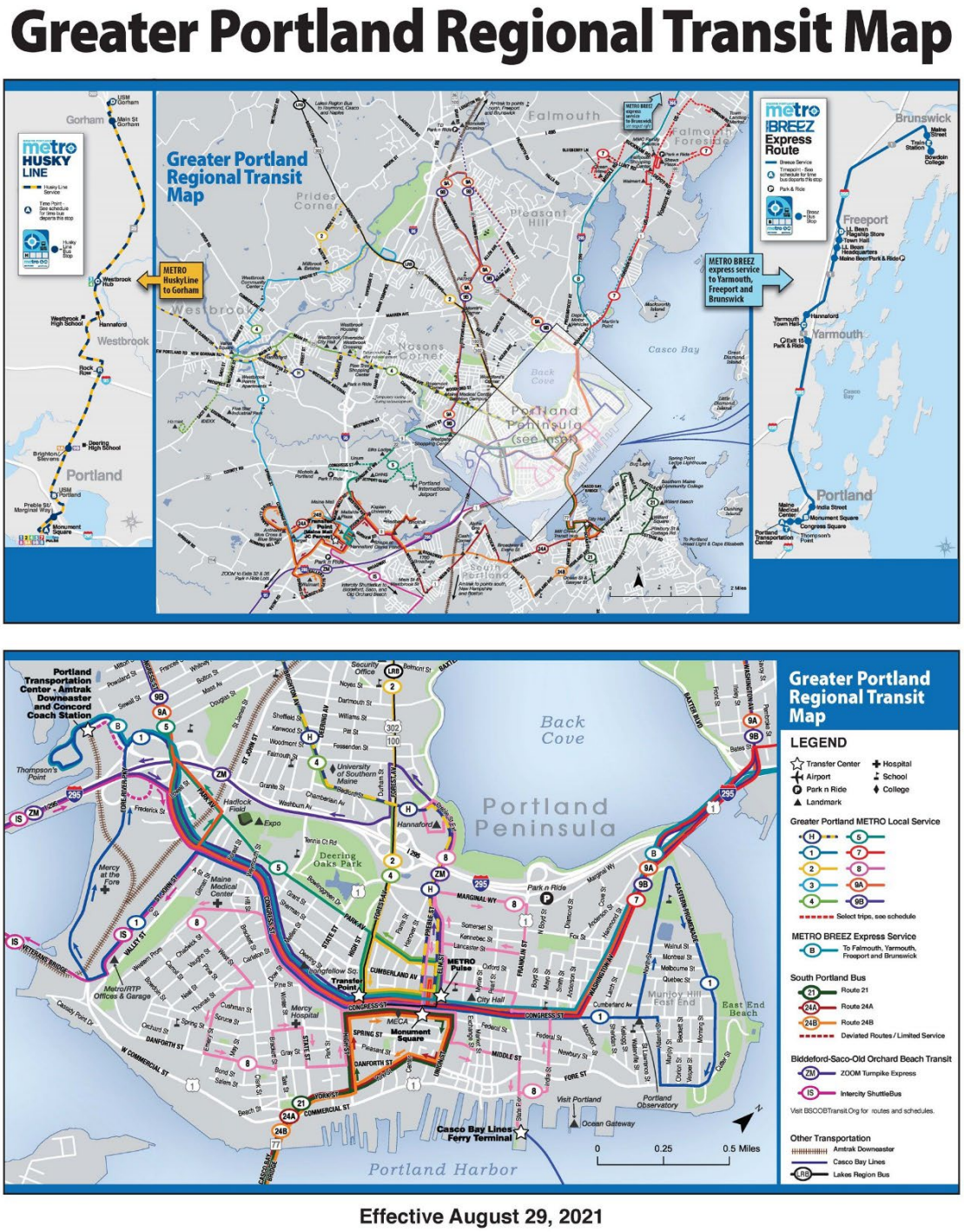


Figure 4: Greater Portland METRO's transit network, from METRO

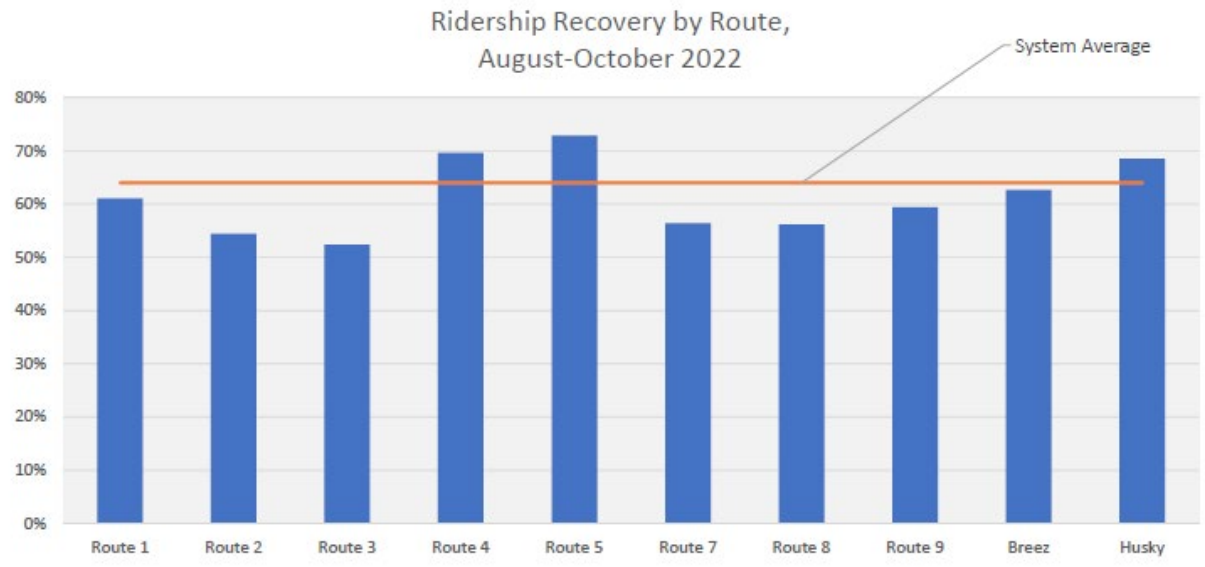
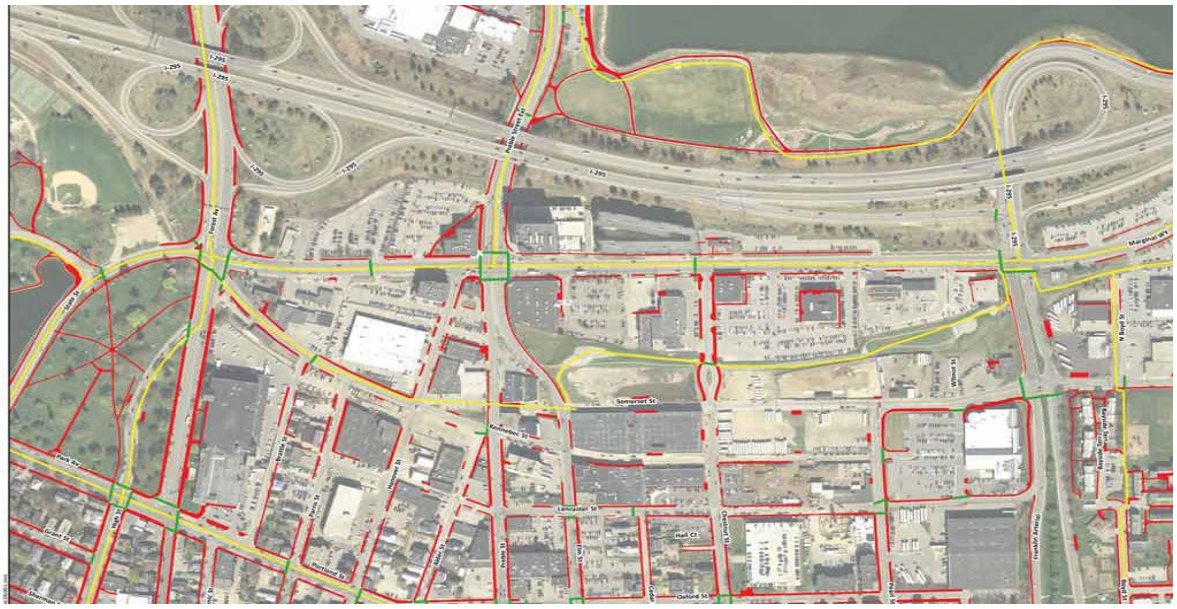


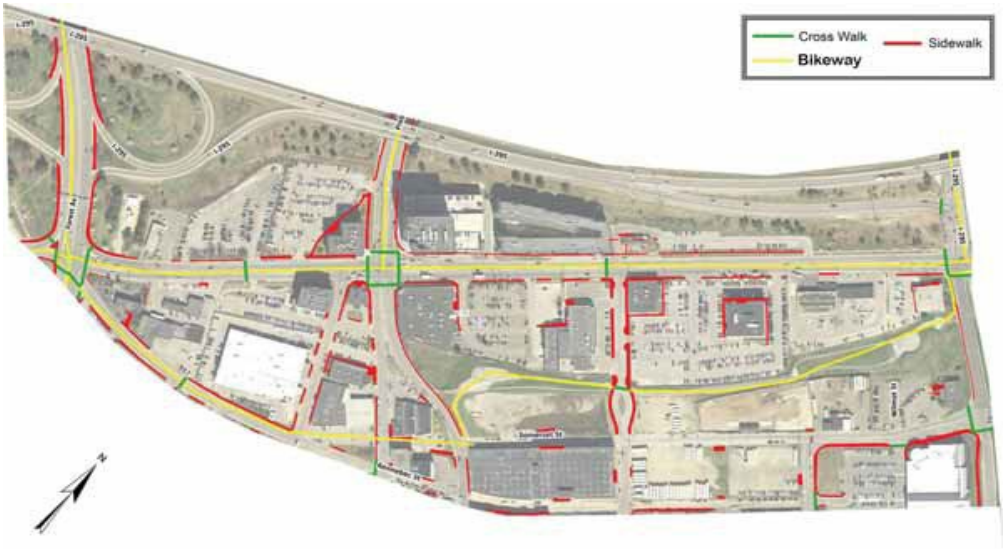
Figure 5: Ridership recovery on METRO routes since the start of the pandemic

Bicycle and Pedestrian Facilities

As mentioned above, all the nearby roadways have sidewalks on both sides. Accessibility is generally acceptable on these sidewalks, with tip downs generally provided. Many of these sidewalks are cleared in the winter as part of Portland Downtown's services. Some of the brick surfaces are not ideal in the rain or snow for those with limited mobility, making Portland Downtown's services particularly important.

The area has excellent bike facilities. The Bayside Trail is nearby, as is the Back Cove Trail and additional dedicated bicycle/pedestrian facilities that circle much of the downtown peninsula. In addition, the City recently partnered with Tandem Mobility to launch a bike sharing system. That system offers both conventional and e-bikes for general use. In 2022, there were two Portland Bikeshare stations in close walking distance of 89 Elm Street, one at Marginal Way and Elm Street and the other at Hanover Street and Lancaster Street.





Figures 6a and 5b: Existing Pedestrian and Bicycle Facilities, from the Bayside Transportation Master Plan. Note that improvements have been made since this map was prepared, included recommended bike lanes and sidewalk improvements on Elm & Preble Streets.

Bayside Transportation Master Plan

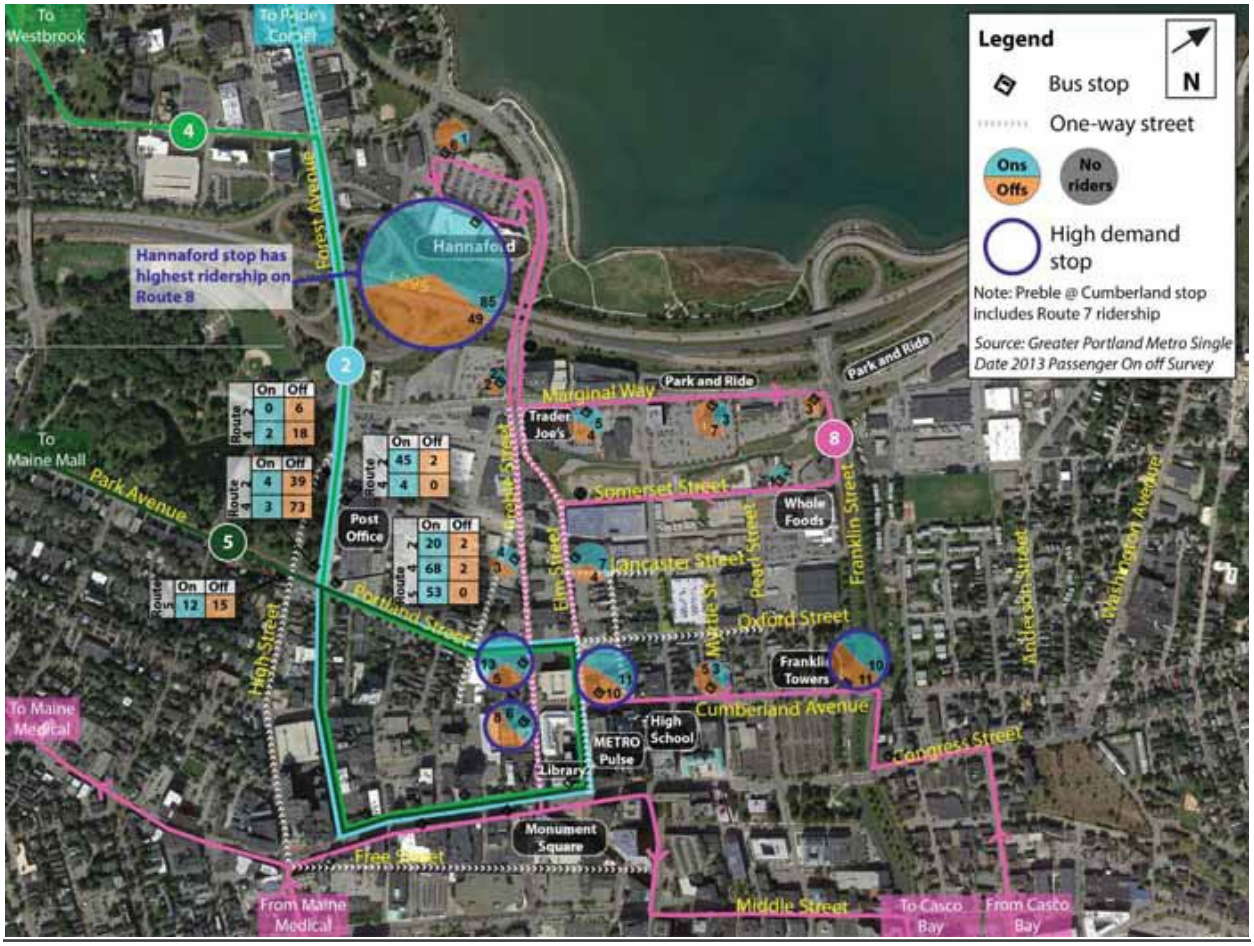


Figure 7: Ridership at Bayside METRO stops from the Bayside Transportation Master Plan

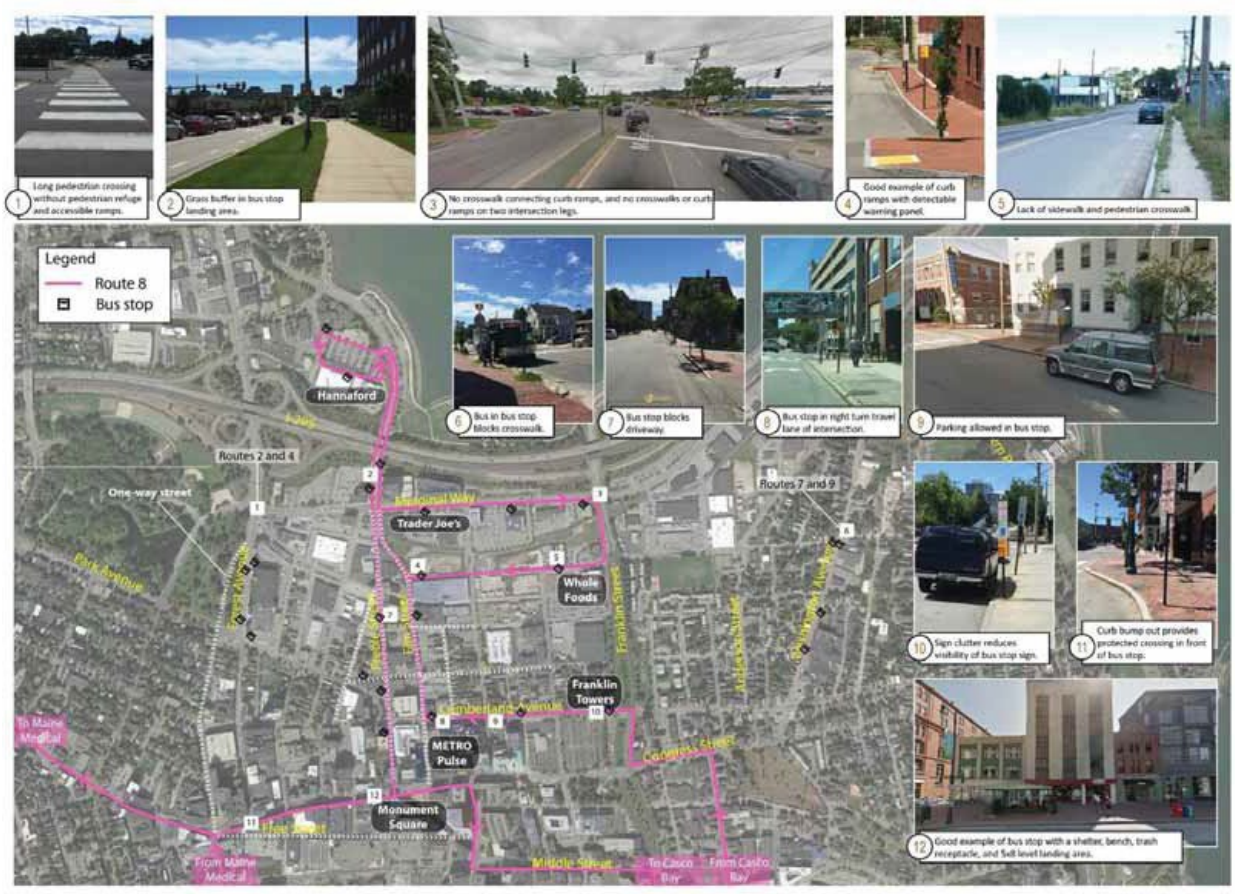


Figure 8: Issues and Opportunities at Bayside bus stops from the Bayside Transportation Master Plan

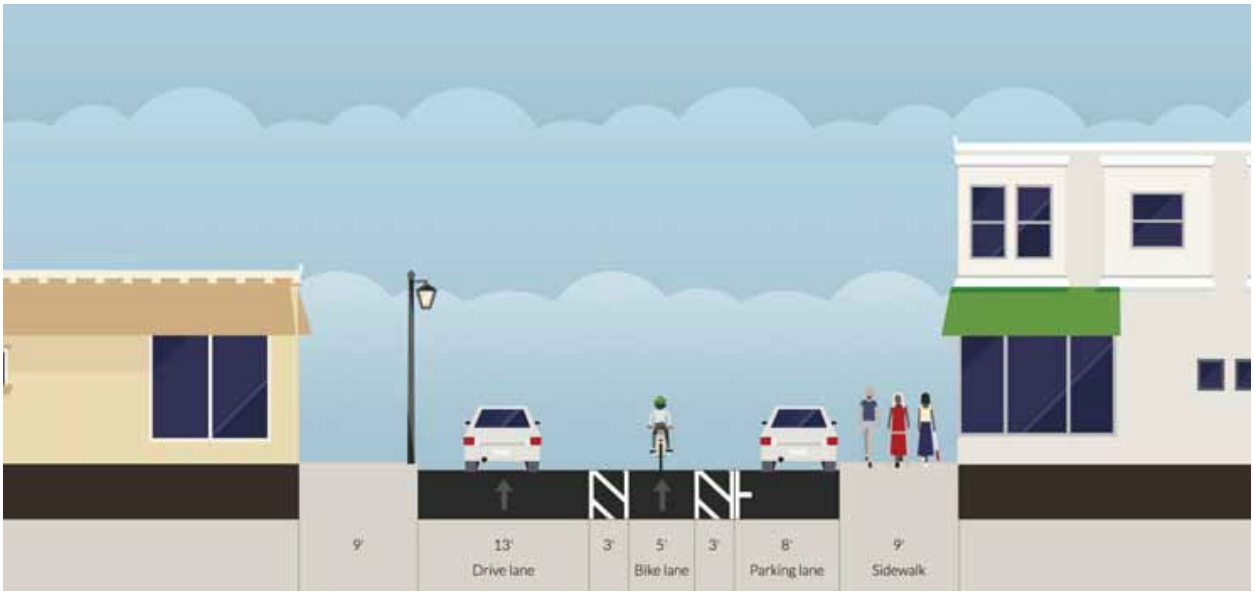


Figure 9: Long-term recommendation for Elm Street at Lancaster Street from the Bayside Transportation Master Plan (since implemented)

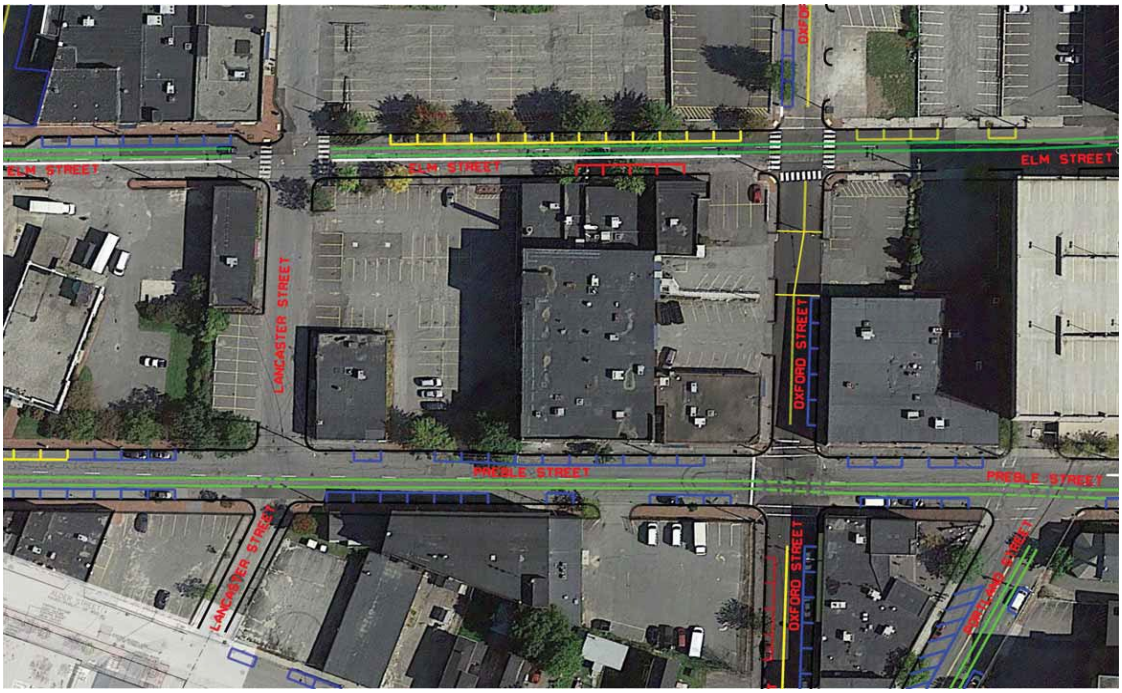


Figure 10: Preble and Elm Streets as planned in the Bayside Transportation Master Plan (this layout has since been implemented)

Characteristics of Likely Residents and Workers

In thinking through who may be likely to live in this building, it makes sense to first look at who currently lives in the neighborhood. Census Tract 6 includes much of the surrounding neighborhood in west Bayside. For that reason, we've looked at data from the 2021 American Community Survey 5-year data from the U.S. Census. That data provides a sense of some key characteristics of likely residents, with respect to car ownership, household size and commuting patterns. This data informs the best TDM strategies for this development.

In this tract, the average household size is 1.74, and one third of households have no vehicle available. In fact, almost half of single-person household have no available vehicles, and almost half of all households have just one vehicle available. The proximity of key assets, such as downtown amenities, jobs, and supermarkets, make this a good place to live car-free, or car-light.

As shown in Figure 11 below, many workers in this Census tract walk to work, work from home, or use alternative modes to get to work. Less than half of the workers in this tract drive to work. When you look at young workers (under age 25) you find that over 2/3 walk to work, and almost 3/4 get to work by alternative modes. The addition of Portland Bikeshare and the redesign of the Route 8 are likely to increase these numbers further.

The retail spaces on Lancaster and Oxford Streets will have a small number of employees. In all likelihood, the tenants will be the types of businesses catering to residents in the building and other nearby buildings. The employees of these businesses will be included in all TDM efforts.

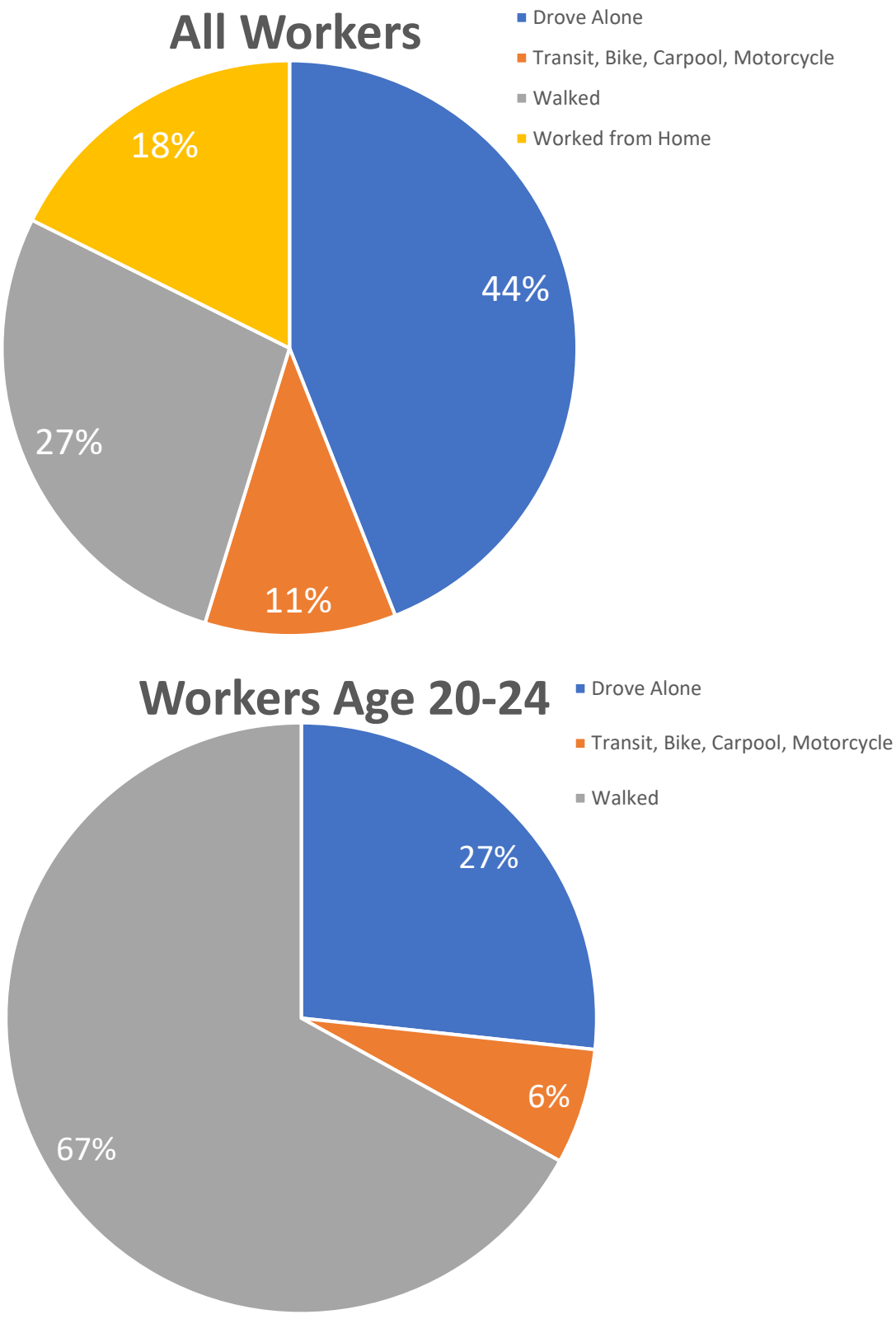


Figure 11: Commuting modes for all workers and workers age 20-40 (2021 5-Year American Community Survey)

TDM Administrator

The TDM Administrator for this project will be:

Jen Munroe, Property Manager
Port Property Management
82 Hanover Street, Suite 5
Portland, ME 04101
jennifer@portpropmgt.com
(207) 233-8418

Ms. Munroe will also serve as the TDM Coordinator for the 52 Hanover Street building under construction, so she will be able to apply best practices across the two buildings. Ms. Munroe may work with property management to implement details of this TDM plan but will be the one-stop contact when needed.

Resident and Employee Survey

To gauge the effectiveness of this TDM plan – and to adjust it if needed – the TDM Administrator will conduct an annual survey of residents in the building as well as employees of the ground level spaces. This survey will be conducted electronically using contact information on file with the management office for each unit. It will include questions on:

- Vehicle ownership and parking location
- Modes of transportation for commuting, household chores, and recreation
- Interest in carpooling or otherwise sharing transportation expenses with other tenants to reduce trips
- Barriers to vehicle trip reduction best practices, such as bicycle use and transit ridership, and
- Other transportation needs and/or interests of tenants.

Those tenants and employees that express interest in sharing information for carpooling or other trip reduction purposes will have their information provided to others who have also expressed interest.

The results of this survey will be provided to the City's Planning & Urban Development Department using a form like the one provided on the City's web site (see Attachment.) The survey will remain substantively consistent from year to year, to allow the results to be used to monitor the effectiveness of this TDM plan and allow for adjustments as needed.

Trip Generation and Parking Supply

This project's trip generation rates were determined using the following ITE Trip Generation Land Use Codes:

- ✓ LUC 223 Affordable housing (201 units)
- ✓ LUC 932 High Turnover sit down restaurant (2,000 sf)
- ✓ LUC 822 Strip retail plaza (<40k) (2,500 sf)

In total, the development is expected to generate 132 trips at morning peak hour and 139 at evening peak hour. Those figures are based on a typical affordable housing development with few transit, pedestrian or bicycle options. For this project, there is likely to be some trip-chaining, or combining of separate trips.

What is particularly different about this project is the mode and distance of these trips. In many cases, most of the trips generated would involve individual vehicle trips. However, in this case, with good TDM strategies in place, most of the expected trips will be on foot, on bike, or on transit.

This project has an expected parking demand of 40 spaces. However, research has shown that parking demand in transit-oriented developments such as this one can be as little as one-fifth the ITE supply guideline (see, for example, Ewing et al, *Landscape & Urban Planning* 160 (2017) 69-78.) We believe that, given the project's location, the decoupling of parking costs from rents, and the robust measures proposed in this TDM plan, the parking generation of this project can be accommodated in nearby lots and overnight on-street parking with limited negative impacts

Mode Shift Targets

What is particularly different about this project is the mode and distance of these trips. In many cases, most of the trips generated would involve individual vehicle trips. However, in this case, with good TDM strategies in place, most of the expected trips will be on foot, on bike, or on transit. This project sets the following mode split targets as per the City TDM guidelines:

Mode Split Targets

	Baseline	3-5 Year Target	7 Year Target
Drive Alone	44%	33%	22%
Carpool/Vanpool	3%	3%	3%
Transit	4%	8%	12%
Bicycle	4%	8%	12%
Walk	27%	30%	33%
Work from Home	18%	18%	18%

Mode Shift Strategies

As a primarily residential building with units best suited to one to three persons, this project will have different mode shift strategies than commercial buildings, or even residential buildings with larger units. The tenants in the retail spaces will also factor into mode shift plans.

The mode shirt strategies for this development are focused on the needs of likely tenants, including younger workers in a variety of fields and older single persons seeking the convenience of a downtown location.

These strategies are designed to respond to the following needs:

- Convenience
- Cost-effectiveness
- Leverage of downtown location, and

- Pushing of information to users rather than expecting them to pull information from on-line sources.

Shift strategies will include education as well as provision of convenient alternatives.

A key part of this TDM plan is to convey clear, compelling and accurate information to tenants and visitors as to the transportation options available other than driving. As part of a welcome packet, all new tenants will be provided information including the following:

- Transit maps, schedules, and information about real-time transit trackers
- Information about transportation providers, including transit operators, transportation-as-a-service (TAAS) companies, and other options to avoid driving
- A building-wide ride board to allow tenants to share trips, and
- Information on bike routes, parking infrastructure, and other incentives.

This educational packet will be provided online as well, so tenants and visitors can refer to it at any time.

Monitoring

As mentioned above, there is a TDM Administrator designated for this development who will be responsible for monitoring this plan. Following an annual survey of residents, the TDM Administrator will report results to the City's Department of Planning & Urban Development and propose modifications to this plan to make it more effective, if need. This reporting will also be helpful in reviewing future TDM plans, as we expect that additional developments will propose using the option in Table 19-B in the future.

The report for this development will include, at a minimum, the following:

1. Building occupation
2. Mode split, and
3. Suggested enhancements to transit, bicycle and pedestrian infrastructure.

TDM Action Steps

The core actions of this TDM Plan are consistent with, and in many cases exceed, the recommended actions in the Technical Manual. These action steps will result in trip and parking demand reductions that meet or exceed the goals listed. In addition, by providing residents with transportation options that reduce per-capita emissions, these steps will have external benefits that will improve the quality of the air in downtown Portland and help address the goals of the *One Climate Future* plan. Finally, by reducing vehicle trips in individual vehicles, this TDM Plan will save the City and state money by reducing the wear and tear on city streets.

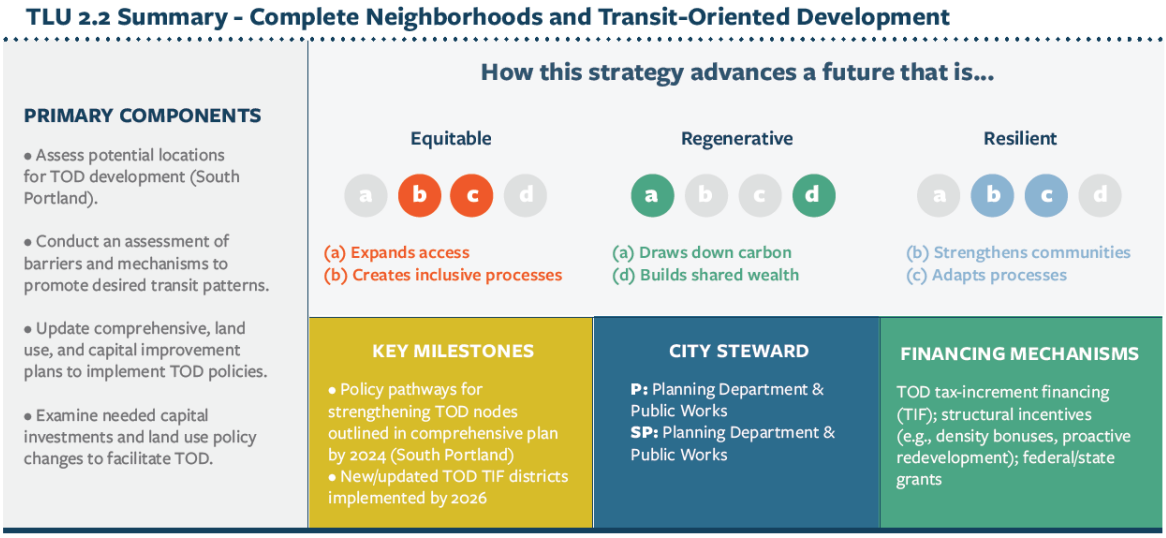


Figure 12: Portland's Climate Action Plan calls for iinfill development such as this project (Source: One Climate Future, p. 151)

1. **Infrastructure**
    a. Transit Lounge: With the closest transit stops outside the door, and others feet away, it will be easy for tenants to access several bus lines just up the street at the METRO Pulse. The developer will work with METRO to develop a "transit lounge" in the lobby that provides a comfortable place to wait for buses, with posted schedules and, as noted below, potentially real-time transit arrival information.
    b. Transit Information: As has become a best practice in transit-oriented developments in other cities, real-time transit information is key. The developer will work to provide either a real-time transit information screen in the transit lounge, with a comfortable waiting area, or develop a kiosk working with other buildings under development in the area and METRO staff that provides transit information and shelter in a common space.
    c. Bicycle Parking: This development will provide at least 40 indoor bicycle parking spaces in a dedicated bike room in the building.
    d. Bike Repair Station: The development will offer a bike repair station for the use of residents, located conveniently in a common area.

2. Incentives

a. Unbundled Parking: As mentioned above, the cost of parking has been "unbundled" from the cost of developing and operating the building. Tenants who choose not to own their own vehicle are then able to enjoy the full benefit of a reduction in their housing and transportation cost by not having to pay for a parking space.

b. Transit Incentives: Research has shown that moving into a new home is a chance for residents to try new transportation options. In order to make sure that new tenants are aware of, and have incentives to try, transit, will provide all new tenants with easy access to the Umo app for use on METRO, BSOOB Transit and/or South Portland Bus Service. All new tenants will also receive $50 pre-loaded onto their Umo account to allow them to try transit options and develop new habits (or continue previous ones) in this location. For tenants without smartphones, a METRO fare card loaded with $50 will be provided.

c. Car and Bike Sharing: While Portland currently does not have a car-sharing vendor, should one become available, the owners commit to working with the City to provide a carsharing vehicle nearby. Similarly, they agree to working with the City as it seeks to expand Portland Bikeshare and will sponsor a station nearby.

d. Telecommuting: This building will be wired broadband infrastructure that meets the build-to standard of the Maine Connectivity Authority and ConnectMaine, in order to encourage telecommuting as a trip reduction strategy.

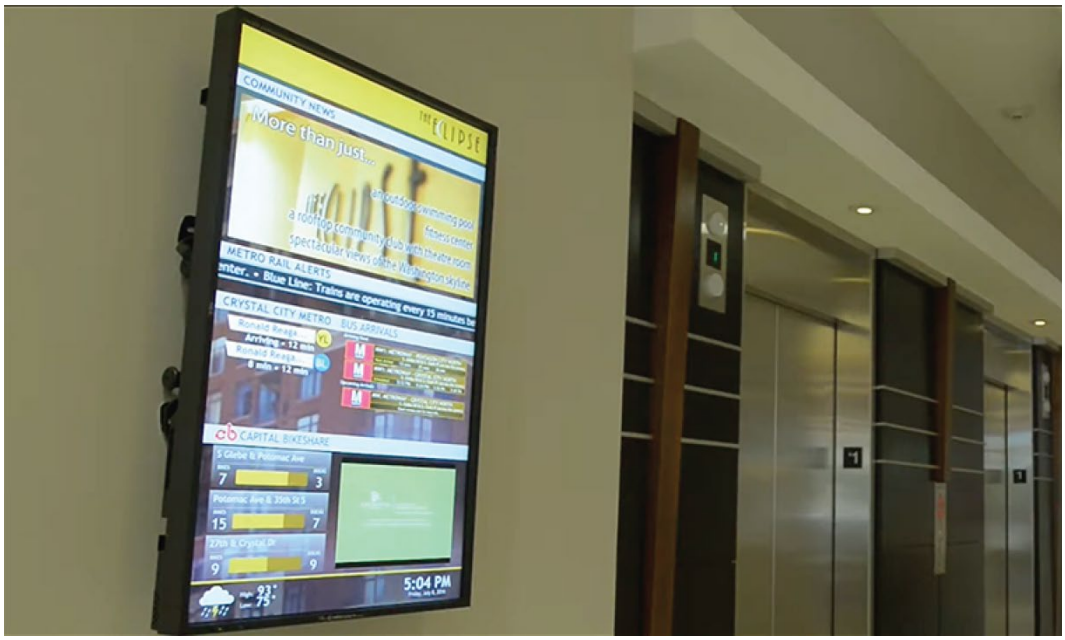


Figure 132: A real-time transit display in an apartment lobby (Source: https://www.redmon.com/expertise/transit-display/)

3. Education

a. Information: As part of a welcome packet, all new tenants will be provided information including the following:
   - Transit maps, schedules, and information about real-time transit trackers
   - Information about transportation providers, including transit operators, transportation-as-a-service (TAAS) companies, and other options to avoid driving
   - A building-wide ride board to allow tenants to share trips, and
   - Information on bike routes, parking infrastructure, and other incentives.
   - This educational packet will be provided online as well, so tenants and visitors can refer to it at any time.

b. Recognition: In order to recognize and provide positive reinforcement for resident TDM efforts, the building management will also provide an annual recognition of leaders in trip reduction from the building.

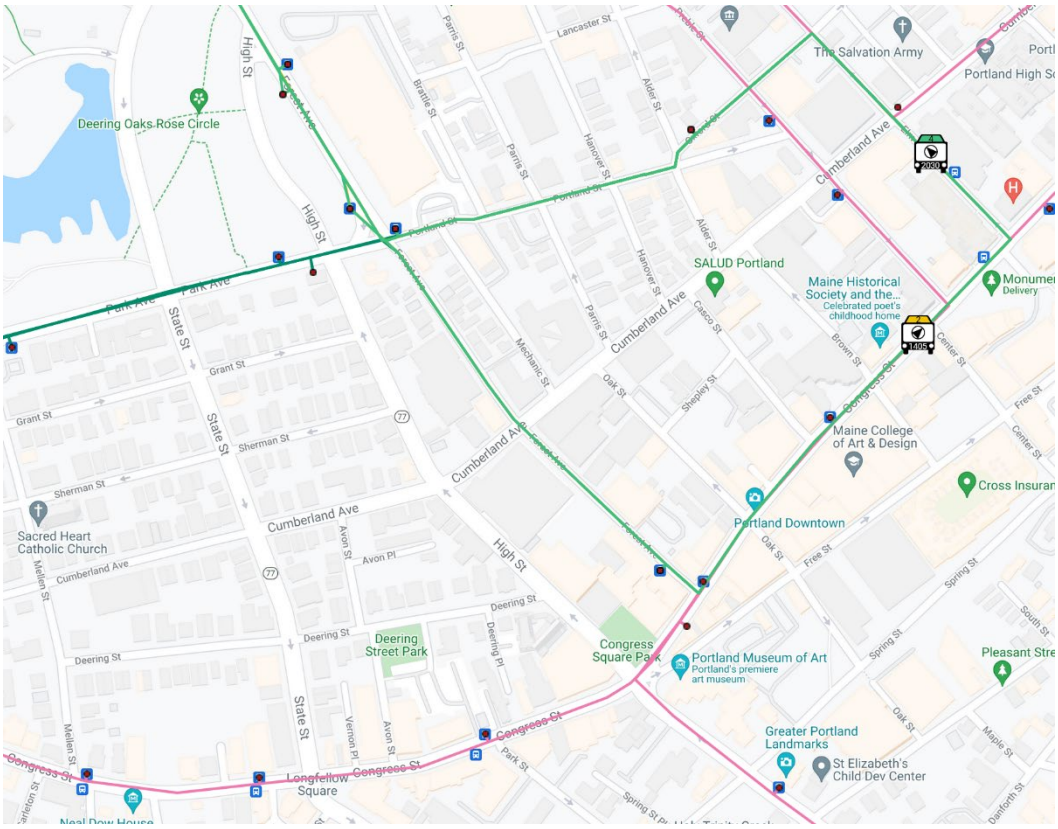
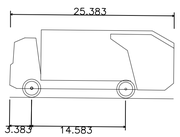


Figure 14: Transit tracking in downtown Portland that can be utilized in a lobby screen system (Source: http://bustimeweb.smttracker.com/bustime/map/displaymap.jsp)



Hino 268A J + Wayne Royal GT12 Refuse Truck

Overall Length	25.383ft
Overall Width	8.042ft
Overall Body Height	10.488ft
Min Body Ground Clearance	1.318ft
Track Width	8.042ft
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	23.900ft

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±

ZONE B7
ZONE B3
ZONE R6
LANCASTER STREET
(TWO-WAY)

RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
LOBBY
BIKE STORAGE
MECHANICAL ROOM
MAIL/PACKAGES
COMMUNITY ROOM
STORAGE/ LAUNDRY
PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS
2ND STORY
RESIDENTIAL
3RD STORY
RETAIL SPACE

7.60'
16.00'
14.44'
27.30'
5.00'
11.50'
11.80'
20.00'
R15'
2.90'
0.30'
8.90'
100.00'
10.40'
14.40'
4.20'

ELM STREET
(ONE-WAY)

OXFORD STREET
(ONE-WAY)

50 CEDAR STREET
21.40'
15.80'
CEDAR STREET
(ONE-WAY)

N/F AMELIA A. LABRECK
37970/11

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

TM 26-A-11
N/F ROBERT HYDE
27470/68

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

HALL COURT

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

7.00'
20.70'
16.00'
24.00'
R2'

EXISTING PARKING SPACE (TYP.)

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

Hino 268A J + Wayne Royal GT12 Refuse Truck

20 0 20 40
SCALE: 1" = 20'

PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
CITY COMMENT	WHS 6/8/23

TURNING TEMPLATE

DRAWING NAME:

PROJECT NAME:
89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT:
89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

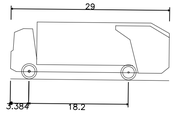
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ACORN ENGINEERING, INC.
70 CENTER STREET, KENNEBUNK, MAINE 04043
PO BOX 3427, KENNEBUNK, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
WILLIAM H. SAVAGE
11419
6/8/23
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
EX-1



AE_EDIT_HINO 338 M + Wayne Royal GT14 Refuse Truck	
Overall Length	29.000ft
Overall Width	8.042ft
Overall Body Height	10.488ft
Min Body Ground Clearance	1.318ft
Track Width	8.042ft
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	28.400ft

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE	SJL 8/16/23

DRAWING NAME: TRASH ENCLOSURE VEHICLE ACCESS

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
FIRST FLOOR, CALENDAR, LAMAIE FLATS
PO BOX 3257, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
8/16/23

DRAWING NO.

EX-2

ACORN ENGINEERING, INC.

Planning Division
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

May 25th, 2023

Subject: 89 Elm Street Neighborhood Meeting

I, Sam Lebel, hereby certify that a neighborhood meeting was held on May 16th, 2023 at 190 Lancaster Street, Portland, ME 04101, at 5:30 pm.

I also certify that on May 4th, 2023, 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.
2. Residents on the "interested parties" list.

Sincerely,

Sam Lebel

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Included with this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

ACORN ENGINEERING, INC.

Dear Neighbor: May 4th, 2023

On behalf of 89 Elm LLC, we are pleased to invite you to a neighborhood meeting on May 16th, 2023, to discuss the proposed Major Site Plan Application submitted for the approximate 0.81-acre parcel located at 89 Elm Street (CBL 33/H/6001). The proposed redevelopment project intends to transform the existing parking lot into an 8-story building to provide 201 affordable residential units with 3 ground-level retail spaces. This project is part of the greater West Bayside Master Development Plan (MDP) that is currently under review. Each phase of the MDP will be submitted and reviewed under its own Site plan application separate from the Master Plan Application. Please refer to the meeting information below:

Meeting Location: 190 Lancaster Street, Portland, ME 04101
Meeting Date/Time: Tuesday, May 16th, 2023, at 5:30pm

A sign-in sheet will be circulated, and a record of the meeting will be taken. Both the sign-in sheet and record will be submitted to the Planning Board. If you have any questions, please call (207) 775-2655.

Sincerely,

Sam Lebel

Sam Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Note: Under the City of Portland land use code, an applicant for a major site plan, master development plan, subdivision of over five lots, or zoning map amendment is required to hold a neighborhood meeting within 30 days of an application being deemed complete and no less than seven calendar days before a public hearing. Should you wish to offer additional comments on this proposed development, you may forward them by e-mail to planning@portlandmaine.gov or by mail to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101.

Sign-in Sheet **Participants:**

Name	Email
Kirsten Springer	Kirsten.Portlandia@gmail.com
Sarah Lewis	Sarahannelewis@gmail.com
Jed Nitzky	jednitzky@gmail.com
Laura Underkuffler + David Nowlin	lu27@cornell.edu
IAN JACOB	IAN@BWEANCHORDSIGN.COM
BRADEN Waypulla	BDraypulla@GMAIL.com.
Ed Gardner	Ed@gardnergroup.com
Avery Yale Kamila	
Michelle Hansen	michelle.hansen@opportunityalliance.org
Robert Sylvain	email@robertsylvain.com
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Amelia Labonecka	

Sign-in Sheet **Participants:**

Name	Email
Emerson Addams	emeryaddamsj@gmail.com
Mila Germon	milenagermon@gmail.com
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Patrick Beacham	patrick.beacham66@gmail.com
Alec Jaegerman	alecjaegerman@gmail.com
Susan McCarthy	smccarthy@main.rr.com

Sign-in Sheet

Presenters:

Name	Email
Michael Barton	mbarton@bushwatson.com
John Laliberte	john@bushwatson.com
William Savage	wsavage@acorn-engineering.com
Sam Lebel	slebel@acorn-engineering.com
Reid Tozier	reid@senatorearchitecture.com

89 Elm Street

Neighborhood Meeting Minutes

May 16th, 2023 / 5:30 pm
190 Lancaster Street, Portland, ME

Project Team Attendees:

Michael Barton (**MB**): Client/Presenter

John Laliberte (**JL**): Client/Presenter

Jessica James (**JJ**): Client Team (Longfellow Communications)

Reid Tozier (**RT**): Architect/Presenter (Ryan Senatore Architecture)

William Savage (**WS**): Civil Engineer/Presenter (Acorn Engineering)

Sam Lebel (**SL**): Civil Engineer/Presenter (Acorn Engineering)

Danielle McGowan (**DM**): Civil Engineer/Note Taker (Acorn Engineering)

The meeting started at approximately 5:35 pm.

Presentation:

Mike Barton:

- Team Introduction
- Overview of meeting
- Project Introduction

Sam Lebel:

- Project Overview; Existing and Proposed conditions and improvements

Will Savage:

- Overview of the utilities and the proposed separated stormwater system. Review of the quality and quantity of stormwater generated from the site.
- Relation to MDP and expansion of Publicly accessible area
- Overview of proposed street trees and approach to maximize tree health

Reid Tozier:

- Reviewed the floor layouts and renderings of the building

Comments, Questions & Answers:

Please note that the following questions and answers were not recorded verbatim and aim to represent and summarize the actual questions, answers, and discussion that took place at the meeting.

Neighbor: Clarify the B-3 Zone Use 30-ft extension into the R6 zone?

MB: Explained the 30ft extension as outlined in the City Land Use code. Described the goal for 18-hour activation within the proposed MDP and hope it extends beyond into the surrounding neighborhood.

Neighbor: Concern on 18-hour activation of portion in R-6 zone and requested clarification of what the "retail" would be.

MB: Addressed that there are no set plans as to what will be in the retail spaces. What does end up in the space will meet the City's requirements and noise standards.

Neighbor: Is there any parking included other than the parking garage? Any street parking included? Anything on the access drive aisle?

MB: The parking garage has space available and will be used for the development to meet the city parking requirements.

Neighbor: How much parking is currently available in the parking garage?

MB: The parking garage has approximately 595 parking spaces and they will allocate the necessary parking spaces and offer available spaces to future tenants. Outlined the recent City Study that addressed 44% of the area walk and bike.

Neighbor: Clarify status of TMP?

MB: TMP is currently under review by the City and their 3rd party traffic engineer

Neighbor: What area is considered to be within the 44% walkable/ biking community? How did we get this number?

MB: The 44% was Census tracked and believe it roughly encompasses Congress Street to Marginal Way and from Franklin Street to Forest Ave.

Neighbor: How many parking spaces will be removed and how many will be replaced?

MB: Unsure at this time how many will be removed, but there are 3 new parking spaces proposed along Lancaster Street as part of the 89 Elm Steet project.

Neighbor: Clarify the parking on Cedar Street? Is there more parking proposed?

WS: The Site plan, sheet C-10 provides the parking layout surrounding the site. It reflects the existing spaces and does not propose any new parking spaces.

Neighbor: What drives the size of the retail spaces? Compared with 40 Free Street (a project by the same architect firm) has what seems to be smaller retail spaces. Curious about the reasoning for this layout.

RT: The retail square footages are comparable in size (<2,000 sf) to what was provided at 40 Free St.

JL: This retail space/size seems to be more preferred and attractive to tenants.

Neighbor: Would like the applicant to revisit the neighborhood needs when selecting the size and placement of the retail units with a preference for smaller retail units

JL: Addressed that they have found that this size is the most flexible to the widest range of businesses allowed to operate in this zoning district.

RT/MB: Mentioned there are opportunities to subdivide the retail units as currently proposed.

Neighbor: What is the impetus for maintaining the current one-way traffic pattern on Oxford Street?

MB: The topic has been discussed with the city and is under review with VHB, the project's traffic engineer. Depending on the outcome of the traffic movement permit, changes may be made. The majority of Oxford Street is outside of the MDP.

Neighbor: Concerns that there is not enough screening around the mechanical features on the roof that were shown in the rendering.

RT: Addressed these are early-stage renderings and are not the final design in particular for the roof features and mechanical equipment screening. The project will likely use heat pumps for the majority of its HVAC. The mechanical features are oriented back from the roof edge such that visibility via line of site is mitigated.

Neighbor: Suggested there be parking proposed on Oxford Street.

Neighbor: Concern about traffic patterns on Cedar Street and entrance to the access aisle. Concerns that a garbage truck will not fit into the access aisle.

WS: AutoTurn tracking software has modeled a garbage truck turning onto Cedar Street and into and out of the development. Turning Templates will be submitted based upon the neighbor's request.

MB: Restated that the access aisle to the rear of 89 Elm is for service vehicles, trash trucks, and emergency vehicles. There will not be constant traffic, these are one off (mostly predictable) situations.

Neighbor: Have there been other considerations for locations of the trash enclosure? Believes the quality of Cedar Street will decrease with more traffic and that the current layout would not support the influx particularly for move in situations with moving trucks.

WS: Clarified that move ins will be handled within the proposed two 30-minute parking spaces on Elm St. The duration of the spaces has not been finalized but is intended to provide enough time for move-ins while promoting a high turnover.

MB: Addressed there will not be an influx of move ins at one time. There is a system in place to control move ins(daily limits, timing windows, spacing, elevator coordination, etc). They coordinate and spread-out move-in/move-out to limit congestion when tenants move in.

SL: In relation to other areas to move the trash enclosure or provide vehicular access, due to the steep slopes from Oxford down into the site, it is not practical to provide a driveway off Oxford.

Neighbor: Concerns of homeless population in area with lack of capacity to house them. Requested clarification on what affordability means and is there are rent incentives in place to help and who is eligible to apply?

MB/JL: Affordability is 60% of the area median income in the city. There is a voucher program available that anyone who makes at or under the 60% area median income is allowed to apply for and would be reviewed for conformance during leasing periods.

Neighbor: Will the existing parking lease be honored?
MB: Yes.

Neighbor: Requested that the turning templates be submitted to the city and would like clarification on the size of vehicle used.

WS: Confirmed that the vehicle dimensions and turning templates would be submitted.

Neighbor: Requested clarification on how low-income housing funding is received and if the funds have been allocated yet? Is there a required unit count and mix related to the grant?
MB: Acknowledged the funds have been allocated for this proposed project. Acknowledged there is no set unit mix associated with the grant but there is a default cost cap associated with the allocated funds.

Neighbor: What do they anticipate rent to be?
JL: Verified that nothing has been established et. John provided an example using 60% of the average median income, assuming it to be around $30,000. In this scenario, the estimated rent could be around $900 / $1,000. The rent will be dependent on the average median income at the time and the unit size the tenant selects.

Neighbor: Curious if existing leases in the area will be kept and proposed they rent out the retail spaces to social services.
JL: The existing leases established will remain, it is up to the tenant to renew their lease when the term is up. Explained that staff are in close contact with all current tenants. Reiterated their intent to continue relationships with existing tenants.

Neighbor: Commented on the lack of housing where larger families can live.

Neighbor: How was the unit count selected? Curious in the study completed to back into this number and mix.
MB: It is apparent that a higher ratio of 1 bedroom units for this market would be more appropriate than this proposed project from market analysis. The bedroom mix within this project is a greater ratio of bedrooms/units as compared to the proposed market rate units in the MDP.

Neighbor: Curious on the MDP process and linkage. If the MDP is delayed will the 89 Elm Street application continue?
MB: MDP process is optional. If the MDP doesn't move forward with the City, the application for 89 Elm Street will continue.

Neighbor: When is the next workshop?
MB: Once the city comments are received and our team responds back to the city, updated materials including comment responses are redistributed to the public realm, then the next workshop or hearing can then be scheduled.

Neighbor: Objects to running traffic down cedar street. Believes it will diminish the life of the community and that parking will be an issue.

Neighbor: Mentioned the shadow study was removed from the city website?

MB: Thanked him for informing him it was not showing up anymore and that we will coordinate with the city on that.

Neighbor: Questioned the shadow study evaluation periods. Curious if we are building as high as possible. Voiced opinion that traffic and parking impact will go down if the building loses a few floors.

MB: Although not required, the shadow study was completed voluntarily and in alignment with the standard for this kind of study. Verified the proposal does not meet or exceed the height limit and, therefore, the proposed heightis allowed in the current zone. The unit count/mix and stepped height configuration works within the maximum allowed density and is the most efficient use of space that they reviewed.

Neighbor: Curious as to what the grey hatched area is on the plan.

SL: Clarified it is a drive aisle for access to the transformer, emergency and occasional service vehicle access.

Neighbor: Addressed concerns for the existing heritage tree on the property and asked why the tree is going to be removed.

WS: Clarified the tree would not be expected to survive the excavation required for the foundation.

SL: Addressed the sidewalk as is with the roots breaking the pavement is not ADA accessible. Acknowledged we are doing what we can to offset the negative impacts of construction.

Neighbor: Expressed their interest in another project being developed down the road in another zone, and how they like the recreational space and amenities included with that development. Claimed that this development, blocks down the road, will look bad for low-income housing if more amenities are not included. Claimed that the bayside trail is being compromised by the homeless population and that they would prefer a development to go there. Claimed that there are not enough trees in the area as is, and that the development does not have enough mature trees.

JL: The proposed development at 89 Elm Street, along with the other proposed buildings included in the MDP, are anticipated to have similar designs and amenities. The property at 52 Hanover Street is within a different zone and is not part of the Master Development Plan.

WS: Acknowledged the 17 or 18 trees that were received through ARPA funding and that following a meeting with the City Forestry Division the consensus to use those trees inthe MDP area and the Applicant would provide approximately 80 street trees within the Master Development Boundary.

MB: Addressed that they are in the first steps with the landscape plan design. Program elements will come about once this is finalized. Noted that the tree study conducted by the city identified about 300 locations in the Bayside neighborhood (including E. Bayside) for trees with current city/state/federal funds available to deploy 80. This project will deploy in excess of 17 or 18 trees displaced in the entirety of the MDP in phase 1 and will include approximately 80 street trees in totality once complete.

Neighbor: Will the roof top turret feature be accessible to tenants? Will it be considered open space or is it just an accent feature?

JL: The roof top turret feature is an architectural element.

Neighbor: Is the parking lot currently used for Baxter parking and what will happen with the spots designated to Baxter? What is the parking count before and after the development? Where will existing parking leases go?

JL: Portions of the current lot are used by Baxter. We are working with them on parking solutions.

Neighbor: What is the percentage investment with Metro and GPCOG? Requested more information and solutions at the next meeting.

JL: They are in communication with Metro as they look at changes to their service, can not confirm that solutions will be available at the next meeting.

Neighbor: Expressed they would prefer the retail spaces not to be bars. Expressed opinion that the development is not thinking about the neighborhood.

JL: Addressed they are thinking about the community and neighborhood, with this phase of the project and in combination with the entire MDP to enhance the neighborhood and provide much needed housing. Reiterated there aren't any set businesses going into the retail space as of yet and anything could go there that's permitted in the zone.

Neighbor: Is it possible to disperse the funds allocated for the affordability to other existing buildings with the same Property Management?

JL: The affordable units being proposed are integrated and designed as part of the master development plan. They are not intended to be dispersed into existing properties.

Neighbor: Questioned why all affordable units are in the 89 Elm parcel and curious why they aren't being spread out.

JL: From a financing perspective, the available funds would need to be used on the 89 Elm project.

Neighbor: Addressed they will push for more affordability in the next market rate phases.

Neighbor: Curious if the developer has considered a smoker's porch?

MB: They will take this comment into consideration.

Neighbor: Questioned if they are able to manage an affordable housing building and believes that another company would need to manage the property.

JL: Shared that integrated management company has experience with affordable housing and that they will be managing the property.

MB: We intend to work with a consulting firm as needed to support the initial professional/administrative guidance required to ensure compliance, but they do have the team and resources capable of carrying out most of the tasks through use of existing internal systems.

Neighbor: Thinks the building design looks institutional and asked if there was a reason that there is no walkable throughway from Elm Street to Cedar?

MB: It is challenging to create that walkway from a few perspectives; main drivers being site topography, constructability and maintaining the target affordable unit mix ratio.

Neighbor: Is the 25% affordability the unit count or bedroom count?

MB: 25% is the bedroom count. The unit count is derived from what is allowed on the parcel with respect to the land use code.

Neighbor: Why aren't there some market rate units in each building? How was the funding received?

MB: Funding is a one-time ARPA distribution.

Neighbor: Has there been consideration of underground/ covered parking?

JL: It is economically infeasible to have covered parking.

Neighbor: Is there an opportunity for affordable retail spaces in the building for local business owners? What is the retail plan?

MB: Interested in hearing more from the public as to what that would entail and what local business retail is in demand right now.

JJ: Offered to do outreach and collect feedback from the neighborhood on what retail they think would be most suitable in the building and will coordinate with neighbors and interested parties for the upcoming meetings.

Neighbor: Concerns that they will take the garden away in 5 years after their lease is up? Thinks that they should deed the garden to the City.

JJ: Clarified they are not losing the garden, the Bayside Neighborhood Association has been offered a five year lease for $1 for the space with the option to renew the lease for another 5 years once the initial lease is up.

Neighbor: What are the City requirements when working with a road that was recently repaved like Elm Street?

MB: There is a moratorium fee and repaving standards when working within a moratorium street.

Neighbor: Is there a lack of parking in the building/ underground due to economic/ affordability factors?

JL: Financing is a factor.

MB: No underground parking proposed. They have over 400 parking spaces available in their parking garage the next block up.

Neighbor: Prefers to have two taller buildings over one larger one. Is it too late to discuss this option?

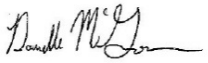
MB: It is not too late to discuss conformance with design standards. The planning board has not undergone the design review but we are expecting staff comment soon. In addition to comments received from design review, the planning board will be workshopping this project and may also have comments. With a full compilation of comments, the design/development team can move forward and re-evaluate the design if necessary, after all check-ins are complete. The design/development team will take into consideration recommendations from staff, members of the pubic at tonight's meeting, and the planning board during workshops/hearings.

Mike Barton concluded the meeting and acknowledged his appreciation for the comments received tonight and looks forward to continuing the conversation and opportunities for the development. Directed Neighbors to reach out to Jessica James with Port Property and Zach Powell the City Planner with any further questions and comments.

The meeting concluded at approximately 7:45 pm.

The abovementioned material was interpreted and recorded from handwritten notes. Please note and relay any discrepancies or disputed information in the recorded minutes to the below address so that they can be reviewed, revised, and resubmitted, as necessary.

Recorded by,



Danielle McGowan, E.I.
Project Engineer
Acorn Engineering, Inc.

www.vhb.com

February 3, 2023
Resubmitted April 12, 2023

Mr. Zachary Powell
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Application for Traffic Movement Permit
West Bayside Development
Portland, Maine

Dear Zachary,

On behalf of West Bayside Partners, LLC (applicant), VHB is pleased to submit this Traffic Movement Permit Application for a mixed-use phased development located on Lancaster Street and Elm Street in Portland.

We have attached the following information in support of this application:

- Sections 1-6
- Signed Application Form
- Notice of Intent to File
- List of Abutters
- $500 application fee

We look forward to scheduling a Scoping Meeting in the near future.

Very truly yours,

Jennifer Conley, PE, PTOE
Director, Transportation Systems
Jconley@vhb.com

500 Southborough Drive
Suite 105B
South Portland, Maine 04106
P 207.889.3150
F 207.253.5596

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Traffic Movement Permit Application

Notice of Intent to File

Abutters List

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Section 3

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Section 4

Attachment 4

Section 5

Section 6

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-624-3600

FOR MDOT USE
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:

Traffic 100-200 PCE's	____
Traffic 100-200 PCE's (Expedited)	____
Traffic 200+ PCE's	_X_

Name of Applicant: West Bayside Partners, LLC

Address: 82 Hanover Street, Suite 5, Portland, ME 04101 Telephone: 207-761-0832

Name of local contact or agent: Michael Barton

Address: 82 Hanover Street, Suite 5, Portland, ME 04101 Telephone: 207-761-0832

Name and type of development: The development consists of 215 multi family housing units, 201 affordable housing units, 6,000 sf retail, 2,000 sf coffee shop, and 6,000 sf restaurant

Location of development including road, street, or nearest route number: The site is bounded by Preble Street to the southwest, Lancaster Street to the northwest, Cedar Street and Elm Street to the northeast, Cumberland and Oxford Street to the southeast.

City/~~Town/Plantation~~: Portland, County: Cumberland, Tax Map # 033, Lot # G003, G006, H005-7, H0018, M012001, M004001

Do you want a consolidated review with DEP pursuant to 23 M.R.S.A. § 704-A (7)? Yes ____ No __X__

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): None Known

Name(s) of DOT staff person(s) contacted concerning this application: _____

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applications: N/A

CERTIFICATION

The traffic engineer responsible for preparing this application and/or attaching pertinent site and traffic information hereto, by signing below, certifies that the application for traffic approval is complete and accurate to the best of his/her knowledge.

Signature: _____ Re/Cert/Lic No.: Maine PE #15652

Name (print): Jennifer Conley

Date: March 24, 2023



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."

_____ 03/25/2023

Signature of applicant Date

NOTICE OF INTENT TO FILE
Traffic Movement Permit

Please take notice that

West Bayside Partners, LLC
82 Hanover Street, Suite 5
Portland, ME 04101

is intending to file a Traffic Movement Permit application with the City of Portland, who has delegated review authority to administer the application, pursuant to the provisions of 23 M.R.S.A. § 704 – A on or about February 3, 2023 resubmitted on March 24, 2023.

The application is for the development of 215 multi family housing units, 201 affordable housing units, and 14,000 sf of commercial space comprising of retail, restaurant, and a coffee shop. The project is forecast to generate 340 and 349 AM and PM weekday peak hour trip ends respectively based on ITE Trip Generation, 11th edition. Each of the uses described are anticipated to be constructed in 2025 and occupied in 2026.

at the following location:

The site is bounded by Preble Street to the southwest, Lancaster Street to the northwest, Cedar Street and Elm Street to the northeast, Cumberland Avenue and Oxford Street to the southeast.

Any interested party may request in writing to participate in the City of Portland scoping meeting for the subject project no later than 20 days after the application is found by the City to be complete and is accepted for processing. Requests shall be sent to the State Traffic Engineer, 16 State House Station, Augusta, ME 04333. Public comments on the application pertaining to either congestion or safety will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Transportation Region office in Scarborough (Region 1) during normal working hours. Addresses may be found at the following website: https://www.maine.gov/mdot/about/regions/ A copy of the application may also be seen at the municipal offices in Portland, Maine.

Written public comments concerning congestion or safety only, may be sent to the following address: Attention Zachary Powell, City of Portland, 389 Congress Street, Portland, ME 04101.



Jennifer Conley, PE, PTOE
VHB, Inc.

Parcel ID	Address	Owner	Owners Mailing Address
034 I001000	125 KENNEBEC STREET	125 KENNEBEC STREET CONDO	125 KENNEBEC STREET, PORTLAND, ME, 04101
034 I001001	125 KENNEBEC STREET	PORTLAND ARCITECTURAL SALVAGE INC	125 KENNEBEC STREET, PORTLAND, ME, 04101
034 I001002	125 KENNEBEC STREET	PD2 LLC	6 PHANTOM FARM RD, CAPE ELIZABETH, ME, 04107
025 E001001	71 KENNEBEC STREET	HOWLES CORPORATION	PO BOX 938, PORTLAND, ME, 04104
025 C002001	53 KENNEBEC STREET	HOWLES CORPORATION	PO BOX 938, PORTLAND, ME, 04104
025 D008001	145 LANCASTER STREET	PERRY E IRON & METAL CO	115 LANCASTER ST, PORTLAND, ME, 04101
026 E004504	75 CHESTNUT STREET	75 CHESTNUT STREET OWNER LLC	220 BROADWAY # 302, LYNNFIELD, MA, 01940
026 A001001	158 LANCASTER STREET	BAYSIDE II LLC	ONE CANAL PLAZA, PORTLAND, ME, 04101
033 H008001	178 LANCASTER STREET	BAYSIDE II LLC	ONE CANAL PLAZA, PORTLAND, ME, 04101
033 H009001	50 CEDAR STREET	BAYSIDE IV LLC	ONE CANAL PLAZA STE 500, PORTLAND, ME, 04101
033 H010001	48 CEDAR STREET	BAYSIDE II LLC	PO BOX 266, CAPRE ELIZABETH, ME, 04107
033 H011001	44 CEDAR STREET	LABRECK AMELIA A	87 MUNJOY ST, PORTLAND, ME, 04101
033 H012001	40 CEDAR STREET	BAYSIDE II LLC	PO BOX 266, CAPRE ELIZABETH, ME, 04107
033 H013001	36 CEDAR STREET	BAYSIDE II LLC	ONE CANAL PLAZA, PORTLAND, ME, 04101
033 H016001	215 OXFORD STREET	NOWLIN DAVID B	360 PLEASANT HILL RD, SCARBOROUGH, ME, 04074
033 N009001	18 CEDAR STREET	SALVATION ARMY THE	88 PREBLE ST, PORTLAND, ME, 04101
033 N003001	220 OXFORD STREET	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
033 N001001	67 ELM STREET	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
033 N002001	65 ELM STREET	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
033 N004001	61 ELM STREET	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
033 N006001	55 ELM STREET	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
033 N018001	307 CUMBERLAND AVE	AVESTA HOUSING DEVELOPMENT CORPORATION	307 CUMBERLAND AVE, PORTLAND, ME, 04101
027 A001001	320 CUMBERLAND AVE	EAST END CORP	PO BOX 10291, PORTLAND, ME, 04104
037 F020001	38 PREBLE STREET	PREBLE STREET	38 PREBLE ST, PORTLAND, ME, 04101
033 K010001	331 CUMBERLAND AVE	YOUTH AND FAMILY OUTREACH	331 CUMBERLAND AVE, PORTLAND, ME, 04101
033 L004001	9 PORTLAND STREET	PREBLE STREET RESOURCE CENTER INC	331 CUMBERLAND AVE, PORTLAND, ME, 04101
033 D015001	74 PREBLE STREET	SALVATION ARMY THE	88 PREBLE ST, PORTLAND, ME, 04101
033 D006001	98 PREBLE STREET	SALVATION ARMY THE	88 PREBLE ST, PORTLAND, ME, 04101
033 O002001	106 PREBLE STREET	114 PREBLE BLOCK LLC	PO BOX 779, PORTLAND, ME, 04104
033 O001001	114 PREBLE STREET	114 PREBLE BLOCK LLC	PO BOX 779, PORTLAND, ME, 04104
033 O004001	120 PREBLE STREET	114 PREBLE BLOCK LLC	PO BOX 779, PORTLAND, ME, 04104
033 O003001	75 ALDER STREET	STATE OF MAINE	16 STATE HOUSE STATION, AUGUSTA, ME, 04330
034 K004001	101 HANOVER STREET	KENNEBEC KROSSING LLC	PO BOX 779, PORTLAND, ME, 04104
027 B001001	284 CUMBERLAND AVE	CITY OF PORTLAND	389 CONGRESS ST, PORTLAND, ME, 04101
026 B012001	31 CEDAR STREET	197 OXFORD STREET LLC	82 HANOVER ST, PORTLAND, ME 04101
026 B014001	33 CEDAR STREET	BENNISON MARY LEE	33 CEDAR ST, PORTLAND, ME 04101
026 B004001	4 HALL COURT	197 OXFORD STREET LLC	82 HANOVER ST, PORTLAND, ME 04101
026 B001001	39 CEDAR STREET	HYDE ROBERT	39 CEDAR ST, PORTLAND, ME 04101
026 A009001	45 CEDAR STREET	AMES PETER P & ALICE D JTS	69 ROCK RIDGE RUN, CUMBERLAND, ME 04021
026 A011001	47 CEDAR STREET	HALL JAMES W & SARAH E MICHNIEWICZ JTS	47 CEDAR ST, PORTLAND, ME 04101
026 A001001	158 LANCASTER STREET	WBP COMMERCIAL LLC	82 HANOVER ST, PORTLAND, ME 04101

West Bayside Development

Traffic Movement Permit (Phase 1 & 2)

PREPARED FOR

West Bayside Partners, LLC
82 Hanover Street, Suite 5
Portland, ME 04101

PREPARED BY

500 Southborough Drive
Suite 105B
South Portland, ME 04106-6928

April 12, 2023

1

Section 1: Site and Traffic Information

1.A Site Description and Site Plan

The site is located on multiple streets in the West Bayside neighborhood including Preble Street, Elm Street, Lancaster Street, and Oxford Street in Portland, Maine. Existing space to be developed includes predominately surface lots and a few existing buildings. The site is identified on the following City Parcels:

- 196 Lancaster Street – 033 G003, G006 (Phase 1)
- 89 Elm Street – 033 H018, H005, H006, H007 (Phase 1)
- 60 Elm Street – 033 M012001 (Phase 2)
- 315 Cumberland Avenue – 033 M004001 (Existing Garage)

The site and boundary surveys, and proposed site plan are included in Attachment 1A.

1.B Existing and Proposed Site Uses

The following describes the existing and proposed uses:

Existing Uses

196 Lancaster Street is currently being used as a 4,250 sf office building. 89 and 60 Elm Street are currently surface parking lots. The Portland Public Market Garage is a seven-level, 595-space parking structure. Vehicular access to and from the garage is provided on both Preble Street and Elm Street.

Proposed Site Uses

The Project consists of a mixed-use two-phase redevelopment of four sites. The following presents the land use program by phase.

Phase 1

› 130 Multi-family housing units
› 201 Affordable housing units
› 4,000 sf general retail

- 2,000 sf coffee shop
- 6,000 sf restaurant

Phase 2

- 85 Multi-family housing units
- 2,000 sf general retail

The existing 595 space Portland Public Market Garage will provide parking for these uses since it is controlled by the developer and is largely vacant. As it does today, the parking garage will continue to have access/egress on both Preble Street and Elm Street. A detailed site plan for 89 Elm Street and a master site plan level for 196 Lancaster Street and 60 Elm Street is provided in Attachment 1A. Parking allocated by site is presented in Table 1.

Table 1 Vehicle Parking Allocation in the Portland Public Market Garage

Site Location	Number of Parking Spaces Allocated
Phase 1	
196 Lancaster Street	73
89 Elm Street	40
Phase 2	
60 Elm Street	56
Total	**169**

1.C Regional Mapping

Site location maps showing the development area is included in Attachment 1A.

The site is bounded by Preble Street to the southwest, Lancaster Street to the northwest, Cedar Street and Elm Street to the northeast, Cumberland Avenue and Oxford Street to the southeast.

1.D Proposed Uses in the Study Area

Projects that have been approved but are not yet occupied as well as projects that have applied for approval are required to be included in the predevelopment traffic volumes. A mapping of locations of these projects is provided in Attachment 1C.

- 385 Congress Street (Mixed-Use Development) (PL001970-2022) This mixed-use development is approved and not yet constructed. A minimal number of trips may pass near the West Bayside proposed development.
- 477-481 Congress Street (PL-01003-2021) This project is a redevelopment of the existing building at 477 Congress Street into a 186-room hotel with retail space, restaurant, rooftop bar, and associated hotel amenities. The site was previously used as an office and retail and a revised trip generation was reviewed by the City and found that the expected AM peak hour traffic will not change while the PM peak hour traffic reduces from the previous use on the site.

- 29 Marginal Way (PL-01879-2021) 29 Marginal Way is a multi-tenant commercial site with a total of six commercial buildings. The re-development of this site has been constructed and has been occupied.
- 343 Cumberland Street (PL-002095-2022) This project combines two existing facilities within 500' of each other and is not expected to increase traffic on the adjacent roadway network.

1.E Trip Generation

Trip generation estimates for the Project are based on the Institute of Transportation Engineers (ITE) publication, Trip Generation, 11th Edition. The ITE Trip Generation Manual categorizes various land uses and provides weekday daily, weekday morning peak hour, and weekday evening peak hour unadjusted vehicle trip generation estimates for each use. Trip generation estimates for the proposed uses were projected using data published in the ITE Trip Generation Manual based on the metrics and land use codes presented in Table 2.

Table 2 Project Program & ITE Land Use Codes

Land Use	Size	Land Use Code	
Multi-family housing	215 units	221	Multifamily Housing (Mid-Rise)
Affordable housing	201 units	223	Affordable Housing
General retail	6,000 sf	822	Strip Retail Plaza (<40k)
Coffee shop	2,000 sf	936*	Coffee/Donut Shop without drive through window
Restaurant	6,000 sf	932	High-Turnover (Sit-Down)

Source: ITE Trip Generation 11th Edition

* AM peak hour is based on trip generation for coffee shop as included in 52 Hanover Street TMP

Site trip generation for the proposed coffee shop is developed based upon methodology used for the approved 52 Hanover Street development in Portland, Maine by using count data taken at an existing neighborhood coffee shop at the intersection of Congress Street and Atlantic Street. Table 3 below summarizes the results of from the 52 Hanover Street traffic movement permit.

Table 3 Trip Generation Neighborhood Coffee Shop

Land Use	Entering Trips		Exiting Trips		Total Trips	
	Pedestrian Trips	Vehicle Trips	Pedestrian Trips	Vehicle Trips	Pedestrian Trips	Vehicle Trips
8:00 to 8:15 AM	7	1	7	1	14	2
8:15 to 8:30 AM	5	2	3	2	8	4
8:30 to 8:45 AM	9	2	7	2	16	4
8:45 to 9:00 AM	12	3	8	2	20	5
9:00 to 9:15 AM	8	1	10	2	18	3
9:15 to 9:30 AM	4	1	6	1	10	2
Peak Hour (8:30 – 9:30) Total	**33**	**7**	**31**	**7**	**64**	**14**

Source: AM peak hour is based on trip generation for coffee shop as included in 52 Hanover Street TMP

The existing coffee shop generates far fewer vehicle trips than pedestrian trips during the AM peak hour. For the analysis, we have included the pedestrian and vehicular trips into our total trip count listed below.

The unadjusted ITE vehicle trip generation was calculated for the weekday AM and PM peak hours for the remainder of the land uses on site as presented in Table 4. Trip generation calculations are provided in Attachment 1D.

Table 4 Total Unadjusted Trips

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Multi-family housing	19	64	83	51	33	84
Affordable housing	29	72	101	54	38	92
General retail	12	8	21	27	27	54
Restaurant	31	26	57	33	21	54
Coffee shop*	40	38	78	33	33	65
Total	**132**	**208**	**340**	**198**	**151**	**349**

Source: ITE Trip Generation 11th Edition

*AM peak hour is based on trip generation for coffee shop as included in 52 Hanover Street TMP

Internal Capture

As a multi-use development, the trip generation characteristics of the Project will be different from single-use sites. Some of the traffic to be generated by the Project will be contained among the components of the site as "internal" or "shared vehicle" trips. This concept means that some patrons could visit more than one of the uses on the Project Site. For example, apartment residents may also patronize the site's retail and restaurant spaces.

While these shared trips represent new traffic to the individual uses, they would not correspond to new vehicle trips on the surrounding roadway network.

As described in the ITE Trip Generation Handbook, *"because of the complementary nature of these land uses, some trips are made among the on-site uses. This capture of trips internal to the Development Site has the net effect of reducing vehicle trip generation between the overall Development Site and the external street system (compared to the total number of trips generated by comparable land uses developed individually on stand-alone sites) an internal capture rate can generally be defined as the percentage of total person trips generated by a site that are made entirely within the Development Site. The trip origin, destination, and travel path are all within the site."*

Because this site is not contiguous, internal capture has been determined at the building level rather than site level. Credit is taken only for trips that would occur between uses in the same building. The internal capture adjustment calculations are presented in Attachment 1D. The internal and external trips are presented in Table 5 and Table 6.

Table 5 Internal Capture Adjustment – AM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	61	12	--	8	1	64
Exit	--	55	39	--	1	8	85
89 Elm							
Enter	8	10	29	2	3	1	41
Exit	5	9	72	2	1	3	80
60 Elm							
Enter	4	--	8	0	--	0	12
Exit	3	--	25	0	--	0	28
TOTAL	**20**	**135**	**185**	**4**	**13**	**13**	**310**

Table 6 Internal Capture Adjustment – PM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	55	31	--	4	5	77
Exit	--	47	20	--	5	4	58
89 Elm							
Enter	18	11	54	5	5	6	67
Exit	18	7	38	8	4	4	47
60 Elm							
Enter	9	--	20	1	--	2	26
Exit	9	--	13	2	--	1	19
TOTAL	**54**	**120**	**176**	**16**	**18**	**22**	**294**

1.F Trip Distribution

To determine the likely travel patterns of trips to the redevelopment area, the US Census Journey to Work data was consulted. Based on this data, most Portland residents work in either Portland or points to the north and south along the interstate. The distribution of these Portland resident work trips is presented in Table 7. The likely travel patterns to and from the redevelopment area are illustrated to follow these same patterns.

Table 7 Trip Distribution Percentages for Residents

Route	Proposed Distribution[1]
I-295 points north	28%
I-95 points north	7%
26/100 points north/west	9%
302 points north/west	8%
25 points west	2%
I-295 points south	41%
Marginal Way	1%
Casco Bay Bridge points south	3%
High or State streets (local)	1%
Cumberland Ave (local)	1%

1: Trip distribution based on journey to work information sorted by Portland residence.

1.G Trip Assignment

Typically, some share of trips to coffee shops and restaurants are counted as pass-by trips. To be conservative, all vehicle trips are assumed to be 100% primary with reductions only for internal capture. With no pass-by trips, all vehicle trips are anticipated to start or end at the existing Portland Public Market Garage at Preble and Elm Streets. New vehicle trips were assigned based on the distribution in Table 7. The resulting trip assignment is shown in Attachment 1D.

Attachment 1A

Boundary Survey

Overall Site Plan

MATCH LINE SHT. 2

LANCASTER STREET EAST (50' WIDE)

196 LANCASTER ST.
196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

89 ELM ST.
89 ELM STREET LLC
39779/246
4,691 S.F. ±

89 ELM STREET LLC
39779/236
38,462 S.F. ±
0.88 ACRES ±

50 CEDAR ST.

158 LANCASTER ST.
WBP COMMERCIAL LLC
39773/225
14,307 S.F. ±
0.33 ACRES ±

82 CHESTNUT ST.
WBP COMMERCIAL LLC
39779/221
3,442 S.F. ±
0.08 ACRES ±

78 CHESTNUT ST.
197 OXFORD STREET LLC
39779/243
12,721 S.F. ±
0.30 ACRES ±

81 PREBLE ST.
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±

73 ELM ST.
73 ELM STREET LLC
39779/234
14,879 S.F. ±
0.34 ACRES ±

60 ELM ST.
60 ELM STREET LLC
39779/230
11,535 S.F. ±
0.26 ACRES ±

62 ELM ST.
WBP COMMERCIAL LLC
39779/229
14,526 S.F. ±
0.33 ACRES ±
2 STORY BRICK

31 CEDAR ST.
197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

193 OXFORD ST.
197 OXFORD STREET LLC
39779/239
11,550 S.F. ±
0.265 ACRES ±

PREBLE STREET (56.5' WIDE)
ELM STREET (49.5' WIDE)
CEDAR STREET (33' WIDE)
CHESTNUT STREET (49.5' WIDE)
OXFORD STREET (49.5' WIDE)
PORTLAND ST.
CUMBERLAND AVE.
HALL COURT
PASSAGE
ONE WAY

TM 26-A-12 N/F JAMES W. HALL SARAH MICHNIEWICZ 23909/341
TM 26-A-11 N/F ROBERT HYDE 27470/68
TM 26-A-8 N/F ALBERT BRESETTE 7951/275
TM 26-B-1 N/F ROBERT HYDE 27470/68
TM 26-B-2,3 N/F ALBERT BRESETTE
TM 26-B-7 N/F FRANK E. DIDONATO DONNA E. COX 24885/320
TM 26-B-14 N/F MARY LEE BENNISON 27956/297
TM 33-H-16,17 N/F DAVID B. NOWLIN 25148/336
TM 33-M-4 N/F WBP GARAGE LLC 39746/216 PARKING GARAGE
N/F AMELIA A. LABRECK 37970/11
OWNERS UNKNOWN

TBM: BONNET BOLT HYDRANT ELEVATION=16.25
TBM: BONNET BOLT HYDRANT ELEVATION=12.69
TBM: BONNET BOLT HYDRANT ELEVATION=35.64
TBM: BONNET BOLT HYDRANT ELEVATION=46.56
TBM: BONNET BOLT HYDRANT ELEVATION=43.68

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- EM/GM ELECTRIC/GAS METER
- MB MAILBOX
- SIGN
- PM PARKING METER
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- LIGHT POLE
- GAS VALVE
- DECIDUOUS TREE
- FENCE
- CURB
- OHW OVERHEAD WIRES
- UGE UNDERGROUND POWER
- W WATER LINE
- G GAS LINE
- T TELEPHONE
- SD STORM DRAIN
- SS SANITARY SEWER
- 100 1' CONTOUR
- IPF/IRF IRON PIPE/ROD FOUND
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK / PAGE
- TM TAX MAP–BLOCK–LOT
- CONC. CONCRETE

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 SURVEY HAS NOT PHYSICALLY LOCATION THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

PLAN REFERENCES

ALTA/NSPS LAND TITLE SURVEYS, BAYSIDE I, LLC, BAYSIDE II, LLC, BAYSIDE III, LLC, BAYSIDE IV, LLC, CEDAR ST., LANCASTER ST. EAST, CHESTNUT ST., PREBLE ST. & OXOFRD ST., PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR BUSH–WATSON SEPT. 2022 BY OWEN HASKELL, INC.

GENERAL NOTES

1. OWNERS OF RECORD: AS NOTED ON PLAN
2. BEARINGS ARE BASED ON MAINE STATE GRID WEST ZONE PER COORDINATES ON CONTROL POINTS PROVIDED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT.
3. ELEVATIONS BASED ON NGVD 1929. CITY BENCHMARK TBM 307 MDOT DISK "612–(1)–10 1983" IN CONCRETE BASE OF LIGHT POLE AT NORTHEAST CORNER ELM/SOMERSET ELEVATION = 9.02.
4. STREET LINES SHOWN ARE BASED ON MONUMENTATION FOUND AND TIES TO BUILDINGS PER SURVEYED BY E.C. JORDAN CO.
5. OWNERSHIP OF FENCES AND RETAINING WALLS ALONG PROPERTY LINES HAS NOT BEEN DETERMINED.

STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

Topographic Survey
Bayside Parcels
Lancaster, Preble, Elm, Cedar, Chestnut and Oxford Streets, Portland, Maine
Made for
Bush-Watson
188 State Street, 3rd Floor, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: RS / JLW	DATE: DEC. 8, 2022	JOB NO. 2022-162 P	
CHECKED BY: RRL	SCALE: 1" = 30'	DRWG. NO. 1	

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	.86 AC
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	6.66 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	5 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	3.85 FT
MINIMUM SIDE YARD SETBACK	N/A	2.91 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT	80'*	< 80 FT

* PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	.86 AC
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	6.66 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.88 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.09 FT
LOT WIDTH	20 FT	89.51 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	–

GENERAL NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.

REFERENCES:

1. PLAN REFERENCE
   1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022

LEGEND:
- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

20 0 20 40
SCALE: 1" = 20'

PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
EXISTING CURB, CROSSWALK, AND DETECTABLE PAD
PROPOSED STREET TREE PER DETAIL AND LA, TYP.
PROPOSED PATIO PER LA
ZONE B7
ZONE B3
ZONE R6
ZONING DISTRICT BOUNDARY, TYP.
LANCASTER STREET
PROPOSED REINFORCED CONCRETE SIDEWALK
EXISTING CURB CUT TO REMAIN AND BE MODIFIED
EXISTING PARKING LOT TO REMAIN
PROPOSED SEAT WALL PER LA
CANOPY ABOVE, TYP.
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
LOBBY
MECHANICAL ROOM
56 CEDAR STREET
PROPOSED PROPERTY LINE, TYP.
CURB CUT TO BE CLOSED
TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341
EXISTING LIGHT POLE TO REMAIN, TYP.
BIKE STORAGE
MAIL/PACKAGES
PROPOSED RETAINING WALL AND GUARDRAIL/FENCE PER STRUCTURAL ENGINEER
EX. RETAINING WALL TO REMAIN WITH MODIFICATIONS AS SHOWN
TM 26-A-11
N/F ROBERT HYDE
27470/68
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
SETBACK LINE, TYP.
COMMUNITY ROOM
STORAGE/ LAUNDRY
PR. LOCATION OF 9'X9' PADMOUNT TRANSFORMER
50 CEDAR STREET
EXISTING PARKING AND CURB CUT TO REMAIN
EXISTING HOME TO REMAIN
TM 26-A-8
N/F ALBERT
BRESETTE
7951/275
196 LANCASTER STREET LLC
39779/232
ELM STREET (ONE-WAY)
PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS
PROPOSED WOOD GUARDRAIL PER DETAIL
PR. PAVEMENT
N/F AMELIA A. LABRECK
37970/11
EX. STREET TREES TO REMAIN, TYP.
HALL COURT
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
2ND STORY
12 PARKING STALLS TO BE STRIPED
EXISTING PARKING LOT TO REMAIN
TM 26-B-1
N/F ROBERT HYDE
27470/68
TM 26-B-2,3
N/F ALBERT
BRESETTE
3 STORY CONCRETE
CEDAR STREET (ONE-WAY)
46 CEDAR STREET
PROPOSED DRIVEWAY AND MODIFIED CURB CUT
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±
PR. STAIRS AND RAMP WITH RAILINGS
SEAT WALL OR CURB AND DECORATIVE RAILING AT ELM STREET ENTRY, TYP. OF 3
PROPOSED RESURFACED PARKING LOT
PROPOSED 22' WIDE ACCESS AND UTILITY EASEMENT
PR. LOCATION OF SOLID WASTE
TM 26-B-14
N/F MARY LEE
BENNISON
27956/297
6' SIDEWALK PER DETAIL
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
PR. MULCH AND SHRUBS
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
RESIDENTIAL
3RD STORY
TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336
PR. RETAINING WALL
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C-20
RETAIL SPACE
OXFORD STREET LLC
39779/234
3,679 S.F. ±
0.34 ACRES ±
OXFORD STREET LLC
39779/241
3,674 S.F. ±
2-1/2 STORY WOOD FRAME
1 STORY BRICK
EXISTING LIGHT POLE AND OVERHEAD WIRES TO BE REMOVED AND REROUTED
EXISTING TREE TO BE REMOVED
OXFORD STREET (ONE-WAY)
ABUTTER'S CURB CUT TO REMAIN
TEMP. CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL PLAN TO BE DEVELOPED BY CONTRACTOR AND SUBMITTED TO CITY PRIOR TO CONSTRUCTION

PRELIMINARY
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23

SITE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

DRAWING NAME:

CLIENT: TOM WATSON & CO., LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE RETURNED UPON REQUEST OR, OTHERWISE, SHALL BE DESTROYED. ANY MODIFICATION OF THESE PLANS BY ANYONE OTHER THAN ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PO BOX 3472 PORTLAND, ME 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
10509
LICENSED PROFESSIONAL ENGINEER
2/13/23

DRAWING NO.
C-10

REFERENCES:

1. EXISTING CONDITIONS PROVIDED BY "TOPOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBLE, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE" PREPARED FOR BUSH WATSON DATED DECEMBER 6, 2022 BY OWEN HASKELL, INC.UTILITY INFORMATION OBTAINED FROM PORTLAND WATER DISTRICT MAPPING, UNITIL MAPPING, AND THE CITY OF PORTLAND GIS DATA CATALOG.
2. ADDITIONAL EXISTING INFORMATION FROM CAD FILE PROVIDED BY OWEN HASKELL, INC. OF "BOUNDARY & TOPOGRAPHIC SURVEY AT 117 PREBLE STREET, PORTLAND, MAINE" DATED SEPTEMBER 28, 2015.

SPACE AND BULK STANDARDS

ZONING DISTRICT	DOWNTOWN BUSINESS (B3)	MIXED DEVELOPMENT (B7)	RESIDENTIAL (R6)
MINIMUM LOT AREA	N/A	N/A	VARIES
MINIMUM STREET FRONTAGE	15 FT	N/A	20 FT
MAX FRONT YARD SETBACK	5 FT	10 FT	N/A
MINIMUM FRONT YARD SETBACK	N/A	N/A	5 FT
MINIMUM REAR YARD SETBACK	N/A	N/A	10 FT
MINIMUM SIDE YARD SETBACK	N/A	N/A	5 FT
LOT WIDTH	N/A	N/A	20 FT
MINIMUM LENGTH OF BUILDING WALL AT MAX SETBACK	N/A	75% OF STREET FRONTAGE OR 25% OF BUILDING PERIMETER	N/A
LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	N/A	N/A
FLOOR AREA	NONE, EXCEPT 15,000 SF FOR EACH FLOOR ABOVE 125 FT		
MAXIMUM BUILDING HEIGHT	PER DOWNTOWN AND BAYSIDE OVERLAY MAPS	PER BAYSIDE OVERLAY MAP	45 FT
LOT COVERAGE (MAX)	N/A*	N/A	60%
LANDSCAPED OPEN SPACE RATIO	N/A	N/A	20%
*MAX 25% OF LOT AREA FOR PORTIONS OF STRUCTURES EXCEEDING 125 FEET IN HEIGHT			

LEGEND:

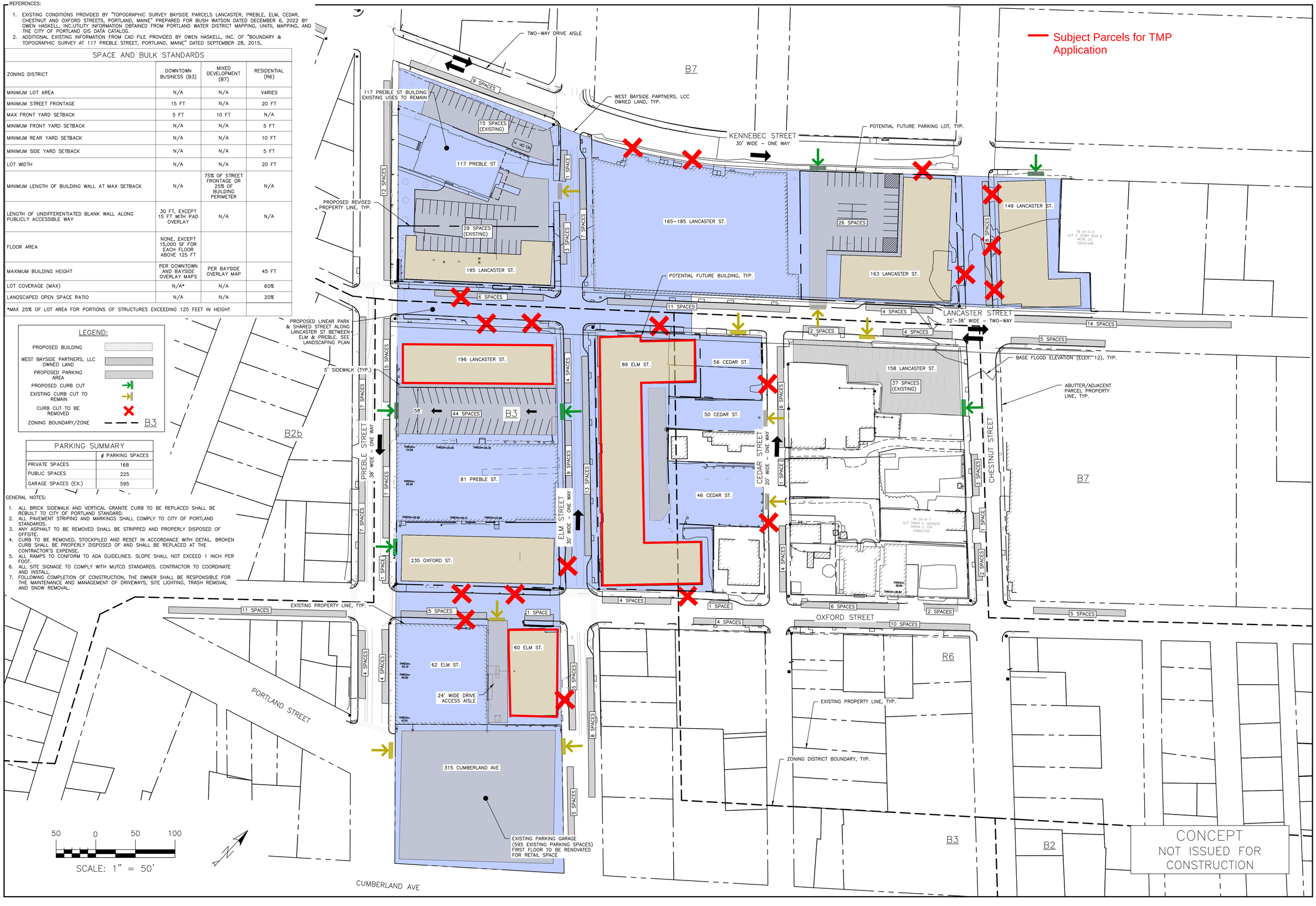
- PROPOSED BUILDING
- WEST BAYSIDE PARTNERS, LLC OWNED LAND
- PROPOSED PARKING AREA
- PROPOSED CURB CUT
- EXISTING CURB CUT TO REMAIN
- CURB CUT TO BE REMOVED
- ZONING BOUNDARY/ZONE — B3

PARKING SUMMARY

	# PARKING SPACES
PRIVATE SPACES	168
PUBLIC SPACES	225
GARAGE SPACES (EX.)	595

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.



ISSUED FOR	BY	DATE
MASTER DEVELOPMENT PLAN	WHS	12/23/22
TMP	WHS	2/2/23

DRAWING NAME: MASTER SITE PLAN

PROJECT NAME: WEST BAYSIDE MASTER DEVELOPMENT PLAN

CLIENT: WEST BAYSIDE PARTNERS, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
CIVIL ENGINEERING
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
P.O. BOX 3271, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1093.13_CIVIL
JN:	1093.13
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
WILLIAM H. SAVAGE
11419
2/2/2023
REGISTERED PROFESSIONAL ENGINEER

DRAWING NO.
C-10


ELEVATION=16.25
BIKE
ZONE B-7
ZONE B-3
RETAIL
1,156 SF
RESIDENTIAL
LOBBY
VEST
PACKAGE
FCC
ELEC
WATER
/ FP
T/D
TRASH
BIKE
STORAGE
VEST
RETAIL
4,521 SF
+17.1
+17.3
+17.9
+35
+21.8
+23.5
+23.29
+24.28
+24.55
+25.05
20.1
38 90° / 34 75°
PARKING SPACES
ZONE B-2B
ZONE B-3
(50.5' WIDE)
(49.5' WIDE)
STREET
89 ELM STREET LLC
36779/235
269'
PM

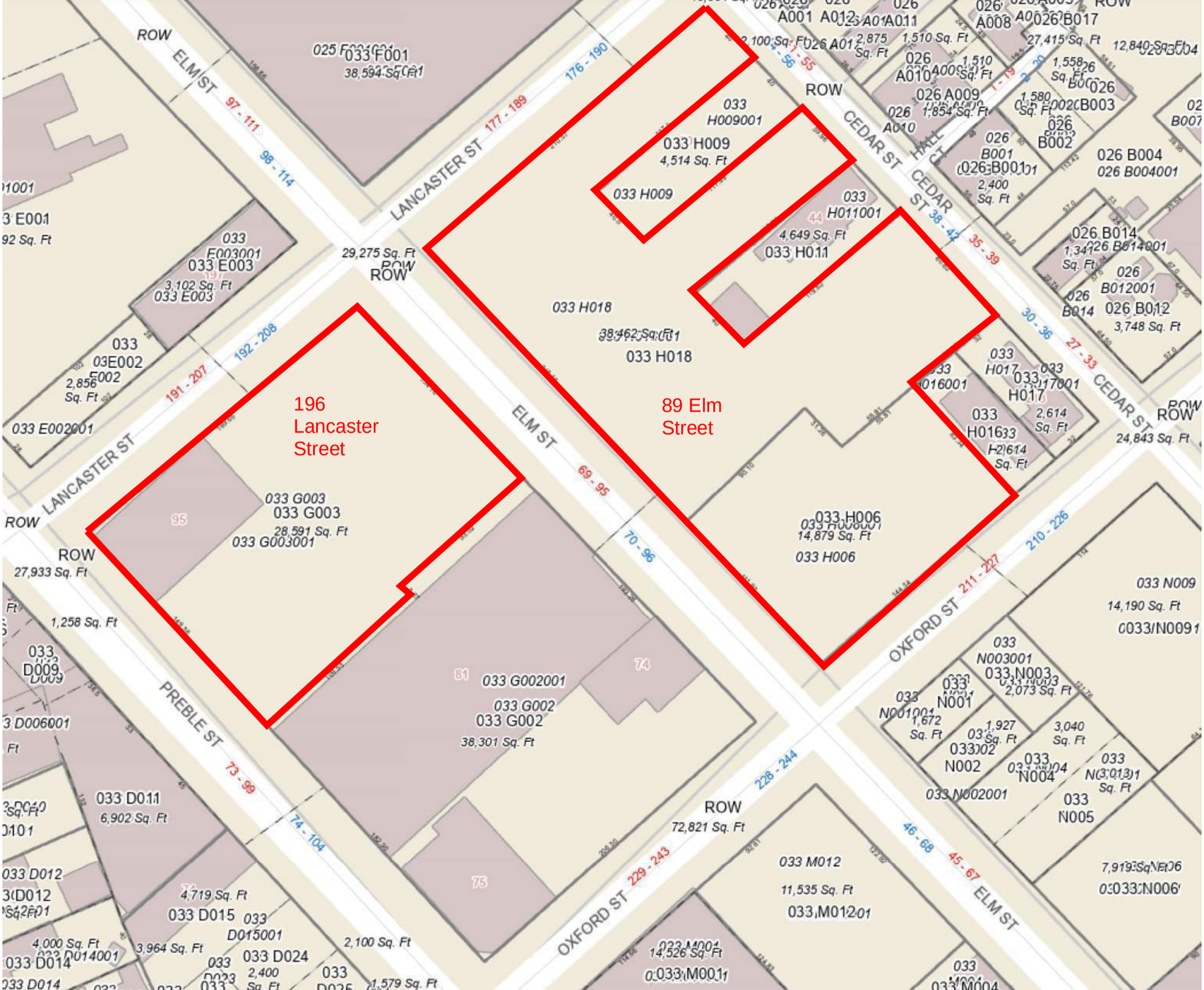
60 Elm Street

RELOCATE TRANSFORMER
CURRENT
+30.00
+32.00
+40.31
+53.99
+34.00
+36.00
+36.80
PATIO - 1,098 SF
+36.00
24.57'
18.33'
+LOADING
NEW
+34.80
THRESH= 29.91
THRESH= 30.73
TRASH
EMR
BIKE STORAGE
ELEC
WATER / FP
T/D
+34.80
AMENITY ABOVE
2,070 SF +45.40
RETAIL
3,246 SF
+37.58
RETAIL
3,242 SF
+42.75
RESIDENTIAL LOBBY
2,493 SF
+42.00
VEST
+42.00
235 OXFORD
ELEVATION=35.64
+37.58
+42.75
11.00'
OXFORD STRE
ELEVATION=46.56
+43.00
+45.00
RETAIL
1,953 SF
+45.00
TRASH
+44.00
+44.00
EMR
BIKE STORAGE
62 ELM
+53.75
NEW
T/D
+48.00
60 ELM
VEST
+48.00
RELOCATE TRANSFORMER
ELEC
FCC
EASEMENT 6921/105
RESIDENTIAL LOBBY
2,671 SF
+51.25
WATER / FP
CURRENT
ACCESS PATH TO 66 ELM
5.00'

Attachment 1B

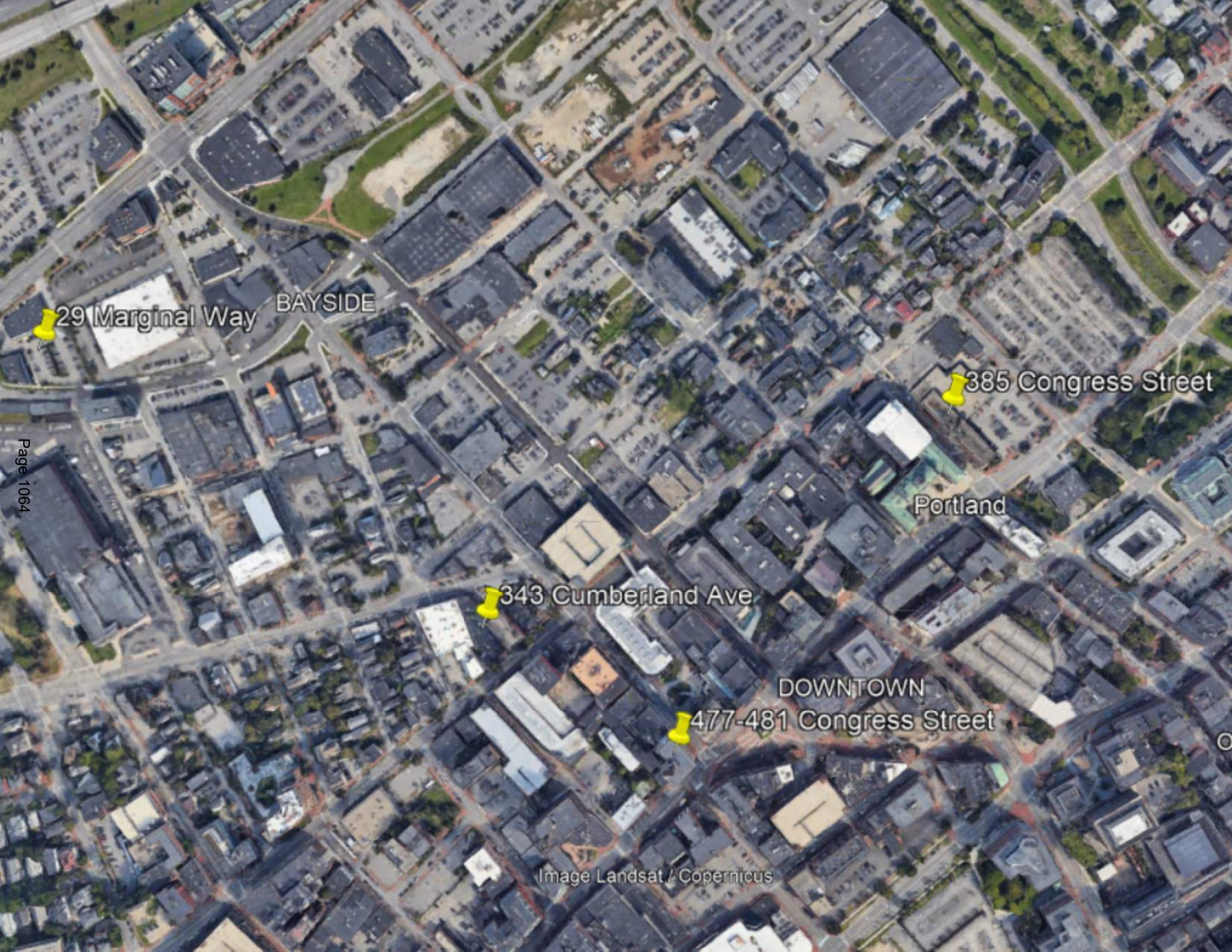
Tax Maps


60 Elm Street
Parking Garage
033 M012
11,535 Sq. Ft
033 M004001
38,535 Sq. Ft
033 M004
033 M001
14,526 Sq. Ft
033 M001001
033 G002
38,301 Sq. Ft
033 G002001
033 N018
8,900 Sq. Ft
033 N018001
033 N020
033 N020001
033 N017
2,678 Sq. Ft
033 N016
2,156 Sq. Ft
033 N005
7,919 Sq. Ft
033 N006
033 N002001
033 N001001
1,672 Sq. Ft
033 N002
1,927 Sq. Ft
033 N004
3,040 Sq. Ft
033 N(3,013)1
Sq. Ft
033 D025
2,100 Sq. Ft
033 D026
1,579 Sq. Ft
033 L007
1,927 Sq. Ft
033 L006
2,414 Sq. Ft
033 L009
1,049 Sq. Ft
033 L008
1,983 Sq. Ft
033 L005
033 L004001
033 L00404
2,108 Sq. Ft
033 K010001
8,087 Sq. Ft
033 K010
033 K009
033 K007
033 K006
033 K005
2,269 Sq. Ft
2,339 Sq. Ft
1,815 Sq. Ft
026 Sq. Ft
11,578 Sq. Ft
027 A001
43,960 Sq. Ft
027 A001001
027 A012001
62,422 Sq. Ft
033 X001
ROW
72,821 Sq. Ft
1,439 Sq. Ft
PREBLE ST
OXFORD ST
PORTLAND ST
CUMBERLAND AVE
ELM ST
229 - 243
228 - 244
46 - 68
45 - 67
55 - 71
58 - 72
245 - 262
1 - 19
2 - 16
43 - 53
44 - 56
311 - 327
312 - 326
2 - 28
1 - 25


196 Lancaster Street
89 Elm Street
LANCASTER ST
ELM ST
CEDAR ST
OXFORD ST
PREBLE ST
HALL CT
ROW
033 F001
38,594 Sq. Ft
033 H009001
033 H009
4,514 Sq. Ft
033 H009
033 H011001
4,649 Sq. Ft
033 H011
29,275 Sq. Ft
ROW
033 H018
38,462 Sq. Ft
033 H018
033 E003001
033 E003
3,102 Sq. Ft
033 E003
033 03E002
E002
2,856 Sq. Ft
033 E002001
033 G003
033 G003
28,591 Sq. Ft
033 G003001
ROW
27,933 Sq. Ft
033 G002001
033 G002
033 G002
38,301 Sq. Ft
033 H006001
033 H006
14,879 Sq. Ft
033 H006
ROW
72,821 Sq. Ft
033 D011
6,902 Sq. Ft
033 D015
4,719 Sq. Ft
033 D015001
033 D024
2,400 Sq. Ft
033 D014001
4,000 Sq. Ft
033 D014
3,964 Sq. Ft
2,100 Sq. Ft
1,579 Sq. Ft
033 M012
11,535 Sq. Ft
033 M012001
033 M004
14,526 Sq. Ft
033 M001
033 N009
14,190 Sq. Ft
033 N003001
033 N003
2,073 Sq. Ft
033 N001
1,672 Sq. Ft
033 N002
1,927 Sq. Ft
033 N002001
033 N004
3,040 Sq. Ft
033 N005
7,919 Sq. Ft
033 N006
033 H017001
033 H017
2,614 Sq. Ft
033 H016001
033 H016
2,614 Sq. Ft
ROW
24,843 Sq. Ft
026 B014
1,341 Sq. Ft
026 B014001
026 B012001
026 B012
3,748 Sq. Ft
026 B004
026 B004001
026 B001
026 B001001
2,400 Sq. Ft
026 B002
026 B003
1,580 Sq. Ft
026 A009
026 A010
1,854 Sq. Ft
026 A008
026 A001
026 A012
026 A011
2,875 Sq. Ft
1,510 Sq. Ft
026 B017
27,415 Sq. Ft
12,840 Sq. Ft
1,558 Sq. Ft
2,100 Sq. Ft
ROW
033 E001
92 Sq. Ft
033 D009
1,258 Sq. Ft
033 D006001
033 D012
033 D014
033 D025
033 D023
033 N001001
033 N002001
033 M004001
033 M001001
033 N006001
033 N005001
033 N003001
033 N004001
033 N013001
033 M012001
033 H016001
033 H017001
033 H011001
033 H009001
033 H018001
033 H006001
033 G003001
033 G002001
033 E003001
033 E002001
026 B014001
026 B012001
026 B004001
026 B001001
026 A001
026 A012
026 A011
026 A010
026 A009
026 A008
026 B017
026 B004
026 B003
026 B002
026 B001
026 B014
026 B012
1 - 19
20 - 34
35 - 39
38 - 42
30 - 36
27 - 33
55 - 56
97 - 111
98 - 114
176 - 190
177 - 189
192 - 208
191 - 207
69 - 95
70 - 96
73 - 99
74 - 104
210 - 226
211 - 227
226 - 244
229 - 243
46 - 68
45 - 67
95
81
74
75
44

Attachment 1C

Other Project Locations Map


29 Marginal Way
BAYSIDE
385 Congress Street
Portland
343 Cumberland Ave
DOWNTOWN
477-481 Congress Street
Image Landsat / Copernicus

Attachment 1D

Trip Generation Calculations

Site Trip Diagrams

ITE Trip Generation 11th Edition - Proposed

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions				AM PK HR OF ADJACENT STREET TRAFFIC											PM PK HR OF ADJACENT STREET TRAFFIC										
				ectional d	average				regression		# trips				directional dist.		average				regression		# trips			
Code	Land Use	Size	Unit	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting
Overall Trip Gen																										
221	Multifamily Housing (Mid-Rise)	215	Dwelling Units	77%	30	0.37	0.09	80	0.91	83	Regression	83	19	64	61%	39%	31	0.39	0.08	84	0.91	84	Regression	84	51	33
223	Affordable Housing	201	Dwelling Units	71%	7	0.50	0.39	101	0.73	91	Average	101	29	72	59%	41%	8	0.46	0.28	92	0.67	86	Average	92	54	38
936*	Coffee/Donut Shop without Drive-Thro	2	1000 SF GFA	49%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	78	40	38	50%	50%	16	32	12.64	65	N/A	N/A	Average	65	33	33
822	Strip Retail Plaza (<40k)	6	1000 SF GFA	40%	5	2.36	0.94	14	0.57	21	Regression	21	12	8	50%	50%	25	6.59	2.94	40	0.56	54	Regression	54	27	27
932	High-Turnover (Sit-Down)	6	1000 SF GFA	45%	37	9.57	11.61	57	N/A	N/A	Average	57	31	26	61%	39%	104	9.05	6.18	54	N/A	N/A	Average	54	33	21
196 Lancaster Only																										
221	Multifamily Housing (Mid-Rise)	130	Dwelling Units	77%								50	12	39	61%	39%								51	31	20
936*	Coffee/Donut Shop without Drive-Thro	2	1000 SF GFA	49%								78	40	38	50%	50%								65	33	33
932	High-Turnover (Sit-Down)	4	1000 SF GFA	45%								38	21	17	61%	39%								36	22	14
89 Elm St Only																										
223	Affordable Housing	201	Dwelling Units	71%								101	29	72	59%	41%								92	54	38
932	High-Turnover (Sit-Down)	2	1000 SF GFA	45%								19	10	9	61%	39%								18	11	7
822	Strip Retail Plaza (<40k)	4	1000 SF GFA	40%								14	8	5	50%	50%								36	18	18
60 Elm St Only																										
221	Multifamily Housing (Mid-Rise)	85	Dwelling Units	77%								33	8	25	61%	39%								33	20	13
822	Strip Retail Plaza (<40k)	2	1000 SF GFA	40%								7	4	3	50%	50%								18	9	9

Based on ITE 11th Edition

*AM peak hour is based on trip generation for coffee shop as included in 52 Hanover Street TMP

	total	entering	exiting
AM Peak Hour Total Site Trips:	340	132	208

	total	entering	exiting
PM Peak Hour Total Site Trips:	349	198	151

Proposed

Trip Generation Summary

Total	Total Peak Hour Site Generated Trips		
Peak Period	Total Unadjusted ITE	Internal	**External**
Weekday Morning			
Enter	132	15	**117**
Exit	208	15	**193**
Total	340	30	**310**
Weekday Evening			
Enter	198	28	**170**
Exit	151	28	**123**
Total	349	56	**293**

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	4	1K sf	116	61	55
Cinema/Entertainment				0		
Residential	221	130	ea	51	12	39
Hotel				0		
All Other Land Uses[2]				0		
Total				167	73	94

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	8	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	167	73	94
Internal Capture Percentage	11%	12%	10%
External Vehicle-Trips[3]	149	64	85
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	13%	2%
Cinema/Entertainment	N/A	N/A
Residential	8%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	61	61	1.00	55	55
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	12	12	1.00	39	39
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	17	8		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	8	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	14	0	0	0
Retail	0		31	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	12	0		0
Hotel	0	0	4	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	8	53	61	53	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	11	12	11	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	54	55	54	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	8	31	39	31	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	4	1K sf	102	55	47
Cinema/Entertainment				0		
Residential	221	130	ea	51	31	20
Hotel				0		
All Other Land Uses[2]				0		
Total				153	86	67

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	153	86	67
Internal Capture Percentage	12%	10%	13%
External Vehicle-Trips[3]	135	77	58
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	7%	11%
Cinema/Entertainment	N/A	N/A
Residential	16%	20%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	55	55	1.00	47	47
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	31	31	1.00	20	20
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	1	19		4	8	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	8	4	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	1	0
Retail	0		16	0	14	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	2		1	0
Residential	0	0	8	0		0
Hotel	0	0	3	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	4	51	55	51	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	26	31	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	5	42	47	42	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	16	20	16	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	13	8	5
Restaurant	932	2	1k sf	19	10	9
Cinema/Entertainment				0		
Residential	223	201	ea	101	29	72
Hotel				0		
All Other Land Uses[2]				0		
Total				133	47	86

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	133	47	86
Internal Capture Percentage	9%	13%	7%
External Vehicle-Trips[3]	121	41	80
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	25%	40%
Restaurant	30%	11%
Cinema/Entertainment	N/A	N/A
Residential	3%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	8	8	1.00	5	5
Restaurant	1.00	10	10	1.00	9	9
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	29	29	1.00	72	72
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		1	0	1	0
Restaurant	3	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	2	0	0	0
Retail	0		5	0	1	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	1	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	6	8	6	0	0
Restaurant	3	7	10	7	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	28	29	28	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	3	5	3	0	0
Restaurant	1	8	9	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	69	72	69	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	36	18	18
Restaurant	932	2	1k sf	18	11	7
Cinema/Entertainment				0		
Residential	223	201	ea	92	54	38
Hotel				0		
All Other Land Uses[2]				0		
Total				146	83	63

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	5	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	146	83	63
Internal Capture Percentage	22%	19%	25%
External Vehicle-Trips[3]	114	67	47
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	28%	44%
Restaurant	45%	57%
Cinema/Entertainment	N/A	N/A
Residential	11%	11%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	18	18	1.00	18	18
Restaurant	1.00	11	11	1.00	7	7
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	54	54	1.00	38	38
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	1	5	1
Restaurant	0	3		1	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	16	8	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	2	0
Retail	0		3	0	25	0
Restaurant	0	9		0	9	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	2	2	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	5	13	18	13	0	0
Restaurant	5	6	11	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	6	48	54	48	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	8	10	18	10	0	0
Restaurant	4	3	7	3	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	34	38	34	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	7	4	3
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	8	25
Hotel				0		
All Other Land Uses[2]				0		
Total				40	12	28

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	40	12	28
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	40	12	28
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	4	4	1.00	3	3
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	8	8	1.00	25	25
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	5	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	4	4	4	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	8	8	8	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	3	3	3	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	25	25	25	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	18	9	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	20	13
Hotel				0		
All Other Land Uses[2]				0		
Total				51	29	22

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	51	29	22
Internal Capture Percentage	12%	10%	14%
External Vehicle-Trips[3]	45	26	19
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	11%	22%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	10%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	9	9	1.00	9	9
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	20	20	1.00	13	13
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	5	3	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	1	0
Retail	0		0	0	9	0
Restaurant	0	5		0	3	0
Cinema/Entertainment	0	0	0		1	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	8	9	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	18	20	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	7	9	7	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	12	13	12	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

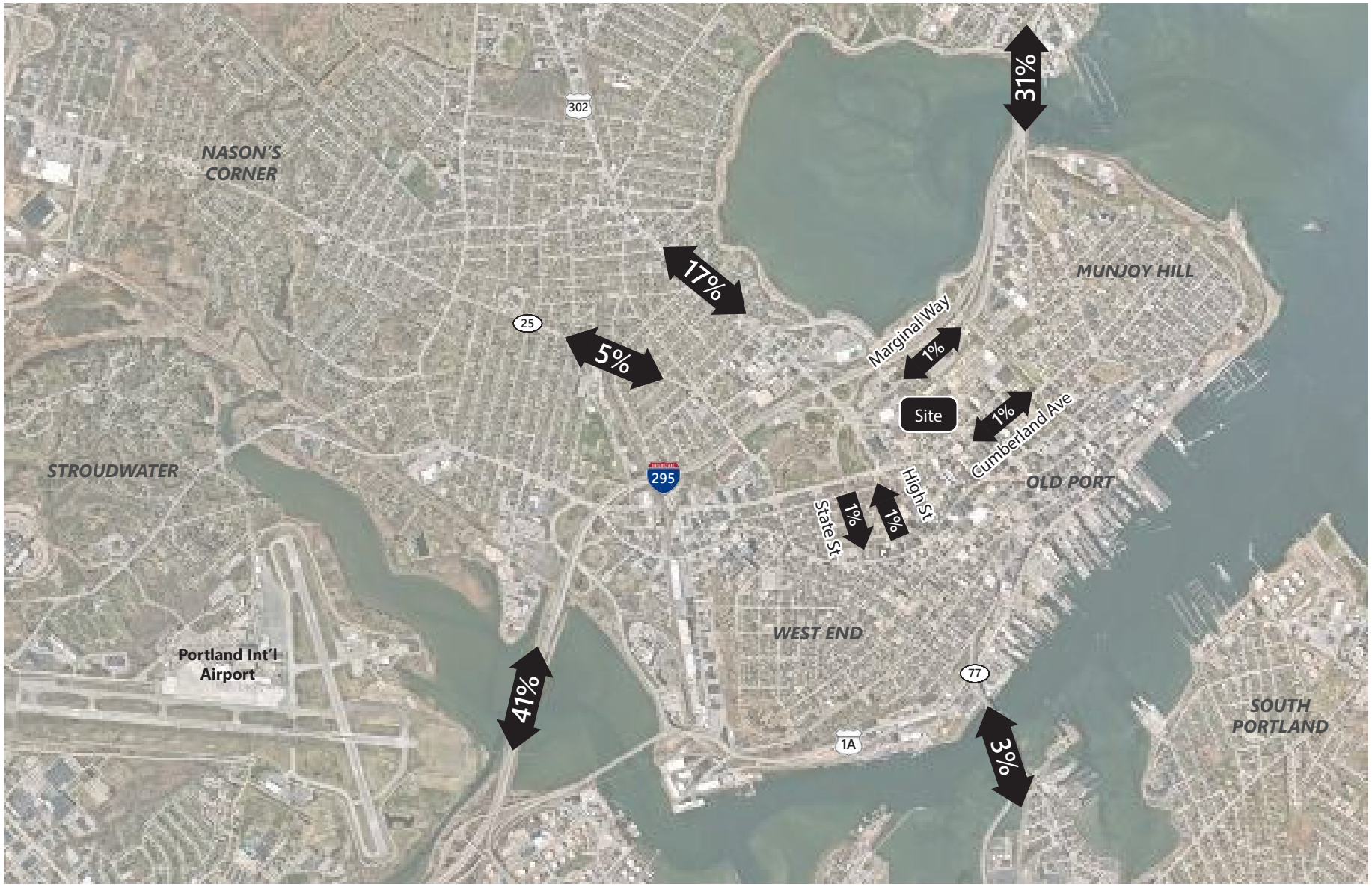
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

	Potential Routes	I-295 points north	I-95 points north	26/100 points north/west	302 points north/west	25 points west	I-295 points south	Marginal Way	State Street points south	High Street Points north	Cumberland Ave	totals
County	Work Destination											
Androscoggin	229	115	114									229
Aroostook	7	7										7
Cumberland	3,084											3084
Baldwin	36						36					36
Bridgton	43		43									43
Brunswick	111	33					78					111
Cape Elizabeth	115						115					115
Casco	60			30	30							60
Chebeague Island	7						7					7
Cumberland	58	58										58
Falmouth	220	220										220
Freeport	133	133										133
Frye Island	0											0
Gorham	145						145					145
Gray	50			50								50
Harpswell	30	30										30
Harrison	0											0
Long Island	19						19					19
Naples	36		36									36
New Gloucester	84	56		28								84
North Yarmouth	28	28										28
Pownal	7		7									7
Raymond	25			18	8							25
Scarborough	224						224					224
Sebago	0											0
Standish	25						25					25
Windham	107			54	53							107
Yarmouth	85	85										85
Cities: Portland	814	41		81	163		366	41	41	41	41	814
Cities: S. Portland	339						226		113			339
Cities: Westbrook	283			94	94	94						283
Franklin	13	13										13
Hancock	26	17	9									26
Kennebec	169	85	84									169
Knox	47	47										47
Lincoln	42	42										42
Oxford	72			50	22							72
Penobscot	40	40										40
Piscataquis	0											0
Sagadahoc	251	251										251
Somerset	57	29	28									57
Waldo	0											0
Washington	13	13										13
York	683						683					683
Sum	4,733	1344	321	405	369	94	1924	41	154	41	41	4733
		28%	7%	9%	8%	2%	41%	1%	3%	1%	1%	100%

Project Traffic Distribution

West Bayside | Portland, Maine



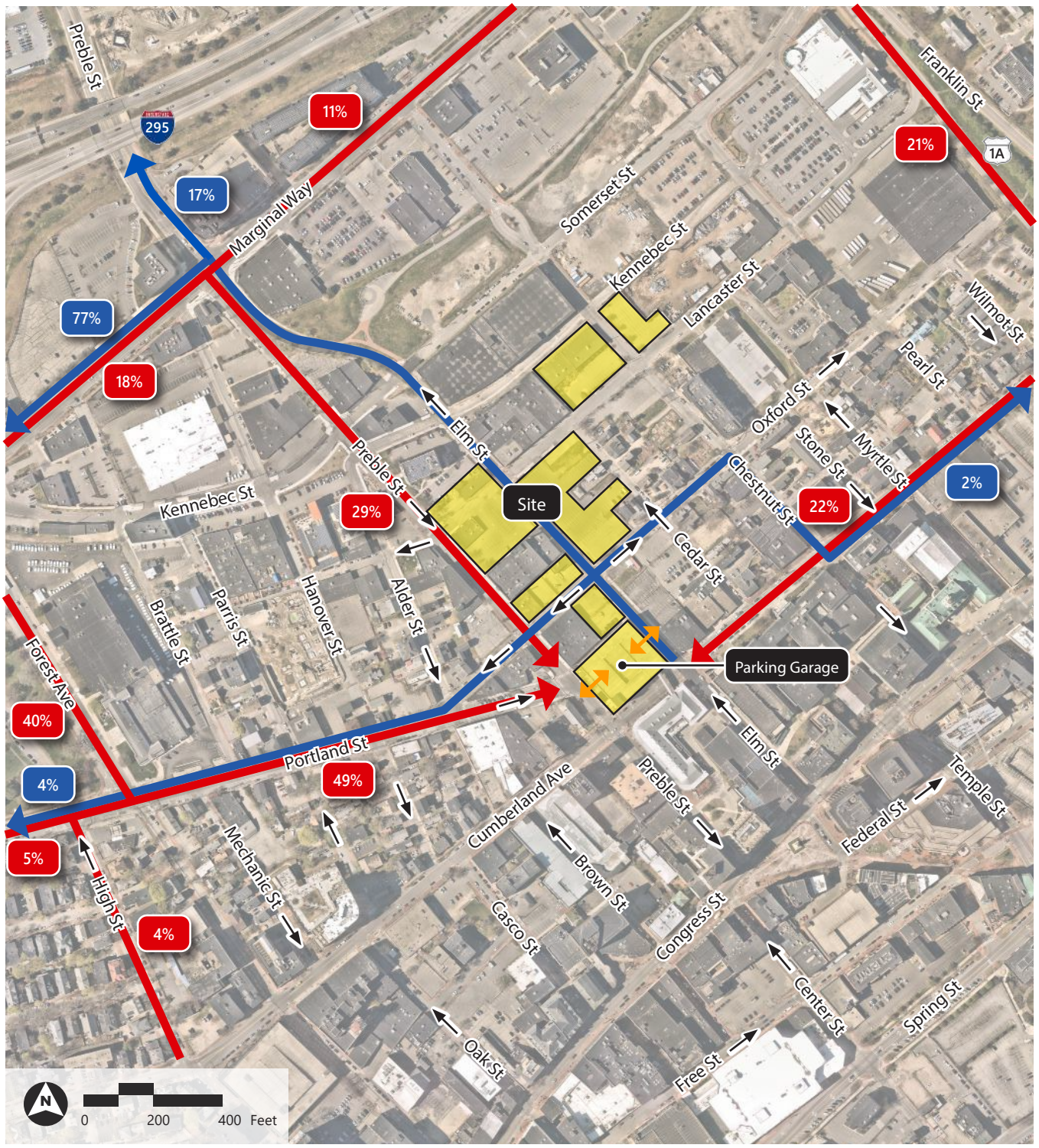
% Project Traffic In/Out

Source: Nearmap Aerial

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Project Traffic Assignment

West Bayside | Portland, Maine



Source: Nearmap Aerial

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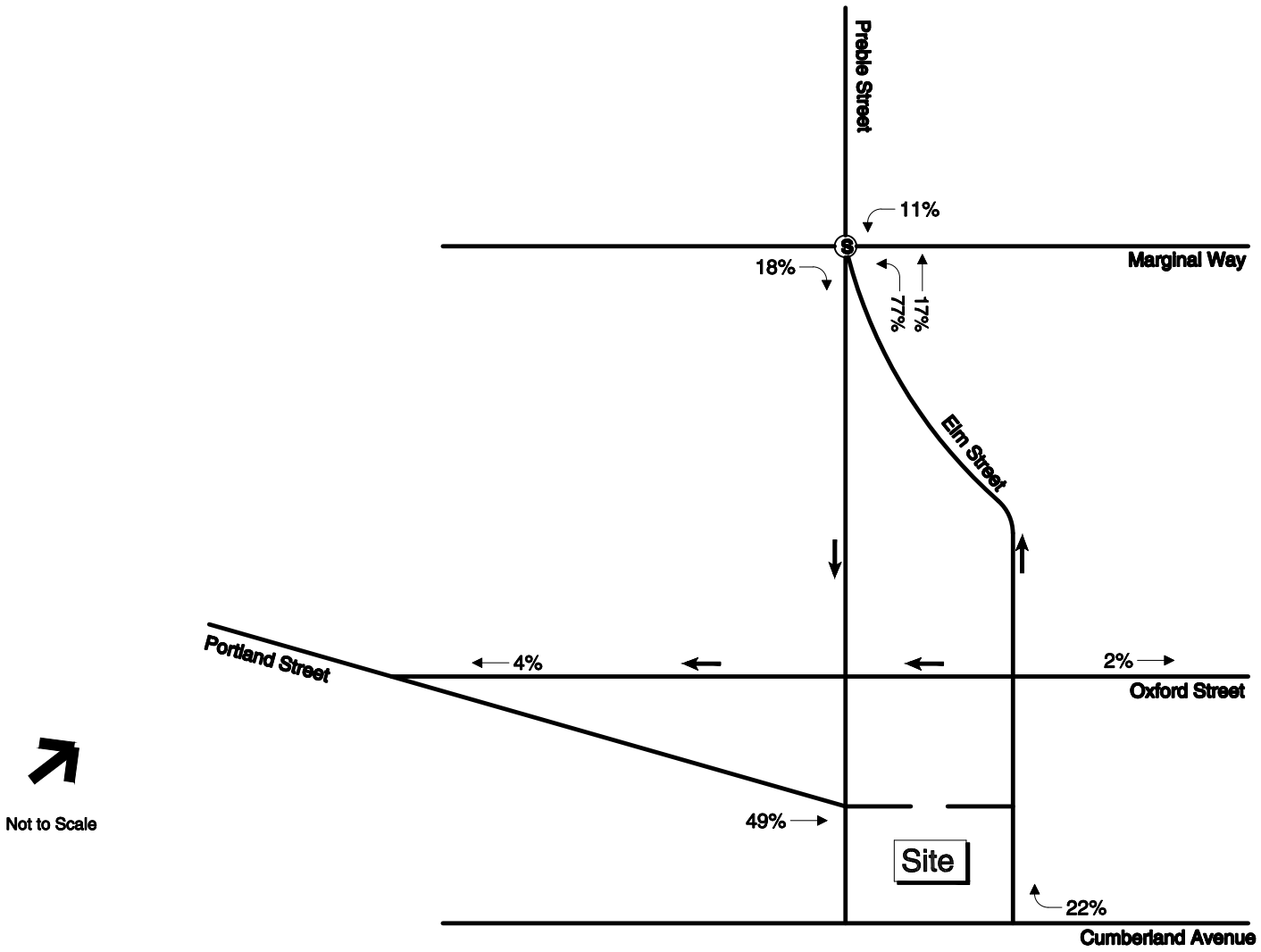
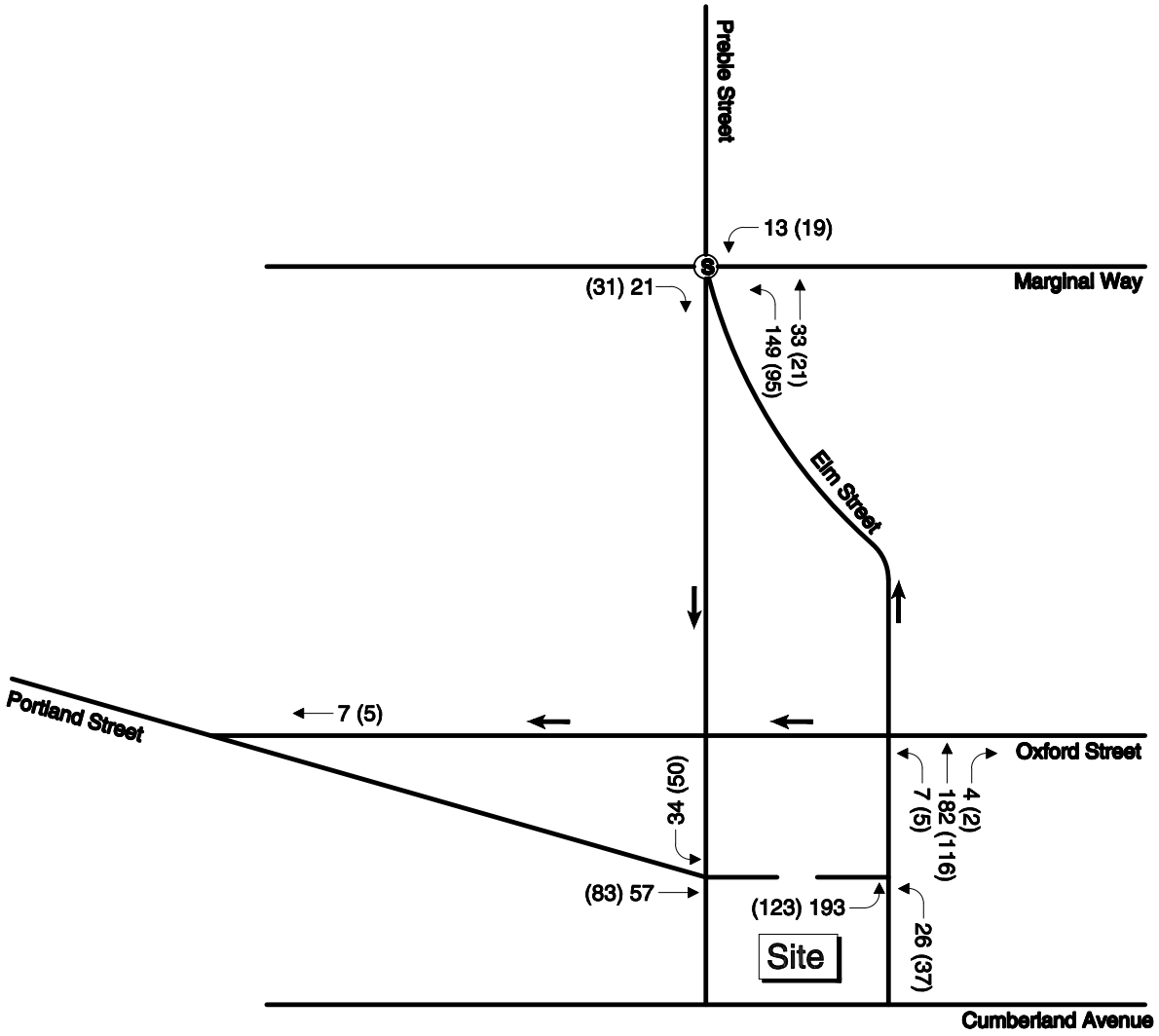


Figure 1
Trip Distribution Percentages



Not to Scale

Trip Assignment	AM (PM)
Enter	117 (170)
Exit	193 (123)
Total	310 (293)

Legend

AM Peak Hour
(PM Peak Hour)

Figure 2
Trip Assignment
Site Generated Vehicle Trips

2

Section 2: Traffic Crashes

2.A Crash Summary Data

VHB obtained the crash data from MaineDOT for the period 2019-2021, the most recent three-year period available.

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 indicated 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 no HCLs in the site vicinity.

The crash information for the intersections in the site vicinity is provided in Attachment 2.

2.B Bicycle and Pedestrian Crashes

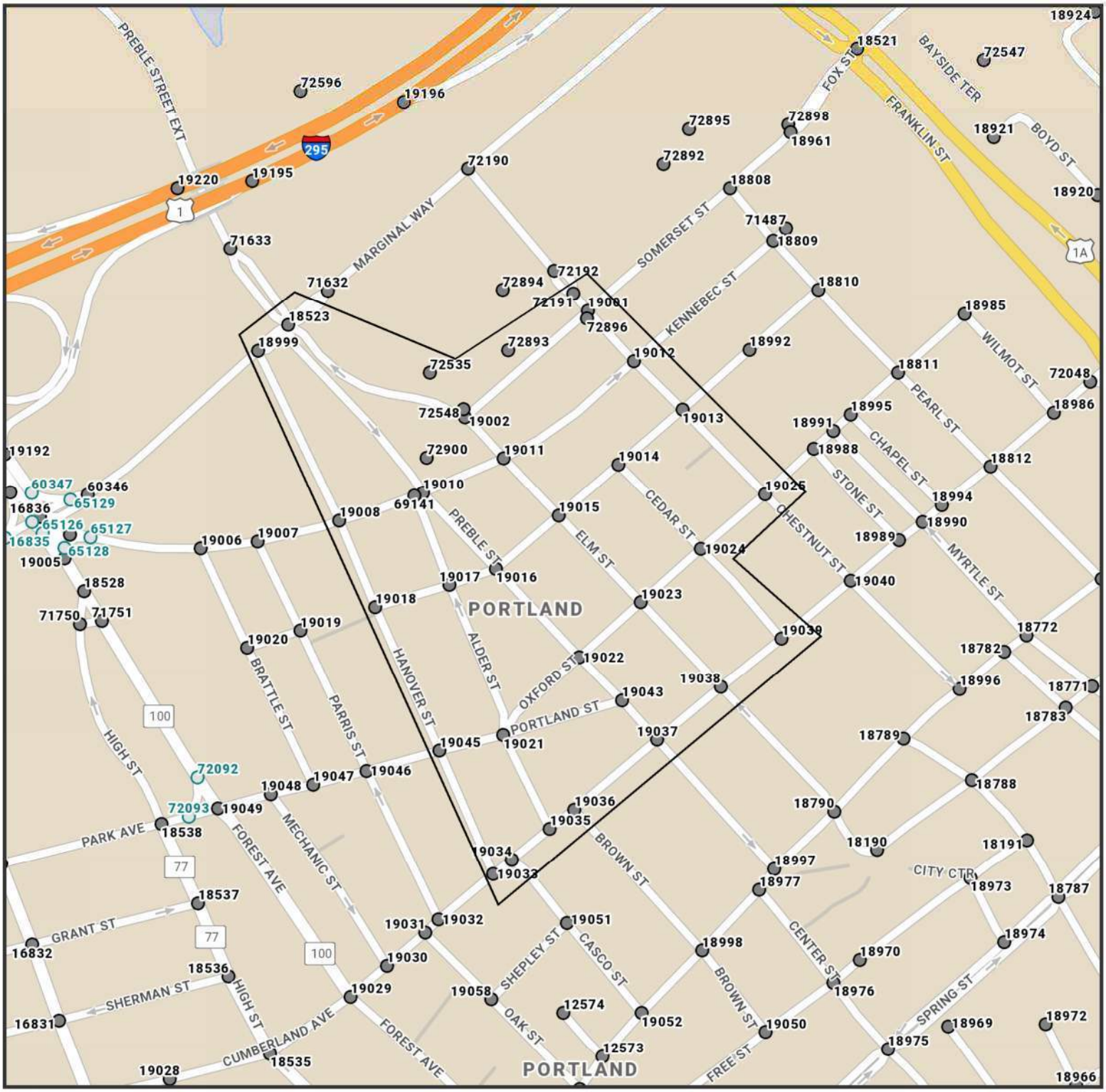
There have been 8 crashes involving bicycles and 6 crashes involving pedestrians in the past three years in the vicinity of the site. Six of the crashes involving bicycles occurred at numerous locations along Preble and Elm Street with 4 of them resulting in injury. Three of the crashes involving pedestrians occurred at the intersection of Cumberland Avenue and Elm Street, all resulting in injury and occurring during the afternoon.

Attachment 2

Node Map

Crash Summary

WEST BAYSIDE



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.1 Miles

1 inch = 0.11 miles

Date: 1/10/2023
Time: 2:54:21 PM

LEGEND

Maine Department Of Transportation - Office of Safety, 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

Portland Area

REPORT PARAMETERS

Year 2019, Start Month 1 through Year 2021 End Month: 12

Route: **0560477**	Start Node: **18999**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18523**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3210331**	Start Node: **18523**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18999**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0561238**	Start Node: **19033**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19039**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560345**	Start Node: **18999**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19033**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560597**	Start Node: **18523**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19037**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560252**	Start Node: **19038**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18523**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560120**	Start Node: **19014**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19039**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560135**	Start Node: **19025**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **72191**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560008**	Start Node: **69141**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19035**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560667**	Start Node: **19002**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19001**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560414**	Start Node: **19012**	Start Offset: **0**	☑ **Exclude First 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 Area

REPORT PARAMETERS

Year 2019, Start Month 1 through Year 2021 End Month: 12

	End Node: **19011**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560414**	Start Node: **19011**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19010**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560414**	Start Node: **19010**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **69141**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560414**	Start Node: **69141**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19008**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **19013**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19014**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **19014**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19015**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **19015**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19016**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **19016**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19017**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560426**	Start Node: **19017**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19018**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560560**	Start Node: **19021**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19022**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560560**	Start Node: **19022**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19023**	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 Area

REPORT PARAMETERS

Year 2019, Start Month 1 through Year 2021 End Month: 12

Route: **0560560**	Start Node: **19023**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19024**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560560**	Start Node: **19024**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19025**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560593**	Start Node: **19045**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19021**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560593**	Start Node: **19021**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19043**	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
18999	0560477 - 0.16	Int of HANOVER ST MARGINAL WY	2	4	0	0	0	0	4	0.0	4.035	0.33	0.36	0.00
												Statewide Crash Rate:	0.13	
18523	0560477 - 0.19	Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EX	9	20	0	0	1	4	13	27.8	8.927	0.75	1.03	0.72
												Statewide Crash Rate:	0.65	
19033	0561238 - 0.28	Int of CUMBERLAND AV HANOVER ST	2	3	0	0	0	0	3	0.0	2.699	0.37	0.39	0.00
												Statewide Crash Rate:	0.13	
19034	0561238 - 0.29	Int of CASCO ST CUMBERLAND AV	2	3	0	2	0	0	1	66.7	2.765	0.36	0.39	0.00
												Statewide Crash Rate:	0.13	
19035	0561238 - 0.32	Int of ALDER ST CUMBERLAND AV	2	1	0	0	0	1	0	100.0	2.571	0.13	0.40	0.00
												Statewide Crash Rate:	0.13	
19036	0561238 - 0.34	Int of BROWN ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.710	0.00	0.39	0.00
												Statewide Crash Rate:	0.13	
19037	0561238 - 0.41	Int of CUMBERLAND AV PREBLE ST	9	8	0	0	1	2	5	37.5	5.725	0.47	1.12	0.42
												Statewide Crash Rate:	0.65	
19038	0561238 - 0.46	Int of CUMBERLAND AV ELM ST	9	11	0	1	2	2	6	45.5	4.731	0.77	1.17	0.66
												Statewide Crash Rate:	0.65	
19039	0561238 - 0.51	Int of CEDAR ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	3.171	0.00	0.38	0.00
												Statewide Crash Rate:	0.13	
19008	0560345 - 0.11	Int of HANOVER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	1.167	0.00	0.45	0.00
												Statewide Crash Rate:	0.12	
19018	0560345 - 0.17	Int of HANOVER ST LANCASTER ST	2	1	0	0	0	0	1	0.0	0.401	0.83	0.52	1.61
												Statewide Crash Rate:	0.12	
19045	0560345 - 0.26	Int of HANOVER ST PORTLAND ST	2	1	0	0	0	0	1	0.0	1.513	0.22	0.46	0.00
												Statewide Crash Rate:	0.13	
19010	0560597 - 0.13	Int of KENNEBEC ST PREBLE ST	2	4	0	0	0	1	3	25.0	1.679	0.79	0.44	1.79
												Statewide Crash Rate:	0.13	
19043	0560597 - 0.30	Int of PORTLAND ST PREBLE ST	2	2	0	0	2	0	0	100.0	2.890	0.23	0.39	0.00
												Statewide Crash Rate:	0.13	
19022	0560597 - 0.26	Int of OXFORD ST PREBLE ST	2	3	0	0	0	0	3	0.0	2.545	0.39	0.40	0.00
												Statewide Crash Rate:	0.13	
19016	0560597 - 0.19	Int of LANCASTER ST PREBLE ST	2	2	0	0	1	0	1	50.0	1.838	0.36	0.43	0.00
												Statewide Crash Rate:	0.13	
19015	0560252 - 0.24	Int of ELM ST LANCASTER ST	2	3	0	0	0	1	2	33.3	1.336	0.75	0.47	1.59
												Statewide Crash Rate:	0.13	
19011	0560252 - 0.29	Int of ELM ST KENNEBEC ST	2	7	0	0	3	2	2	71.4	1.555	1.50	0.45	3.31
												Statewide Crash Rate:	0.13	
19023	0560252 - 0.17	Int of ELM ST OXFORD ST	2	1	0	0	0	0	1	0.0	1.741	0.19	0.44	0.00
												Statewide Crash Rate:	0.13	
19002	0560252 - 0.32	Int of ELM ST SOMERSET ST	2	0	0	0	0	0	0	0.0	2.075	0.00	0.42	0.00
												Statewide Crash Rate:	0.13	
19014	0560120 - 0	Int of CEDAR ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.907	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
19024	0560120 - 0.07	Int of CEDAR ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.463	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	

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
19012	0560135 - 0.27	Int of CHESTNUT ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	1.042	0.00	0.46	0.00
												Statewide Crash Rate:	0.12	
19001	0560135 - 0.31	Int of CHESTNUT ST SOMERSET ST	2	1	0	0	1	0	0	100.0	1.665	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	
19013	0560135 - 0.23	Int of CHESTNUT ST LANCASTER ST	2	0	0	0	0	0	0	0.0	1.330	0.00	0.44	0.00
												Statewide Crash Rate:	0.12	
19025	0560135 - 0.16	Int of CHESTNUT ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.874	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
72191	0560135 - 0.32	Non Int CHESTNUT ST	2	0	0	0	0	0	0	0.0	0.879	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
19017	0560008 - 0.06	Int of ALDER ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.384	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19021	0560008 - 0.16	Int of ALDER ST, OXFORD ST, PORTLAND ST	2	1	0	0	0	0	1	0.0	1.264	0.26	0.48	0.00
												Statewide Crash Rate:	0.13	
69141	0560008 - 0	Int of ALDER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	0.412	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
Study Years:	3.00	**NODE TOTALS:**		76	0	3	11	13	47	35.5	65.294	0.39	0.38	1.03

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
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0.03	2	0	0	0	0	0	0	0.0	0.00052	0.00	765.88	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60477											Statewide Crash Rate: 189.30		
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0.02	2	0	0	0	0	0	0	0.0	0.00035	0.00	807.42	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 3210331											Statewide Crash Rate: 189.30		
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00026	0.00	677.25	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 61238											Statewide Crash Rate: 158.39		
19034	19035	3123316	0 - 0.03	0561238 - 0.29	0.03	2	0	0	0	0	0	0	0.0	0.00075	0.00	619.52	0.00
Int of CASCO ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 158.39		
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00049	0.00	663.08	0.00
Int of ALDER ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 158.39		
19036	19037	3106839	0 - 0.07	0561238 - 0.34	0.07	2	5	0	0	0	0	5	0.0	0.00166	1005.57	517.59	1.94
Int of BROWN ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 158.39		
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0.05	2	0	0	0	0	0	0	0.0	0.00162	0.00	520.37	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 61238											Statewide Crash Rate: 158.39		
19038	19039	3117970	0 - 0.05	0561238 - 0.46	0.05	2	2	0	0	0	0	2	0.0	0.00158	420.85	523.46	0.00
Int of CUMBERLAND AV ELM ST				RD INV 05 61238											Statewide Crash Rate: 158.39		
18999	19008	194689	0 - 0.11	0560345 - 0	0.11	2	2	0	0	0	0	2	0.0	0.00115	580.98	1028.96	0.00
Int of HANOVER ST MARGINAL WY				RD INV 05 60345											Statewide Crash Rate: 351.30		
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0.06	2	0	0	0	0	0	0	0.0	0.00029	0.00	1411.88	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60345											Statewide Crash Rate: 351.30		
19018	19045	5080405	0 - 0.09	0560345 - 0.17	0.09	2	7	0	1	0	1	5	28.6	0.00026	9129.81	1442.85	6.33
Int of HANOVER ST LANCASTER ST				RD INV 05 60345											Statewide Crash Rate: 351.30		
19033	19045	194749	0 - 0.08	0560345 - 0.26	0.08	2	0	0	0	0	0	0	0.0	0.00007	0.00	1287.57	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 60345											Statewide Crash Rate: 351.30		
18523	19010	3940497	0 - 0.13	0560597 - 0	0.13	2	1	0	0	0	0	1	0.0	0.00179	185.75	579.47	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60597											Statewide Crash Rate: 189.30		
19010	19016	3106835	0 - 0.06	0560597 - 0.13	0.06	2	1	0	0	0	0	0	0.0	0.00104	320.77	663.69	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 189.30		
19016	19022	3106836	0 - 0.07	0560597 - 0.19	0.07	2	1	0	0	0	0	0	0.0	0.00143	232.43	613.43	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 189.30		
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0.04	2	0	0	0	0	0	0	0.0	0.00071	0.00	722.78	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 189.30		
19037	19043	3124005	0 - 0.03	0560597 - 0.30	0.03	2	1	0	0	0	0	1	0.0	0.00088	380.66	690.47	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 189.30		
19023	19038	3122299	0 - 0.07	0560252 - 0.10	0.07	2	2	0	0	0	0	2	0.0	0.00122	546.90	638.66	0.00
Int of ELM ST OXFORD ST				RD INV 05 60252											Statewide Crash Rate: 189.30		
19015	19023	3123553	0 - 0.07	0560252 - 0.17	0.07	2	1	0	0	0	0	1	0.0	0.00065	512.02	735.27	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60252											Statewide Crash Rate: 189.30		

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
19011	19015	3119283	0 - 0.05	0560252 - 0.24	0.05	2	1	0	0	0	0	1	0.0	0.00070	475.15	724.29	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60252											Statewide Crash Rate: 189.30		
19002	19011	3129301	0 - 0.03	0560252 - 0.29	0.03	2	1	0	0	0	0	1	0.0	0.00055	611.15	759.91	0.00
Int of ELM ST SOMERSET ST				RD INV 05 60252											Statewide Crash Rate: 189.30		
18523	19002	3106678	0 - 0.12	0560252 - 0.32	0.12	2	0	0	0	0	0	0	0.0	0.00257	0.00	528.34	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60252											Statewide Crash Rate: 189.30		
19014	19024	194713	0 - 0.07	0560120 - 0	0.07	2	1	0	0	0	0	0	0.0	0.00016	2100.86	1513.88	1.39
Int of CEDAR ST LANCASTER ST				RD INV 05 60120											Statewide Crash Rate: 351.30		
19024	19039	5080414	0 - 0.07	0560120 - 0.07	0.07	2	1	0	0	0	0	1	0.0	0.00012	2842.33	1504.22	1.89
Int of CEDAR ST OXFORD ST				RD INV 05 60120											Statewide Crash Rate: 351.30		
19013	19025	5080419	0 - 0.07	0560135 - 0.16	0.07	2	1	0	0	0	0	1	0.0	0.00045	745.93	1297.00	0.00
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60135											Statewide Crash Rate: 351.30		
19012	19013	194709	0 - 0.04	0560135 - 0.23	0.04	2	1	0	0	0	1	0	100.0	0.00033	1004.00	1379.16	0.00
Int of CHESTNUT ST KENNEBEC ST				RD INV 05 60135											Statewide Crash Rate: 351.30		
19001	19012	5080420	0 - 0.04	0560135 - 0.27	0.04	2	1	0	0	0	0	1	0.0	0.00029	1153.67	1414.40	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 351.30		
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0.01	2	0	0	0	0	0	0	0.0	0.00009	0.00	1428.41	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 351.30		
69141	19017	3525695	0 - 0.06	0560008 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00013	0.00	1513.73	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60008											Statewide Crash Rate: 351.30		
19017	19021	194719	0 - 0.10	0560008 - 0.06	0.10	2	2	0	0	0	0	2	0.0	0.00021	3215.64	1483.38	2.17
Int of ALDER ST LANCASTER ST				RD INV 05 60008											Statewide Crash Rate: 351.30		
19021	19035	194725	0 - 0.06	0560008 - 0.16	0.06	2	1	0	0	0	0	1	0.0	0.00005	6646.59	964.27	6.89
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60008											Statewide Crash Rate: 351.30		
19001	19002	194691	0 - 0.10	0560667 - 0	0.10	2	1	0	0	0	0	1	0.0	0.00051	649.07	1256.84	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 351.30		
19011	19012	194707	0 - 0.10	0560414 - 0.11	0.10	2	0	0	0	0	0	0	0.0	0.00019	0.00	1498.08	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 351.30		
19010	19011	194704	0 - 0.05	0560414 - 0.21	0.05	2	0	0	0	0	0	0	0.0	0.00015	0.00	1515.93	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60414											Statewide Crash Rate: 351.30		
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0.01	2	0	0	0	0	0	0	0.0	0.00003	0.00	-166.94	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 351.30		
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0.05	2	0	0	0	0	0	0	0.0	0.00016	0.00	1514.46	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 351.30		
19013	19014	5080418	0 - 0.05	0560426 - 0.10	0.05	2	1	0	0	0	0	0	0.0	0.00033	1020.38	1383.40	0.00
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 351.30		
19014	19015	194712	0 - 0.05	0560426 - 0.15	0.05	2	0	0	0	0	0	0	0.0	0.00035	0.00	1362.02	0.00
Int of CEDAR ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 351.30		
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0.05	2	0	0	0	0	0	0	0.0	0.00005	0.00	1020.97	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 351.30		

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
19016	19017	194716	0 - 0.03	0560426 - 0.25	0.03	2	0	0	0	0	0	0	0.0	0.00003	0.00	87.16	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60426											Statewide Crash Rate: 351.30		
19017	19018	194718	0 - 0.05	0560426 - 0.28	0.05	2	0	0	0	0	0	0	0.0	0.00002	0.00	-3401.07	0.00
Int of ALDER ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 351.30		
19021	19022	3106837	0 - 0.07	0560560 - 0	0.07	2	1	0	0	0	0	1	0.0	0.00054	621.25	655.82	0.00
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60560											Statewide Crash Rate: 158.39		
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0.05	2	0	0	0	0	0	0	0.0	0.00025	0.00	674.98	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60560											Statewide Crash Rate: 158.39		
19023	19024	194730	0 - 0.05	0560560 - 0.12	0.05	2	0	0	0	0	0	0	0.0	0.00015	0.00	1516.58	0.00
Int of ELM ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 351.30		
19024	19025	194732	0 - 0.05	0560560 - 0.17	0.05	2	1	0	0	0	0	1	0.0	0.00012	2823.00	1505.11	1.88
Int of CEDAR ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 351.30		
19021	19045	3122297	0 - 0.04	0560593 - 0.14	0.04	2	2	0	0	2	0	0	100.0	0.00040	1675.67	677.87	2.47
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 158.39		
19021	19043	3129954	0 - 0.07	0560593 - 0.18	0.07	2	6	0	0	0	1	4	20.0	0.00078	2554.76	614.47	4.16
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 158.39		
Study Years: 3.00				**Section Totals:**	2.68		45	0	1	2	3	34	13.3	0.02640	568.17	342.01	1.66
				Grand Totals:	2.68		121	0	4	13	16	81	27.3	0.02640	1527.73	464.84	3.29

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0	0	0	0	0	0				
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0	0	0	0	0	0				
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0	0	0	0	0	0				
19034	19035	3123316	0 - 0.03	0561238 - 0.29	0	0	0	0	0	0				
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0	0	0	0	0	0				
19036	19037	3106839	0 - 0.07	0561238 - 0.34	5	0	0	0	0	5	2019-67019	10/03/2019	0.35	PD
											2019-46162	03/13/2019	0.37	PD
											2019-58617	07/18/2019	0.38	PD
											2019-1495	01/14/2019	0.39	PD
											2019-73097	11/24/2019	0.40	PD
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0	0	0	0	0	0				
19038	19039	3117970	0 - 0.05	0561238 - 0.46	2	0	0	0	0	2	2019-69195	10/25/2019	0.47	PD
											2019-48636	04/10/2019	0.50	PD
18999	19008	194689	0 - 0.11	0560345 - 0	2	0	0	0	0	2	2019-58618	07/18/2019	0.03	PD
											2021-8903	04/11/2021	0.06	PD
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0	0	0	0	0	0				
19018	19045	5080405	0 - 0.09	0560345 - 0.17	7	0	1	0	1	5	2020-18215	07/31/2020	0.18	PD
											2020-11372	04/20/2020	0.18	PD
											2021-13760	05/09/2021	0.21	C
											2019-2633	01/18/2019	0.21	PD
											2019-47842	03/29/2019	0.23	PD
											2019-44843	03/01/2019	0.23	PD
											2019-72752	11/21/2019	0.25	A
19033	19045	194749	0 - 0.08	0560345 - 0.26	0	0	0	0	0	0				
18523	19010	3940497	0 - 0.13	0560597 - 0	1	0	0	0	0	1	2019-44220	02/27/2019	0.12	PD
19010	19016	3106835	0 - 0.06	0560597 - 0.13	1	0	0	0	0	0	2019-1870	01/17/2019	0.17	
19016	19022	3106836	0 - 0.07	0560597 - 0.19	1	0	0	0	0	0	2019-52933	05/23/2019	0.23	
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0	0	0	0	0	0				
19037	19043	3124005	0 - 0.03	0560597 - 0.30	1	0	0	0	0	1	2021-12331	05/21/2021	0.31	PD
19023	19038	3122299	0 - 0.07	0560252 - 0.10	2	0	0	0	0	2	2021-16503	07/01/2021	0.13	PD
											2021-32496	11/18/2021	0.15	PD
19015	19023	3123553	0 - 0.07	0560252 - 0.17	1	0	0	0	0	1	2019-58250	07/15/2019	0.18	PD
19011	19015	3119283	0 - 0.05	0560252 - 0.24	1	0	0	0	0	1	2019-67929	10/14/2019	0.28	PD
19002	19011	3129301	0 - 0.03	0560252 - 0.29	1	0	0	0	0	1	2020-29957	12/02/2020	0.30	PD
18523	19002	3106678	0 - 0.12	0560252 - 0.32	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19014	19024	194713	0 - 0.07	0560120 - 0	1	0	0	0	0	0	2021-1478	01/03/2021	0.05	
19024	19039	5080414	0 - 0.07	0560120 - 0.07	1	0	0	0	0	1	2019-52185	05/20/2019	0.11	PD
19013	19025	5080419	0 - 0.07	0560135 - 0.16	1	0	0	0	0	1	2020-20337	08/25/2020	0.19	PD
19012	19013	194709	0 - 0.04	0560135 - 0.23	1	0	0	0	1	0	2020-23199	09/29/2020	0.24	C
19001	19012	5080420	0 - 0.04	0560135 - 0.27	1	0	0	0	0	1	2019-45592	02/26/2019	0.30	PD
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0	0	0	0	0	0				
69141	19017	3525695	0 - 0.06	0560008 - 0	0	0	0	0	0	0				
19017	19021	194719	0 - 0.10	0560008 - 0.06	2	0	0	0	0	2	2021-27344	10/09/2021	0.10	PD
											2019-67248	10/08/2019	0.11	PD
19021	19035	194725	0 - 0.06	0560008 - 0.16	1	0	0	0	0	1	2021-33319	11/29/2021	0.21	PD
19001	19002	194691	0 - 0.10	0560667 - 0	1	0	0	0	0	1	2019-71683	11/14/2019	0.03	PD
19011	19012	194707	0 - 0.10	0560414 - 0.11	0	0	0	0	0	0				
19010	19011	194704	0 - 0.05	0560414 - 0.21	0	0	0	0	0	0				
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0	0	0	0	0	0				
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0	0	0	0	0	0				
19013	19014	5080418	0 - 0.05	0560426 - 0.10	1	0	0	0	0	0	2019-59865	07/26/2019	0.13	
19014	19015	194712	0 - 0.05	0560426 - 0.15	0	0	0	0	0	0				
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0	0	0	0	0	0				
19016	19017	194716	0 - 0.03	0560426 - 0.25	0	0	0	0	0	0				
19017	19018	194718	0 - 0.05	0560426 - 0.28	0	0	0	0	0	0				
19021	19022	3106837	0 - 0.07	0560560 - 0	1	0	0	0	0	1	2019-74264	12/03/2019	0.04	PD
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0	0	0	0	0	0				
19023	19024	194730	0 - 0.05	0560560 - 0.12	0	0	0	0	0	0				
19024	19025	194732	0 - 0.05	0560560 - 0.17	1	0	0	0	0	1	2019-47012	03/24/2019	0.18	PD
19021	19045	3122297	0 - 0.04	0560593 - 0.14	2	0	0	2	0	0	2019-54997	06/07/2019	0.15	B
											2021-8970	04/01/2021	0.15	B
19021	19043	3129954	0 - 0.07	0560593 - 0.18	6	0	0	0	1	4	2019-59213	07/19/2019	0.21	PD
											2021-23574	09/06/2021	0.21	PD
											2019-58068	07/09/2019	0.22	PD
											2019-1375	01/12/2019	0.23	
											2020-26608	10/22/2020	0.23	C
											2020-19411	08/07/2020	0.23	PD
				Totals:	45	0	1	2	3	34				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day	PM											
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	0	1	0	1	0	0	0	0	0	1	0	0	0	1	1	0	1	2	0	0	0	0	0	0	0	8
MONDAY	0	0	0	0	0	0	0	0	4	1	2	0	1	1	1	2	1	3	0	1	1	1	0	0	0	19
TUESDAY	1	0	0	0	0	0	0	2	0	1	0	2	1	2	1	4	5	0	2	0	1	0	0	0	0	22
WEDNESDAY	0	0	0	0	0	0	0	0	1	2	0	0	2	1	2	2	2	2	2	1	0	0	1	0	0	18
THURSDAY	0	0	0	0	0	0	0	2	0	0	0	1	4	3	3	2	2	3	0	0	2	0	0	0	0	22
FRIDAY	1	0	0	0	0	0	0	0	0	1	1	1	2	6	2	0	2	3	0	1	2	1	1	0	0	24
SATURDAY	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	2	0	0	0	0	1	1	0	0	0	8
Totals	2	2	0	1	0	0	0	4	5	7	3	5	10	14	11	12	13	13	4	3	7	3	2	0	0	**121**

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	135
2-(Sport) Utility Vehicle	43
3-Passenger Van	1
4-Cargo Van (10K lbs or Less)	4
5-Pickup	16
6-Motor Home	0
7-School Bus	2
8-Transit Bus	2
9-Motor Coach	0
10-Other Bus	1
11-Motorcycle	1
12-Moped	2
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	1
17-Medium/Heavy Trucks (More than 10,000 lbs)	4
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	6

Unit Type	Total
23-Bicyclist	8
24-Witness	24
25-Other	9
26-Construction	1
27-Farm Vehicle	0
Total	**260**

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	31	57	1	0	0	0	89
Ran Off Roadway	4	0	0	0	0	0	4
Failed to Yield Right-of-Way	18	6	0	0	0	0	24
Ran Red Light	4	1	0	0	0	0	5
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	1	0	0	0	0	0	1
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	10	2	0	0	0	0	12
Improper Backing	8	1	0	0	0	0	9
Improper Passing	0	1	0	0	0	0	1
Wrong Way	2	0	0	0	0	0	2
Followed Too Closely	9	2	0	0	0	0	11
Failed to Keep in Proper Lane	7	2	0	0	0	0	9
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	3	0	0	0	0	0	3
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	2	0	0	0	0	0	2
Over-Correcting/Over-Steering	2	1	0	0	0	0	3
Other Contributing Action	9	3	1	0	0	0	13
Unknown	0	0	0	0	0	0	0
Total	**110**	**76**	**2**	**0**	**0**	**0**	**188**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	102	74	2	0	0	12	190
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	1	0	0	0	0	0	1
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	2	0	0	0	0	0	2
Under the Influence of Medications/Drugs/Alcohol	4	1	0	0	0	2	7
Other	0	0	0	0	0	0	0
Total	**109**	**75**	**2**	**0**	**0**	**14**	**200**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	11	0	0	0	0	11
20-24	22	0	0	0	0	22
25-29	18	0	0	0	0	18
30-39	40	0	0	0	0	40
40-49	37	0	0	0	0	37
50-59	33	0	0	0	0	33
60-69	17	0	0	0	0	17
70-79	14	0	0	0	0	14
80-Over	6	0	0	0	0	6
Unknown	24	8	0	6	0	38
Total	**222**	**8**	**0**	**6**	**0**	**236**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**211**
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	2		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	182		
14-Parked Motor Vehicle	22		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	3		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	1		
33-Traffic Sign Support	1		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	44
2-Traffic Signals (Flashing)	2
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	4
5-Stop Signs - Other	22
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	1
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	46
14-Other	2
Total	**121**

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	4	4
B	13	13
C	16	20
PD	81	0
Total	**114**	**37**

Road Character

Road Grade	Total
1-Level	76
2-On Grade	36
3-Top of Hill	4
4-Bottom of Hill	4
5-Other	1
Total	**121**

Light

Light Condition	Total
1-Daylight	94
2-Dawn	0
3-Dusk	1
4-Dark - Lighted	25
5-Dark - Not Lighted	1
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	**121**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2019	2020	2021	Total
JANUARY	6	2	3	11
FEBRUARY	3	2	2	7
MARCH	5	1	2	8
APRIL	4	1	4	9
MAY	5	0	9	14
JUNE	2	1	0	3
JULY	10	3	3	16
AUGUST	0	3	2	5
SEPTEMBER	3	3	6	12
OCTOBER	5	3	3	11
NOVEMBER	7	1	2	10
DECEMBER	7	4	4	15
Total	**57**	**24**	**40**	**121**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	26	0	4	23	1	4	0	0	0	0	0	0	0	0	58
Head-on - Sideswipe	4	0	1	0	0	0	0	0	0	0	0	0	0	0	5
Intersection Movement	0	0	6	24	0	3	0	0	0	0	0	0	0	0	33
Pedestrians	1	0	1	3	0	0	0	0	0	0	0	0	0	0	5
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	2	0	1	5	0	1	0	0	0	0	0	0	0	0	9
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	1	5	0	1	0	0	0	0	0	0	0	0	8
Other	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**36**	**0**	**14**	**61**	**1**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**121**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	13	0	0	0	0	0	1	0	0	0	5	19
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	72	2	0	0	0	0	1	0	0	0	1	76
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	12	0	0	0	0	0	0	0	0	0	0	12
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	1	0	0	0	0	0	0	0	4	5
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	2	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	2	0	0	0	0	0	0	0	0	0	0	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	1	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**101**	**2**	**1**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**14**	**121**

3

Section 3: Development Entrances and Exits

3.A Entrance and Exit Locations

The site is bounded by Preble Street to the southwest, Lancaster Street to the northwest, Cedar Street and Elm Street to the northeast, Cumberland Avenue and Oxford Street to the southeast. All driveway locations are illustrated on the site plans as attachments to Section 1.

Project generated vehicle trips are expected to use the 595 space Public Market Garage for parking which is now controlled by this developer and is largely vacant. Vehicular access and egress are provided via both Preble Street and Elm Street. There are also supplemental surface parking proposed at 196 Lancaster Street (44 proposed spaces) with an entrance / exit on both Preble Street and Elm Street, surface parking proposed at 89 Elm Street on both Lancaster Street (15 proposed spaces) and Cedar Street (39 proposed spaces) with one entrance / exit and two entrance /exits respectively. Although surface parking will be present on these parcels, this parking is largely occupied by nearby uses and it is assumed all vehicles associated with this TMP will use the garage.

The garage access on Preble and Elm Street are located 175' from Cumberland Avenue and 200' from Oxford Street.

Existing one-way bike lanes are present on Preble Street and Elm Street and two-way bike lanes present on part of Portland Street, and Marginal Way along with the Bayside Trail multi-use path north of the site for both pedestrian and bicyclist users.

Pedestrians are well accommodated in this urban environment. Most roadways surrounding the site provide sidewalks on each side of the street and crosswalks at each major intersection.

3.B Plan View of Entrance and Exit Locations

Attachment 1A of Section 1 shows the proposed site plan. As shown, the garage site fronts onto Preble Street and Elm Street.

3.C Stopping Sight Distances

VHB followed the MaineDOT evaluation of sight distance. Sight distance is measured to and from the point of centerline of the proposed access that is located 10 feet from the edge of the traveled way. The speed limit is posted as 25 mph on Preble and Elm Street and assumed to be 25 mph on Lancaster Street and Cedar Street. The minimum allowable sight distances can be seen in Table 1 below:

Table 1 MaineDOT Sight Distance Requirements

Posted Speed (MPH)	Sight Distance (Feet)
20	155
25	**200**
30	250
35	305
40	360
45	425
50	495
55	570
60	645

Based on a field visit, the Portland Public Market Garage sight distance exceeds the minimum 200 feet on Elm Street. However, when exiting the garage on Preble Street, the sight distance is blocked by the existing building. As in most urban areas, in actuality, vehicles pull up further than 10 feet behind the edge of pavement. If existing vehicles pull up to edge of roadway, beyond the impact of the adjacent building, sight lines increase dramatically, because parking is prohibited in this area.

Sight distance along Preble and Elm Street for the proposed parking at 196 Lancaster Street both exceed 400 feet and sight distance along Lancaster Street and Cedar Street for 89 Elm Street parking all exceed 300 feet.

3.D Entrance/Exit Compliance with Design Requirements

Entrances and exits were designed to meet all the criteria specified in the MaineDOT's Chapter 299 Highway Driveway and Entrance Rules.

Attachment 3

Entrance/Exit Locations

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	.86 AC
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	6.66 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	5 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	3.85 FT
MINIMUM SIDE YARD SETBACK	N/A	2.91 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT	80'*	< 80 FT

* PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	.86 AC
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	6.66 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.88 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.09 FT
LOT WIDTH	20 FT	89.51 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	–

GENERAL NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.

REFERENCES:

1. PLAN REFERENCE
   1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022

LEGEND:
- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

20 0 20 40
SCALE: 1" = 20'

PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
EXISTING CURB, CROSSWALK, AND DETECTABLE PAD
PROPOSED STREET TREE PER DETAIL AND LA, TYP.
PROPOSED PATIO PER LA
ZONE B7
ZONE B3
ZONE R6
ZONING DISTRICT BOUNDARY, TYP.
25 mph
LANCASTER STREET
300'
PROPOSED REINFORCED CONCRETE SIDEWALK
EXISTING CURB CUT TO REMAIN AND BE MODIFIED
EXISTING PARKING LOT TO REMAIN
PROPOSED SEAT WALL PER LA
CANOPY ABOVE, TYP.
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
27.32'
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
LOBBY
MECHANICAL ROOM
56 CEDAR STREET
PROPOSED PROPERTY LINE, TYP.
CURB CUT TO BE CLOSED
TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341
EXISTING LIGHT POLE TO REMAIN, TYP.
BIKE STORAGE
MAIL/PACKAGES
10.18'
PROPOSED RETAINING WALL AND GUARDRAIL/FENCE PER STRUCTURAL ENGINEER
EX. RETAINING WALL TO REMAIN WITH MODIFICATIONS AS SHOWN
TM 26-A-11
N/F ROBERT HYDE
27470/68
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
SETBACK LINE, TYP.
COMMUNITY ROOM
STORAGE/ LAUNDRY
PR. LOCATION OF 9'X9' PADMOUNT TRANSFORMER
50 CEDAR STREET
EXISTING PARKING AND CURB CUT TO REMAIN
EXISTING HOME TO REMAIN
TM 26-A-8
N/F ALBERT
BRESETTE
7951/275
196 LANCASTER STREET LLC
39779/232
ELM STREET (ONE-WAY)
PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS
PROPOSED WOOD GUARDRAIL PER DETAIL
PR. PAVEMENT
N/F AMELIA A. LABRECK
37970/11
EX. STREET TREES TO REMAIN, TYP.
24'
89.51
2ND STORY
HALL COURT
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
12 PARKING STALLS TO BE STRIPED
EXISTING PARKING LOT TO REMAIN
TM 26-B-1
N/F ROBERT HYDE
27470/68
TM 26-B-2,3
N/F ALBERT
BRESETTE
3 STORY CONCRETE
R10'
CEDAR STREET (ONE-WAY)
25 MPH
46 CEDAR STREET
22'
PROPOSED DRIVEWAY AND MODIFIED CURB CUT
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±
PR. STAIRS AND RAMP WITH RAILINGS
R15'
PROPOSED RESURFACED PARKING LOT
SEAT WALL OR CURB AND DECORATIVE RAILING AT ELM STREET ENTRY, TYP. OF 3
PROPOSED 22' WIDE ACCESS AND UTILITY EASEMENT
PR. LOCATION OF SOLID WASTE
6' SIDEWALK PER DETAIL
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
PR. MULCH AND SHRUBS
TM 26-B-14
N/F MARY LEE
BENNISON
27956/297
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
RESIDENTIAL
3RD STORY
TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336
PR. RETAINING WALL
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C-20
RETAIL SPACE
10.36'
14.78'
2.91'
0.33'
8.92'
100.08'
OXFORD STREET LLC
39779/241
3,674 S.F. ±
2-1/2 STORY WOOD FRAME
1 STORY BRICK
EXISTING LIGHT POLE AND OVERHEAD WIRES TO BE REMOVED AND REROUTED
EXISTING TREE TO BE REMOVED
OXFORD STREET (ONE-WAY)
ABUTTER'S CURB CUT TO REMAIN
TEMP. CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL PLAN TO BE DEVELOPED BY CONTRACTOR AND SUBMITTED TO CITY PRIOR TO CONSTRUCTION
300'
PRELIMINARY
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23

DRAWING NAME: SITE PLAN
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: TOM WATSON & CO., LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND UNAUTHORIZED USE OF THESE PLANS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 MILK STREET, SUITE 04104
PO BOX 3287, PORTLAND, ME 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
10509
LICENSED PROFESSIONAL ENGINEER
2/13/23

DRAWING NO.
C-10

REFERENCES:

1. EXISTING CONDITIONS PROVIDED BY "TOPOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBLE, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE" PREPARED FOR BUSH WATSON DATED DECEMBER 6, 2022 BY OWEN HASKELL, INC.UTILITY INFORMATION OBTAINED FROM PORTLAND WATER DISTRICT MAPPING, UNITIL MAPPING, AND THE CITY OF PORTLAND GIS DATA CATALOG.
2. ADDITIONAL EXISTING INFORMATION FROM CAD FILE PROVIDED BY OWEN HASKELL, INC. OF "BOUNDARY & TOPOGRAPHIC SURVEY AT 117 PREBLE STREET, PORTLAND, MAINE" DATED SEPTEMBER 28, 2015.

SPACE AND BULK STANDARDS

ZONING DISTRICT	DOWNTOWN BUSINESS (B3)	MIXED DEVELOPMENT (B7)	RESIDENTIAL (R6)
MINIMUM LOT AREA	N/A	N/A	VARIES
MINIMUM STREET FRONTAGE	15 FT	N/A	20 FT
MAX FRONT YARD SETBACK	5 FT	10 FT	N/A
MINIMUM FRONT YARD SETBACK	N/A	N/A	5 FT
MINIMUM REAR YARD SETBACK	N/A	N/A	10 FT
MINIMUM SIDE YARD SETBACK	N/A	N/A	5 FT
LOT WIDTH	N/A	N/A	20 FT
MINIMUM LENGTH OF BUILDING WALL AT MAX SETBACK	N/A	75% OF STREET FRONTAGE OR 25% OF BUILDING PERIMETER	N/A
LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	N/A	N/A
FLOOR AREA	NONE, EXCEPT 15,000 SF FOR EACH FLOOR ABOVE 125 FT		
MAXIMUM BUILDING HEIGHT	PER DOWNTOWN AND BAYSIDE OVERLAY MAPS	PER BAYSIDE OVERLAY MAP	45 FT
LOT COVERAGE (MAX)	N/A*	N/A	60%
LANDSCAPED OPEN SPACE RATIO	N/A	N/A	20%
*MAX 25% OF LOT AREA FOR PORTIONS OF STRUCTURES EXCEEDING 125 FEET IN HEIGHT			

LEGEND:

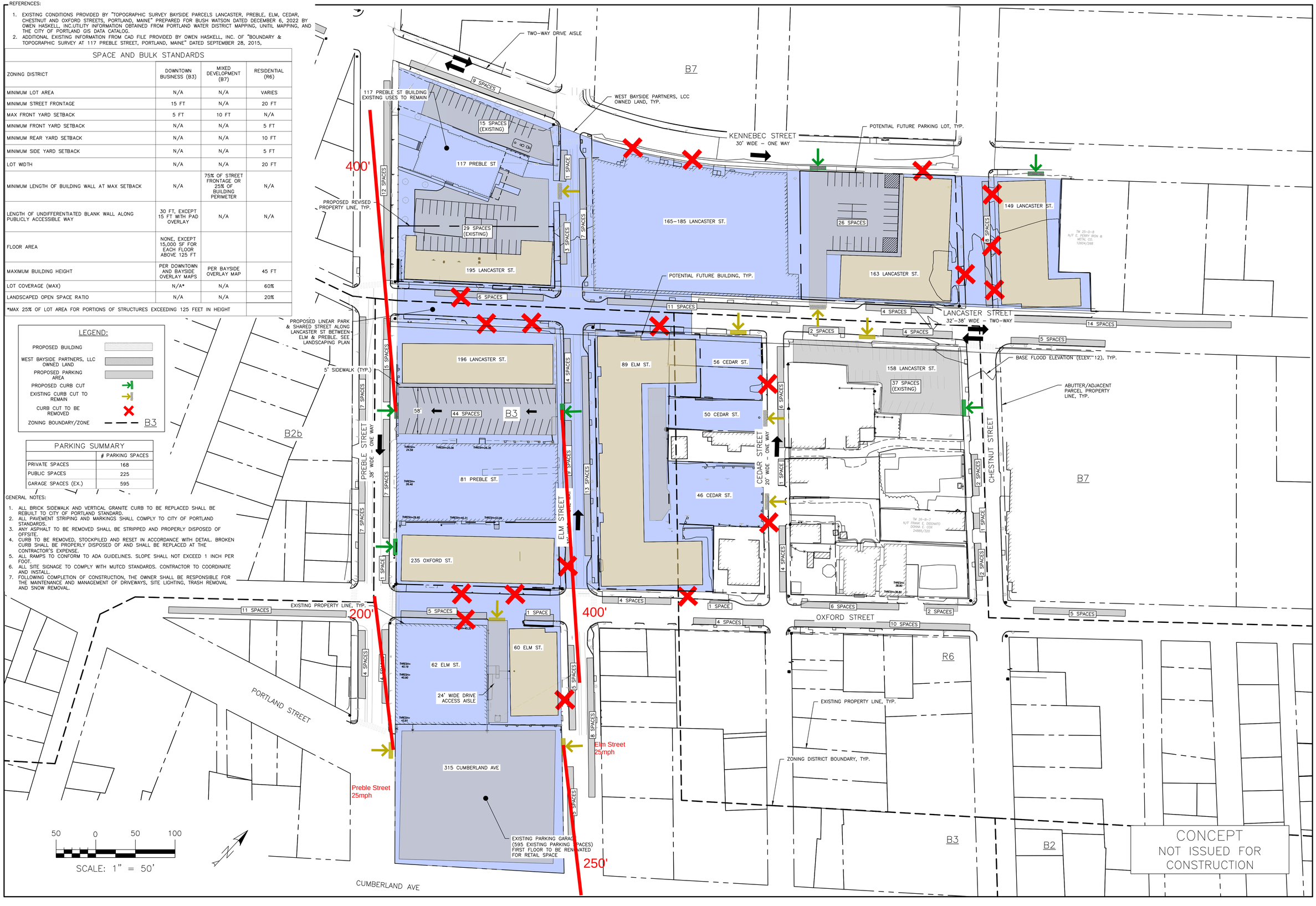
- PROPOSED BUILDING
- WEST BAYSIDE PARTNERS, LLC OWNED LAND
- PROPOSED PARKING AREA
- PROPOSED CURB CUT
- EXISTING CURB CUT TO REMAIN
- CURB CUT TO BE REMOVED
- ZONING BOUNDARY/ZONE — B3

PARKING SUMMARY

	# PARKING SPACES
PRIVATE SPACES	168
PUBLIC SPACES	225
GARAGE SPACES (EX.)	595

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.



ISSUED FOR	BY	DATE
MASTER DEVELOPMENT PLAN	WHS	12/23/22
TMP	WHS	2/2/23

DRAWING NAME: MASTER SITE PLAN

PROJECT NAME: WEST BAYSIDE MASTER DEVELOPMENT PLAN

CLIENT: WEST BAYSIDE PARTNERS, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
PO BOX 3427 (207) 775-2655

ALL PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE WITHOUT SUCH PERMISSION SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1093.13_CIVIL
JN:	1093.13
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE — WILLIAM H. SAVAGE — 11419 — 2/2/2023 — LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-10

4

Section 4: Title, Right, or Interest

4.A Evidence of Title, Right, or Interest

The proposed development is located on properties owned by the Applicant and identified as the following:

- 60 Elm Street – 033 M012001
- 89 Elm Street – 033 H018, H005, H006, H007
- 196 Lancaster Street – 033 G003, G006
- 315 Cumberland Avenue (Garage) – 033 M004001

Attached are copies of the deeds associated with the property.

Attachment 4

Deeds

Evidence of Right, Title and Interest

See attached deeds showing ownership for the proposed development parcels.

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE II, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **73 ELM STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside II, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE II, LLC

By_____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside II, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

Doc#: 51977 Bk:39779 Pg: 235

Received
Recorded Register of Deeds
Oct 13,2022 02:29:58P
Cumberland County
Jessica M. Spaulding

EXHIBIT A
(Legal Description, Parcel to 73 Elm Street LLC)

A CERTAIN LOT OR PARCEL OF LAND WITH THE IMPROVEMENTS THEREON SITUATED ON THE NORTHEASTERLY SIDELINE OF ELM STREET AND THE NORTHWESTERLY SIDE OF OXFORD STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE AS SHOWN PLAN TITLED "LAND DIVISION PLAN BAYSIDE II, LLC" MADE FOR RECORD OWNER BAYSIDE II, LLC BY OWEN HASKELL, INC. DATED SEPTEMBER 14, 2022, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHWESTERLY SIDELINE OF OXFORD STREET AND THE NORTHEASTERLY SIDELINE OF ELM STREET;

THENCE, N 43° 45' 13" W ALONG SAID SIDELINE OF SAID ELM STREET 111.92 FEET; THENCE, THE FOLLOWING COURSES AND DISTANCES THROUGH THE LAND OF THE GRANTOR:

N 46° 08' 15" E A DISTANCE OF 90.10 FEET;

S 43° 54' 25" E A DISTANCE OF 31.26 FEET;

N 49° 53' 31" E A DISTANCE OF 55.81 FEET TO THE WESTERLY CORNER OF LAND NOW OR FORMERLY OF DAVID B. NOWLIN AS DESCRIBED IN DEED BOOK 25148, PAGE 336;

THENCE, S 42° 36' 35" E ALONG THE LAND OF SAID NOWLIN 83.34 FEET TO THE NORTHWESTERLY SIDELINE OF SAID OXFORD STREET;

THENCE, S 48° 38' 53" W ALONG THE SIDELINE OF OXFORD STREET 144.34 FEET TO THE POINT OF BEGINNING, CONTAINING 14,879 S.F. OR 0.34 ACRES. MORE OR LESS.

BEARINGS ARE REFERENCED TO CITY GRID.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 2 CONVEYED TO BAYSIDE II, LLC BY QUITCLAIM DEED OF OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 15298, PAGE 144.

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE II, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **89 ELM STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside II, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE II, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside II, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 2)

A CERTAIN LOT OR PARCEL OF LAND, WITH THE IMPROVEMENTS THEREON SITUATED ON THE NORTHEASTERLY SIDELINE OF ELM STREET, THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET EAST AND THE SOUTHWESTERLY SIDELINE OF CEDAR STREET AND IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE AS SHOWN ON A PLAN TITLED "LAND DIVISION PLAN BAYSIDE II, LLC" MADE FOR RECORD OWNER BAYSIDE II, LLC BY OWEN HASKELL, INC. DATED SEPTEMBER 14, 2022, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET EAST AND THE NORTHEASTERLY SIDELINE OF ELM STREET;

THENCE, N 49° 39' 27" E ALONG SAID SIDELINE OF LANCASTER STREET EAST 210.57 FEET TO THE SOUTHWESTERLY SIDELINE OF CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG SAID SIDELINE OF CEDAR STREET 40.00 FEET TO THE NORTHEASTERLY CORNER OF LAND NOW OR FORMERLY OF BAYSIDE IV, LLC AS DESCRIBED IN DEED BOOK 35293, PAGE 78;

THENCE, THE FOLLOWING COURSES AND DISTANCES ALONG SAID BAYSIDE IV, LLC LAND:

S 49° 39' 26" W A DISTANCE OF 117.00 FEET;

S 42° 13' 00" E A DISTANCE OF 39.96 FEET;

N 49° 39' 26" E A DISTANCE OF 117.89 FEET TO THE SOUTHWESTERLY SIDELINE OF SAID CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG THE SIDELINE OF CEDAR STREET 39.34 FEET TO THE NORTHERLY CORNER OF LAND NOW OR FORMERLY OF AMELIA A. LABRECK AS DESCRIBED IN DEED BOOK 37970, PAGE 11;

THENCE, BY THE FOLLOWING COURSES AND DISTANCES ALONG SAID LABRECK LAND:

S 48° 42' 12" W A DISTANCE OF 118.73 FEET;
S 42° 13' 00" E A DISTANCE OF 40.00 FEET;

N 48° 41' 30" E A DISTANCE OF 119.62 FEET TO THE SIDELINE OF SAID CEDAR STREET;

THENCE, S 43° 29' 51" E ALONG THE SIDELINE OF CEDAR STREET 80.62 FEET TO THE NORTHERLY CORNER OF LAND NOW OR FORMERLY OF DAVID B. NOWLIN AS DESCRIBED IN DEED BOOK 25148, PAGE 336;

THENCE, S 48° 41' 30" W ALONG SAID NOWLIN LAND 63.30 FEET;

THENCE, THE FOLLOWING COURSES AND DISTANCES THROUGH THE LAND OF THE GRANTOR:

S 49°53'31" W A DISTANCE OF 55.81 FEET;

N 43°54'25" W A DISTANCE OF 31.26 FEET;

S 46°08'15" W A DISTANCE OF 90.10 FEET TO THE NORTHEASTERLY SIDELINE OF SAID ELM STREET;

THENCE, N 43°45'13" W ALONG THE SIDELINE OF ELM STREET 215.15 FEET TO THE POINT OF BEGINNING, CONTAINING 38,462 S.F. OR 0.88 ACRES, MORE OR LESS.

BEARINGS ARE REFERENCED TO CITY GRID.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 2 CONVEYED TO BAYSIDE II, LLC BY QUITCLAIM DEED OF OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 15298, PAGE 144.

Received
Recorded Register of Deeds
Oct 13,2022 02:30:55P
Cumberland County
Jessica M. Spaulding

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE III, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **197 OXFORD STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside III, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE III, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside III, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 1)

A CERTAIN PARCEL OF LAND, TOGETHER WITH THE IMPROVEMENTS THEREON, SITUATED ON THE NORTHWESTERLY SIDE OF OXFORD STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE, AND SHOWN AS PARCEL 1 ON ALTA/ACSM LAND TITLE SURVEY ON CEDAR STREET, CHESTNUT STREET, ELM STREET AND OXFORD STREET, PORTLAND, MAINE FOR BAYSIDE III, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY Of DEEDS IN PLAN BOOK 200, PAGE 42 (THE "PLAN'), BOUNDED AND DESCRIBED AS FOLLOWS:

THENCE S 48° 37' 47" W ALONG THE SIDELINE OF OXFORD STREET 167.19 FEET;

THENCE N 43° 29' 51" W 67.00 FEET;

THENCE N 48° 37' 47" E 35.54 FEET;

THENCE N 00° 14' 40" E 2.72 FEET;

THENCE N 52° 33' 00" E 18.73 FEET;

THENCE N 41° 16' 13" W 3.10 FEET;

THENCE N 49° 06' 44" E 109.65 FEET TO THE SOUTHWESTERLY SIDELINE OF CHESTNUT STREET;

THENCE S 44° 38' 26" E 70.00 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE PREMISES CONVEYED TO BAYSIDE III, LLC BY QUITCLAIM DEED FROM OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 193.

Received
Recorded Register of Deeds
Oct 13,2022 02:32:29P
Cumberland County
Jessica M. Spaulding

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE IV, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **89 ELM STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside IV, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE IV, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside IV, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 5- 50 Cedar Street)

A CERTAIN LOT OR PARCEL OF LAND WITH ALL THE BUILDINGS THEREON, SITUATED ON THE SOUTHWESTERLY SIDE OF CEDAR STREET, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A STAKE ON THE LINE OF SAID STREET DISTANT TWO HUNDRED FORTY-FOUR AND FOUR TENTHS (244.4) FEET NORTHWESTERLY FROM OXFORD STREET AT THE NORTHERLY CORNER OF LAND SOLD BY THE ADMINISTRATOR OF WILLIAM WEBB'S ESTATE TO JOSIAH M. HASKELL AND RUNNING THENCE NORTHWESTERLY BY SAID CEDAR STREET FORTY (40) FEET TO A STAKE;

THENCE SOUTHWESTERLY ON A LINE PARALLEL WITH THE NORTHWESTERLY SIDE OF SAID HASKELL'S LAND ONE HUNDRED SEVENTEEN (117) FEET, MORE OR LESS, TO THE SOUTHWESTERLY SIDELINE OF LAND OF WHICH THE SAID WEBB DIED SEIZED;

THENCE SOUTHEASTERLY BY SAID SOUTHWESTERLY SIDELINE OF SAID WEBB'S LAND TO MOST WESTERLY CORNER OF SAID HASKELL'S LOT;

THENCE NORTHEASTERLY BY SAID HASKELL'S LAND ONE HUNDRED SEVENTEEN (117) FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

BEING THE SAME PREMISES CONVEYED BY DEED DATED NOVEMBER 16, 2018 FROM 50 CEDAR STREET, LLC, TO BAYSIDE IV, LLC, AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 35293, PAGE 77, AND BY DEED RECORDED IN SAID REGISTRY AT BOOK 35293, PAGE 78.

Received
Recorded Register of Deeds
Oct 13,2022 02:35:36P
Cumberland County
Jessica M. Spaulding

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE IV, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **149 LANCASTER STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

MAINE REAL ESTATE TAX PAID

IN WITNESS WHEREOF, the said Bayside IV, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 13th day of October, 2022.

WITNESS:

BAYSIDE IV, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside IV, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 1)

A CERTAIN LOT OR PARCEL OF LAND, TOGETHER WITH THE IMPROVEMENTS THEREON, SITUATED ON THE NORTHWESTERLY SIDE OF LANCASTER STREET AND THE NORTHEASTERLY SIDE OF CHESTNUT STREET, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, AND STATE OF MAINE, AND SHOWN AS PARCEL 1 ON ALTA/ACSM LAND TITLE SURVEY ON CEDAR STREET, LANCASTER STREET EAST, CHESTNUT STREET AND OXFORD STREET, PORTLAND, MAINE FOR BAYSIDE IV, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 43 (THE PLAN), BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHEASTERLY SIDE OF SAID CHESTNUT STREET AND THE NORTHWESTERLY SIDE OF LANCASTER STREET;

THENCE BY THE NORTHEASTERLY SIDE OF CHESTNUT STREET N 44° 38' 26" W, A DISTANCE OF 165.33 FEET, TO THE SOUTHEASTERLY SIDE OF KENNEBEC STREET;

THENCE BY THE SOUTHEASTERLY SIDE OF SAID KENNEBEC STREET N 49° 02' 07' E, A DISTANCE OF 84.95 FEET, TO THE NORTHWESTERLY CORNER OF LAND CONVEYED TO E. PERRY IRON AND METAL CO. AS DESCRIBED IN THE DEED RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 12604 PAGE 268;

THENCE BY LAND NOW OR FORMERLY OF SAID E. PERRY IRON AND METAL CO. ON THE FOLLOWING COURSES:

S 40° 57' 53" E, A DISTANCE OF 117.11 FEET;
N 49° 02' 47" E, A DISTANCE OF 40.11 FEET;
S 43° 43' 01" E, A DISTANCE OF 47.93 FEET, TO THE NORTHWESTERLY SIDE OF SAID LANCASTER STREET;

THENCE BY THE NORTHWESTERLY SIDE OF SAID LANCASTER STREET S 49° 02' 07" W, A DISTANCE OF 116.76 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE LAND DESCRIBED AS PARCEL 1 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE IV, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 242.

Received
Recorded Register of Deeds
Oct 13,2022 02:34:34P
Cumberland County
Jessica M. Spaulding

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE IV, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **197 OXFORD STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

MAINE REAL ESTATE TAX PAID

IN WITNESS WHEREOF, the said Bayside IV, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE IV, LLC

By_____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside IV, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 4)

A CERTAIN PARCEL OF LAND, TOGETHER WITH THE IMPROVEMENTS THEREON, SITUATED ON THE NORTHWESTERLY SIDE OF OXFORD STREET, AND THE NORTHEASTERLY SIDE OF CEDAR STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND STATE OF MAINE AND SHOWN AS PARCEL 4 ON ALTA/ACSM LAND TITLE SURVEY ON CEDAR STREET, LANCASTER STREET EAST, CHESTNUT STREET AND OXFORD STREET, PORTLAND, MAINE FOR BAYSIDE IV, LLC BY OWEN HASKELL. INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 43 (THE PLAN), BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHWESTERLY SIDELINE OF OXFORD STREET AND THE NORTHEASTERLY SIDELINE OF CEDAR STREET;

THENCE N 43° 29' 51" W ALONG THE SIDELINE OF CEDAR STREET 64.50 FEET;
THENCE N 48° 37' 47" E 57.00 FEET;
THENCE S 43° 29' 51" E 64.50 FEET TO THE NORTHWESTERLY SIDELINE OF OXFORD STREET;
THENCE S 48° 37' 47" W ALONG SAID SIDELINE 57.00 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE LAND DESCRIBED AS PARCEL 4 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE IV, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 242.

EXHIBIT A
(Legal Description, Parcel 3)

A CERTAIN PARCEL OF LAND, TOGETHER WITH THE IMPROVEMENTS THEREON. SITUATED ON THE SOUTHWESTERLY SIDE OF CHESTNUT STREET AND THE SOUTHEASTERLY SIDE OF HALL'S COURT, SO CALLED, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE AND SHOWN AS PARCEL 3 ON ALTA/ACSM LAND TITLE SURVEY ON CEDAR STREET, LANCASTER STREET EAST, CHESTNUT STREET AND OXFORD STREET, PORTLAND, MAINE FOR BAYSIDE IV, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 43 (THE PLAN), BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTHWESTERLY SIDELINE OF CHESTNUT STREET AND THE SOUTHEASTERLY SIDELINE OF HALL'S COURT;

THENCE S 44° 38' 26" E ALONG THE SIDELINE OF CHESTNUT STREET 78.04 FEET;
THENCE S 49° 06' 44" W 108.67 FEET;
THENCE S 43° 14' 05" E 39.95 FEET;
THENCE S 41°16' 13" E 3.10 FEET;
THENCE S 52° 33' 00" W 18.73 FEET;
THENCE S 00°14' 40" W 2.72 FEET;
THENCE S 48° 37' 47" W 35.54 FEET;
THENCE N 43° 29' 51" W 33.00 FEET;
THENCE S 48° 37' 47" W 57.00 FEET TO THE NORTHEASTERLY SIDELINE OF CEDAR STREET;
THENCE N 43° 29' 51" W ALONG SAID SIDELINE 23.00 FEET;
THENCE N 48°37' 47" E 113.42 FEET;
THENCE N 43° 14' 05' W 58.51 FEET TO THE SOUTHEASTERLY SIDELINE OF HALL'S COURT;
THENCE ALONG SAID SIDELINE THE FOLLOWING COURSES AND DISTANCES:
N 33° 50' 09" E 19.40 FEET;
N 42° 14' 19" E 19.88 FEET;
N 49° 19' 48" E 68.00 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE LAND DESCRIBED AS PARCEL 3 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE IV, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 242.

Received
Recorded Register of Deeds
Oct 13,2022 02:33:19P
Cumberland County
Jessica M. Spaulding

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE I, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **60 ELM STREET LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside I, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE I, LLC

By_____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside I, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, 60 Elm Street)

A CERTAIN LOT OR PARCEL OF LAND SITUATED ON THE WESTERLY SIDE OF ELM STREET AND SOUTHERLY SIDE OF OXFORD STREET 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 OF ELM STREET AND SOUTHERLY SIDE OF OXFORD STREET, THENCE, S 43° 40' 43" E ALONG THE WESTERLY SIDELINE OF ELM STREET A DISTANCE OF 122.92 FEET TO LAND NOW OR FORMERLY OF NORTHEAST INVESTORS, LLC (aka NORTHEAST INVESTORS (MAINE), LLC) AS DESCRIBED IN DEED BOOK 32422, PAGE 197;

THENCE, S 47° 21' 26" W ALONG LAND OF SAID NORTHEAST INVESTORS, LLC A DISTANCE OF 93.70 FEET;

THENCE, N 43° 08' 59" W BY THE NORTHERLY FACE OF THE EXISTING BRICK BUILDING A DISTANCE OF 124.83 FEET TO THE SOUTHERLY SIDELINE OF SAID OXFORD STREET;

THENCE N 48° 33' 13" E ALONG THE SIDELINE OF OXFORD STREET A DISTANCE OF 92.61 FEET TO THE POINT OF BEGINNING, CONTAINING 11,535 S.F. OR 0.26 ACRES, MORE OR LESS.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 1 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE I, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 91.

Received
Recorded Register of Deeds
Oct 13,2022 02:25:54P
Cumberland County
Jessica M. Spaulding

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE I, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **196 LANCASTER STREET LLC** a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside I, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE I, LLC

By_____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside I, LLC.

_____
Attorney at Law/~~Notary Public~~

_____
Printed Name Jason G. Howe, Esq.
Bar No. 0004860

Doc#: 51976 Bk:39779 Pg: 233

Received
Recorded Register of Deeds
Oct 13,2022 02:28:31P
Cumberland County
Jessica M. Spaulding

EXHIBIT A
(Legal Description, 196 Lancaster Street East)

A CERTAIN PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED ON SOUTHEASTERLY SIDE OF LANCASTER STREET EAST, THE SOUTHWESTERLY SIDE OF ELM STREET AND THE NORTHEASTERLY SIDE OF PREBLE STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE Of MAINE AS SHOWN PLAN TITLED "LAND DIVISION PLAN BAYSIDE I, LLC' MADE FOR RECORD OWNER BAYSIDE I, LLC BY OWEN HASKELL, INC. DATED SEPTEMBER 14, 2022, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHEASTERLY SIDELINE OF PREBLE STREET AND THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET EAST;

THENCE, N 49° 39' 27" E ALONG THE SIDELINE OF SAID LANCASTER STREET EAST 199.65 FEET TO THE SOUTHWESTERLY SIDELINE OF ELM STREET;

THENCE, S 43° 45' 13" E ALONG THE SIDELINE OF SAID ELM STREET 134.76 FEET;

THENCE, THE FOLLOWING COURSES AND DISTANCES THROUGH THE LAND OF THE GRANTOR:

S 47° 34' 12" W A DISTANCE OF 93.02 FEET;

S 44° 45' 38" E A DISTANCE OF 7.27 FEET;

S 47° 31' 17" W A DISTANCE OF 109.53 FEET TO THE NORTHEASTERLY SIDELINE Of SAID PREBLE STREET;

THENCE, N 42° 34' 18" W ALONG THE SIDELINE OF PREBLE STREET 149.36 FEET TO THE POINT OF BEGINNING, CONTAINING 28,591 S.F. OR 0.66 ACRES, MORE OR LESS.

BEARINGS ARE REFERENCED TO CITY GRID.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 2 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE I, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 91.

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE I, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **WBP COMMERCIAL LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101,with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside I, LLC has caused this instrument to be executed by Thomas A Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

_____

BAYSIDE I, LLC

By _____

Thomas A. Toye, III

Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside I, LLC.

_____

Attorney at Law/Notary Public

_____

Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, 190 Lancaster Street East)

A CERTAIN PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED ON THE SOUTHWESTERLY SIDE OF ELM STREET, THE NORTHWESTERLY SIDE OF OXFORD STREET AND THE NORTHEASTERLY SIDE PREBLE STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE AS SHOWN PLAN TITLED "LAND DIVISION PLAN BAYSIDE I, LLC" MADE FOR RECORD OWNER BAYSIDE I, LLC BY OWEN HASKELL, INC. DATED SEPTEMBER 14, 2022, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHEASTERLY SIDELINE OF PREBLE STREET AND THE NORTHWESTERLY SIDELINE OF OXFORD STREET;

THENCE, N 42°34'18" W ALONG THE SIDELINE OF SAID PREBLE STREET 182.30 FEET;

THENCE THE FOLLOWING COURSES AND DISTANCES THROUGH THE LAND OF THE GRANTOR:

N 47° 31' 17" E A DISTANCE OF 109.53 FEET;

N 44° 45' 38" W A DISTANCE OF 7.27 FEET;

N 47° 34' 12" E A DISTANCE OF 93.02 FEET TO THE SOUTHWESTERLY SIDELINE OF ELM STREET;

THENCE, S 43° 45' 13" E ALONG THE SIDELINE OF SAID ELM STREET 193.26 FEET TO THE NORTHWESTERLY SIDELINE OF SAID OXFORD STREET;

THENCE, S 48° 33' 13" W ALONG THE SIDELINE OF OXFORD STREET 206.30 FEET TO THE POINT OF BEGINNING. CONTAINING 38,301 S.F. OR 0.88 ACRES, MORE OR LESS.

BEARINGS ARE REFERENCED TO CITY GRID.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 2 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE I, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 91.

EXHIBIT A
(Legal Description 62 Elm Street)

A CERTAIN LOT OR PARCEL OF LAND, WITH THE BUILDINGS THEREON, SITUATED ON THE EASTERLY SIDE OF PREBLE STREET AND SOUTHERLY SIDE OF OXFORD STREET IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, AND STATE OF MAINE, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EASTERLY SIDE OF PREBLE STREET AND SOUTHERLY SIDE OF OXFORD STREET, THENCE N 48° 33' 13" E ALONG THE SOUTHERLY SIDE OF OXFORD STREET A DISTANCE OF 114.66 FEET;

THENCE, S 43° 08' 59" E BY THE NORTHERLY FACE OF THE EXISTING BRICK BUILDING A DISTANCE OF 124.83 FEET TO LAND NOW OR FORMERLY OF NORTHERN INVESTORS LLC AS DESCRIBED IN DEED BOOK 32422, PAGE 197;

THENCE, S 47° 21' 26" W ALONG LAND OF SAID NORTHERN INVESTORS LLC AND BY THE FACE OF THE SAID BRICK BUILDING A DISTANCE OF 115.91 FEET TO THE EASTERLY SIDELINE OF SAID PREBLE STREET;

THENCE, N 42° 34' 00" W ALONG THE SIDELINE OF PREBLE STREET A DISTANCE OF 127.22 FEET TO THE POINT OF BEGINNING, CONTAINING 14,526 S.F. OR 0.33 ACRES, MORE OR LESS.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING A PORTION OF THE LAND DESCRIBED AS PARCEL 1 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE I, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 91.

Received
Recorded Register of Deeds
Oct 13,2022 02:23:43P
Cumberland County
Jessica M. Spaulding

Doc#: 51973 Bk:39779 Pg: 223

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE II, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **WBP COMMERCIAL LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside II, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE II, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside II, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 1)

A CERTAIN LOT OR PARCEL OF LAND, WITH THE IMPROVEMENTS THEREON, SITUATED IN THE BLOCK BOUNDED BY ELM, KENNEBEC, CHESTNUT AND LANCASTER STREETS, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE AND SHOWN AS PARCEL 1 ON ALTA/ACSM LAND TITLE SURVEY ON KENNEBEC STREET, LANCASTER STREET EAST, ELM STREET, CEDAR STREET AND OXFORD STREET, PORTLAND, MAINE MADE FOR BAYSIDE II, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 41 (THE PLAN), BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION MARKING THE NORTHWESTERLY SIDE OF LANCASTER STREET AND THE NORTHEASTERLY SIDE OF ELM STREET;

THENCE, BY THE NORTHEASTERLY SIDE OF ELM STREET N 43° 46' 33" W, A DISTANCE OF 158.86' TO AN ANGLE IN SAID STREET;

THENCE, N 40° 53' 33" W, A DISTANCE OF 31.49' TO THE SOUTHEASTERLY SIDE OF KENNEBEC STREET, MARKING A NON-TANGENT POINT ON A CURVE, IN SAID STREET;

THENCE, NORTHEASTERLY BY THE SOUTHEASTERLY SIDE OF SAID KENNEBEC STREET AND BY A CURVE TO THE LEFT WHOSE RADIUS IS 695.00', AN ARC DISTANCE OF 210.01', TO A POINT OF TANGENCY;

THENCE CONTINUING BY SAID KENNEBEC STREET N 48° 56' 54' E, A DISTANCE OF 251.30', TO THE SOUTHWESTERLY SIDE OF SAID CHESTNUT STREET;

THENCE BY THE SOUTHWESTERLY SIDE OF SAID CHESTNUT STREET S 44° 38' 26" E, A DISTANCE OF 164.71' TO THE NORTHWESTERLY SIDE OF SAID LANCASTER STREET;

THENCE BY THE NORTHWESTERLY SIDE OF SAID LANCASTER STREET S 49° 39' 27" W, A DISTANCE OF 461.02', TO THE POINT OF BEGINNING.

THE PROPERTY IS SUBJECT TO A NOTICE OF ABANDONED UNDERGROUND OIL STORAGE FACIUTY OR TANK NOTICE, DATED APRIL 6, 2011 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 28629, PAGE 238.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE SAME LAND DESCRIBED AS PARCEL 1 CONVEYED TO BAYSIDE II, LLC BY QUITCLAIM

DEED OF OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 15298, PAGE 144.

EXHIBIT A
(Legal Description, Parcel 3)

A CERTAIN PARCEL OF LAND, WITH THE OF IMPROVEMENTS THEREON SITUATED ON THE SOUTHEASTERLY SIDE OF LANCASTER STREET, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE AND SHOWN AS PARCEL 3 ON ALTA/ACSM LAND TITLE SURVEY ON KENNEBEC STREET, LANCASTER STREET EAST, ELM STREET, CEDAR STREET AND OXFORD STREET, PORTLAND, MAINE MADE FOR BAYSIDE II, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 41 (THE PLAN), BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET AND THE SOUTHWESTERLY SIDELINE OF CHESTNUT STREET;

THENCE S 44° 38' 26" E ALONG THE SIDELINE OF CHESTNUT STREET 88.08 FEET;
THENCE S 49° 39' 27" W 107.40;
THENCE N 45° 57' 49" W 3.67 FEET;
THENCE S 31° 29' 21" W 4.67 FEET;
THENCE N 43° 29' 51" W 23.77 FEET;
THENCE S 49° 39' 27" W 35.69 FEET;
THENCE N 43° 29' 51" W 28.00 FEET;
THENCE S 49° 39' 27" W 72.00 FEET TO THE NORTHEASTERLY SIDELINE OF CEDAR STREET;
THENCE N 43° 29' 51" W ALONG SAID SIDELINE 34.00 FEET TO THE SOUTHEASTERLY SIDELINE OF LANCASTER STREET;
THENCE N 49° 39' 27" E ALONG SAID SIDELINE 218.00 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE SAME LAND DESCRIBED AS PARCEL 3 CONVEYED TO BAYSIDE II, LLC BY QUITCLAIM DEED OF OCTOBER CORPORATION, DATED JANUARY 26, 2000 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 15298, PAGE 144.

Received
Recorded Register of Deeds
Oct 13,2022 02:22:36P
Cumberland County
Jessica M. Spaulding

MAINE REAL ESTATE TAX PAID

DLN:_____

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS THAT **BAYSIDE IV, LLC,** a Maine limited liability with a principal place of business in Portland, County of Cumberland, State of Maine, for consideration paid, grants to **WBP COMMERCIAL LLC**, a Maine limited liability company with an address of 82 Hanover Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any buildings and improvements thereon, in Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Bayside IV, LLC has caused this instrument to be executed by Thomas A. Toye, III, its Sole Member thereunto duly authorized as of this 12th day of October, 2022.

WITNESS:

BAYSIDE IV, LLC

By _____
Thomas A. Toye, III
Its: Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

October 12, 2022

Then personally appeared the above named Thomas A. Toye, III, Sole Member 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 Bayside IV, LLC.

_____
Attorney at Law/Notary Public

_____
Printed Name

Jason G. Howe, Esq.
Bar No. 0004860

EXHIBIT A
(Legal Description, Parcel 2)

A CERTAIN PARCEL OF LAND, TOGETHER WITH THE IMPROVEMENTS THEREON, SITUATED ON THE SOUTHWESTERLY SIDE OF CHESTNUT STREET AND THE NORTHWESTERLY SIDE OF HALL'S COURT, SO CALLED, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE AND SHOWN AS PARCEL 2 ON ALTA/ACSM LAND TITLE SURVEY ON CEDAR STREET, LANCASTER STREET EAST, CHESTNUT STREET AND OXFORD STREET, PORTLAND, MAINE FOR BAYSIDE IV, LLC BY OWEN HASKELL, INC., DATED JANUARY 24, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 200, PAGE 43 (THE PLAN), BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTHWESTERLY SIDELINE OF CHESTNUT STREET AND THE NORTHWESTERLY SIDELINE OF HALL'S COURT;

THENCE S 49° 19' 48" W ALONG THE SIDELINE OF HALL'S COURT 112.65 FEET;

THENCE N 43° 29' 51" W 31.09 FEET;

THENCE N 49° 39' 27" E 112.08 FEET TO THE SOUTHWESTERLY SIDELINE OF CHESTNUT STREET;

THENCE S 44° 38' 26" E 30.48 FEET TO THE POINT OF BEGINNING.

MEANING AND INTENDING TO CONVEY AND HEREBY CONVEYING THE LAND DESCRIBED AS PARCEL 2 IN DEED FROM OCTOBER CORPORATION TO BAYSIDE IV, LLC DATED JANUARY 26, 2000 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 15298, PAGE 242.

Received
Recorded Register of Deeds
Oct 13,2022 02:21:12P
Cumberland County
Jessica M. Spaulding

5

Section 5: Public or Private Right-of-Way

5.A Public or Private Rights–of–Way

The site is proposed to be accessed as described in Section 3. No additional public or private rights of way are proposed.

6

Section 6: Schedule

6.A Schedule

Phases 1 and 2 are anticipated to be constructed by 2025. The proposed uses are anticipated to be fully occupied in 2026.

Memorandum

To: Jennifer Conley, PE, PTOE

Date: June 28, 2023

Project #: 55678.00

From: Mike Cristiani

Re: West Bayside Redevelopment
Additional Mode Share Data

In order to address the request from the City of Portland to further support the proposed mode shares with field data, additional mode share data has been collected.

Residential Data

VHB has collected data at an additional two residential locations in the area. Originally, VHB collected data at 117 Lofts on Preble Street. Since that time, data was also collected at Back Bay Tower and Hiawatha. Each development is market rate apartments with unbundled parking. Visual following was employed to differentiate pedestrians from people walking to and from on street parking. The resulting trips and mode share percentages are illustrated in Tables 1 to 6 below.

Table 1 AM Back Bay Tower Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	1	2	0	4	2	0
7:15 to 7:30 AM	4	0	0	5	6	0	9	6	0
7:30 to 7:45 AM	2	2	0	5	3	0	7	5	0
7:45 to 8:00 AM	1	1	0	6	9	0	7	10	0
8:00 to 8:15 AM	0	1	0	2	7	0	2	8	0
8:15 to 8:30 AM	2	0	0	1	1	0	3	1	0
8:30 to 8:45 AM	2	3	0	0	2	0	2	5	0
8:45 to 9:00 AM	3	1	1	2	3	0	5	4	1
Total	**17**	**8**	**1**	**22**	**33**	**0**	**39**	**41**	**1**
							48%	**51%**	**1%**

Source: AM peak hour is based on data collected at Back Bay Tower

Memorandum

Table 2 PM Back Bay Tower Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	5	4	0	2	2	0	7	6	0
7:15 to 7:30 AM	2	1	0	3	2	0	5	3	0
7:30 to 7:45 AM	3	5	0	1	3	0	4	8	0
7:45 to 8:00 AM	6	3	0	3	4	1	9	7	1
8:00 to 8:15 AM	6	6	0	5	5	0	11	11	0
8:15 to 8:30 AM	6	1	0	1	4	0	7	5	0
8:30 to 8:45 AM	3	2	0	1	5	0	4	7	0
8:45 to 9:00 AM	2	2	1	1	4	0	3	6	1
Total	**33**	**24**	**1**	**17**	**29**	**0**	**50**	**53**	**2**
							48%	**50%**	**2%**

Source: PM peak hour is based on data collected at Back Bay Tower

Table 3 AM Hiawatha Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	2	0	0	1	0	0	3	0
7:15 to 7:30 AM	0	0	0	6	5	0	6	5	0
7:30 to 7:45 AM	3	1	0	15	3	0	18	4	0
7:45 to 8:00 AM	7	1	1	8	4	0	15	5	1
8:00 to 8:15 AM	2	4	0	13	5	0	15	9	0
8:15 to 8:30 AM	0	0	0	4	3	0	4	3	0
8:30 to 8:45 AM	2	3	0	4	4	1	6	7	1
8:45 to 9:00 AM	1	3	0	11	0	0	12	3	0
Total	**15**	**14**	**1**	**61**	**25**	**1**	**76**	**39**	**2**
							65%	**33%**	**2%**

Source: AM peak hour is based on data collected at Hiawatha

Table 4 PM Hiawatha Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	2	1	0	5	1	0
7:15 to 7:30 AM	6	2	0	7	0	1	13	2	1
7:30 to 7:45 AM	3	1	0	2	2	0	5	3	0
7:45 to 8:00 AM	10	1	0	4	3	0	14	4	0
8:00 to 8:15 AM	8	3	0	9	3	0	17	6	0
8:15 to 8:30 AM	8	4	0	9	1	0	17	5	0
8:30 to 8:45 AM	8	4	0	4	4	2	12	8	2
8:45 to 9:00 AM	5	1	0	6	3	0	11	4	0
Total	**51**	**16**	**0**	**43**	**17**	**3**	**94**	**33**	**3**
							72%	**26%**	**2%**

Source: PM peak hour is based on data collected at Hiawatha

Table 5 AM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	2	0	0	3	1	0	5	1	0
7:15 to 7:30 AM	0	2	0	0	2	0	0	4	0
7:30 to 7:45 AM	0	2	0	2	1	0	2	3	0
7:45 to 8:00 AM	1	0	0	1	0	0	2	0	0
8:00 to 8:15 AM	0	1	0	2	2	0	2	3	0
8:15 to 8:30 AM	0	1	0	0	1	0	0	2	0
8:30 to 8:45 AM	0	1	0	1	1	0	1	2	0
8:45 to 9:00 AM	0	1	0	3	0	0	3	1	0
Total	**3**	**8**	**0**	**12**	**8**	**0**	**15**	**16**	**0**
							48%	**52%**	**0%**

Source: AM peak hour is based on data collected at 117 Lofts on Preble Street

Table 6 PM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	1	0	0	1	0	0	2	0
7:15 to 7:30 AM	0	0	0	0	1	0	0	1	0
7:30 to 7:45 AM	1	1	0	0	0	0	1	1	0
7:45 to 8:00 AM	1	2	0	1	0	0	2	2	0
8:00 to 8:15 AM	4	2	0	1	1	0	5	3	0
8:15 to 8:30 AM	0	0	0	1	1	0	1	1	0
8:30 to 8:45 AM	0	1	0	0	0	0	0	1	0
8:45 to 9:00 AM	1	1	0	1	0	0	2	1	0
Total	**7**	**8**	**0**	**4**	**4**	**0**	**11**	**12**	**0**
							47%	**53%**	**0%**

Source: PM peak hour is based on data collected at 117 Lofts on Preble Street

The mode share data collected was summarized into Table 7. In addition to the summaries of mode shares for AM and PM for each of the developments, the initially used mode share, based on census data for this area, is provided for comparison.

Table 7 Mode Share Comparison

Mode of Transportation		Back Bay Tower Mode Share[1]	Hiawatha Mode Share[2]	117 Preble Mode Share[3]	Field Collected Residential Average	ACS 2017-2021 Mode Share – Excluding "Worked from home"[4]
Vehicle	AM	51%	33%	52%	**45%**	**55%**
	PM	50%	26%	53%	**43%**	
Walk	AM	48%	65%	48%	**54%**	**45%**
	PM	48%	72%	47%	**56%**	
Bike	AM	1%	2%	0%	**1%**	
	PM	2%	2%	0%	**1%**	

[1]Back Bay Tower – 116 Market Rate apartments, parking garage unbundled
[2]Hiawatha – 139 Market rate apartments, parking garage unbundled
[3]117 Lofts – 56 Market Rate apartments, surface parking unbundled
[4]US Census Bureau American Community Survey. Census Tract 6, Workers 16 yrs and over

As shown in the tables above, the average mode split observed at 117 Lofts, Back Bay Tower, and The Hiawatha building show approximately **55% pedestrian trips and 45% vehicle trips.** As indicated above, all three buildings offer market rate apartments at various bedroom sizes. Conversely, census data reflected only 45% pedestrian trips and 55% vehicular trips.

There is parking associated with all three locations, Back Bay Tower and The Hiawatha provide unbundled parking in attached parking garages while 117 Lofts offers unbundled surface lot parking. As indicated above, to ensure accurate mode share data for vehicular trips, the data collection reflects observations of pedestrians who walked to and from on street parking as vehicular trips.

Coffee Shop Data

As discussed in a call with Tom Errico, the only additional coffee shop requested for data collection is a facility significantly larger than is proposed at this location, has a large parking supply located on multiple sides of the facility (and is twice as dense as typical on street parking as includes pull in spaces, not parallel). Finally, there are no residential units within a short walking distance. These factors make this site not a comparable location to what is being proposed in a residential building with a significant number of units proposed in the immediate area and no parking provided except typical on street parking.

With the data collected at Coffee Me Up and all three residential developments supporting a vehicular mode share in this area similar, or less than that provided in the census data, that census mode share (55% auto and 45% walking/biking/transit) is appropriate for use on the proposed site.

Att. W2

West Bayside Development

Revised Section 7 – Traffic Impact Study (Phase 1 & 2)

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1

Introduction

This Traffic Impact Study is provided as Section 7 of the Traffic Movement Permit (TMP) application for the proposed mixed use-development in the West Bayside neighborhood including 215 multi family housing units, 201 affordable housing units, and 14,000 sf of commercial space comprising of retail, restaurant, and a coffee shop. This study incorporates comments received at the project Scoping Meeting held virtually on May 8th, 2023, with The City of Portland and the City's Traffic Peer Reviewer.

Project Area

The site is located on multiple streets in the West Bayside neighborhood including Preble Street, Elm Street, Lancaster Street, and Oxford Street in Portland, Maine. Existing space to be developed includes predominately surface lots and one existing building.

196 Lancaster Street is currently being used as a 4,250 sf office building. 89 and 60 Elm Street are currently surface parking lots. The Portland Public Market Garage is a seven-level, 595-space parking structure. Vehicular access to and from the garage is provided on both Preble Street and Elm Street.

The Project consists of a mixed-use two-phase redevelopment of four sites. The following presents the land use program by phase.

Phase 1

- 130 Multi-family housing units
- 201 Affordable housing units
- 4,000 sf general retail
- 2,000 sf coffee shop
- 6,000 sf restaurant

Phase 2

- 85 Multi-family housing units
- 2,000 sf general retail

The existing 595 space Portland Public Market Garage will provide parking for these uses since it is controlled by the developer and is largely vacant. As it does today, the parking garage will continue to have access/egress on both Preble Street and Elm Street.

The site locations are shown in Attachment 7A along with updated site plans for 196 Lancaster Street, 89 Elm Street, and 60 Elm Street.

2

Study Area

The study area intersections for the project are based on the requirements for inclusion criteria set forth by MaineDOT. The intersection parameters and thresholds are as follows:

- Development entrances and exits
- First major intersection in either direction from the Development entrances and exits
- All intersections where, during any one-hour period, traffic attributable to the proposed Development equals or exceeds:
    - 25 left turn movements per lane; or
    - 50 through and/or right turn movements per lane

Based on the above criteria, the study area intersections for the proposed development were determined as outlined below:

- Elm Street / Garage Entrance/Exit
- Preble Street / Portland Street / Garage Entrance/Exit
- Marginal Way / Preble & Elm Street / Preble Street Extension
- Preble Street / Cumberland Avenue
- Elm Street / Cumberland Avenue
- Forest Avenue / Park Avenue / Portland Street
- Elm Street / Somerset Street
- Preble Street / Somerset Street / Kennebec Street
- Elm Street / Kennebec Street
- Preble Street / Kennebec Street / Albert Street
- Elm Street / Lancaster Street
- Preble Street / Lancaster Street
- Elm Street / Oxford Street
- Preble Street/ Oxford Street

3

Existing Traffic Volume Data

Turning movement count data was collected for the study area intersections described above. Traffic data was collected on Wednesday May 31, 2023. The weather was clear/cloudy and approximately 60-degrees. Data was collected during the typical peak commuter peak periods, 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The network peak hour occurred from 7:45 AM to 8:45 AM and 4:30 PM to 5:30 PM at the study area intersections.

4

Adjusted Traffic Volumes

The appropriate adjustment to result in the 30th highest hour of the year was researched using the weekly mean factors published by MaineDOT based on the urban classification of the roadway. As a result, the raw volumes collected in May 2023 were adjusted by a factor of 1.01.

In addition to seasonally adjusting the traffic volumes, to account for background traffic growth, the traffic associated with seven nearby permitted projects was investigated (see Section 5), the volumes were also increased by a half percent per year to a future horizon year of 2026 when the proposed project is anticipated to open.

5

Proposed Uses in the Study Area

Projects that have been approved but are not yet occupied as well as projects that have applied for approval are required to be included in the predevelopment traffic volumes. The projects listed below were agreed upon at the project scoping meeting as well as email correspondence with the City of Portland on May 30th, 2023. A mapping of locations of these projects is provided in Attachment 7B.

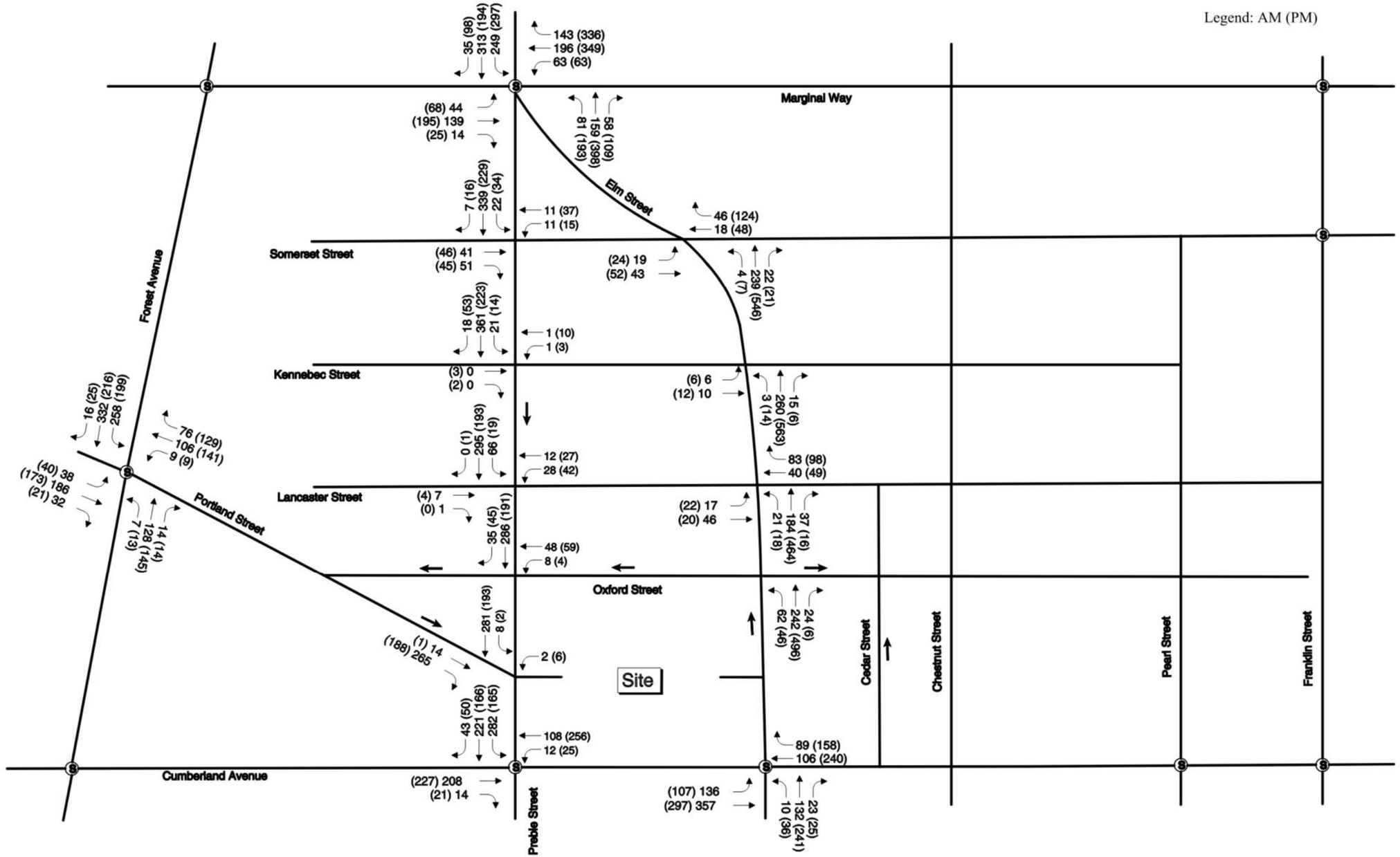
- 385 Congress Street (Mixed-Use Development) (PL001970-2022) This mixed-use development is approved and not yet constructed. A minimal number of trips may pass near the West Bayside proposed development.
- 477-481 Congress Street (PL-01003-2021) This project is a redevelopment of the existing building at 477 Congress Street into a 186-room hotel with retail space, restaurant, rooftop bar, and associated hotel amenities.
- 29 Marginal Way (PL-01879-2021) 29 Marginal Way is a multi-tenant commercial site with a total of six commercial buildings. The re-development of this site has been constructed and occupied.
- 343 Cumberland Street (PL-002095-2022) This project combines two existing facilities within 500' of each other and is not expected to increase traffic on the adjacent roadway network.
- 52 Hanover Street (PL) This project contains 171 apartment units as well as 6,500 sf retail space and is expected to be occupied summer 2023. 52 Hanover Street is adjacent to the proposed West Bayside development and trips associated with this project will pass near the development.
- 200 Federal Street (PL-001235-2020) This project proposes an 18-story residential building consisting of 266 residential apartments and a 1,950sf retail space. A minimal number of trips may pass near the West Bayside proposed development.
- 75 Chestnut Street (PL-001343-2020) 75 Chestnut Street is a seven-story apartment building containing a total of 54 residential units and approximately 2,328sf commercial-retail space.

6

No Build Traffic Volumes

The traffic associated with the background developments was added to the intersection traffic volumes increased to the future horizon years. The resulting 2026 traffic volumes are illustrated in Figure 1 below.

Figure 1 2026 No-Build Traffic Volumes



7

Trip Generation

Trip generation estimates for the Project are based on the Institute of Transportation Engineers (ITE) publication, Trip Generation, 11th Edition. The ITE Trip Generation Manual categorizes various land uses and provides weekday daily, weekday morning peak hour, and weekday evening peak hour unadjusted vehicle trip generation estimates for each use. Trip generation estimates for the proposed uses were projected using data published in the ITE Trip Generation Manual based on the metrics and land use codes presented in Table 1.

Table 1 Project Program and ITE Land Use Code

Land Use	Size	Land Use Code	
Multi-family housing	215 units	221	Multifamily Housing (Mid-Rise)
Affordable housing	201 units	223	Affordable Housing
General retail	6,000 sf	822	Strip Retail Plaza (<40k)
Coffee shop	2,000 sf	936	Coffee/Donut Shop without drive through window
Restaurant	6,000 sf	932	High-Turnover (Sit-Down)

Source: ITE Trip Generation 11th Edition

The unadjusted ITE vehicle trip generation was calculated for the weekday AM and PM peak hours for the land uses on site as presented in **Error! Reference source not found.** 2. Trip generation calculations are provided in Attachment 7C.

Table 2 Total Unadjusted Trips

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Multi-family housing	19	64	83	51	33	84
Affordable housing	29	72	101	54	38	92
General retail	12	8	21	27	27	54
Restaurant	31	26	57	33	21	54
Coffee shop	95	91	186	33	33	65
Total	**187**	**261**	**448**	**198**	**151**	**349**

Source: ITE Trip Generation 11th Edition

Internal Capture

As a multi-use development, the trip generation characteristics of the Project will be different from single-use sites. Some of the traffic to be generated by the Project will be contained among the components of the site as "internal" or "shared vehicle" trips. This concept means that some patrons could visit more than one of the uses on the Project Site. For example, apartment residents may also patronize the site's retail and restaurant spaces.

While these shared trips represent new traffic to the individual uses, they would not correspond to new vehicle trips on the surrounding roadway network.

As described in the ITE Trip Generation Handbook, "because of the complementary nature of these land uses, some trips are made among the on-site uses. This capture of trips internal to the Development Site has the net effect of reducing vehicle trip generation between the overall Development Site and the external street system (compared to the total number of trips generated by comparable land uses developed individually on stand-alone sites). An internal capture rate can generally be defined as the percentage of total person trips generated by a site that are made entirely within the Development Site. The trip origin, destination, and travel path are all within the site."

Because this site is not contiguous, internal capture has been determined at the building level rather than site level. Credit is taken only for trips that would occur between uses in the same building. The internal capture adjustment calculations are presented in Attachment 1C. The internal and external trips are presented in Table 3 and Table 4.

Table 3 Internal Capture Adjustment – AM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	116	12	--	8	1	119
Exit	--	108	39	--	1	8	138
89 Elm							
Enter	8	10	29	2	3	1	41
Exit	5	9	72	2	1	3	80
60 Elm							
Enter	4	--	8	0	--	0	12
Exit	3	--	25	0	--	0	28
TOTAL	**20**	**243**	**185**	**4**	**13**	**13**	**418**

Table 4 Internal Capture Adjustment – PM Peak Hour

	Total Trips			Internal Trips			Net External Trips
	Retail	Restaurant	Residential	Retail	Restaurant	Residential	
196 Lancaster							
Enter	--	55	31	--	4	5	77
Exit	--	47	20	--	5	4	58
89 Elm							
Enter	18	11	54	5	5	6	67
Exit	18	7	38	8	4	4	47
60 Elm							
Enter	9	--	20	1	--	2	26
Exit	9	--	13	2	--	1	19
TOTAL	**54**	**120**	**176**	**16**	**18**	**22**	**294**

Mode Share

Due to this project's central location, it is expected that a significant portion of site trips will be by alternative modes including walking, biking and transit. A localized mode share estimate was explored by consulting the American Community Survey (ACS) Five-Year Estimates for 2017-2021. The ACS provides the mode share for work commutes by residents of each census tract. Since this development is largely residential, these mode shares were considered applicable. Data for Census Tract 6 was used, which includes the development site. This area is shown in Figure 2. The mode shares are presented in Table 5.

Figure 2 Census Tract



The only adjustment made to the Census data mode shares was to exclude "work from home". To be conservative, mode shares were recalculated without that option. Although we know remote work continues to depress peak hour trips somewhat, mode share was based on only trips taken.

Table 5 Mode Share, Based on ACS Data

Mode of Transportation	ACS 2017-2021 5-Year Data Profile	Mode Share – Excluding "Worked from home"
Drove alone	**44%**	**55%**
Carpool	**3%**	**4%**
Public Transit	**5%**	**6%**
Walked	**28%**	**35%**
Other means	**2%**	
Worked from Home	**18%**	

Source: US Census Bureau American Community Survey. Census Tract 6, Workers 16 yrs and over

In order to address a request from the City of Portland to further support the proposed mode shares with field data, additional mode share data has been collected.

VHB has collected data at the following three residential locations all located in Portland, Maine:

- Back Bay Tower
- Hiawatha
- 117 Lofts

Each development has market rate apartments with unbundled parking which is consistent with the residential proposed in this project. During data collection, visual following was employed to differentiate between pedestrian trips to and from the developments and people walking to and from on street parking. Observations of pedestrians walking to and from on street parking as were tabulated as vehicular trips. The resulting trips and mode share percentages are illustrated in Tables 6 to 11 below.

Table 6 AM Back Bay Tower Mode Share

Time	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	1	2	0	4	2	0
7:15 to 7:30 AM	4	0	0	5	6	0	9	6	0
7:30 to 7:45 AM	2	2	0	5	3	0	7	5	0
7:45 to 8:00 AM	1	1	0	6	9	0	7	10	0
8:00 to 8:15 AM	0	1	0	2	7	0	2	8	0
8:15 to 8:30 AM	2	0	0	1	1	0	3	1	0
8:30 to 8:45 AM	2	3	0	0	2	0	2	5	0
8:45 to 9:00 AM	3	1	1	2	3	0	5	4	1
Total	**17**	**8**	**1**	**22**	**33**	**0**	**39**	**41**	**1**
							48%	**51%**	**1%**

Source: AM peak hour is based on data collected at Back Bay Tower

Table 7 PM Back Bay Tower Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	5	4	0	2	2	0	7	6	0
7:15 to 7:30 AM	2	1	0	3	2	0	5	3	0
7:30 to 7:45 AM	3	5	0	1	3	0	4	8	0
7:45 to 8:00 AM	6	3	0	3	4	1	9	7	1
8:00 to 8:15 AM	6	6	0	5	5	0	11	11	0
8:15 to 8:30 AM	6	1	0	1	4	0	7	5	0
8:30 to 8:45 AM	3	2	0	1	5	0	4	7	0
8:45 to 9:00 AM	2	2	1	1	4	0	3	6	1
Total	**33**	**24**	**1**	**17**	**29**	**0**	**50**	**53**	**2**
							48%	**50%**	**2%**

Source: PM peak hour is based on data collected at Back Bay Tower

Table 8 AM Hiawatha Mode Share

Time	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	2	0	0	1	0	0	3	0
7:15 to 7:30 AM	0	0	0	6	5	0	6	5	0
7:30 to 7:45 AM	3	1	0	15	3	0	18	4	0
7:45 to 8:00 AM	7	1	1	8	4	0	15	5	1
8:00 to 8:15 AM	2	4	0	13	5	0	15	9	0
8:15 to 8:30 AM	0	0	0	4	3	0	4	3	0
8:30 to 8:45 AM	2	3	0	4	4	1	6	7	1
8:45 to 9:00 AM	1	3	0	11	0	0	12	3	0
Total	**15**	**14**	**1**	**61**	**25**	**1**	**76**	**39**	**2**
							65%	**33%**	**2%**

Source: AM peak hour is based on data collected at Hiawatha

Table 9 PM Hiawatha Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	3	0	0	2	1	0	5	1	0
7:15 to 7:30 AM	6	2	0	7	0	1	13	2	1
7:30 to 7:45 AM	3	1	0	2	2	0	5	3	0
7:45 to 8:00 AM	10	1	0	4	3	0	14	4	0
8:00 to 8:15 AM	8	3	0	9	3	0	17	6	0
8:15 to 8:30 AM	8	4	0	9	1	0	17	5	0
8:30 to 8:45 AM	8	4	0	4	4	2	12	8	2
8:45 to 9:00 AM	5	1	0	6	3	0	11	4	0
Total	**51**	**16**	**0**	**43**	**17**	**3**	**94**	**33**	**3**
							72%	**26%**	**2%**

Source: PM peak hour is based on data collected at Hiawatha

Table 10 AM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	2	0	0	3	1	0	5	1	0
7:15 to 7:30 AM	0	2	0	0	2	0	0	4	0
7:30 to 7:45 AM	0	2	0	2	1	0	2	3	0
7:45 to 8:00 AM	1	0	0	1	0	0	2	0	0
8:00 to 8:15 AM	0	1	0	2	2	0	2	3	0
8:15 to 8:30 AM	0	1	0	0	1	0	0	2	0
8:30 to 8:45 AM	0	1	0	1	1	0	1	2	0
8:45 to 9:00 AM	0	1	0	3	0	0	3	1	0
Total	**3**	**8**	**0**	**12**	**8**	**0**	**15**	**16**	**0**
							48%	**52%**	**0%**

Source: AM peak hour is based on data collected at 117 Lofts on Preble Street

Table 11 PM 117 Lofts Mode Share

Land Use	Entering Trips			Exiting Trips			Total Trips		
	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips	Pedestrian Trips	Vehicle Trips	Bike Trips
7:00 to 7:15 AM	0	1	0	0	1	0	0	2	0
7:15 to 7:30 AM	0	0	0	0	1	0	0	1	0
7:30 to 7:45 AM	1	1	0	0	0	0	1	1	0
7:45 to 8:00 AM	1	2	0	1	0	0	2	2	0
8:00 to 8:15 AM	4	2	0	1	1	0	5	3	0
8:15 to 8:30 AM	0	0	0	1	1	0	1	1	0
8:30 to 8:45 AM	0	1	0	0	0	0	0	1	0
8:45 to 9:00 AM	1	1	0	1	0	0	2	1	0
Total	**7**	**8**	**0**	**4**	**4**	**0**	**11**	**12**	**0**
							47%	**53%**	**0%**

Source: PM peak hour is based on data collected at 117 Lofts on Preble Street

The mode share data collected for the developments was summarized into Table 12. In addition to the summaries of mode shares for AM and PM for each of the developments, the Census based mode shares are provided for comparison.

Table 12 Mode Share Comparison

Mode of Transportation		Back Bay Tower Mode Share[1]	Hiawatha Mode Share[2]	117 Preble Mode Share[3]	**Field Collected Residential Average**	**ACS 2017-2021 Mode Share – Excluding "Worked from home"[4]**
Vehicle	AM	51%	33%	52%	**45%**	**55%**
	PM	50%	26%	53%	**43%**	
Walk	AM	48%	65%	48%	**54%**	**45%**
	PM	48%	72%	47%	**56%**	
Bike	AM	1%	2%	0%	**1%**	
	PM	2%	2%	0%	**1%**	

[1]Back Bay Tower – 116 Market Rate apartments, parking garage unbundled

[2]Hiawatha – 139 Market rate apartments, parking garage unbundled

[3]117 Lofts – 56 Market Rate apartments, surface parking unbundled

[4]US Census Bureau American Community Survey. Census Tract 6, Workers 16 yrs and over

As shown in the tables above, the average mode split observed at 117 Lofts, Back Bay Tower, and The Hiawatha building is approximately **55% pedestrian trips and 45% vehicular trips.** Conversely, Census data reflected **45% pedestrian trips and 55% vehicular trips**.

At each of the market rate apartment buildings with various unit sizes, there is parking associated with each building. Back Bay Tower and The Hiawatha provide unbundled parking in attached parking garages while 117 Lofts offers unbundled surface lot parking.

Data collected at all three residential developments support a vehicular mode share in this area similar to or less than that provided in the Census data, indicating that the Census mode share (55% auto and 45% walking/biking/transit) is appropriate, if not conservatively high, for residential use on the proposed site. Because the restaurant and retail space is anticipated to draw a significant amount of trips from the new residential units in the surrounding buildings (internal capture only calculated for trips captured on single sites, not between sites), and only limited on-street parking will be available, a similarly high walk/bike/transit percentage is also anticipated for those uses.

The mode share rates were applied to the trip generation to estimate project-generated trips by mode. Both driving alone and carpooling were counted as new vehicle trips. Non-vehicular trips were broken out by walk and public transit/bike. Using the data collected in the field it was assumed that 99% of non-vehicular trips are classified as walk with 1% classified as public transit/bike. The trips by mode share are shown in Table 13.

Table 13 Adjusted Trips by Mode Share

Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto	**95**	**135**	**230**	**94**	**68**	**162**
Walk	76	109	186	76	54	130
Public Transit/Bike	1	2	2	1	1	2

Notes: Trip generation estimates with mode share and internal capture calculations applied.

8

Trip Distribution

To determine the likely travel patterns of trips to the redevelopment area, the US Census Journey to Work data was consulted. Based on this data, most Portland residents work in either Portland or points to the north and south along the interstate. The distribution of these Portland resident work trips is presented in Table 14. The likely travel patterns to and from the redevelopment area are illustrated to follow the patterns from the Journey to Work data.

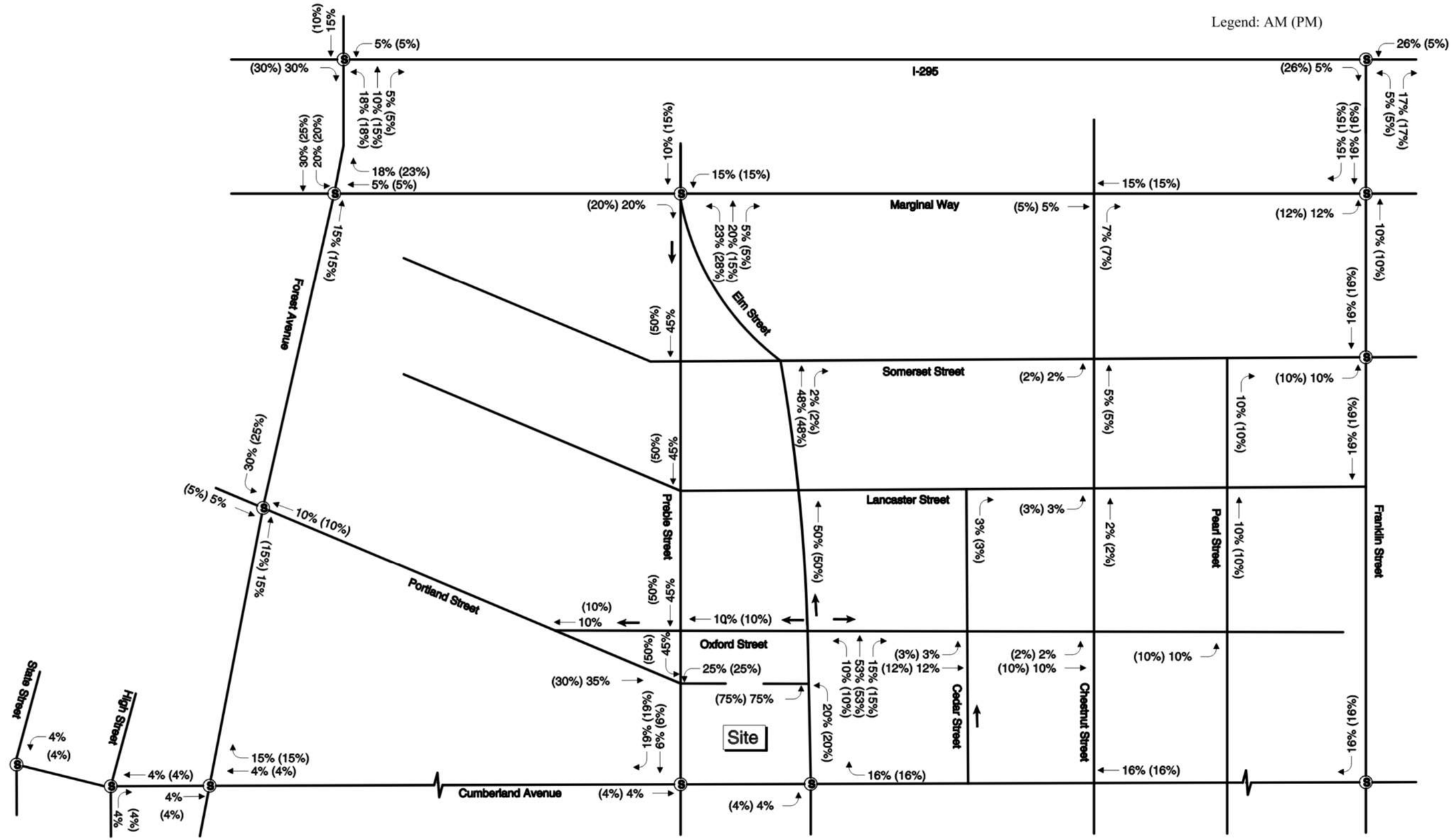
Table 14 Trip Distribution Percentages for Residents

Route	Proposed Distribution[1]
I-295 points north	28%
I-95 points north	7%
26/100 points north/west	9%
302 points north/west	8%
25 points west	2%
I-295 points south	41%
Marginal Way	1%
Casco Bay Bridge points south	3%
High or State streets (local)	1%
Cumberland Ave (local)	1%

1: Trip distribution based on Census Journey to Work information sorted by Portland residence.

Based on discussions at the scoping meeting, the trip distribution in the immediate vicinity of the site was refined and can be seen in Figure 3 below:

Figure 3 Trip Distribution



9

Trip Assignment

Typically, some share of trips to coffee shops and restaurants are counted as pass-by trips. To be conservative, all vehicle trips are assumed to be 100% primary with reductions only for internal capture. With no pass-by trips accounted for, all vehicle trips are anticipated to start or end at the existing Portland Public Market Garage at Preble and Elm Streets. New vehicle trips were assigned based on the distribution in Figure 3. The resulting trip assignment and resulting 2026 Build volumes are shown in Figures 4 and 5 respectively.

Figure 4 Trip Assignment

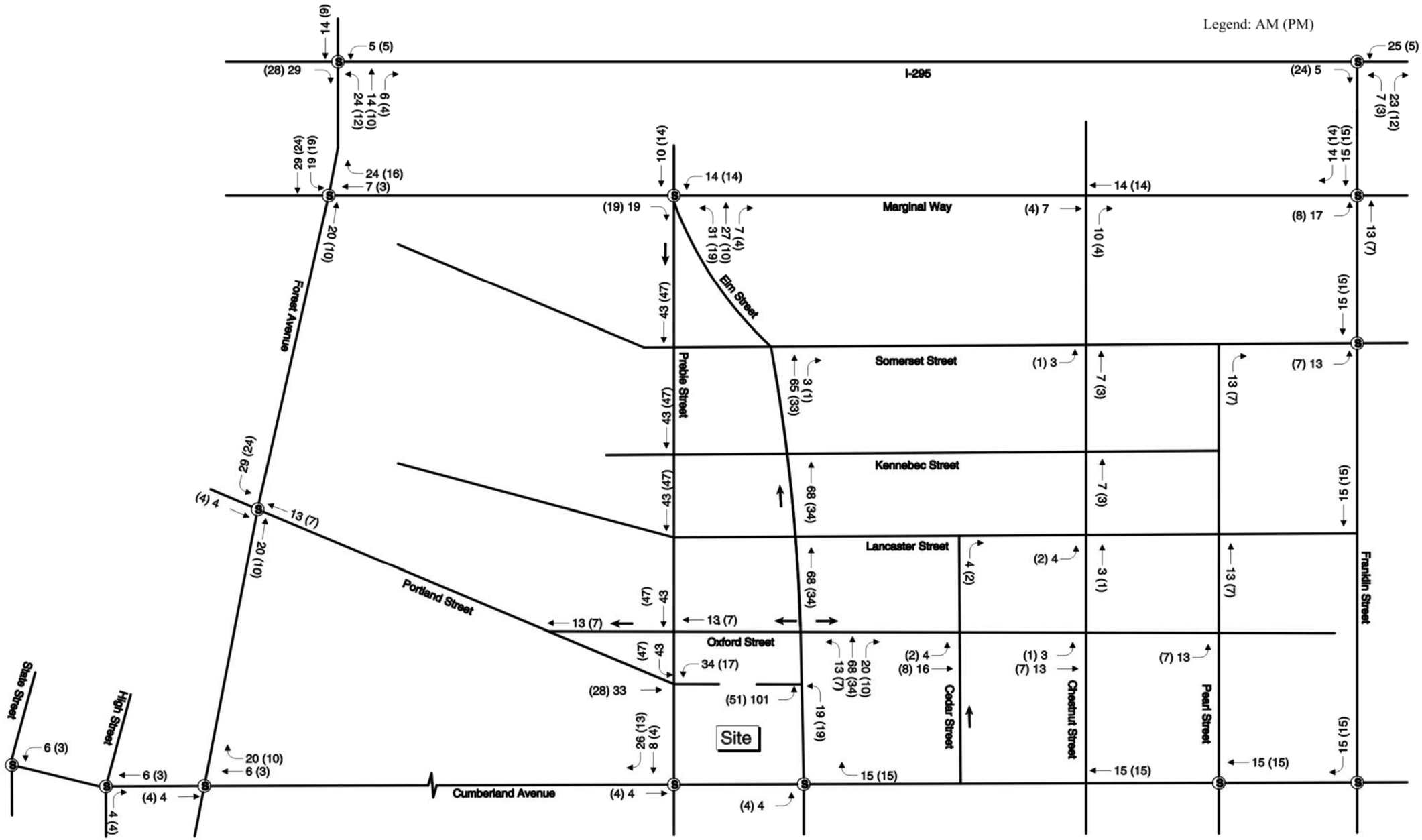
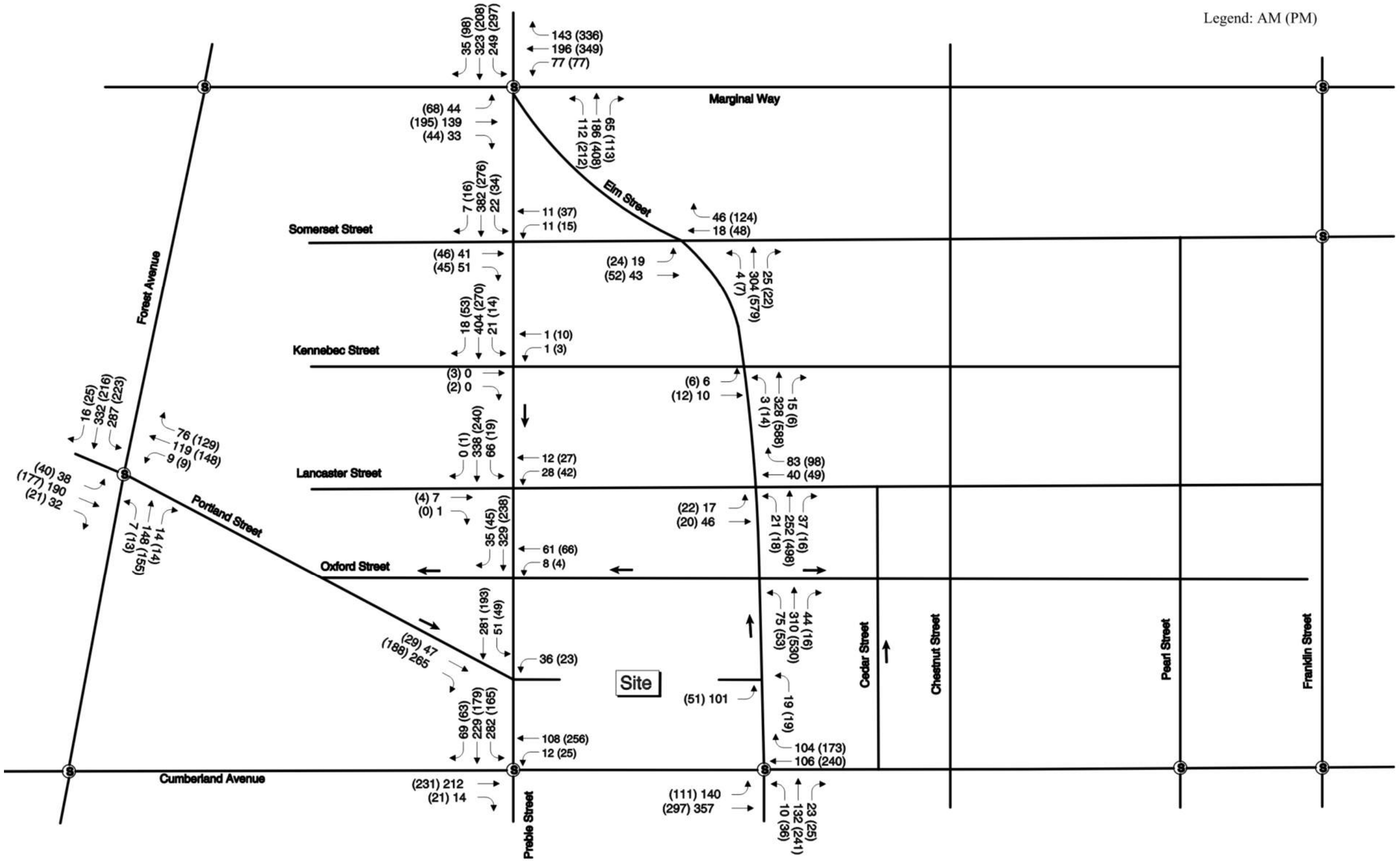


Figure 5 **2026 Build Traffic Volumes**



10

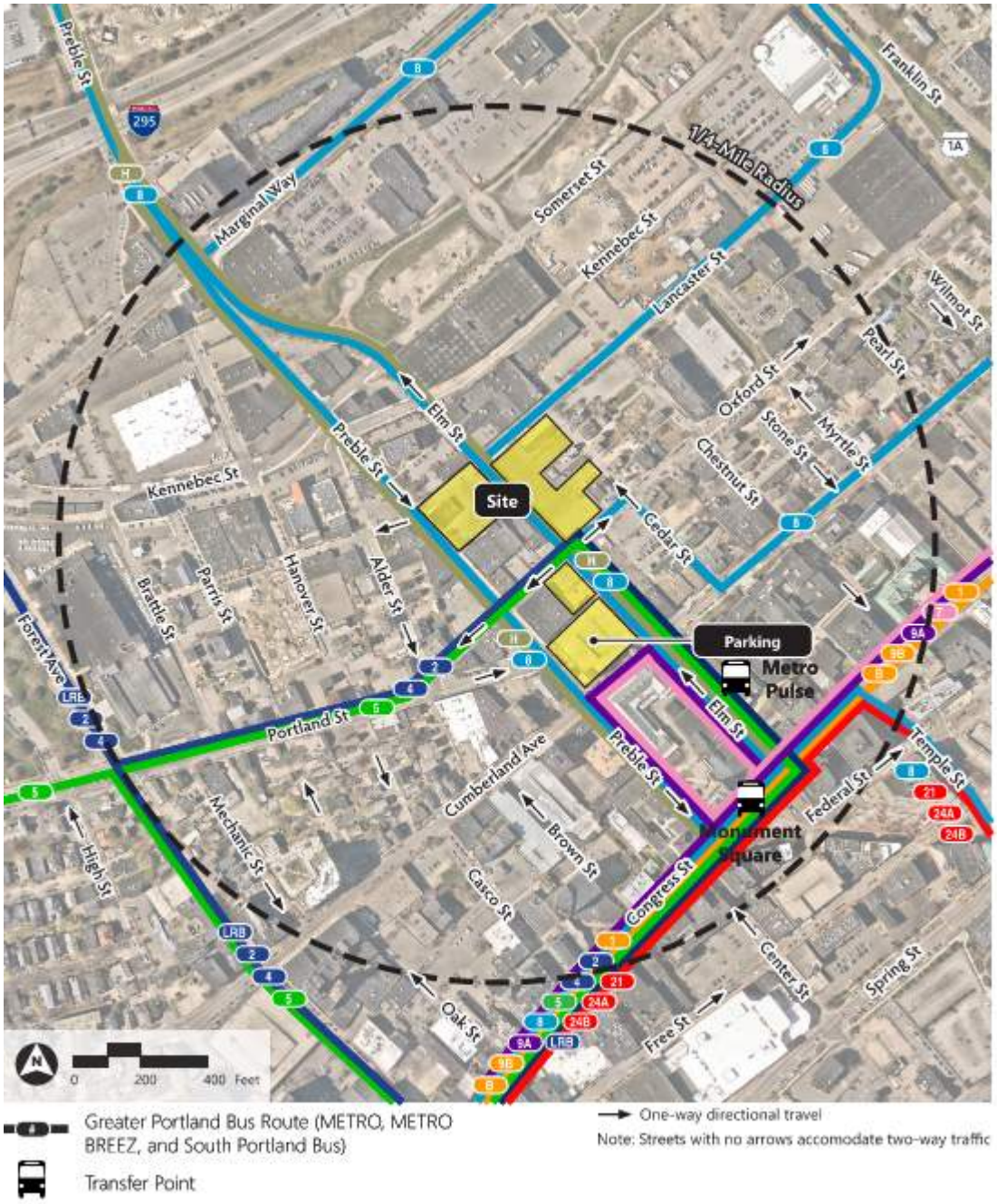
Pedestrian, Bicycle Facilities, Transit

A review of the existing conditions in the site vicinity was conducted, including transit, vehicular, bicycle, and pedestrian infrastructure and current commuting patterns.

Public Transit

As illustrated in Figure 6, the site is located along several METRO bus stops. Route #8 and H both stop on Preble Street and Elm Street just south of the site. Numerous other METRO bus routes also run along Oxford Street (Routes 2, 4, 5) and Congress Street (Routes 1, 2, 5, 8, 9A, 9B) which is a 5-minute walk away.

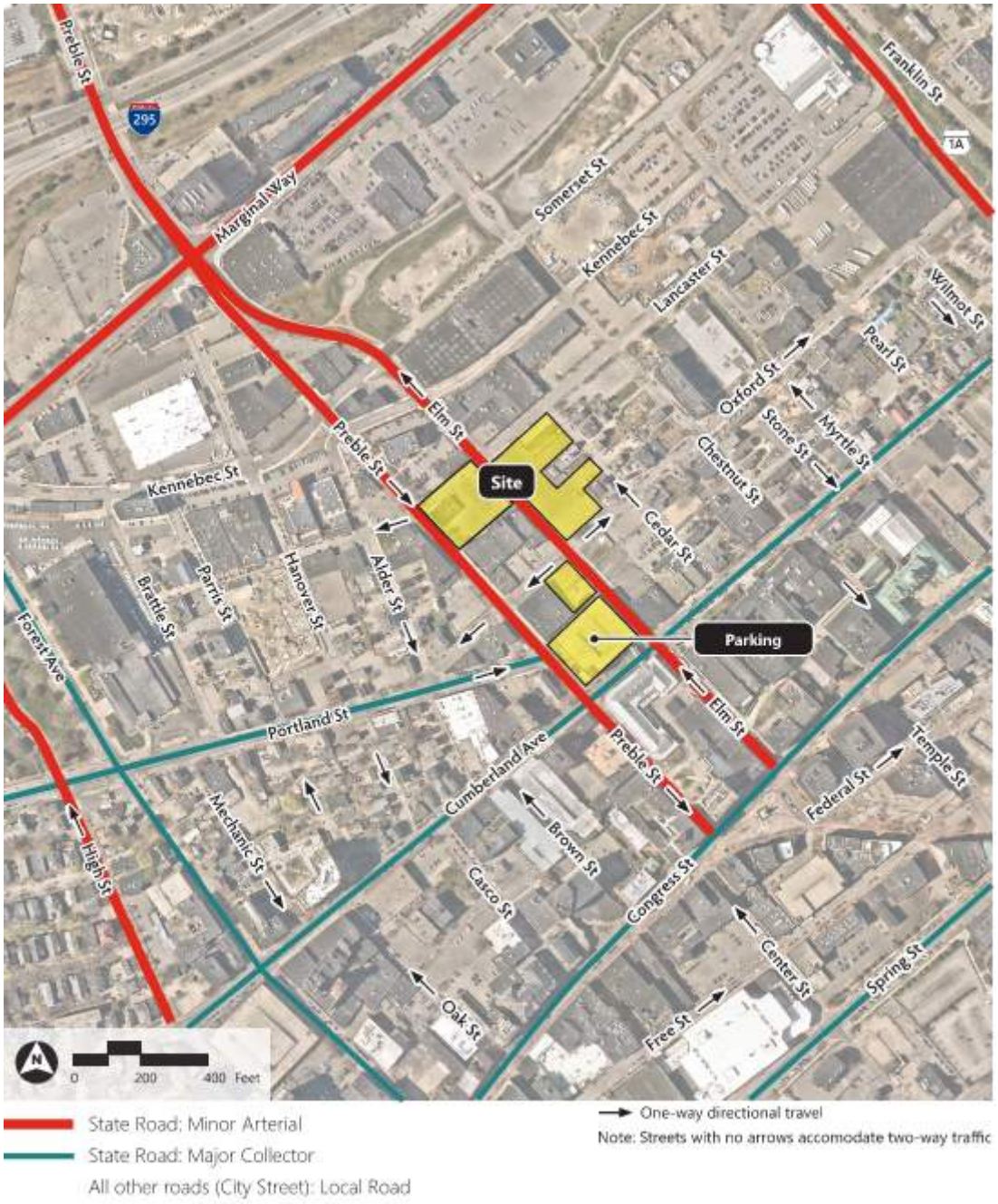
Figure 6 Existing Public Transit Services



Vehicular Facilities

The West Bayside area is just south of I-295 on the Portland peninsula. Major roads adjacent to the site are classified as minor arterial (Preble Street and Elm Street) and major collector (Portland Street and Cumberland Ave). There are also numerous one-way streets connecting in a grid system around the site. Figure 7 below represents the existing roadway network.

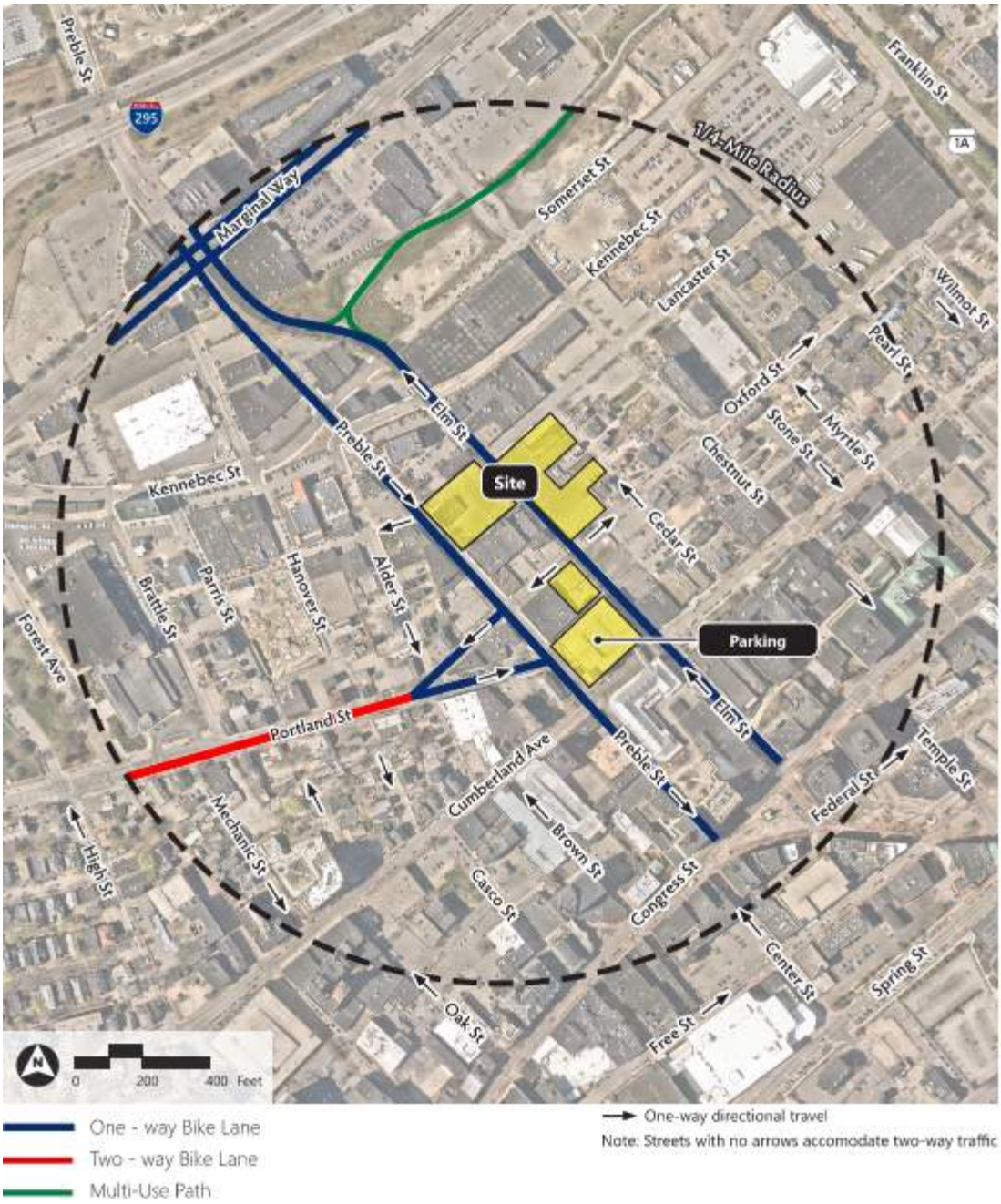
Figure 7 Existing Roadway Network



Bicycle Facilities

As illustrated in Figure 8, existing one-way bike lanes are present on Preble Street and Elm Street and two-way bike lanes are present on part of Portland Street and Marginal Way. Bayside Trail multi-use path connects to Elm Street north of the site for both pedestrian and bicyclist users. In addition, a number of study area roadways; Somerset, Lancaster, Oxford, and Chestnut Street; are low speed, low volume roadways and cyclists can travel with traffic, although not signed or striped for this use.

Figure 8 Existing Bicycle Network



All of the bike lanes shown in Figure 8 are in good condition and do not have any sections where paint is fading or hard to see. Most of the bike lanes in the study area were recently implemented.

There are bike lanes provided in each direction on Portland Street. In the eastbound direction, the bike lane terminates at Preble Street and in the westbound direction the bike lane terminates at Oxford Street.

The bike lanes on Preble Street are continuous from Marginal Way to Congress Street with no breaks at any intersection or segment. Similar to Preble Street Elm Street also has a bike lane that runs from Marginal Way to Congress Street, however the bike lane breaks and does not continue through Lancaster and Oxford Street. At Marginal Way / Preble Street Extension / Preble and Elm intersection there is a bike box on the Preble and Elm Street approach.

Pedestrian Facilities

As indicated above, Bayside Trail multi-use path connects to Elm Street north of the site for both pedestrian and bicyclist users. As illustrated in Figure 9, pedestrians are well accommodated in this urban environment. There are sidewalks on each side of the street throughout the study area. Crosswalks are provided on most legs of major intersections. A notable exception is at the intersection of Elm Street at Kennebec Street where crosswalks are only provided across the south leg of Elm Street and west leg of Kennebec Street.

Figure 10 shows an evaluation of the existing pedestrian facilities on the major streets in the study area that are non ADA-compliant, in poor or condition, or have gaps. As shown, there are poor segments of sidewalk located on Kennebec Street, Cedar Street, and Oxford Street. Fair segments of sidewalk are located Kennebec Street, Cedar Street, Oxford Street, Myrtle Street, and Brattle Street.

On Oxford Street abutting the proposed 89 Elm Street parcel there are two trees in the middle of the sidewalk. Throughout this entire study area there are few fully ADA compliant locations, however at most locations there are ramps in place. The exception to this are the following:

- Oxford Street / Stone Street
- Oxford Street / Myrtle Street

Figure 9 Existing Pedestrian Infrastructure

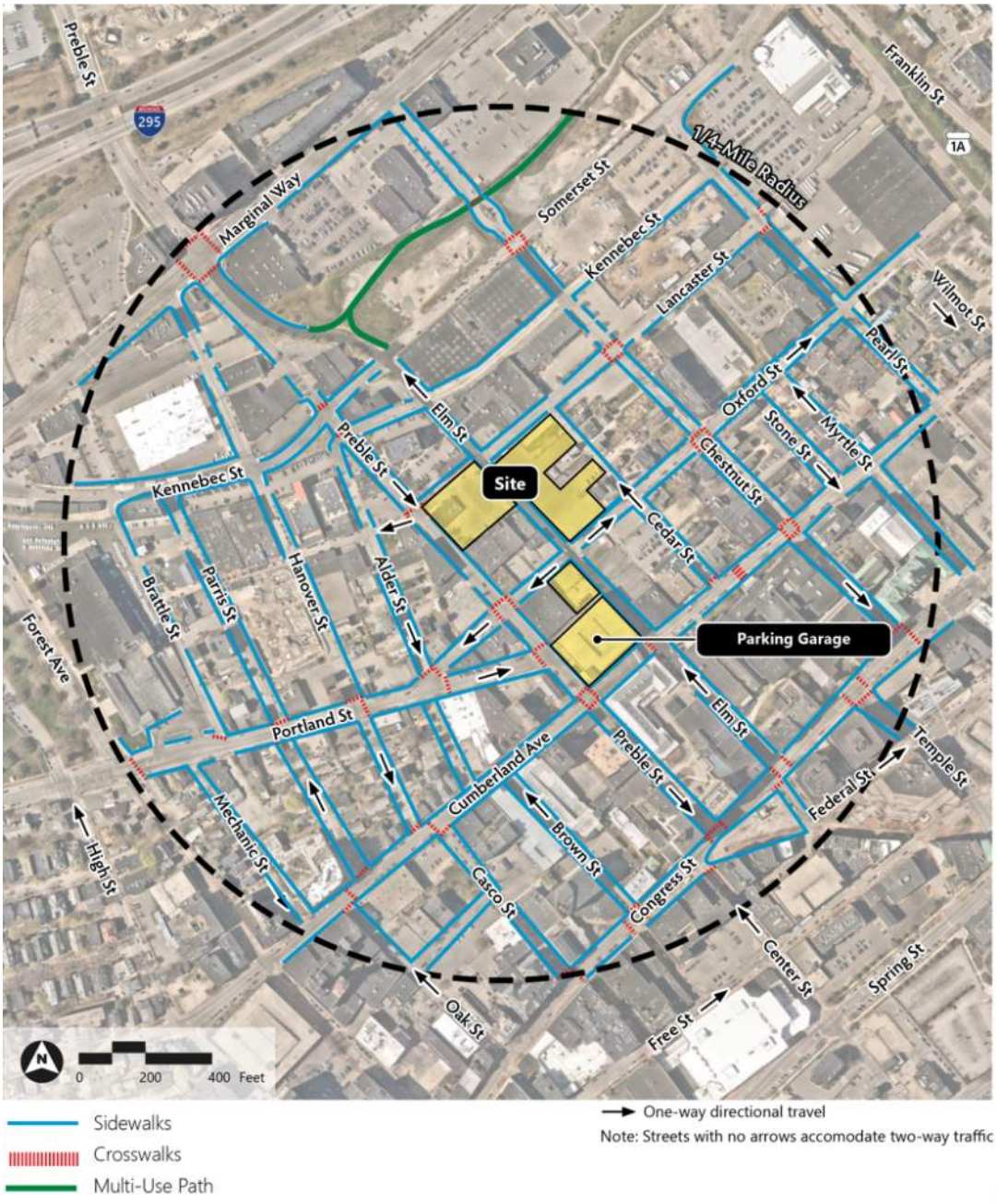
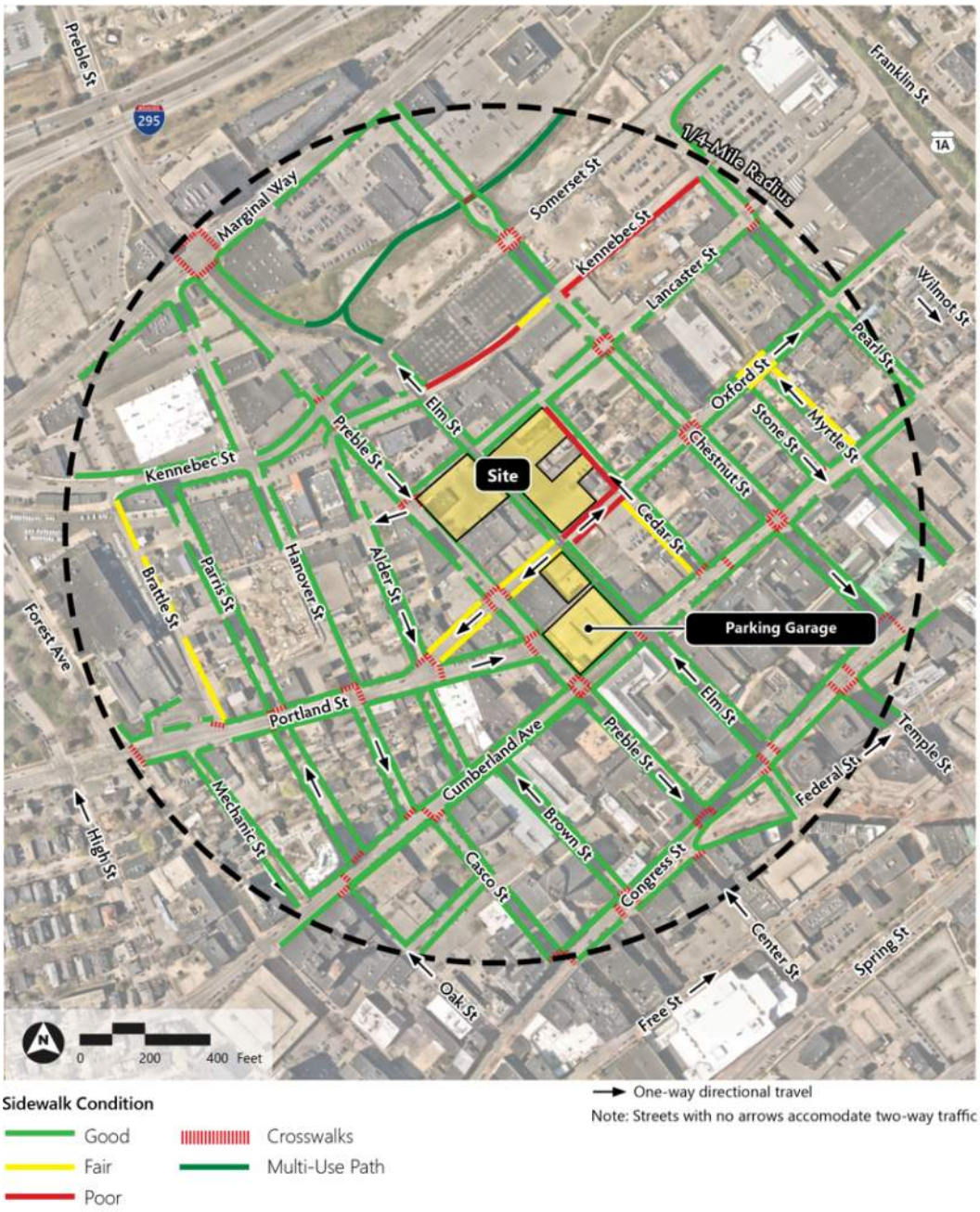


Figure 10 Existing Pedestrian Infrastructure Conditions



It is recommended that sidewalks along Cedar Street adjacent to the proposed 89 Elm Street building be reconstructed to accommodate pedestrians to and from the parking garage, as well as sidewalks on Oxford Street from Portland Street to Chestnut Street (including removing existing trees in sidewalk) prior to the occupancy of this project. These pedestrian improvements will connect an existing poor sidewalk to existing sidewalk that is updated or in good condition making a more walkable neighborhood from the parking garage to each proposed building in this phase. Since pedestrians will be required to walk from the parking garage to their respective building destination, it is recommended that all crosswalks on Preble Street between Lancaster Street and Cumberland Avenue be re-striped with high visibility paint.

11

Capacity / Queue Analysis

Intersection capacity analyses were performed for the study area intersections. Levels of service (LOS) were calculated based on the criteria published in the *2000 Highway Capacity Manual*. Level of service is the term that defines the delay conditions that occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing generally free flowing operating conditions and LOS F representing generally congested conditions. Table 15 summarizes LOS and delay for signalized and unsignalized intersections. Synchro 11 was used to determine the LOS. The initial conditions for the signalized intersections were compared to existing field condition observations during both peak hours. Based on a field review the existing queues observed are reflective of the existing conditions and no calibration is needed. A summary of the field observations can be found in Attachment 7E.

Table 15 Level of Service and Delay Summary

Level of Service	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)
A	≤10.0	≤10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	>80.0	>50.0

Table 16 below summarizes the operation analysis at each unsignalized intersection during the 2026 weekday AM and PM peak hours under No-Build and Build conditions, respectively. As shown, all unsignalized study area intersections are projected to operate at acceptable levels of service during the Build condition with the worst overall level of service projected to be LOS B.

Vehicle queues are reasonable and are accommodated at all study area unsignalized intersections.

Table 16 Capacity Analysis Summary Unsignalized

Intersection	2026 No Build				2026 Build			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Kennebec Street/Somerset Street & Preble Street								
AM Peak Hour								
Preble Street SELT	0.02	1.0	A	1	0.02	0.9	A	1
Preble Street SETR	0.12	0.0	N/A	0	0.14	0.0	N/A	0
Kennebec Street NETR	0.18	11.4	B	16	0.18	11.8	B	17
Somerset Street SWLT	0.07	12.7	B	6	0.07	13.1	B	6
Overall	**--**	**3.5**	**A**	**--**	**--**	**3.3**	**A**	**--**
PM Peak Hour								
Preble Street SELT	0.02	1.8	A	2	0.02	1.6	A	2
Preble Street SETR	0.08	0.0	N/A	0	0.09	0.0	N/A	0
Kennebec Street NETR	0.22	11.6	B	21	0.23	12.0	B	22
Somerset Street SWLT	0.13	12.6	B	11	0.13	13.1	B	12
Overall	**--**	**5.7**	**A**	**--**	**--**	**5.4**	**A**	**--**
Somerset Street & Elm Street								
AM Peak Hour								
Elm Street WBLTR	0.00	0.2	A	0	0.00	0.1	A	0
Somerset Street NELT	0.12	12.2	B	11	0.14	13.2	B	12
Somerset Street SWTR	0.11	11.0	B	10	0.13	11.7	B	11
Overall	**--**	**3.8**	**A**	**--**	**--**	**3.5**	**A**	**--**
PM Peak Hour								
Elm Street WBLTR	0.00	0.1	A	0	0.00	0.1	A	0
Somerset Street NELT	0.41	32.5	D	46	0.45	37.2	E	52
Somerset Street SWTR	0.68	28.6	D	126	0.72	32.3	D	140
Overall	**--**	**11.2**	**B**	**--**	**--**	**12.2**	**B**	**--**
Preble Street & Alder Street/Kennebec Street								
AM Peak Hour								
Alder Street EBTR	0.00	0.0	A	0	0.01	0.0	A	0
Kennebec Street WBLT	0.01	12.1	B	1	0.01	12.6	B	1
Preble Street SEL	0.02	7.3	A	1	0.02	7.3	A	1
Preble Street SETR	0.25	0.0	N/A	0	0.28	0.0	N/A	0
Overall	**--**	**0.5**	**A**	**--**	**--**	**0.5**	**A**	**--**
PM Peak Hour								
Alder Street EBTR	0.01	10.6	B	1	0.01	11.0	B	1
Kennebec Street WBLT	0.03	11.4	B	3	0.04	11.9	B	3
Preble Street SEL	0.01	7.3	A	1	0.01	7.3	A	1

Preble Street SETR	0.19	0.0	N/A	0	0.22	0.0	N/A	0
Overall	**--**	**1.2**	**A**	**--**	**--**	**1.0**	**A**	**--**
Elm Street & Kennebec Street								
AM Peak Hour								
Kennebec Street EBLT	0.03	11.3	B	3	0.04	12.1	B	3
Elm Street NWLTR	0.00	0.1	A	0	0.00	0.1	A	0
Overall	**--**	**0.7**	**A**	**--**	**--**	**0.6**	**A**	**--**
PM Peak Hour								
Kennebec Street EBLT	0.08	15.8	C	6	0.08	16.3	C	7
Elm Street NWLTR	0.01	0.3	A	1	0.01	0.3	A	1
Overall	**--**	**0.9**	**A**	**--**	**--**	**0.9**	**A**	**--**
Lancaster Street & Preble Street								
AM Peak Hour								
SELTR	0.05	1.7	A	4	0.05	1.6	A	4
NETR	0.03	12.5	B	2	0.03	13.0	B	2
SWLT	0.10	13.6	B	8	0.10	14.3	B	9
Overall	**--**	**3.1**	**A**	**--**	**--**	**3.0**	**A**	**--**
PM Peak Hour								
SELTR	0.01	0.8	A	1	0.01	0.7	A	1
NETR	0.01	10.9	B	1	0.01	11.3	B	1
SWLT	0.14	11.7	B	12	0.15	12.3	B	14
Overall	**--**	**3.8**	**A**	**--**	**--**	**3.5**	**A**	**--**
Lancaster Street & Elm Street								
AM Peak Hour								
NWLTR	0.02	0.8	A	1	0.02	0.6	A	1
NELT	0.22	13.7	B	21	0.25	15.3	C	24
SWTR	0.22	11.6	B	21	0.25	12.6	B	24
Overall	**--**	**6.5**	**A**	**--**	**--**	**6.2**	**A**	**--**
PM Peak Hour								
NWLTR	0.01	0.4	A	1	0.01	0.4	A	1
NELT	0.22	20.9	C	21	0.24	22.6	C	23
SWTR	0.35	16.3	C	38	0.37	17.3	C	42
Overall	**--**	**5.4**	**A**	**--**	**--**	**5.5**	**A**	**--**
Oxford Street & Preble Street								
AM Peak Hour								
SETR	0.21	0.0	N/A	0	0.24	0.0	N/A	0
SWLT	0.15	12.8	B	13	0.20	13.8	B	19
Overall	**--**	**2.4**	**A**	**--**	**--**	**2.8**	**A**	**--**
PM Peak Hour								
SETR	0.16	0.0	N/A	0	0.25	0.0	N/A	0
SWLT	0.15	11.9	B	13	0.20	14.1	B	19
Overall	**--**	**3.0**	**A**	**--**	**--**	**2.7**	**A**	**--**
Oxford Street & Elm Street								

AM Peak Hour								
NWLTR	0.04	1.7	A	3	0.05	1.7	A	4
PM Peak Hour								
NWLTR	0.03	1.0	A	3	0.04	1.1	A	3
Preble Street & Portland Street & Site Garage								
AM Peak Hour								
EBLR	0.43	14.1	B	55	0.51	16.1	C	73
SELT	0.01	0.2	A	0	0.04	1.4	A	3
SWL	0.04	22.8	C	3	0.89	101.4	F	159
Overall	**--**	**7.1**	**A**	**--**	**--**	**24.0**	**C**	**--**
PM Peak Hour								
EBLR	0.27	11.1	B	27	0.32	12.0	B	35
SELT	0.00	0.1	A	0	0.04	1.7	A	3
SWL	0.03	15.2	C	3	0.16	20.3	C	14
Overall	**--**	**5.7**	**A**	**--**	**--**	**7.7**	**A**	**--**
Elm Street & Site Garage								
AM Peak Hour								
NWLT	N/A	N/A	N/A	N/A	0.01	0.5	A	1
NEL	N/A	N/A	N/A	N/A	0.19	12.8	B	18
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**3.0**	**A**	**--**
PM Peak Hour								
NWLT	N/A	N/A	N/A	N/A	0.01	0.4	A	1
NEL	N/A	N/A	N/A	N/A	0.12	13.7	B	10
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**1.5**	**A**	**--**

+ Volume to capacity ratio

*Delay expressed in seconds per vehicles

**Level of Service

Queue measured in feet.

#95 percentile volume exceeds capacity, queue may be longer.

Table 17 summarizes the operational analysis at the signalized study area intersections during the 2026 weekday AM and PM peak hours under No Build and Build conditions, respectively. As shown, although each signalized intersection is anticipated to see a change in delay, all signalized study area intersections are not anticipated to decrease in overall level of service. It is important to note that the signal timings were measured during the peak hours in the field. The # symbol in the chart indicates that the volumes for 95th percentile cycle exceeds capacity, however, queuing was not noted to extend into adjacent intersections. The installation of adaptive signal control would enable the intersection to operate at optimal conditions throughout the day.

Table 17 Capacity Analysis Summary Signalized

Intersection	2026 No Build				2026 Build			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Marginal Way & Preble Street/Elm Street/Preble Street Ext								
AM Peak Hour								
Preble Street Ext SEL	0.65	34.9	C	222	0.66	36.3	D	227
Preble Street Ext SETR	0.35	23.3	C	128	0.36	23.9	C	132
Preble/Elm Street NWL	0.41	39.7	D	99	0.53	44.3	D	#146
Preble/Elm Street NWTR	0.47	29.0	C	94	0.52	30.8	C	110
Marginal Way NEL	0.31	39.5	D	59	0.32	41.2	D	60
Marginal Way NETR	0.58	35.3	D	139	0.65	37.6	D	156
Marginal Way SWL	0.35	40.5	D	84	0.43	43.9	D	100
Marginal Way SWT	0.50	31.8	C	189	0.49	32.1	C	193
Marginal Way SWR	0.29	2.6	A	14	0.29	2.5	A	13
Overall	**--**	**28.7**	**C**	**--**	**--**	**30.6**	**C**	**--**
PM Peak Hour								
Preble Street Ext SEL	0.79	49.7	D	#316	0.79	49.9	D	#316
Preble Street Ext SETR	0.34	22.6	C	101	0.37	24.1	C	110
Preble/Elm Street NWL	0.73	52.9	D	#224	0.78	55.6	E	#259
Preble/Elm Street NWTR	0.84	46.6	D	#268	0.85	47.3	D	#278
Marginal Way NEL	0.55	59.6	E	#106	0.55	59.8	E	#106
Marginal Way NETR	0.58	36.2	D	203	0.64	37.9	D	219
Marginal Way SWL	0.41	50.1	D	85	0.49	52.7	D	99
Marginal Way SWT	0.78	44.3	D	317	0.78	44.4	D	317
Marginal Way SWR	0.53	6.4	A	66	0.53	6.4	A	66
Overall	**--**	**38.2**	**D**	**--**	**--**	**39.2**	**D**	**--**
Cumberland Avenue & Preble Street								
AM Peak Hour								
Preble Street SEL	0.55	16.9	B	172	0.55	16.9	B	174
Preble Street SETR	0.47	14.4	B	150	0.53	15.2	B	170
Cumberland Avenue NETR	0.53	16.9	B	132	0.54	17.1	B	133
Cumberland Avenue SWL	0.04	9.5	A	11	0.04	9.6	A	11
Cumberland Avenue SWT	0.19	10.4	B	53	0.19	10.5	B	53
Overall	**--**	**15.4**	**B**	**--**	**--**	**15.6**	**B**	**--**
PM Peak Hour								
Preble Street SEL	0.38	17.0	B	97	0.37	16.7	B	97
Preble Street SETR	0.45	16.1	B	114	0.49	16.4	B	127
Cumberland Avenue NETR	0.48	16.3	B	140	0.49	17.0	B	148
Cumberland Avenue SWL	0.07	7.3	A	14	0.07	7.7	A	14
Cumberland Avenue SWT	0.42	10.1	B	93	0.43	10.6	B	98
Overall	**--**	**14.2**	**B**	**--**	**--**	**14.6**	**B**	**--**

Cumberland Avenue & Elm Street								
AM Peak Hour								
Elm Street NWL	0.03	14.1	B	12	0.03	14.1	B	12
Elm Street NWTR	0.39	16.9	B	81	0.39	16.9	B	81
Cumberland Avenue NEL	0.27	7.7	A	45	0.28	7.7	A	47
Cumberland Avenue NET	0.46	9.3	A	119	0.46	9.3	A	119
Cumberland Avenue SWT	0.24	17.5	B	64	0.24	17.5	B	64
Cumberland Avenue SWR	0.22	3.6	A	18	0.26	4.8	A	24
Overall	**--**	**10.8**	**B**	**--**	**--**	**10.8**	**B**	**--**
PM Peak Hour								
Elm Street NWL	0.09	16.2	B	31	0.09	16.2	B	31
Elm Street NWTR	0.59	22.5	C	162	0.59	22.5	C	162
Cumberland Avenue NEL	0.23	8.9	A	48	0.24	9.0	A	50
Cumberland Avenue NET	0.37	10.2	B	124	0.37	10.1	B	124
Cumberland Avenue SWT	0.54	23.0	C	152	0.54	23.1	C	152
Cumberland Avenue SWR	0.34	5.9	A	40	0.37	5.9	A	42
Overall	**--**	**15.4**	**B**	**--**	**--**	**15.3**	**B**	**--**
Forest Avenue & Park Avenue/Portland Street								
AM Peak Hour								
Park Avenue EBL	0.13	12.4	B	29	0.13	14.3	B	32
Park Avenue EBTR	0.43	14.6	B	120	0.45	16.7	B	138
Portland Street WBL	0.04	19.8	B	15	0.04	21.7	C	16
Portland Street WBTR	0.49	20.6	C	120	0.52	23.2	C	143
Forest Avenue NBLTR	0.25	13.0	B	81	0.27	13.1	B	96
Forest Avenue SBL	0.56	19.1	B	153	0.62	20.9	C	187
Forest Avenue SBT	0.50	16.2	B	176	0.47	15.6	B	183
Forest Avenue SBR	0.03	0.1	A	0	0.03	0.1	A	0
Overall	**--**	**16.5**	**B**	**--**	**--**	**17.7**	**B**	**--**
PM Peak Hour								
Park Avenue EBL	0.12	10.9	B	29	0.12	12.3	B	32
Park Avenue EBTR	0.32	11.9	B	103	0.33	13.3	B	117
Portland Street WBL	0.03	19.4	B	14	0.03	21.2	C	15
Portland Street WBTR	0.57	21.2	C	175	0.59	23.1	C	197
Forest Avenue NBLTR	0.35	16.6	B	109	0.35	16.4	B	117
Forest Avenue SBL	0.55	22.3	C	149	0.60	23.7	C	175
Forest Avenue SBT	0.38	17.2	B	141	0.36	16.7	B	143
Forest Avenue SBR	0.05	0.2	A	0	0.04	0.1	A	0
Overall	**--**	**17.3**	**B**	**--**	**--**	**18.3**	**B**	**--**

+ Volume to capacity ratio

*Delay expressed in seconds per vehicles

**Level of Service

Queue measured in feet.

#95 percentile volume exceeds capacity, queue may be longer.

Oxford Street 2-Way Conversation Analysis

It was requested at the scoping meeting that converting Oxford Street to two-way flow from Elm Street to Portland Street be evaluated. Table 18 summarizes the operational analysis at the following intersections during the 2026 weekday AM and PM peak hours with Oxford Street operating as a 2-way road:

- Portland Street / Oxford Street (Unsignalized)
- Oxford Street / Preble Street (Unsignalized)
- Oxford Street / Elm Street (Unsignalized)
- Cumberland Avenue / Preble Street (Signalized)
- Cumberland Avenue / Elm Street (Signalized)

Since all vehicle trips are oriented towards the garage, no site generated trips are redistributed because this conversion creates additional turns to enter the site if coming from Portland Street. 10% of exiting site trips already were assigned to use Oxford Street to Portland Street, so no additional exiting trips have been redistributed.

The conversion to two way will provide a potential route for the left turning vehicles from Preble Street to Cumberland Avenue to reduce travel time. 25% of those vehicles were estimated to utilize Oxford Street and travel to Pearl Street and connect back to Cumberland Avenue during the AM and PM peak hours. The total number of trips being reassigned are 35 AM and 21 PM trips. Half of the vehicles being reassigned originated from Portland Street traveling straight onto Oxford towards Pearl Street while the other half were traveling southbound on Preble and turning left on Oxford Street towards Pearl Street.

Table 18 Capacity Analysis Summary 2-Way Oxford Street

Intersection	2026 Build				2026 2-Way Oxford			
Peak Hour	**v/c⁺**	**Delay***	**LOS****	**Queue**	**v/c⁺**	**Delay***	**LOS****	**Queue**
Portland Street & Oxford Street (Unsignalized)								
AM Peak Hour								
EBLT	N/A	N/A	N/A	N/A	0.02	1.0	A	2
SWLTR	N/A	N/A	N/A	N/A	0.04	8.4	A	3
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**1.7**	**A**	**--**
PM Peak Hour								
EBLT	N/A	N/A	N/A	N/A	0.01	0.8	A	1
SWLTR	N/A	N/A	N/A	N/A	0.05	8.5	A	4
Overall	**--**	**N/A**	**N/A**	**--**	**--**	**2.1**	**A**	**--**
Oxford Street & Preble Street (Unsignalized)								
AM Peak Hour								
SETR	0.24	0.0	N/A	0	0.22	0.0	N/A	0
SWLT	0.20	13.8	B	19	0.19	13.5	B	18
NET	N/A	N/A	N/A	N/A	0.07	12.0	B	5
Overall	**--**	**2.8**	**A**	**--**	**--**	**3.6**	**A**	**--**

PM Peak Hour								
SETR	0.25	0.0	N/A	0	0.24	0.0	N/A	0
SWLT	0.20	14.1	B	19	0.04	12.2	B	3
NET	N/A	N/A	N/A	N/A	0.20	14.0	B	19
Overall	**--**	**2.7**	**A**	**--**	**--**	**3.2**	**A**	**--**
Oxford Street & Elm Street (Unsignalized)								
AM Peak Hour								
NWLTR	0.05	1.7	A	4	0.05	1.8	A	4
NELT	N/A	N/A	N/A	N/A	0.19	16.2	C	17
Overall	**--**	**1.7**	**A**	**--**	**--**	**3.8**	**A**	**--**
PM Peak Hour								
NWLTR	0.04	1.1	A	3	0.04	1.1	A	3
NELT	N/A	N/A	N/A	N/A	0.15	18.7	C	13
Overall	**--**	**1.1**	**A**	**--**	**--**	**2.2**	**A**	**--**
Cumberland Avenue & Preble Street (Signalized)								
AM Peak Hour								
Preble Street SEL	0.55	16.9	B	174	0.42	14.9	B	129
Preble Street SETR	0.53	15.2	B	170	0.54	15.5	B	170
Cumberland Avenue NETR	0.54	17.1	B	133	0.53	16.7	B	133
Cumberland Avenue SWL	0.04	9.6	A	11	0.04	9.3	A	11
Cumberland Avenue SWT	0.19	10.5	B	53	0.19	10.2	B	53
Overall	**--**	**15.6**	**B**	**--**	**--**	**15.0**	**B**	**--**
PM Peak Hour								
Preble Street SEL	0.37	16.7	B	97	0.27	15.7	B	75
Preble Street SETR	0.49	16.4	B	127	0.49	16.4	B	127
Cumberland Avenue NETR	0.49	17.0	B	148	0.49	17.0	B	148
Cumberland Avenue SWL	0.07	7.7	A	14	0.07	7.7	A	14
Cumberland Avenue SWT	0.43	10.6	B	98	0.43	10.6	B	98
Overall	**--**	**14.6**	**B**	**--**	**--**	**14.4**	**B**	**--**
Cumberland Avenue & Elm Street (Signalized)								
AM Peak Hour								
Elm Street NWL	0.03	14.1	B	12	0.03	14.1	B	12
Elm Street NWTR	0.39	16.9	B	81	0.39	17.0	B	81
Cumberland Avenue NEL	0.28	7.7	A	47	0.29	7.8	A	47
Cumberland Avenue NET	0.46	9.3	A	119	0.38	8.5	A	93
Cumberland Avenue SWT	0.24	17.5	B	64	0.25	17.7	B	64
Cumberland Avenue SWR	0.26	4.8	A	24	0.27	4.9	A	24
Overall	**--**	**10.8**	**B**	**--**	**--**	**10.7**	**B**	**--**
PM Peak Hour								
Elm Street NWL	0.09	16.2	B	31	0.09	16.2	B	31
Elm Street NWTR	0.59	22.5	C	162	0.59	22.4	C	162
Cumberland Avenue NEL	0.24	9.0	A	50	0.24	9.0	A	50
Cumberland Avenue NET	0.37	10.1	B	124	0.32	9.6	A	106

Cumberland Avenue SWT	0.54	23.1	C	152	0.54	23.2	C	152
Cumberland Avenue SWR	0.37	5.9	A	42	0.37	5.9	A	42
Overall	**--**	**15.3**	**B**	**--**	**--**	**15.4**	**B**	**--**

As shown, the change to two-way Oxford is not forecasted to change the overall level of service at these intersections, however the Preble Street southeast left onto Cumberland Avenue sees a slight increase in capacity.

Although converting Oxford Street to 2-Way flow does open circulation options, the analysis does not show a significant enough change or improvement to be recommended.

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Crash History

The crash data were obtained from MaineDOT for an expanded area determined by the City of Portland during the project scoping meeting. The study area for reviewing high crash locations (HCLs) is bounded by I-295, Forest Avenue, Franklin Street, and Cumberland Street. It is important to note that the original crash data submitted in Section 2 of the TMP shows data from 2019-2021, the most recent three-year period available during time of submission. There were no HCLs identified during that three-year period. For this study, the data obtained were updated crash data from MaineDOT for the period of 2020-2022, the most recent three-year period now available.

In order to evaluate whether a location qualifies as a High Crash Location (HCL), MaineDOT uses two criteria. 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 indicated 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 were 11 HCLs (8 intersections and 3 segments) identified in the site vicinity. In addition to the HCLs, one non-HCL intersection was identified for further review at the scoping meeting per request of the City of Portland.

Intersections

Node 18523: Marginal Way / Preble Street/Preble Street Extension (Total of 19 Crashes, CFR = .89)

- This intersection was recently reconstructed in 2022 so may have already addressed the 2020-2022 high crash history at that time.
- Marginal Way westbound rear-end (5 crashes): This crash pattern appears to have occurred during the midday and afternoon period. Four of the five crashes occurred during a weekday and four of the five crashes were caused by following too closely. This issue may be due to insufficient clearance times. A countermeasure could include increasing clearance times to allow more vehicles to clear the intersection.

- Preble Street Extension southbound angle (3 crashes): One of the crashes involved a possible injury. Two of the three crashes were caused by a driver running a red light. The countermeasure of increasing clearance times may reduce this crash occurrence as well.

Node 16836: Forest Avenue / Marginal Way/Kennebec Street/State Street (Total of 49 Crashes, CFR = 1.38)

- Marginal Way southwest rear-end (10 crashes): Nine out of the 10 crashes were identified as "follow too close" at this yield movement. It is possible that the yield sign is not visible to motorists due to tree branches blocking it. A countermeasure could include recommending the removal of obstructive tree branches for better line of sight and converting from a yield condition to a stop.
- Forest Avenue southbound through movement rear-end (6 crashes): Three of the six crashes were identified as "follow too close". A countermeasure could include increasing clearance times to allow more vehicles to clear the intersection.
- Forest Avenue southbound sideswipe (6 crashes): Four of the six crashes were identified as "improper turn". The other two crashes failed to keep in lane and disregarded road markings. Two of the crashes resulted in a minor injury and a possible injury. There may not be sufficient space to accommodate queuing and lane changes where the 295 northbound off-ramp enters Forest Avenue as a yield movement which could be contributing to this sideswipe activity. A countermeasure would be to add lane use signs for each lane on the mast arms.
- Forest Avenue southbound rear-end (6 crashes): all six of the crashes were identified as "follow too closely" at this yield movement. Three of the six crashes resulted in possible injury. Increasing clearance time could reduce this crash occurrence as well.

Node 19029: Cumberland Avenue / Forest Avenue (Total of 17 Crashes, CFR = 1.03)

- Cumberland Avenue eastbound through angle collision (7 crashes): Three of the seven crashes at this location were caused by "ran red light" while the other four crashes resulted from various reasons including "fail to yield", "Hit and run" and unknown. Two of the crashes resulted in possible injury while one resulted in minor injury. This issue may be due to insufficient clearance times. A countermeasure could include increasing clearance times to more safely process vehicles through the intersection and adding sun shields to the signal heads for better visibility.
- Forest Avenue southbound through angle collision (3 crashes): These crashes were caused by "ran red light" and "fail to yield". Similarly, it is recommended that the clearance time be increased and adding sun shields to the signal heads for better visibility.

Node 19040: Chestnut Street / Cumberland Avenue (Total of 9 crashes, CFR = 3.13)

- Cumberland Avenue northeast bound rear-end collision (3 crashes): These three crashes were identified as "follow too close" and occurred when pedestrians were crossing. A motorist stopped to yield to a pedestrian and another motorist then rear-ended not stopping in time. This intersection is adjacent to Portland High School which experiences a significant amount of school related pedestrian traffic. Based on review of the area, there is already a high visibility crosswalk pattern on all four crossing legs as well as crossing signage.

Node 19049: Forest Avenue / Park Avenue / Portland Street (Total of 22 crashes, CFR = 1.27)

- Portland Street westbound angle collision (3 crashes): The angled crashes at this location were identified as "improper turn" and "failed to yield". The right-turn lane is missing lane markings as there was a patch job that was not restriped after. A countermeasure would be to add right turn arrow pavement markings and define the bike lane and right-turn travel lane.
- Forest Avenue northbound angle collision (4 crashes): All four of these crashes were identified as "fail to yield". One crash resulted in a minor injury. Although the crash report is not available, based on the diagram it appears that left-turning vehicles traveling southbound on Forest Avenue did not yield to vehicles traveling through on Forest Avenue northbound. Protected phasing strategies for the left-turns on Forest Avenue in the southbound left movement could be explored as a counter measure as well as installing a left turn yield on green sign.

Node 19193: Forest Avenue / 1-295 NB Exit 6B Off Ramp (Total of 32 crashes, CFR = 6.47)

- 1-295NB Exit 6B Off Ramp rear-end collision (31 crashes): Twenty-three of these crashes were identified as "follow too close" while the additional reasons include "fail to yield" or "inattention". Eight of these crashes involved a possible injury. Thirteen of these crashes occurred during the evening peak period and the sunsetting could potentially be a factor. The yield sign is not always visible from the queue due to the tree branches blocking it. The crosswalk striping is also faded. Counter measures could include making the yield sign more visible and restriping the crosswalk with high visible markings.

Node 19197: Franklin Street / 1-295 NB Exit 7 Off Ramp (Total of 25 crashes, CFR = 1.52)

- 1-295 NB Exit 7 Off Ramp rear-end collision (8 crashes): Seven of these crashes are identified as "follow too close" and one is "hit and run".
- I-295 NB Exit 7 Off Ramp angle collision (11crashes): Five of these crashes are identified as "ran red light" while the remaining six were caused by "fail to yield".
- This intersection often experiences spill back from the upstream intersection during peak period conditions.

Node 60342: Forest Avenue / I-295 NB Exit 6A Off Ramp (Total of 16 crashes, CFR = 3.5)

- 1-295NB Exit 6A Ramp Off rear-end collision (13 crashes): Twelve of the crashes at this off ramp were identified as "follow too close".

Node 72190: Chestnut Street / Marginal Way (Total of 12 crashes. CFR = 2.37)

- Chestnut Street northwest bound angle collision (5 crashes): All five of these crashes were identified as "fail to yield". This intersection was recently modified and now includes a stop-bar on the Chestnut Street stop approach, therefore these improvements might help mitigate this pattern of crashes.

Roadway Segments

Node 60346-18999: Marginal Way from Forest Avenue Island to Hanover Street (Total of 8 crashes, CFR = 1.48)

› This section of Marginal Way is one lane in each direction with a shared center left-turn lane. No consistent crash patterns were identified as the crashes were spread out throughout the corridor and were caused by various issues therefore no countermeasures are recommended.

Node 71632-72190: Marginal Way from Preble Street Island to Chestnut Street (Total of 13 crashes, CFR = 2.02)

› No consistent crash patterns were identified as the crashes were spread out throughout the corridor and were caused by various issues therefore no countermeasures are recommended.

Node 72190-71634: Marginal Way from Chestnut Street to Franklin Street Island (Total of 9 crashes, CFR = 1.03)

› Marginal Way northeast bound angle collision (3 crashes): The angle collisions were due to "fail to yield". It is assumed that drivers making a left-turn from the Marginal Way southwest bound direction did not yield to motorists traveling through. The close proximity of two commercial driveways to one another and allowing left-turns in could be a factor for these crashes. No countermeasures are recommended since these are commercial driveways.

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Recommendations

Based on the evaluations completed above, a number of infrastructure investments are recommended in conjunction with the project. Although there are limited capacity impacts, there are pedestrian needs in the study area as well as existing safety concerns to address. It is recommended that these improvements be constructed prior to the occupancy of this project.

Pedestrian Improvements

To improve pedestrian connections throughout the study area, the project will reconstruct the following blocks of sidewalk:

- Oxford Street from Portland Street to Chestnut Street
- Cedar Street from Oxford Street to Lancaster Street

To safety cross residents between the parking garage and their various building destinations, all crosswalks on Preble Street between Lancaster Street and Cumberland Avenue be re-striped with high visibility paint.

Safety Improvements

Infrastructure improvements are recommended to improve safety at study area intersections. Based on the crash history, the following items are proposed:

Forest Avenue / Marginal Way/Kennebec Street/State Street

- Remove obstructive tree branches for better line of sight and convert Marginal Way southwest bound right from a yield condition to a stop.
- Add lane use signs for each approach on the mast arms.
- Increase clearance times to allow more vehicles to clear the intersection.

Cumberland Avenue / Forest Avenue

- Add sun shields to the signal heads for better visibility.

Forest Avenue / Park Avenue / Portland Street

- Add right turn arrow pavement markings and define the bike lane and right-turn travel lane on Portland Street westbound.
- Install a left turn yield on green sign for left turns from Forest Avenue to Portland Street.
- Increase clearance times to allow more vehicles to clear the intersection.

Forest Avenue / Marginal Way/Kennebec Street/State Street

- Remove obstructive tree branches on Marginal Way for better line of sight.
- Add lane use signs for each lane for the Forest Avenue approaches.
- Increase clearance times to allow more vehicles to clear the intersection.

Traffic Signal Timing Evaluation

After the project is occupied, a post-occupancy traffic signal evaluation will be performed at the Marginal Way intersection with Elm Street to confirm adequate operation.

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Summary and Conclusions

The project consists of 215 multi-family housing units, 201 affordable housing units, and 14,000 sf of commercial space comprising of retail, restaurant, and a coffee shop. The project is located at 89 Elm Street, 60 Elm Street, and 196 Lancaster Street. All uses are anticipated to utilize the Portland Public Market Garage, a seven-level, 595-space parking structure. Vehicular access to and from the garage is provided on both Preble Street and Elm Street.

The proposed development program is anticipated to generate 230 and 162 new vehicular trips during the AM and PM peak hours respectively. With these trips distributed onto the adjacent roadway network, the overall level of service is expected to operate at acceptable levels in 2026 during both the no-build and build conditions.

As the project is occupied a post-occupancy traffic signal evaluation will be performed at the study area signalized intersections.

Attachment 7A

Site Location Map

Site Plans

MATCH LINE SHT. 2

LANCASTER STREET EAST (50' WIDE)

PREBLE STREET (56.5' WIDE)

ELM STREET (49.5' WIDE)

CEDAR STREET (33' WIDE)

CHESTNUT STREET (49.5' WIDE)

OXFORD STREET (49.5' WIDE)

PORTLAND ST.

CUMBERLAND AVE.

HALL COURT

PASSAGE

ONE WAY

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

89 ELM STREET LLC
39779/246
4,691 S.F. ±

89 ELM STREET LLC
39779/236
38,462 S.F. ±
0.88 ACRES ±

WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±

73 ELM ST.
73 ELM STREET LLC
39779/234
14,879 S.F. ±
0.34 ACRES ±

60 ELM ST.
60 ELM STREET LLC
39779/230
11,535 S.F. ±
0.26 ACRES ±

62 ELM ST.
WBP COMMERCIAL LLC
39779/229
14,526 S.F. ±
0.33 ACRES ±

158 LANCASTER ST.
WBP COMMERCIAL LLC
39773/225
14,307 S.F. ±
0.33 ACRES ±

82 CHESTNUT ST.
WBP COMMERCIAL LLC
39779/221
3,442 S.F. ±
0.08 ACRES ±

78 CHESTNUT ST.
197 OXFORD STREET LLC
39779/243
12,721 S.F. ±
0.30 ACRES ±

193 OXFORD ST.
197 OXFORD STREET LLC
39779/239
11,550 S.F. ±
0.265 ACRES ±

31 CEDAR ST.
197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- EM/GM ELECTRIC/GAS METER
- MB MAILBOX
- SIGN
- PM PARKING METER
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- LIGHT POLE
- GAS VALVE
- DECIDUOUS TREE
- FENCE
- CURB
- OHW OVERHEAD WIRES
- UGE UNDERGROUND POWER
- W WATER LINE
- G GAS LINE
- T TELEPHONE
- SD STORM DRAIN
- SS SANITARY SEWER
- 100 1' CONTOUR
- IPF/IRF IRON PIPE/ROD FOUND
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK / PAGE
- TM TAX MAP–BLOCK–LOT
- CONC. CONCRETE

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 SURVEY HAS NOT PHYSICALLY LOCATION THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

PLAN REFERENCES

ALTA/NSPS LAND TITLE SURVEYS, BAYSIDE I, LLC, BAYSIDE II, LLC, BAYSIDE III, LLC, BAYSIDE IV, LLC, CEDAR ST., LANCASTER ST. EAST, CHESTNUT ST., PREBLE ST. & OXOFRD ST., PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR BUSH–WATSON SEPT. 2022 BY OWEN HASKELL, INC.

GENERAL NOTES

1. OWNERS OF RECORD: AS NOTED ON PLAN
2. BEARINGS ARE BASED ON MAINE STATE GRID WEST ZONE PER COORDINATES ON CONTROL POINTS PROVIDED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT.
3. ELEVATIONS BASED ON NGVD 1929. CITY BENCHMARK TBM 307 MDOT DISK "612–(1)–10 1983" IN CONCRETE BASE OF LIGHT POLE AT NORTHEAST CORNER ELM/SOMERSET ELEVATION = 9.02.
4. STREET LINES SHOWN ARE BASED ON MONUMENTATION FOUND AND TIES TO BUILDINGS PER SURVEYED BY E.C. JORDAN CO.
5. OWNERSHIP OF FENCES AND RETAINING WALLS ALONG PROPERTY LINES HAS NOT BEEN DETERMINED.

STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

Topographic Survey
Bayside Parcels
Lancaster, Preble, Elm, Cedar, Chestnut and Oxford Streets, Portland, Maine
Made for
Bush-Watson
188 State Street, 3rd Floor, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: RS / JLW	DATE: DEC. 8, 2022	JOB NO. 2022-162 P	
CHECKED BY: RRL	SCALE: 1" = 30'	DRWG. NO. 1	

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	.86 AC
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	6.66 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	5 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	3.85 FT
MINIMUM SIDE YARD SETBACK	N/A	2.91 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT	80'*	< 80 FT

* PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	.86 AC
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	6.66 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.88 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.09 FT
LOT WIDTH	20 FT	89.51 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	–

GENERAL NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.

REFERENCES:

1. PLAN REFERENCE
   1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022

LEGEND:
- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

20 0 20 40
SCALE: 1" = 20'

PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
EXISTING CURB, CROSSWALK, AND DETECTABLE PAD
PROPOSED STREET TREE PER DETAIL AND LA, TYP.
PROPOSED PATIO PER LA
ZONE B7
ZONE B3
ZONE R6
ZONING DISTRICT BOUNDARY, TYP.
LANCASTER STREET
PROPOSED REINFORCED CONCRETE SIDEWALK
EXISTING CURB CUT TO REMAIN AND BE MODIFIED
EXISTING PARKING LOT TO REMAIN
PROPOSED SEAT WALL PER LA
CANOPY ABOVE, TYP.
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
LOBBY
MECHANICAL ROOM
56 CEDAR STREET
PROPOSED PROPERTY LINE, TYP.
CURB CUT TO BE CLOSED
TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341
EXISTING LIGHT POLE TO REMAIN, TYP.
BIKE STORAGE
MAIL/PACKAGES
PROPOSED RETAINING WALL AND GUARDRAIL/FENCE PER STRUCTURAL ENGINEER
EX. RETAINING WALL TO REMAIN WITH MODIFICATIONS AS SHOWN
TM 26-A-11
N/F ROBERT HYDE
27470/68
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
SETBACK LINE, TYP.
COMMUNITY ROOM
STORAGE/ LAUNDRY
PR. LOCATION OF 9'X9' PADMOUNT TRANSFORMER
50 CEDAR STREET
EXISTING PARKING AND CURB CUT TO REMAIN
EXISTING HOME TO REMAIN
TM 26-A-8
N/F ALBERT
BRESETTE
7951/275
196 LANCASTER STREET LLC
39779/232
ELM STREET (ONE-WAY)
PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS
PROPOSED WOOD GUARDRAIL PER DETAIL
PR. PAVEMENT
N/F AMELIA A. LABRECK
37970/11
EX. STREET TREES TO REMAIN, TYP.
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
2ND STORY
HALL COURT
TM 26-B-1
N/F ROBERT HYDE
27470/68
TM 26-B-2,3
N/F ALBERT
BRESETTE
12 PARKING STALLS TO BE STRIPED
EXISTING PARKING LOT TO REMAIN
3 STORY CONCRETE
WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±
CEDAR STREET (ONE-WAY)
46 CEDAR STREET
PROPOSED DRIVEWAY AND MODIFIED CURB CUT
PR. STAIRS AND RAMP WITH RAILINGS
SEAT WALL OR CURB AND DECORATIVE RAILING AT ELM STREET ENTRY, TYP. OF 3
PROPOSED RESURFACED PARKING LOT
PROPOSED 22' WIDE ACCESS AND UTILITY EASEMENT
PR. LOCATION OF SOLID WASTE
TM 26-B-14
N/F MARY LEE
BENNISON
27956/297
6' SIDEWALK PER DETAIL
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL
PR. MULCH AND SHRUBS
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
RESIDENTIAL
3RD STORY
TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336
PR. RETAINING WALL
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C-20
RETAIL SPACE
OXFORD STREET LLC
39779/234
1,679 S.F. ±
0.34 ACRES ±
OXFORD STREET LLC
39779/241
3,674 S.F. ±
2-1/2 STORY WOOD FRAME
1 STORY BRICK
EXISTING LIGHT POLE AND OVERHEAD WIRES TO BE REMOVED AND REROUTED
EXISTING TREE TO BE REMOVED
ABUTTER'S CURB CUT TO REMAIN
TEMP. CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL PLAN TO BE DEVELOPED BY CONTRACTOR AND SUBMITTED TO CITY PRIOR TO CONSTRUCTION
OXFORD STREET (ONE-WAY)

PRELIMINARY
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23

DRAWING NAME: SITE PLAN
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: TOM WATSON & CO., LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE USED FOR OTHER PROJECTS OR, OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ENGINEERING
PO BOX 3372 • 290 NE MAIN STREET • AUBURN, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
10509
LICENSED PROFESSIONAL ENGINEER
2/13/23

DRAWING NO.
C-10

REFERENCES:

1. EXISTING CONDITIONS PROVIDED BY "TOPOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBLE, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE" PREPARED FOR BUSH WATSON DATED DECEMBER 6, 2022 BY OWEN HASKELL, INC.UTILITY INFORMATION OBTAINED FROM PORTLAND WATER DISTRICT MAPPING, UNITIL MAPPING, AND THE CITY OF PORTLAND GIS DATA CATALOG.
2. ADDITIONAL EXISTING INFORMATION FROM CAD FILE PROVIDED BY OWEN HASKELL, INC. OF "BOUNDARY & TOPOGRAPHIC SURVEY AT 117 PREBLE STREET, PORTLAND, MAINE" DATED SEPTEMBER 28, 2015.

SPACE AND BULK STANDARDS

ZONING DISTRICT	DOWNTOWN BUSINESS (B3)	MIXED DEVELOPMENT (B7)	RESIDENTIAL (R6)
MINIMUM LOT AREA	N/A	N/A	VARIES
MINIMUM STREET FRONTAGE	15 FT	N/A	20 FT
MAX FRONT YARD SETBACK	5 FT	10 FT	N/A
MINIMUM FRONT YARD SETBACK	N/A	N/A	5 FT
MINIMUM REAR YARD SETBACK	N/A	N/A	10 FT
MINIMUM SIDE YARD SETBACK	N/A	N/A	5 FT
LOT WIDTH	N/A	N/A	20 FT
MINIMUM LENGTH OF BUILDING WALL AT MAX SETBACK	N/A	75% OF STREET FRONTAGE OR 25% OF BUILDING PERIMETER	N/A
LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	N/A	N/A
FLOOR AREA	NONE, EXCEPT 15,000 SF FOR EACH FLOOR ABOVE 125 FT		
MAXIMUM BUILDING HEIGHT	PER DOWNTOWN AND BAYSIDE OVERLAY MAPS	PER BAYSIDE OVERLAY MAP	45 FT
LOT COVERAGE (MAX)	N/A*	N/A	60%
LANDSCAPED OPEN SPACE RATIO	N/A	N/A	20%
*MAX 25% OF LOT AREA FOR PORTIONS OF STRUCTURES EXCEEDING 125 FEET IN HEIGHT			

LEGEND:

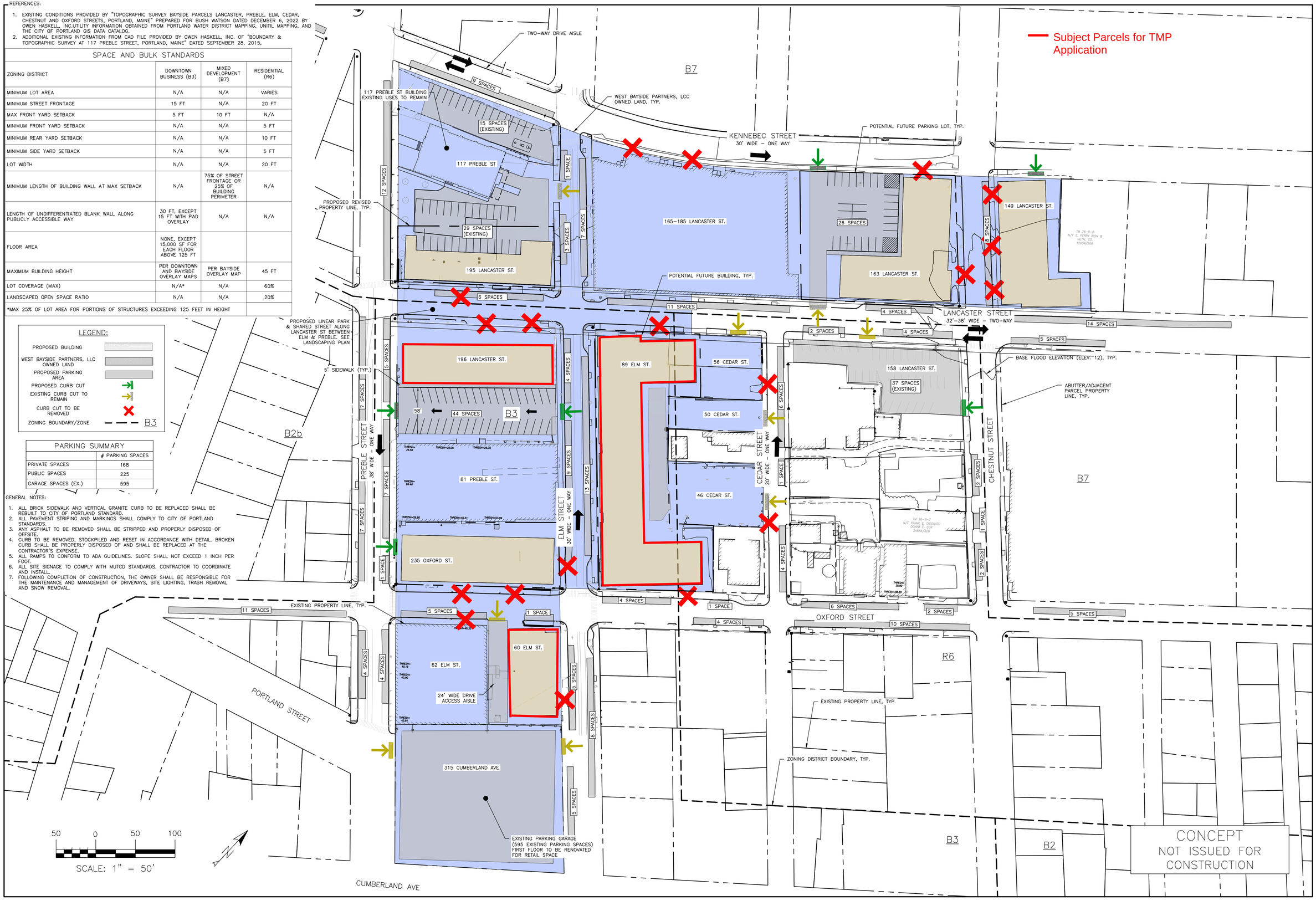
- PROPOSED BUILDING
- WEST BAYSIDE PARTNERS, LLC OWNED LAND
- PROPOSED PARKING AREA
- PROPOSED CURB CUT
- EXISTING CURB CUT TO REMAIN
- CURB CUT TO BE REMOVED
- ZONING BOUNDARY/ZONE — B3

PARKING SUMMARY

	# PARKING SPACES
PRIVATE SPACES	168
PUBLIC SPACES	225
GARAGE SPACES (EX.)	595

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.



ISSUED FOR	BY	DATE
MASTER DEVELOPMENT PLAN	WHS	12/23/22
TMP	WHS	2/2/23

DRAWING NAME: MASTER SITE PLAN

PROJECT NAME: WEST BAYSIDE MASTER DEVELOPMENT PLAN

CLIENT: WEST BAYSIDE PARTNERS, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
PO BOX 3422 PORTLAND, MAINE 04104
(207) 775-2655

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1093.13_CIVIL
JN:	1093.13
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
WILLIAM H. SAVAGE
11419
2/2/2023
LICENSED PROFESSIONAL ENGINEER

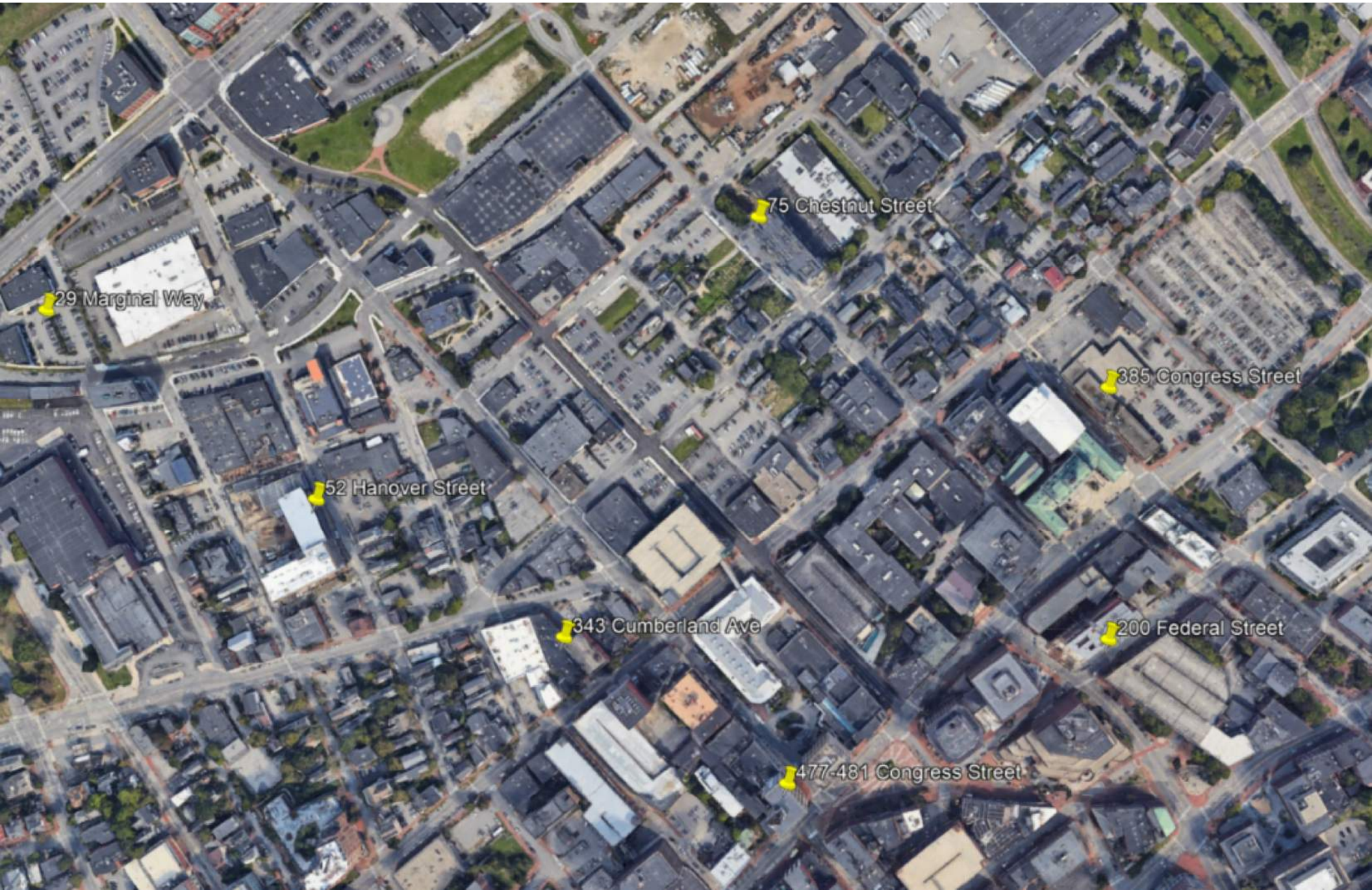
DRAWING NO.
C-10


ELEVATION=16.25
BIKE
ZONE B-7
ZONE B-3
RETAIL
1,156 SF
RESIDENTIAL
LOBBY
VEST
PACKAGE
FCC
BIKE
STORAGE
T/D
TRASH
ELEC
WATER
/ FP
RETAIL
4,521 SF
+17.1
+17.3
+17.9
+21.8
+23.5
+23.29
+24.28
+24.55
+25.05
+35
20.1
38 90° / 34 75°
PARKING SPACES
ZONE B-2B
ZONE B-3
(50.5' WIDE)
(49.5' WIDE)
STREET
89 ELM STREET LLC
36779/235
269'


RELOCATE
TRANSFORMER
CURRENT
+30.00
+32.00
+40.31
+53.99
+34.00
+36.00
+36.80
PATIO
1,098 SF
+36.00
24.57'
18.33'
+LOADING
NEW
+34.80
THRESH=
29.91
THRESH=
30.73
TRASH
EMR
BIKE
STORAGE
ELEC
WATER
/ FP
T/D
+34.80
AMENITY ABOVE
2,070 SF +45.40
RETAIL
3,246 SF
+37.58
RETAIL
3,242 SF
+42.75
RESIDENTIAL LOBBY
2,493 SF
+42.00
VEST
+42.00
235 OXFORD
ELEVATION=35.64
+37.58
+42.75
11.00'
60 Elm Street
OXFORD STRE
ELEVATION=46.56
+43.00
+45.00
RETAIL
1,953 SF
TRASH
+44.00
+44.00
EMR
BIKE
STORAGE
62 ELM
+53.75
NEW
T/D
+48.00
60 ELM
VEST
+48.00
RELOCATE
TRANSFORMER
ELEC
FCC
EASEMENT
6921/105
RESIDENTIAL LOBBY
2,671 SF
+51.25
WATER
/ FP
CURRENT
ACCESS PATH TO 66 ELM
5.00'

Attachment 7B

Other Project Locations Map


75 Chestnut Street
29 Marginal Way
385 Congress Street
52 Hanover Street
343 Cumberland Ave
200 Federal Street
477-481 Congress Street

Attachment 7C

Trip Generation Calculations

Site Trip Diagrams

ITE Trip Generation 11th Edition - Proposed

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions				AM PK HR OF ADJACENT STREET TRAFFIC										PM PK HR OF ADJACENT STREET TRAFFIC									
				directional dist.		average				regression		# trips			directional dist.		average				regression		# trips			
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting
Overall Trip Gen																											
221	Multifamily Housing (Mid-Rise)	215	Dwelling Units	23%	77%	30	0.37	0.09	80	0.91	83	Regression	83	19	64	61%	39%	31	0.39	0.08	84	0.91	84	Regression	84	51	33
223	Affordable Housing	201	Dwelling Units	29%	71%	7	0.50	0.39	101	0.73	91	Average	101	29	72	59%	41%	8	0.46	0.28	92	0.67	86	Average	92	54	38
936	Coffee/Donut Shop without Drive-Thrc	2	1000 SF GFA	51%	49%	25	93.08	42.71	186	N/A	N/A	Average	186	95	91	50%	50%	16	32	12.64	65	N/A	N/A	Average	65	33	32
822	Strip Retail Plaza (<40k)	6	1000 SF GFA	60%	40%	5	2.36	0.94	14	0.57	21	Regression	21	12	8	50%	50%	25	6.59	2.94	40	0.56	54	Regression	54	27	27
932	High-Turnover (Sit-Down)	6	1000 SF GFA	55%	45%	37	9.57	11.61	57	N/A	N/A	Average	57	31	26	61%	39%	104	9.05	6.18	54	N/A	N/A	Average	54	33	21
196 Lancaster Only																											
221	Multifamily Housing (Mid-Rise)	130	Dwelling Units	23%	77%								50	12	39	61%	39%								51	31	20
936	Coffee/Donut Shop without Drive-Thrc	2	1000 SF GFA	51%	49%								186	95	91	50%	50%								65	33	32
932	High-Turnover (Sit-Down)	4	1000 SF GFA	55%	45%								38	21	17	61%	39%								36	22	14
89 Elm St Only																											
223	Affordable Housing	201	Dwelling Units	29%	71%								101	29	72	59%	41%								92	54	38
932	High-Turnover (Sit-Down)	2	1000 SF GFA	55%	45%								19	10	9	61%	39%								18	11	7
822	Strip Retail Plaza (<40k)	4	1000 SF GFA	60%	40%								14	8	5	50%	50%								36	18	18
60 Elm St Only																											
221	Multifamily Housing (Mid-Rise)	85	Dwelling Units	23%	77%								33	8	25	61%	39%								33	20	13
822	Strip Retail Plaza (<40k)	2	1000 SF GFA	60%	40%								7	4	3	50%	50%								18	9	9

Based on ITE 11th Edition

	total	entering	exiting
AM Peak Hour Total Site Trips:	448	187	261

	total	entering	exiting
PM Peak Hour Total Site Trips:	349	199	151

Proposed

Trip Generation Summary

Total	Total Peak Hour Site Generated Trips									External Site Generated Vehicle Trips			
Peak Period	Total Unadjusted ITE	Internal	**External**	**Vehicle Trips**	Transit	Bike	Pedestrian	Pass-By	Primary	Total	Pass-By	Diverted	New
Weekday Morning				***55%***	*0%*	*0%*	*45%*						
Enter	187	15	**172**	**95**	0	0	77		95	95			95
Exit	261	15	**246**	**135**	0	0	111		135	135			135
Total	448	30	**418**	**230**	0	0	188		230	230	0	0	230
Weekday Evening													
Enter	199	28	**171**	**94**	0	0	77		94	94			94
Exit	151	28	**123**	**68**	0	0	55		68	68			68
Total	350	56	**294**	**162**	0	0	132		162	162			162

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	7	4	3
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	8	25
Hotel				0		
All Other Land Uses[2]				0		
Total				40	12	28

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	40	12	28
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	40	12	28
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	4	4	1.00	3	3
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	8	8	1.00	25	25
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	5	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	4	4	4	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	8	8	8	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	3	3	3	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	25	25	25	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	60 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	2	1k sf	18	9	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	85	ea	33	20	13
Hotel				0		
All Other Land Uses[2]				0		
Total				51	29	22

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	51	29	22
Internal Capture Percentage	12%	10%	14%
External Vehicle-Trips[3]	45	26	19
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	11%	22%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	10%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	9	9	1.00	9	9
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	20	20	1.00	13	13
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	5	3	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	1	0
Retail	0		0	0	9	0
Restaurant	0	5		0	3	0
Cinema/Entertainment	0	0	0		1	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	8	9	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	18	20	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	7	9	7	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	12	13	12	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	13	8	5
Restaurant	932	2	1k sf	19	10	9
Cinema/Entertainment				0		
Residential	223	201	ea	101	29	72
Hotel				0		
All Other Land Uses[2]				0		
Total				133	47	86

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	133	47	86
Internal Capture Percentage	9%	13%	7%
External Vehicle-Trips[3]	121	41	80
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	25%	40%
Restaurant	30%	11%
Cinema/Entertainment	N/A	N/A
Residential	3%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	8	8	1.00	5	5
Restaurant	1.00	10	10	1.00	9	9
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	29	29	1.00	72	72
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		1	0	1	0
Restaurant	3	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	2	0	0	0
Retail	0		5	0	1	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	1	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	6	8	6	0	0
Restaurant	3	7	10	7	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	28	29	28	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	3	5	3	0	0
Restaurant	1	8	9	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	69	72	69	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	89 Elm St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	4	1k sf	36	18	18
Restaurant	932	2	1k sf	18	11	7
Cinema/Entertainment				0		
Residential	223	201	ea	92	54	38
Hotel				0		
All Other Land Uses[2]				0		
Total				146	83	63

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	5	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	146	83	63
Internal Capture Percentage	22%	19%	25%
External Vehicle-Trips[3]	114	67	47
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	28%	44%
Restaurant	45%	57%
Cinema/Entertainment	N/A	N/A
Residential	11%	11%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	18	18	1.00	18	18
Restaurant	1.00	11	11	1.00	7	7
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	54	54	1.00	38	38
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	1	5	1
Restaurant	0	3		1	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	16	8	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	2	0
Retail	0		3	0	25	0
Restaurant	0	9		0	9	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	2	2	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	5	13	18	13	0	0
Restaurant	5	6	11	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	6	48	54	48	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	8	10	18	10	0	0
Restaurant	4	3	7	3	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	34	38	34	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**AM Street Peak Hour**	**Date:**	3/20/2023

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	6	1K sf	224	116	108
Cinema/Entertainment				0		
Residential	221	130	ea	51	12	39
Hotel				0		
All Other Land Uses[2]				0		
Total				275	128	147

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	8	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	275	128	147
Internal Capture Percentage	7%	7%	6%
External Vehicle-Trips[3]	257	119	138
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	7%	1%
Cinema/Entertainment	N/A	N/A
Residential	8%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	116	116	1.00	108	108
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	12	12	1.00	39	39
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	33	15		0	4	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	8	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	27	0	0	0
Retail	0		58	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	23	0		0
Hotel	0	0	7	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	8	108	116	108	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	11	12	11	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	107	108	107	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	8	31	39	31	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	West Bayside	**Organization:**	VHB
Project Location:	196 Lancaster St, Portland, ME	**Performed By:**	EPH
Scenario Description:		**Date:**	3/20/2023
Analysis Year:	2023	**Checked By:**	MC
Analysis Period:	**PM Street Peak Hour**	**Date:**	3/20/2023

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932/936	6	1K sf	102	55	47
Cinema/Entertainment				0		
Residential	221	130	ea	51	31	20
Hotel				0		
All Other Land Uses[2]				0		
Total				153	86	67

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	153	86	67
Internal Capture Percentage	12%	10%	13%
External Vehicle-Trips[3]	135	77	58
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	7%	11%
Cinema/Entertainment	N/A	N/A
Residential	16%	20%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	West Bayside
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	55	55	1.00	47	47
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	31	31	1.00	20	20
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	1	19		4	8	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	8	4	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	1	0
Retail	0		16	0	14	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	2		1	0
Residential	0	0	8	0		0
Hotel	0	0	3	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	4	51	55	51	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	26	31	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	5	42	47	42	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	16	20	16	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

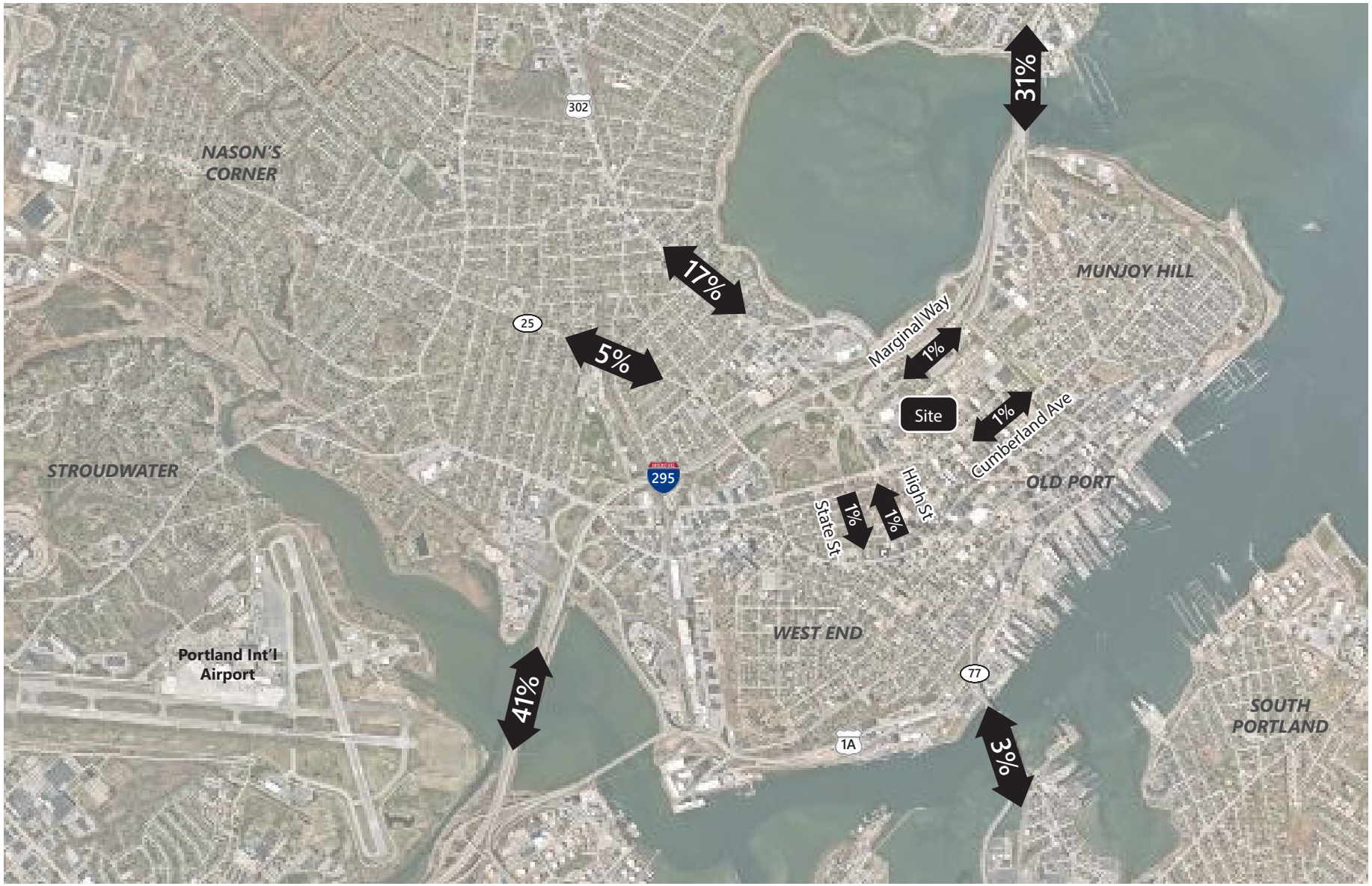
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

	Potential Routes	I-295 points north	I-95 points north	26/100 points north/west	302 points north/west	25 points west	I-295 points south	Marginal Way	State Street points south	High Street Points north	Cumberland Ave	totals
County	Work Destination											
Androscoggin	229	115	114									229
Aroostook	7	7										7
Cumberland	3,084											3084
Baldwin	36						36					36
Bridgton	43		43									43
Brunswick	111	33					78					111
Cape Elizabeth	115						115					115
Casco	60			30	30							60
Chebeague Island	7						7					7
Cumberland	58	58										58
Falmouth	220	220										220
Freeport	133	133										133
Frye Island	0											0
Gorham	145						145					145
Gray	50			50								50
Harpswell	30	30										30
Harrison	0											0
Long Island	19						19					19
Naples	36		36									36
New Gloucester	84	56		28								84
North Yarmouth	28	28										28
Pownal	7		7									7
Raymond	25			18	8							25
Scarborough	224						224					224
Sebago	0											0
Standish	25						25					25
Windham	107			54	53							107
Yarmouth	85	85										85
Cities: Portland	814	41		81	163		366	41	41	41	41	814
Cities: S. Portland	339						226		113			339
Cities: Westbrook	283			94	94	94						283
Franklin	13	13										13
Hancock	26	17	9									26
Kennebec	169	85	84									169
Knox	47	47										47
Lincoln	42	42										42
Oxford	72			50	22							72
Penobscot	40	40										40
Piscataquis	0											0
Sagadahoc	251	251										251
Somerset	57	29	28									57
Waldo	0											0
Washington	13	13										13
York	683						683					683
Sum	4,733	1344	321	405	369	94	1924	41	154	41	41	4733
		28%	7%	9%	8%	2%	41%	1%	3%	1%	1%	100%

Project Traffic Distribution

West Bayside | Portland, Maine

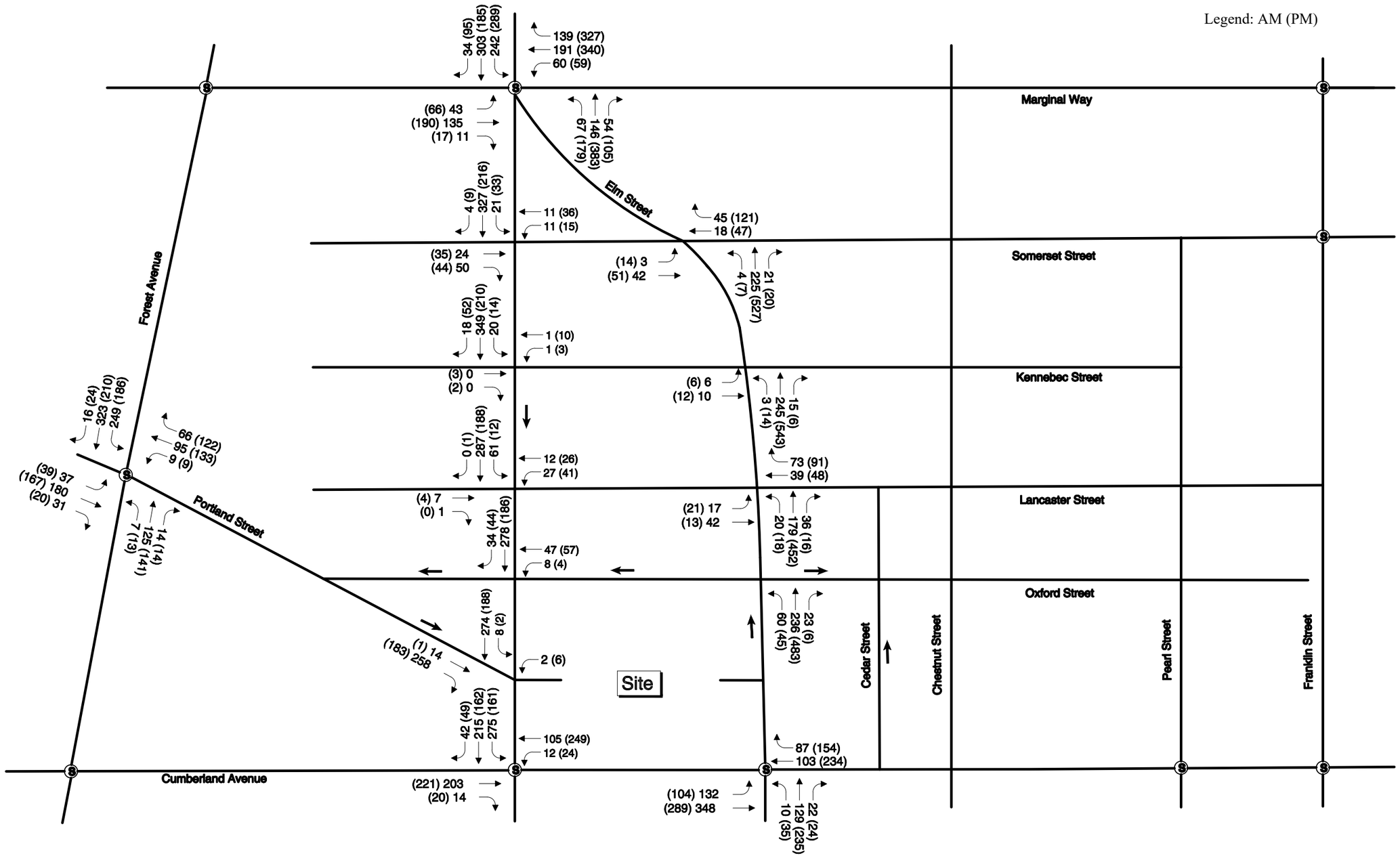


% Project Traffic In/Out

Source: Nearmap Aerial

\\vhb\gbl\proj\Portland\55678.00 West Bayside\Graphics\FIGURES\Transportation Figures - SY working.indd p5 12/23/22

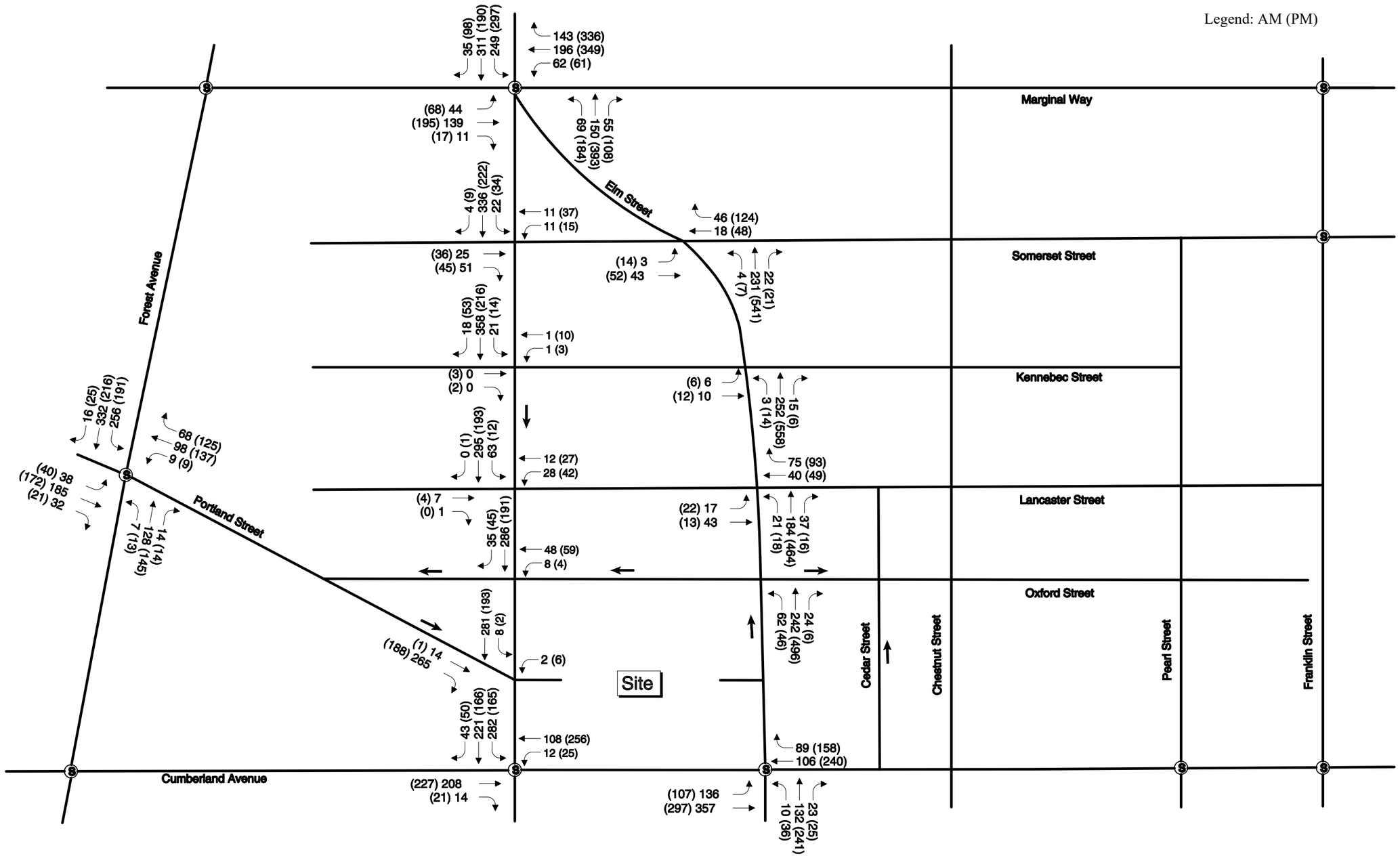
Legend: AM (PM)



Not to Scale

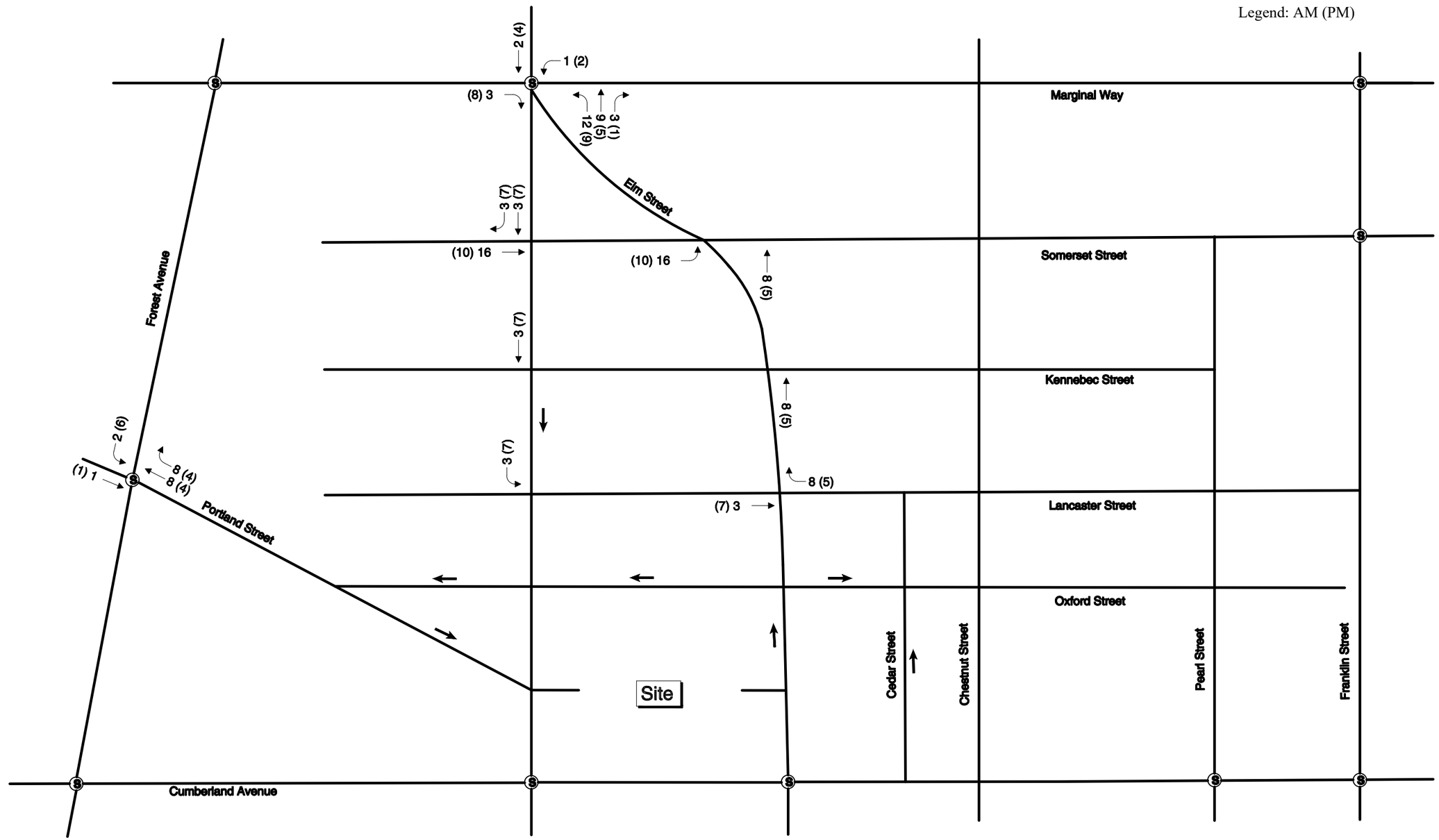
Figure 1
Raw Volumes

Legend: AM (PM)



Not to Scale

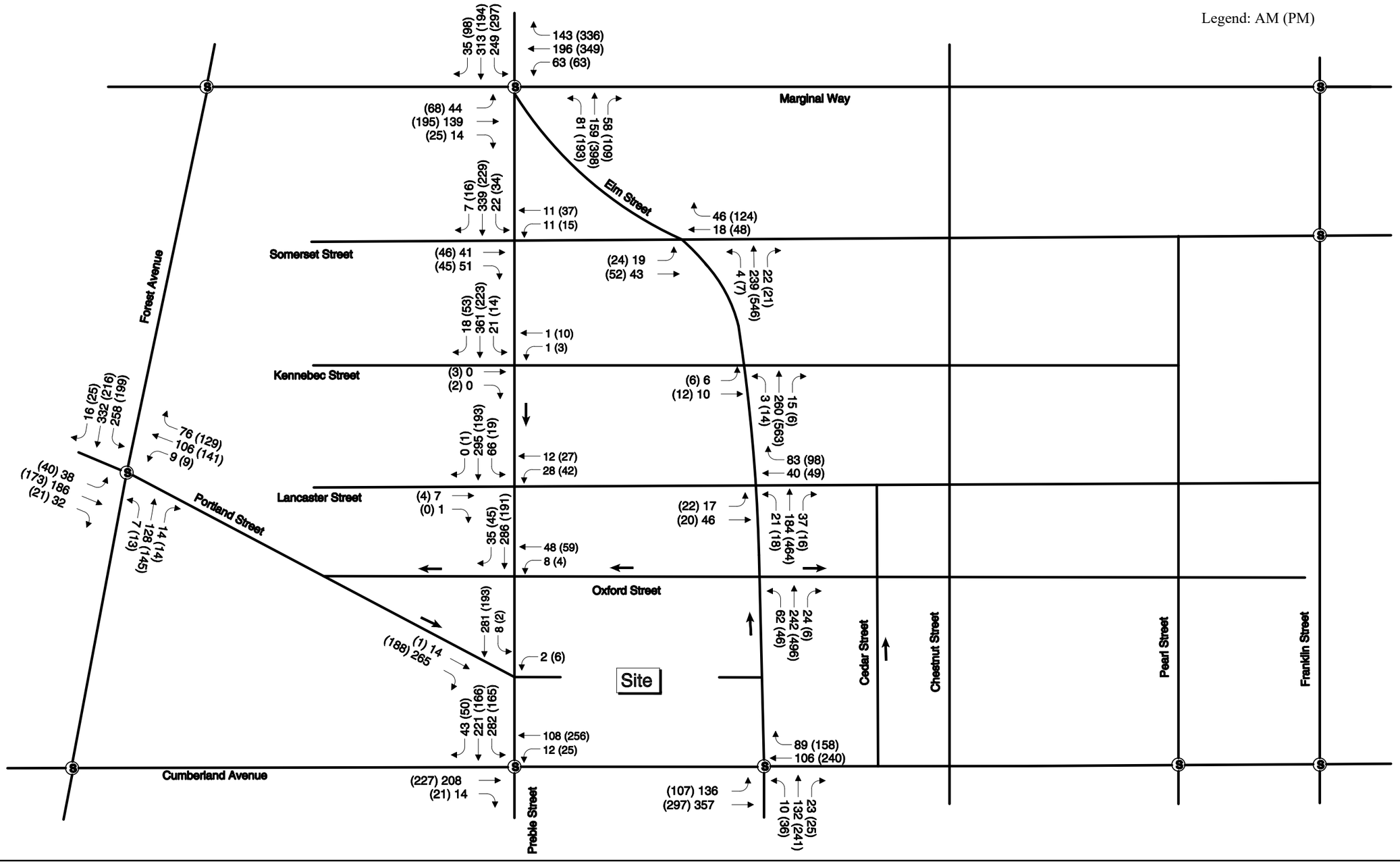
Figure 2
Adjusted Volumes



Not to Scale

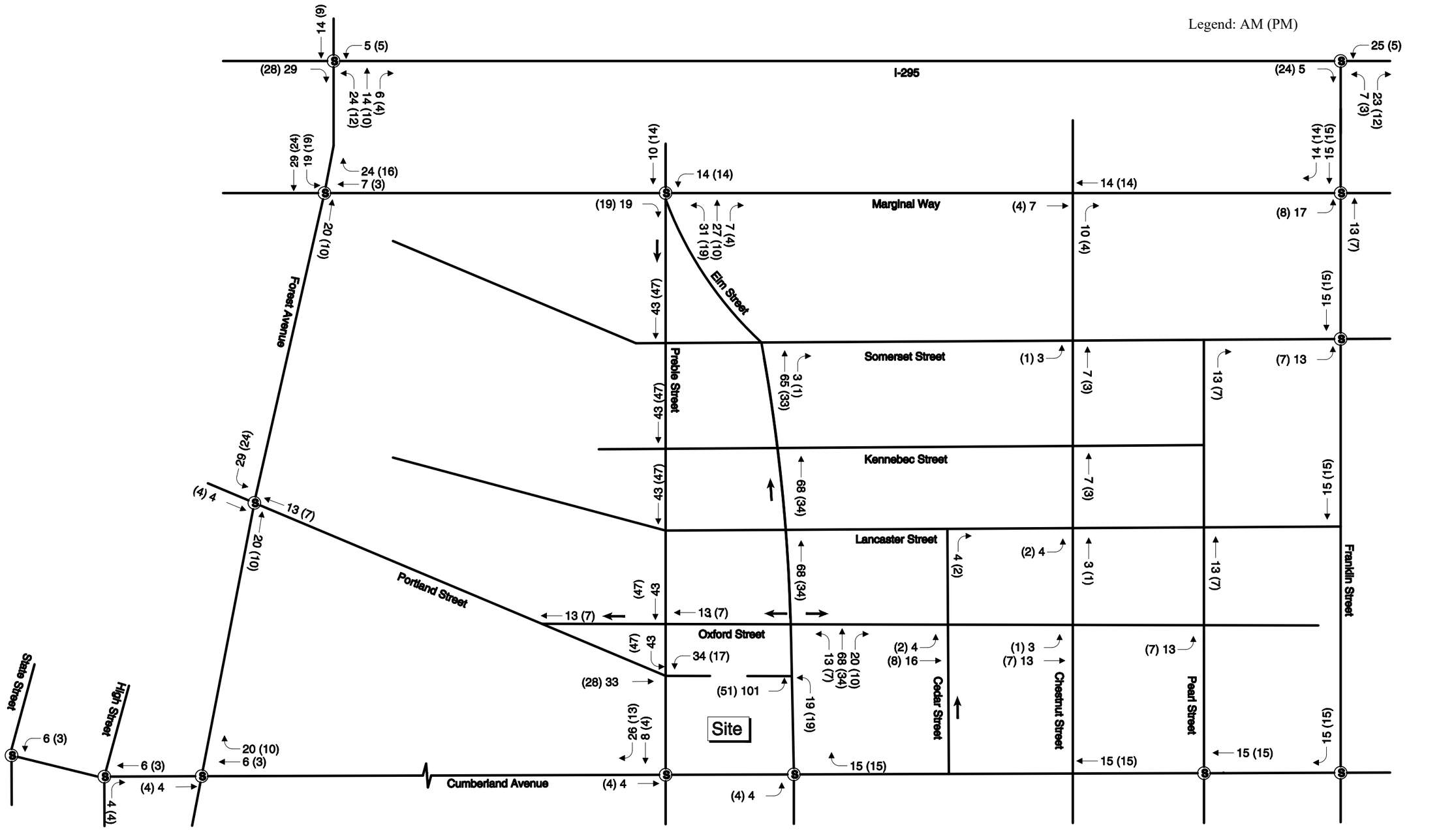
Figure 3
Other Development

Legend: AM (PM)



Not to Scale

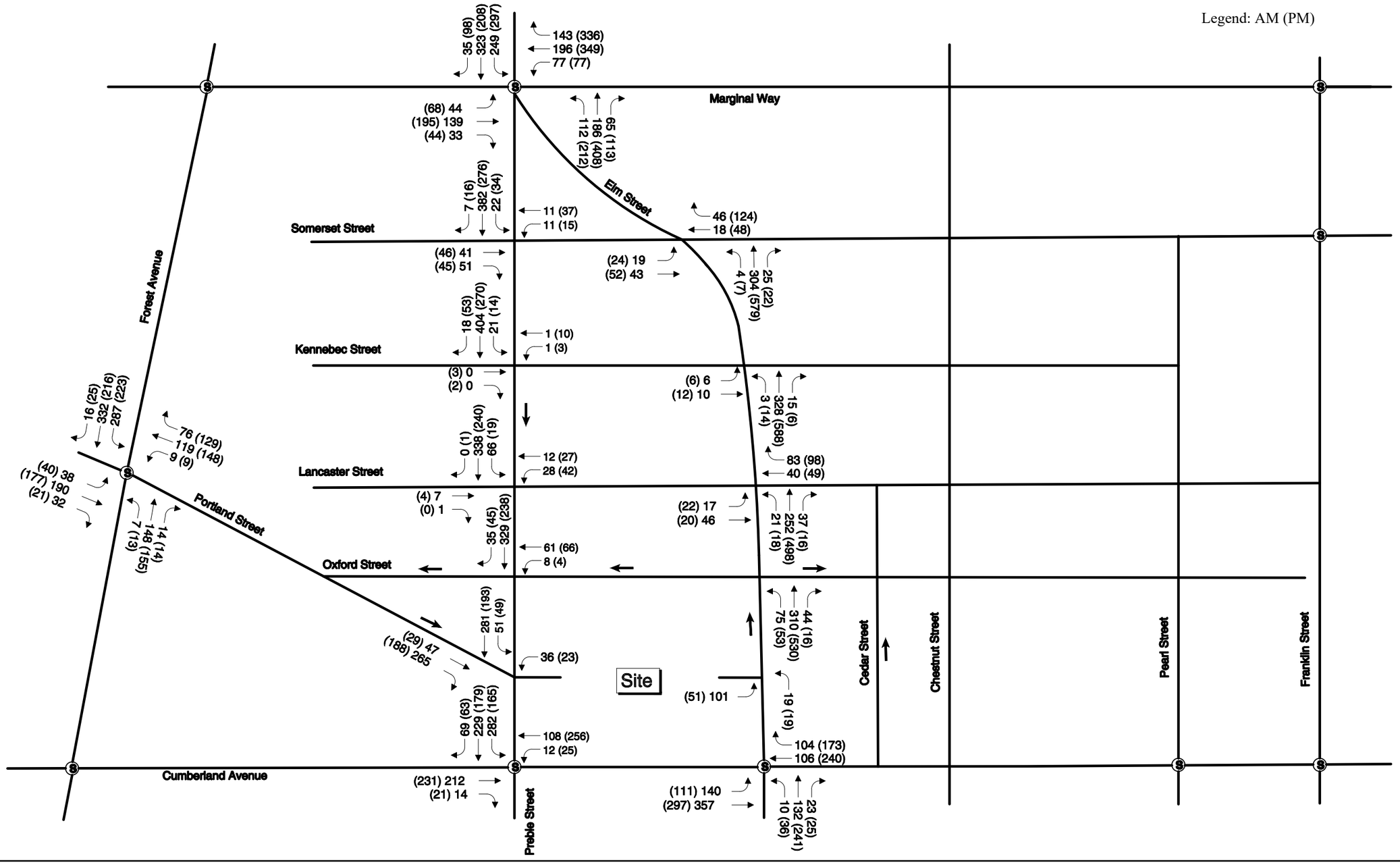
Figure 4
2026 No-Build Volumes



Not to Scale

Figure 5
Trip Assignment

Legend: AM (PM)



Not to Scale

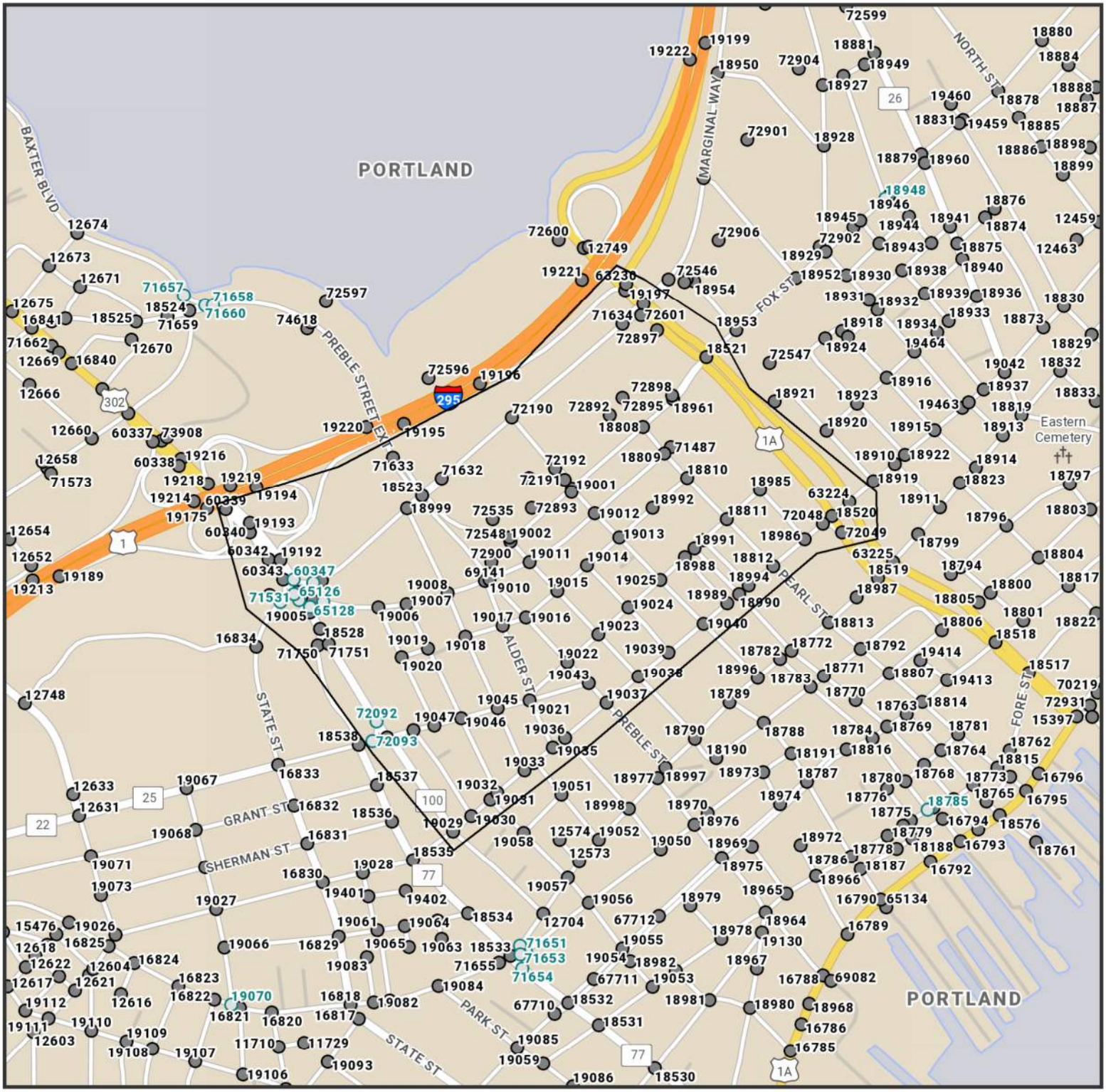
Figure 6
2026 Build Volumes

Attachment 7D

Node Map

Crash Summary

WEST BAYSIDE



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.2 Miles

1 inch = 0.22 miles

Date: 5/9/2023
Time: 7:36:15 AM

LEGEND

LRAP_SEGMENTS_2
- NO VALUE
- AGREEMENT
- RURAL-SA-FC5
- RURAL-SH
- URBAN-STW
- URBAN-TW
- RURAL-SA-FC6
- RURAL-STW
- RURAL-TW
- URBAN-SA
- URBAN-SH
- WCSH

LRAP_SEGMENTS_2
- NO VALUE
- URBAN-STW
- URBAN-TW
- URBAN-SA
- URBAN-SH
- RURAL-SH
- RURAL-TW
- RURAL-SA-FC5
- RURAL-STW
- RURAL-SA-FC6
- WCSH
- AGREEMENT

LRAP_SEGMENTS_2
- NO VALUE
- AGREEMENT
- RURAL-SA-FC5
- URBAN-STW
- URBAN-TW
- URBAN-SA
- URBAN-SH
- RURAL-SH
- RURAL-TW
- RURAL-SA-FC6
- RURAL-STW
- WCSH

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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0100X	Start Node: 19029	Start Offset: 0	☐ Exclude First Node
	End Node: 19193	End Offset: 0	☐ Exclude Last Node
Route: 0100S	Start Node: 60339	Start Offset: 0	☐ Exclude First Node
	End Node: 16836	End Offset: 0	☑ Exclude Last Node
Route: 0100S	Start Node: 16836	Start Offset: 0	☑ Exclude First Node
	End Node: 19005	End Offset: 0	☑ Exclude Last Node
Route: 3201041	Start Node: 60340	Start Offset: 0	☑ Exclude First Node
	End Node: 65126	End Offset: 0	☑ Exclude Last Node
Route: 3200506	Start Node: 60343	Start Offset: 0	☑ Exclude First Node
	End Node: 16835	End Offset: 0	☐ Exclude Last Node
Route: 321020S	Start Node: 16836	Start Offset: 0	☑ Exclude First Node
	End Node: 71531	End Offset: 0	☑ Exclude Last Node
Route: 3201020	Start Node: 71750	Start Offset: 0	☐ Exclude First Node
	End Node: 18528	End Offset: 0	☑ Exclude Last Node
Route: 3210401	Start Node: 71750	Start Offset: 0	☑ Exclude First Node
	End Node: 71751	End Offset: 0	☑ Exclude Last Node
Route: 321020S	Start Node: 71531	Start Offset: 0	☑ Exclude First Node
	End Node: 16835	End Offset: 0	☑ Exclude Last Node
Route: 3210576	Start Node: 72092	Start Offset: 0	☑ Exclude First Node
	End Node: 72093	End Offset: 0	☐ Exclude Last Node
Route: 0560563	Start Node: 72093	Start Offset: 0	☑ Exclude First 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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: 19049	End Offset: 0	☑ Exclude Last Node
Route: 0001A	Start Node: 63224	Start Offset: 0	☐ Exclude First Node
	End Node: 63230	End Offset: 0	☐ Exclude Last Node
Route: 001AS	Start Node: 19197	Start Offset: 0	☐ Exclude First Node
	End Node: 19000	End Offset: 0	☑ Exclude Last Node
Route: 001AS	Start Node: 19000	Start Offset: 0	☑ Exclude First Node
	End Node: 18521	End Offset: 0	☑ Exclude Last Node
Route: 001AS	Start Node: 18521	Start Offset: 0	☑ Exclude First Node
	End Node: 18520	End Offset: 0	☐ Exclude Last Node
Route: 3210555	Start Node: 72048	Start Offset: 0	☑ Exclude First Node
	End Node: 72049	End Offset: 0	☑ Exclude Last Node
Route: 0561238	Start Node: 19029	Start Offset: 0	☑ Exclude First Node
	End Node: 18520	End Offset: 0	☑ Exclude Last Node
Route: 0561238	Start Node: 18520	Start Offset: 0	☑ Exclude First Node
	End Node: 63224	End Offset: 0	☑ Exclude Last Node
Route: 0560477	Start Node: 16836	Start Offset: 0	☑ Exclude First Node
	End Node: 19000	End Offset: 0	☑ Exclude Last Node
Route: 3210333	Start Node: 19000	Start Offset: 0	☑ Exclude First Node
	End Node: 71634	End Offset: 0	☑ Exclude Last Node
Route: 3210331	Start Node: 71632	Start Offset: 0	☑ Exclude First Node
	End Node: 18523	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 3210331	Start Node: 18523	Start Offset: 0	☑ Exclude First Node
	End Node: 18999	End Offset: 0	☑ Exclude Last Node
Route: 3201880	Start Node: 60346	Start Offset: 0	☑ Exclude First Node
	End Node: 16836	End Offset: 0	☑ Exclude Last Node
Route: 3200507	Start Node: 65129	Start Offset: 0	☑ Exclude First Node
	End Node: 60347	End Offset: 0	☑ Exclude Last Node
Route: 0560414	Start Node: 18809	Start Offset: 0	☐ Exclude First Node
	End Node: 16836	End Offset: 0	☑ Exclude Last Node
Route: 3210271	Start Node: 18809	Start Offset: 0	☑ Exclude First Node
	End Node: 71487	End Offset: 0	☐ Exclude Last Node
Route: 3201879	Start Node: 65128	Start Offset: 0	☑ Exclude First Node
	End Node: 65127	End Offset: 0	☑ Exclude Last Node
Route: 0560667	Start Node: 19002	Start Offset: 0	☐ Exclude First Node
	End Node: 18521	End Offset: 0	☑ Exclude Last Node
Route: 3210335	Start Node: 18521	Start Offset: 0	☑ Exclude First Node
	End Node: 18961	End Offset: 0	☑ Exclude Last Node
Route: 0560426	Start Node: 18810	Start Offset: 0	☐ Exclude First Node
	End Node: 19018	End Offset: 0	☐ Exclude Last Node
Route: 0560560	Start Node: 19021	Start Offset: 0	☑ Exclude First Node
	End Node: 18985	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0560593	Start Node: 19049	Start Offset: 0	☑ Exclude First Node
	End Node: 19043	End Offset: 0	☐ Exclude Last Node
Route: 0561200	Start Node: 19019	Start Offset: 0	☑ Exclude First Node
	End Node: 19020	End Offset: 0	☑ Exclude Last Node
Route: 0560496	Start Node: 19030	Start Offset: 0	☑ Exclude First Node
	End Node: 19048	End Offset: 0	☑ Exclude Last Node
Route: 0560080	Start Node: 19006	Start Offset: 0	☑ Exclude First Node
	End Node: 19047	End Offset: 0	☑ Exclude Last Node
Route: 0560565	Start Node: 19007	Start Offset: 0	☑ Exclude First Node
	End Node: 19046	End Offset: 0	☑ Exclude Last Node
Route: 0560565	Start Node: 19046	Start Offset: 0	☑ Exclude First Node
	End Node: 19032	End Offset: 0	☑ Exclude Last Node
Route: 0560345	Start Node: 18999	Start Offset: 0	☑ Exclude First Node
	End Node: 19008	End Offset: 0	☑ Exclude Last Node
Route: 0560345	Start Node: 19008	Start Offset: 0	☑ Exclude First Node
	End Node: 19018	End Offset: 0	☑ Exclude Last Node
Route: 0560345	Start Node: 19018	Start Offset: 0	☑ Exclude First Node
	End Node: 19045	End Offset: 0	☑ Exclude Last Node
Route: 0560345	Start Node: 19045	Start Offset: 0	☑ Exclude First Node
	End Node: 19033	End Offset: 0	☑ Exclude Last Node
Route: 0560008	Start Node: 69141	Start Offset: 0	☑ Exclude First 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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: 19017	End Offset: 0	☑ Exclude Last Node
Route: 0560008	Start Node: 19017	Start Offset: 0	☑ Exclude First Node
	End Node: 19021	End Offset: 0	☑ Exclude Last Node
Route: 0560008	Start Node: 19021	Start Offset: 0	☑ Exclude First Node
	End Node: 19035	End Offset: 0	☑ Exclude Last Node
Route: 0560818	Start Node: 71633	Start Offset: 0	☐ Exclude First Node
	End Node: 18523	End Offset: 0	☑ Exclude Last Node
Route: 3210332	Start Node: 18523	Start Offset: 0	☑ Exclude First Node
	End Node: 71633	End Offset: 0	☑ Exclude Last Node
Route: 0560597	Start Node: 18523	Start Offset: 0	☑ Exclude First Node
	End Node: 19010	End Offset: 0	☑ Exclude Last Node
Route: 0560597	Start Node: 19010	Start Offset: 0	☑ Exclude First Node
	End Node: 19016	End Offset: 0	☑ Exclude Last Node
Route: 0560597	Start Node: 19016	Start Offset: 0	☑ Exclude First Node
	End Node: 19022	End Offset: 0	☑ Exclude Last Node
Route: 0560597	Start Node: 19022	Start Offset: 0	☑ Exclude First Node
	End Node: 19043	End Offset: 0	☑ Exclude Last Node
Route: 0560597	Start Node: 19043	Start Offset: 0	☑ Exclude First Node
	End Node: 19037	End Offset: 0	☑ Exclude Last Node
Route: 0560252	Start Node: 19038	Start Offset: 0	☑ Exclude First Node
	End Node: 19023	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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0560252	Start Node: 19023 End Node: 19015	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560252	Start Node: 19015 End Node: 19011	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560252	Start Node: 19011 End Node: 19002	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560252	Start Node: 19002 End Node: 18523	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560120	Start Node: 19014 End Node: 19024	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560120	Start Node: 19024 End Node: 19039	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560135	Start Node: 19040 End Node: 19025	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560135	Start Node: 19025 End Node: 19013	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560135	Start Node: 19013 End Node: 19012	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ Exclude Last Node
Route: 0560135	Start Node: 19012 End Node: 19001	Start Offset: 0 End Offset: 0	☑ Exclude First Node ☑ 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
Forest Ave. - Marginal Wy. - Franklin St. - Cumberland Ave. Block Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0560135	Start Node: 19001	Start Offset: 0	☑ Exclude First Node
	End Node: 72190	End Offset: 0	☑ Exclude Last Node
Route: 3210625	Start Node: 72192	Start Offset: 0	☑ Exclude First Node
	End Node: 72191	End Offset: 0	☑ Exclude Last Node
Route: 0560679	Start Node: 18988	Start Offset: 0	☑ Exclude First Node
	End Node: 18989	End Offset: 0	☑ Exclude Last Node
Route: 0560527	Start Node: 18990	Start Offset: 0	☑ Exclude First Node
	End Node: 18991	End Offset: 0	☑ Exclude Last Node
Route: 0560126	Start Node: 18994	Start Offset: 0	☑ Exclude First Node
	End Node: 18995	End Offset: 0	☑ Exclude Last Node
Route: 0560571	Start Node: 18812	Start Offset: 0	☑ Exclude First Node
	End Node: 18811	End Offset: 0	☑ Exclude Last Node
Route: 0560571	Start Node: 18811	Start Offset: 0	☑ Exclude First Node
	End Node: 18810	End Offset: 0	☑ Exclude Last Node
Route: 0560571	Start Node: 18810	Start Offset: 0	☑ Exclude First Node
	End Node: 18809	End Offset: 0	☑ Exclude Last Node
Route: 0560571	Start Node: 18809	Start Offset: 0	☐ Exclude First Node
	End Node: 18808	End Offset: 0	☐ Exclude Last Node
Route: 0560798	Start Node: 18985	Start Offset: 0	☑ Exclude First Node
	End Node: 18986	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
19029	0100X - 0	Int of CUMBERLAND AV FOREST AV	9	17	0	0	1	3	13	23.5	4.783	1.18	1.15	1.03
												Statewide Crash Rate:	0.64	
P19049	0100X - 0.14	Int of FOREST AV PARK AV PORTLAND ST	9	22	0	0	2	3	17	22.7	5.074	1.45	1.14	1.27
												Statewide Crash Rate:	0.64	
A72092	0100X - 0.16	Int of CUT FROM FOREST AV FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
71751	0100X - 0.27	Int of FOREST AV RD INV 3210401	2	0	0	0	0	0	0	0.0	2.960	0.00	0.41	0.00
												Statewide Crash Rate:	0.14	
18528	0100X - 0.29	Int of FOREST AV HIGH ST EXT	9	7	0	0	0	0	7	0.0	7.877	0.30	1.04	0.28
												Statewide Crash Rate:	0.64	
19005	0100X - 0.31	Non Int FOREST AV	2	6	0	0	0	1	5	16.7	5.127	0.39	0.35	1.10
												Statewide Crash Rate:	0.14	
A65128	0100X - 0.32	Int of FOREST AV RD INV 3201879	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
P16836	0100X - 0.34	Int of FOREST AV KENNEBEC ST MARGINAL WY STATE S	9	49	0	0	2	11	36	26.5	12.242	1.33	0.97	1.38
												Statewide Crash Rate:	0.64	
A60347	0100X - 0.36	Int of CUT FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
19192	0100X - 0.39	Int of FOREST AV RAMP G ON FROM FOREST AV	2	2	0	0	0	1	1	50.0	7.330	0.09	0.25	0.00
												Statewide Crash Rate:	0.10	
19193	0100X - 0.45	Int of FOREST AV RAMP E OFF TO FOREST AV	2	32	0	0	2	9	21	34.4	6.326	1.69	0.26	6.47
												Statewide Crash Rate:	0.10	
60339	0100S - 10.61	Int of FOREST AV RAMP C ON FROM FOREST AV	2	0	0	0	0	0	0	0.0	5.267	0.00	0.27	0.00
												Statewide Crash Rate:	0.10	
60340	0100S - 10.65	Non-Int FOREST AV	2	0	0	0	0	0	0	0.0	4.464	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
A65126	0100S - 10.75	Non Int FOREST AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
60342	3201041 - 0.04	Int of FOREST AV RAMP A OFF TO FOREST AV	2	14	0	0	0	3	11	21.4	4.751	0.98	0.28	3.50
												Statewide Crash Rate:	0.10	
60343	3201041 - 0.07	Int of CUT FOREST AV	2	2	0	0	0	0	2	0.0	4.751	0.14	0.36	0.00
												Statewide Crash Rate:	0.14	
A71531	3201041 - 0.09	Int of FOREST AV STATE ST EXT	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
A16835	3200506 - 0.03	Int of CUT STATE ST EXT	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
71750	3201020 - 0.23	Int of HIGH ST EXT RD INV 3210401	2	0	0	0	0	0	0	0.0	3.318	0.00	0.40	0.00
												Statewide Crash Rate:	0.14	
A72093	3210576 - 0.02	Int of CUT FROM FOREST AV PARK AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
63224	0001A - 12.20	Int of CUMBERLAND AV FRANKLIN ST	9	11	0	1	0	0	10	9.1	5.866	0.63	1.10	0.57
												Statewide Crash Rate:	0.64	
18521	0001A - 12.45	Int of FOX ST FRANKLIN ST	9	24	0	0	3	5	16	33.3	10.518	0.76	0.99	0.77
												Statewide Crash Rate:	0.64	

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
19000	0001A - 12.55	Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY N	9	27	0	1	2	5	19	29.6	12.410	0.73	0.96	0.75
												Statewide Crash Rate:	0.64	
63230	0001A - 12.58	Int of FRANKLIN ST RAMP C ON FROM FRANKLIN ST ART	2	0	0	0	0	0	0	0.0	5.325	0.00	0.27	0.00
												Statewide Crash Rate:	0.10	
19197	001AS - 1.48	Int of FRANKLIN ST RAMP A OFF TO FRANKLIN ST ART	9	25	0	0	2	2	21	16.0	4.771	1.75	1.15	1.52
												Statewide Crash Rate:	0.64	
18520	001AS - 1.85	Int of CUMBERLAND AV FRANKLIN ST	9	8	0	0	0	3	5	37.5	5.703	0.47	1.11	0.42
												Statewide Crash Rate:	0.64	
19030	0561238 - 0.20	Int of CUMBERLAND AV MECHANIC ST	2	3	0	0	0	2	1	66.7	3.146	0.32	0.36	0.00
												Statewide Crash Rate:	0.12	
19031	0561238 - 0.23	Int of CUMBERLAND AV OAK ST	2	4	0	0	1	0	3	25.0	3.824	0.35	0.34	1.03
												Statewide Crash Rate:	0.12	
19032	0561238 - 0.24	Int of CUMBERLAND AV PARRIS ST	2	0	0	0	0	0	0	0.0	3.301	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
19033	0561238 - 0.28	Int of CUMBERLAND AV HANOVER ST	2	2	0	0	0	0	2	0.0	3.312	0.20	0.35	0.00
												Statewide Crash Rate:	0.12	
19034	0561238 - 0.29	Int of CASCO ST CUMBERLAND AV	2	3	0	2	0	0	1	66.7	2.842	0.35	0.37	0.00
												Statewide Crash Rate:	0.12	
19035	0561238 - 0.32	Int of ALDER ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.036	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
19036	0561238 - 0.34	Int of BROWN ST CUMBERLAND AV	2	1	0	0	0	0	1	0.0	2.168	0.15	0.39	0.00
												Statewide Crash Rate:	0.12	
19037	0561238 - 0.41	Int of CUMBERLAND AV PREBLE ST	9	8	0	0	0	1	7	12.5	4.161	0.64	1.18	0.54
												Statewide Crash Rate:	0.64	
19038	0561238 - 0.46	Int of CUMBERLAND AV ELM ST	9	9	0	1	1	1	6	33.3	3.373	0.89	1.24	0.72
												Statewide Crash Rate:	0.64	
19039	0561238 - 0.51	Int of CEDAR ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.252	0.00	0.39	0.00
												Statewide Crash Rate:	0.12	
19040	0561238 - 0.56	Int of CHESTNUT ST CUMBERLAND AV	2	9	0	0	0	1	8	11.1	2.544	1.18	0.38	3.12
												Statewide Crash Rate:	0.12	
18989	0561238 - 0.60	Int of CUMBERLAND AV, STONE ST	2	0	0	0	0	0	0	0.0	2.403	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
18990	0561238 - 0.62	Int of CUMBERLAND AV MYRTLE ST	2	1	0	0	0	0	1	0.0	2.345	0.14	0.39	0.00
												Statewide Crash Rate:	0.12	
18994	0561238 - 0.64	Int of CHAPEL ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.439	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
18812	0561238 - 0.68	Int of CUMBERLAND AV PEARL ST	9	7	0	0	1	0	6	14.3	3.898	0.60	1.20	0.50
												Statewide Crash Rate:	0.64	
18986	0561238 - 0.73	Int of CUMBERLAND AV WILMOT ST	2	0	0	0	0	0	0	0.0	2.384	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
72048	0561238 - 0.76	Int of CUMBERLAND AV RD INV 3210555	2	0	0	0	0	0	0	0.0	1.955	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
60346	0560477 - 0.03	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	2.309	0.00	0.43	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
18999	0560477 - 0.16	Int of HANOVER ST MARGINAL WY	2	2	0	0	0	0	2	0.0	3.265	0.20	0.40	0.00
												Statewide Crash Rate:	0.14	
18523	0560477 - 0.19	Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EX	9	19	0	0	1	3	13	23.5	6.632	0.96	1.08	0.89
												Statewide Crash Rate:	0.64	
71632	0560477 - 0.22	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	4.311	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
72190	0560477 - 0.33	Int of CHESTNUT ST MARGINAL WY	2	12	0	0	1	2	9	25.0	4.658	0.86	0.36	2.37
												Statewide Crash Rate:	0.14	
71634	0560477 - 0.50	Non Int MARGINAL WY	2	0	0	0	0	0	0	0.0	4.190	0.00	0.37	0.00
												Statewide Crash Rate:	0.14	
A65129	3201880 - 0.01	Int of CUT MARGINAL WY	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
18809	0560414 - 0	Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	2.111	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
19012	0560414 - 0.11	Int of CHESTNUT ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	0.869	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
19011	0560414 - 0.21	Int of ELM ST KENNEBEC ST	2	3	0	0	1	1	1	66.7	1.161	0.86	0.51	1.68
												Statewide Crash Rate:	0.14	
19010	0560414 - 0.26	Int of KENNEBEC ST PREBLE ST	2	2	0	0	0	0	2	0.0	1.169	0.57	0.51	1.11
												Statewide Crash Rate:	0.14	
69141	0560414 - 0.27	Int of ALDER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	0.474	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19008	0560414 - 0.32	Int of HANOVER ST KENNEBEC ST	2	0	0	0	0	0	0	0.0	1.040	0.00	0.46	0.00
												Statewide Crash Rate:	0.12	
19007	0560414 - 0.37	0509427 POR,KENNEBEC,PARRIS ST.	2	0	0	0	0	0	0	0.0	0.437	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19006	0560414 - 0.40	Int of BRATTLE ST KENNEBEC ST	2	1	0	0	0	0	1	0.0	0.411	0.81	0.52	1.56
												Statewide Crash Rate:	0.12	
A65127	0560414 - 0.47	Int of KENNEBEC ST RD INV 3201879	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
71487	3210271 - 0.01	End of WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	0.611	0.00	0.51	0.00
												Statewide Crash Rate:	0.12	
19002	0560667 - 0	Int of ELM ST SOMERSET ST	2	5	0	0	1	0	4	20.0	1.542	1.08	0.48	2.25
												Statewide Crash Rate:	0.14	
19001	0560667 - 0.10	Int of CHESTNUT ST SOMERSET ST	2	2	0	0	1	0	1	50.0	1.419	0.47	0.44	1.08
												Statewide Crash Rate:	0.12	
18808	0560667 - 0.21	0509228 POR,PEARL,SOMERSET ST	2	2	0	0	0	1	1	50.0	2.877	0.23	0.37	0.00
												Statewide Crash Rate:	0.12	
18961	0560667 - 0.26	Int of FOX ST SOMERSET ST	2	0	0	0	0	0	0	0.0	3.325	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
18810	0560426 - 0	Int of LANCASTER ST PEARL ST	2	4	0	0	2	1	1	75.0	1.456	0.92	0.43	2.12
												Statewide Crash Rate:	0.12	
18992	0560426 - 0.05	Non Int LANCASTER ST	2	0	0	0	0	0	0	0.0	0.414	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	

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
19013	0560426 - 0.10	Int of CHESTNUT ST LANCASTER ST	2	1	0	0	0	0	1	0.0	1.019	0.33	0.47	0.00
												Statewide Crash Rate:	0.12	
19014	0560426 - 0.15	Int of CEDAR ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.644	0.00	0.50	0.00
												Statewide Crash Rate:	0.12	
19015	0560426 - 0.20	Int of ELM ST LANCASTER ST	2	4	0	0	0	1	3	25.0	0.868	1.54	0.55	2.82
												Statewide Crash Rate:	0.14	
19016	0560426 - 0.25	Int of LANCASTER ST PREBLE ST	2	2	0	0	1	0	1	50.0	1.226	0.54	0.51	1.07
												Statewide Crash Rate:	0.14	
19017	0560426 - 0.28	Int of ALDER ST LANCASTER ST	2	1	0	0	0	0	1	0.0	0.314	1.06	0.51	2.09
												Statewide Crash Rate:	0.12	
19018	0560426 - 0.33	Int of HANOVER ST LANCASTER ST	2	1	0	0	0	0	1	0.0	0.387	0.86	0.52	1.66
												Statewide Crash Rate:	0.12	
19022	0560560 - 0.07	Int of OXFORD ST PREBLE ST	2	6	0	0	0	1	5	16.7	1.618	1.24	0.47	2.60
												Statewide Crash Rate:	0.14	
19023	0560560 - 0.12	Int of ELM ST OXFORD ST	2	3	0	0	1	0	2	33.3	1.102	0.91	0.52	1.75
												Statewide Crash Rate:	0.14	
19024	0560560 - 0.17	Int of CEDAR ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.300	0.00	0.50	0.00
												Statewide Crash Rate:	0.12	
19025	0560560 - 0.22	Int of CHESTNUT ST OXFORD ST	2	2	0	0	0	0	2	0.0	0.618	1.08	0.51	2.13
												Statewide Crash Rate:	0.12	
18988	0560560 - 0.26	0509408 POR,STONE,OXFORD ST.	2	1	0	0	0	0	0	0.0	0.189	1.76	0.42	4.15
												Statewide Crash Rate:	0.12	
18991	0560560 - 0.28	Int of MYRTLE ST OXFORD ST	2	0	0	0	0	0	0	0.0	0.105	0.00	0.12	0.00
												Statewide Crash Rate:	0.12	
18995	0560560 - 0.29	Int of CHAPEL ST OXFORD ST	2	1	0	0	0	0	1	0.0	0.190	1.76	0.42	4.14
												Statewide Crash Rate:	0.12	
18811	0560560 - 0.33	0509231 POR,PEARL,OXFORD ST	2	1	0	0	1	0	0	100.0	1.400	0.24	0.44	0.00
												Statewide Crash Rate:	0.12	
18985	0560560 - 0.38	0509405 POR,WILMOT,OXFORD ST.	2	0	0	0	0	0	0	0.0	0.077	0.00	-0.18	0.00
												Statewide Crash Rate:	0.12	
19048	0560593 - 0.03	Int of MECHANIC ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.855	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
19047	0560593 - 0.06	Int of BRATTLE ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.893	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
19046	0560593 - 0.09	Int of PARRIS ST PORTLAND ST	2	0	0	0	0	0	0	0.0	2.454	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
19045	0560593 - 0.14	Int of HANOVER ST PORTLAND ST	2	2	0	0	0	1	1	50.0	1.551	0.43	0.43	1.01
												Statewide Crash Rate:	0.12	
19021	0560593 - 0.18	Int of ALDER ST, OXFORD ST, PORTLAND ST	2	2	0	0	0	0	2	0.0	0.844	0.79	0.48	1.63
												Statewide Crash Rate:	0.12	
19043	0560593 - 0.25	Int of PORTLAND ST PREBLE ST	2	1	0	0	1	0	0	100.0	1.987	0.17	0.45	0.00
												Statewide Crash Rate:	0.14	
19020	0560080 - 0.07	Int of BRATTLE ST LANCASTER ST	2	0	0	0	0	0	0	0.0	0.265	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	

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
19019	0560565 - 0.06	Int of LANCASTER ST PARRIS ST	2	0	0	0	0	0	0	0.0	0.266	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
71633	0560818 - 0.55	Non Int PREBLE ST EXT	2	2	0	0	0	0	2	0.0	4.172	0.16	0.37	0.00
												Statewide Crash Rate:	0.14	
72191	0560135 - 0.32	Non Int CHESTNUT ST	2	0	0	0	0	0	0	0.0	0.816	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
72192	0560135 - 0.34	Non Int CHESTNUT ST	2	0	0	0	0	0	0	0.0	0.816	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
18809	0560571 - 0.59	Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT	2	0	0	0	0	0	0	0.0	2.111	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
18808	0560571 - 0.63	0509228 POR,PEARL,SOMERSET ST	2	2	0	0	0	1	1	50.0	2.877	0.23	0.37	0.00
												Statewide Crash Rate:	0.12	
Study Years: 3.00		NODE TOTALS:		377	0	5	28	63	278	25.5	245.891	0.51	0.36	1.43

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
19029	19049	3106838	0 - 0.14	0100X - 0	0.14	2	6	0	0	0	0	5	0.0	0.00351	569.79	421.45	1.35
Int of CUMBERLAND AV FOREST AV				ST RTE 100											Statewide Crash Rate: 155.70		
72092	19049	4339345	0 - 0.02	0100X - 0.14	0.02	2	1	0	0	0	1	0	100.0	0.00060	560.07	636.36	0.00
Int of CUT FROM FOREST AV FOREST AV				ST RTE 100											Statewide Crash Rate: 155.70		
71751	72092	4339344	0 - 0.11	0100X - 0.16	0.11	2	5	0	0	1	2	2	60.0	0.00328	507.84	428.86	1.18
Int of FOREST AV RD INV 3210401				ST RTE 100											Statewide Crash Rate: 155.70		
18528	71751	4312989	0 - 0.02	0100X - 0.27	0.02	2	2	0	0	0	1	1	50.0	0.00059	1137.71	637.91	1.78
Int of FOREST AV HIGH ST EXT				ST RTE 100											Statewide Crash Rate: 155.70		
18528	19005	3129086	0 - 0.02	0100X - 0.29	0.02	2	0	0	0	0	0	0	0.0	0.00124	0.00	638.30	0.00
Int of FOREST AV HIGH ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
65128	19005	3118890	0 - 0.01	0100X - 0.31	0.01	2	0	0	0	0	0	0	0.0	0.00042	0.00	794.94	0.00
Int of FOREST AV RD INV 3201879				ST RTE 100											Statewide Crash Rate: 190.15		
16836	65128	3130295	0 - 0.02	0100X - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00083	0.00	701.61	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
16836	60347	3115194	0 - 0.02	0100X - 0.34	0.02	2	0	0	0	0	0	0	0.0	0.00124	0.00	638.73	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100											Statewide Crash Rate: 190.15		
60347	19192	3943967	0 - 0.02	0100X - 0.36	0.02	2	1	0	0	0	0	1	0.0	0.00147	227.38	612.10	0.00
Int of CUT FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
60347	19192	3943967	0.02 - 0.03	0100X - 0.38	0.01	2	0	0	0	0	0	0	0.0	0.00073	0.00	720.27	0.00
Int of CUT FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
19192	19193	3120357	0 - 0.06	0100X - 0.39	0.06	2	0	0	0	0	0	0	0.0	0.00280	0.00	518.03	0.00
Int of FOREST AV RAMP G ON FROM FOREST AV				ST RTE 100											Statewide Crash Rate: 190.15		
60339	60340	2074091	0 - 0.04	0100S - 10.61	0.04	2	0	0	0	0	0	0	0.0	0.00179	0.00	582.15	0.00
Int of FOREST AV RAMP C ON FROM FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
60340	16836	3115200	0 - 0.09	0100S - 10.65	0.09	2	3	0	0	0	0	3	0.0	0.00119	840.23	644.58	1.30
Non-Int FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
16836	65126	2783058	0 - 0.01	0100S - 10.74	0.01	2	0	0	0	0	0	0	0.0	0.00007	0.00	191.95	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				ST RTE 100S											Statewide Crash Rate: 190.15		
65126	19005	2783059	0 - 0.02	0100S - 10.75	0.02	2	2	0	1	0	0	1	50.0	0.00041	1641.64	797.44	2.06
Non Int FOREST AV				ST RTE 100S											Statewide Crash Rate: 190.15		
60340	60342	3123039	0 - 0.04	3201041 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00126	0.00	636.06	0.00
Non-Int FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		
60342	60343	3123354	0 - 0.03	3201041 - 0.04	0.03	2	1	0	0	0	0	1	0.0	0.00143	233.86	616.43	0.00
Int of FOREST AV RAMP A OFF TO FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		
60343	71531	4047084	0 - 0.02	3201041 - 0.07	0.02	2	0	0	0	0	0	0	0.0	0.00036	0.00	807.10	0.00
Int of CUT FOREST AV				RD INV 3201041											Statewide Crash Rate: 190.15		

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
71531	65126	4047085	0 - 0.01	3201041 - 0.09	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	794.80	0.00
Int of FOREST AV STATE ST EXT				RD INV 3201041											Statewide Crash Rate: 190.15		
60343	16835	3121818	0 - 0.03	3200506 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00088	0.00	692.34	0.00
Int of CUT FOREST AV				RD INV 3200506											Statewide Crash Rate: 190.15		
71531	16836	4047087	0 - 0.01	321020S - 0	0.01	2	0	0	0	0	0	0	0.0	0.00009	0.00	454.27	0.00
Int of FOREST AV STATE ST EXT				RD INV 321020S											Statewide Crash Rate: 190.15		
18528	71750	4312987	0 - 0.02	3201020 - 0.23	0.02	2	0	0	0	0	0	0	0.0	0.00066	0.00	735.25	0.00
Int of FOREST AV HIGH ST EXT				RD INV 3201020											Statewide Crash Rate: 190.15		
71750	71751	4313006	0 - 0.01	3210401 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00000	0.00	-	0.00
Int of HIGH ST EXT RD INV 3210401				RD INV 3210401											Statewide Crash Rate: 190.15	532633.47	
16835	71531	4047221	0 - 0.02	321020S - 0.01	0.02	2	0	0	0	0	0	0	0.0	0.00017	0.00	782.79	0.00
Int of CUT STATE ST EXT				RD INV 321020S											Statewide Crash Rate: 190.15		
72092	72093	4339351	0 - 0.02	3210576 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00012	0.00	456.97	0.00
Int of CUT FROM FOREST AV FOREST AV				RD INV 3210576											Statewide Crash Rate: 155.70		
72093	19049	4339348	0 - 0.02	0560563 - 0.02	0.02	2	0	0	0	0	0	0	0.0	0.00032	0.00	672.27	0.00
Int of CUT FROM FOREST AV PARK AV				RD INV 05 60563											Statewide Crash Rate: 155.70		
63224	18521	3115975	0 - 0.25	0001A - 12.20	0.25	2	2	0	0	0	1	1	50.0	0.00907	73.50	387.11	0.00
Int of CUMBERLAND AV FRANKLIN ST				US 1A											Statewide Crash Rate: 190.15		
18521	19000	3139409	0 - 0.10	0001A - 12.45	0.10	2	2	0	0	0	0	2	0.0	0.00465	143.48	455.15	0.00
Int of FOX ST FRANKLIN ST				US 1A											Statewide Crash Rate: 190.15		
19000	63230	3139410	0 - 0.03	0001A - 12.55	0.03	2	0	0	0	0	0	0	0.0	0.00160	0.00	282.71	0.00
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				US 1A											Statewide Crash Rate: 71.78		
19000	19197	3117265	0 - 0.03	001AS - 1.48	0.03	2	4	0	0	0	0	4	0.0	0.00143	931.64	288.40	3.23
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				US 1AS											Statewide Crash Rate: 71.78		
18521	19000	3937925	0 - 0.10	001AS - 1.51	0.10	2	1	0	0	0	0	1	0.0	0.00410	81.25	469.71	0.00
Int of FOX ST FRANKLIN ST				US 1AS											Statewide Crash Rate: 190.15		
18520	18521	3106672	0 - 0.24	001AS - 1.61	0.24	2	4	0	0	2	1	1	75.0	0.00802	166.35	398.43	0.00
Int of CUMBERLAND AV FRANKLIN ST				US 1AS											Statewide Crash Rate: 190.15		
72048	72049	4338622	0 - 0.03	3210555 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00011	0.00	385.85	0.00
Int of CUMBERLAND AV RD INV 3210555				RD INV 3210555											Statewide Crash Rate: 155.70		
19029	19030	3121772	0 - 0.03	0561238 - 0.17	0.03	2	0	0	0	0	0	0	0.0	0.00090	0.00	589.02	0.00
Int of CUMBERLAND AV FOREST AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19030	19031	194742	0 - 0.03	0561238 - 0.20	0.03	2	2	0	1	0	0	1	50.0	0.00087	765.82	593.23	1.29
Int of CUMBERLAND AV MECHANIC ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19031	19032	3123724	0 - 0.01	0561238 - 0.23	0.01	2	0	0	0	0	0	0	0.0	0.00033	0.00	672.20	0.00
Int of CUMBERLAND AV OAK ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19032	19033	3131705	0 - 0.04	0561238 - 0.24	0.04	2	4	0	0	0	0	4	0.0	0.00131	1014.15	540.74	1.88
Int of CUMBERLAND AV PARRIS ST				RD INV 05 61238											Statewide Crash Rate: 155.70		

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
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00031	0.00	672.22	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19034	19035	3123316	0 - 0.03	0561238 - 0.29	0.03	2	1	0	0	0	0	0	0.0	0.00060	558.76	636.13	0.00
Int of CASCO ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00040	0.00	667.44	0.00
Int of ALDER ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19036	19037	3106839	0 - 0.07	0561238 - 0.34	0.07	2	0	0	0	0	0	0	0.0	0.00133	0.00	539.64	0.00
Int of BROWN ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0.05	2	0	0	0	0	0	0	0.0	0.00123	0.00	549.67	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19038	19039	3117970	0 - 0.05	0561238 - 0.46	0.05	2	1	0	0	0	0	1	0.0	0.00113	295.69	560.58	0.00
Int of CUMBERLAND AV ELM ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
19039	19040	3130050	0 - 0.05	0561238 - 0.51	0.05	2	2	0	0	0	0	2	0.0	0.00112	592.92	560.91	1.06
Int of CEDAR ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 155.70		
18989	19040	3120761	0 - 0.04	0561238 - 0.56	0.04	2	0	0	0	0	0	0	0.0	0.00096	0.00	581.49	0.00
Int of CUMBERLAND AV, STONE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18989	18990	3120760	0 - 0.02	0561238 - 0.60	0.02	2	0	0	0	0	0	0	0.0	0.00043	0.00	662.56	0.00
Int of CUMBERLAND AV, STONE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18990	18994	3106833	0 - 0.02	0561238 - 0.62	0.02	2	1	0	0	0	0	0	0.0	0.00037	894.98	669.82	1.34
Int of CUMBERLAND AV MYRTLE ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18812	18994	3119280	0 - 0.04	0561238 - 0.64	0.04	2	1	0	0	0	0	1	0.0	0.00121	276.37	551.88	0.00
Int of CUMBERLAND AV PEARL ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18812	18986	3122292	0 - 0.05	0561238 - 0.68	0.05	2	4	0	0	0	1	3	25.0	0.00127	1048.35	545.03	1.92
Int of CUMBERLAND AV PEARL ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
72048	18986	4338619	0 - 0.03	0561238 - 0.73	0.03	2	1	0	0	0	0	1	0.0	0.00064	521.26	628.94	0.00
Int of CUMBERLAND AV RD INV 3210555				RD INV 05 61238											Statewide Crash Rate: 155.70		
18520	72048	4338618	0 - 0.01	0561238 - 0.76	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	610.11	0.00
Int of CUMBERLAND AV FRANKLIN ST				RD INV 05 61238											Statewide Crash Rate: 155.70		
18520	63224	3118814	0 - 0.03	0561238 - 0.77	0.03	2	0	0	0	0	0	0	0.0	0.00088	0.00	691.25	0.00
Int of CUMBERLAND AV FRANKLIN ST				RD INV 05 61238											Statewide Crash Rate: 190.15		
16836	60346	3115192	0 - 0.03	0560477 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00026	0.00	821.03	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		
60346	18999	3115193	0 - 0.13	0560477 - 0.03	0.13	2	8	0	1	0	0	7	12.5	0.00374	713.19	480.97	1.48
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0.03	2	0	0	0	0	0	0	0.0	0.00035	0.00	810.10	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		
18523	71632	4210637	0 - 0.03	0560477 - 0.19	0.03	2	0	0	0	0	0	0	0.0	0.00065	0.00	738.91	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60477											Statewide Crash Rate: 190.15		

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
71632	72190	4348446	0 - 0.11	0560477 - 0.22	0.11	2	13	0	0	1	3	9	30.8	0.00474	913.87	452.83	2.02
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
72190	71634	4348447	0 - 0.17	0560477 - 0.33	0.17	2	9	0	0	0	2	7	22.2	0.00712	421.15	409.74	1.03
Int of CHESTNUT ST MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
71634	19000	4210710	0 - 0.04	0560477 - 0.50	0.04	2	0	0	0	0	0	0	0.0	0.00084	0.00	699.71	0.00
Non Int MARGINAL WY				RD INV 05 60477											Statewide Crash Rate: 190.15		
19000	71634	4210711	0 - 0.04	3210333 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00084	0.00	699.71	0.00
Int of FRANKLIN ST FRANKLIN ST ART MARGINAL WAY MARGINAL WY				RD INV 3210333											Statewide Crash Rate: 190.15		
71632	18523	4210644	0 - 0.03	3210331 - 0	0.03	2	1	0	0	0	0	1	0.0	0.00065	515.52	738.91	0.00
Non Int MARGINAL WY				RD INV 3210331											Statewide Crash Rate: 190.15		
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0.02	2	0	0	0	0	0	0	0.0	0.00028	0.00	820.37	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 3210331											Statewide Crash Rate: 190.15		
60346	65129	3123766	0 - 0.01	3201880 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00020	0.00	807.25	0.00
Non Int MARGINAL WY				RD INV 3201880											Statewide Crash Rate: 190.15		
65129	16836	3139747	0 - 0.02	3201880 - 0.01	0.02	2	0	0	0	0	0	0	0.0	0.00017	0.00	783.12	0.00
Int of CUT MARGINAL WY				RD INV 3201880											Statewide Crash Rate: 190.15		
65129	60347	3116433	0 - 0.02	3200507 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00023	0.00	817.93	0.00
Int of CUT MARGINAL WY				RD INV 3200507											Statewide Crash Rate: 190.15		
18809	19012	194411	0 - 0.11	0560414 - 0	0.11	2	2	0	0	0	0	2	0.0	0.00013	4986.31	1440.63	3.46
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 05 60414											Statewide Crash Rate: 334.56		
19011	19012	194707	0 - 0.10	0560414 - 0.11	0.10	2	0	0	0	0	0	0	0.0	0.00014	0.00	1444.18	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19010	19011	194704	0 - 0.05	0560414 - 0.21	0.05	2	0	0	0	0	0	0	0.0	0.00017	0.00	1441.91	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0.01	2	0	0	0	0	0	0	0.0	0.00003	0.00	-363.15	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0.05	2	0	0	0	0	0	0	0.0	0.00020	0.00	1427.76	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
19007	19008	194700	0 - 0.05	0560414 - 0.32	0.05	2	0	0	0	0	0	0	0.0	0.00021	0.00	1415.66	0.00
0509427 POR,KENNEBEC,PARRIS ST.				RD INV 05 60414											Statewide Crash Rate: 334.56		
19006	19007	194698	0 - 0.03	0560414 - 0.37	0.03	2	1	0	0	0	0	0	0.0	0.00007	4763.91	1204.71	3.95
Int of BRATTLE ST KENNEBEC ST				RD INV 05 60414											Statewide Crash Rate: 334.56		
65127	19006	5094271	0 - 0.07	0560414 - 0.40	0.07	2	1	0	0	0	0	1	0.0	0.00014	2415.98	1442.52	1.67
Int of KENNEBEC ST RD INV 3201879				RD INV 05 60414											Statewide Crash Rate: 334.56		
16836	65127	2783081	0 - 0.03	0560414 - 0.47	0.03	2	0	0	0	0	0	0	0.0	0.00005	0.00	899.39	0.00
Int of FOREST AV KENNEBEC ST MARGINAL WY STATE ST EXT				RD INV 05 60414											Statewide Crash Rate: 334.56		

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
18809	71487	4046366	0 - 0.01	3210271 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00012	0.00	1431.54	0.00
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 3210271											Statewide Crash Rate: 334.56		
65128	65127	3121551	0 - 0.02	3201879 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00000	0.00	-	0.00
Int of FOREST AV RD INV 3201879				RD INV 3201879											Statewide Crash Rate: 334.56	25059.06	
19001	19002	194691	0 - 0.10	0560667 - 0	0.10	2	3	0	0	0	0	2	0.0	0.00039	2565.29	1284.82	2.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18808	19001	194409	0 - 0.11	0560667 - 0.10	0.11	2	2	0	0	0	0	2	0.0	0.00104	642.59	1018.48	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18808	18961	194408	0 - 0.05	0560667 - 0.21	0.05	2	1	0	0	0	0	1	0.0	0.00156	213.18	915.91	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18521	18961	5094284	0 - 0.06	0560667 - 0.26	0.06	2	0	0	0	0	0	0	0.0	0.00106	0.00	1013.64	0.00
Int of FOX ST FRANKLIN ST				RD INV 05 60667											Statewide Crash Rate: 334.56		
18521	18961	4210761	0 - 0.06	3210335 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00106	0.00	1013.64	0.00
Int of FOX ST FRANKLIN ST				RD INV 3210335											Statewide Crash Rate: 334.56		
18810	18992	5080416	0 - 0.05	0560426 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00021	1612.08	1420.32	1.14
Int of LANCASTER ST PEARL ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
18992	19013	194682	0 - 0.05	0560426 - 0.05	0.05	2	2	0	0	0	0	2	0.0	0.00021	3224.16	1420.32	2.27
Non Int LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19013	19014	5080418	0 - 0.05	0560426 - 0.10	0.05	2	0	0	0	0	0	0	0.0	0.00025	0.00	1387.23	0.00
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19014	19015	194712	0 - 0.05	0560426 - 0.15	0.05	2	0	0	0	0	0	0	0.0	0.00025	0.00	1391.89	0.00
Int of CEDAR ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0.05	2	0	0	0	0	0	0	0.0	0.00003	0.00	93.77	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19016	19017	194716	0 - 0.03	0560426 - 0.25	0.03	2	0	0	0	0	0	0	0.0	0.00002	0.00	-1712.32	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19017	19018	194718	0 - 0.05	0560426 - 0.28	0.05	2	0	0	0	0	0	0	0.0	0.00001	0.00	-4163.53	0.00
Int of ALDER ST LANCASTER ST				RD INV 05 60426											Statewide Crash Rate: 334.56		
19021	19022	3106837	0 - 0.07	0560560 - 0	0.07	2	0	0	0	0	0	0	0.0	0.00029	0.00	670.61	0.00
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60560											Statewide Crash Rate: 155.70		
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0.05	2	0	0	0	0	0	0	0.0	0.00016	0.00	583.35	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60560											Statewide Crash Rate: 155.70		
19023	19024	194730	0 - 0.05	0560560 - 0.12	0.05	2	0	0	0	0	0	0	0.0	0.00010	0.00	1373.53	0.00
Int of ELM ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
19024	19025	194732	0 - 0.05	0560560 - 0.17	0.05	2	1	0	1	0	0	0	100.0	0.00008	4359.15	1265.87	3.44
Int of CEDAR ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18988	19025	194676	0 - 0.04	0560560 - 0.22	0.04	2	1	0	0	0	0	1	0.0	0.00008	4399.05	1260.12	3.49
0509408 POR,STONE,OXFORD ST.				RD INV 05 60560											Statewide Crash Rate: 334.56		
18988	18991	194675	0 - 0.02	0560560 - 0.26	0.02	2	1	0	0	0	0	1	0.0	0.00001	25367.83	-4844.81	0.00
0509408 POR,STONE,OXFORD ST.				RD INV 05 60560											Statewide Crash Rate: 334.56		

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
18991	18995	194681	0 - 0.01	0560560 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00001	0.00	-7170.63	0.00
Int of MYRTLE ST OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18811	18995	194416	0 - 0.04	0560560 - 0.29	0.04	2	0	0	0	0	0	0	0.0	0.00008	0.00	1261.35	0.00
0509231 POR,PEARL,OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
18811	18985	194415	0 - 0.05	0560560 - 0.33	0.05	2	0	0	0	0	0	0	0.0	0.00003	0.00	-136.44	0.00
0509231 POR,PEARL,OXFORD ST				RD INV 05 60560											Statewide Crash Rate: 334.56		
19048	19049	3129303	0 - 0.03	0560593 - 0	0.03	2	3	0	0	0	0	3	0.0	0.00074	1347.76	612.37	2.20
Int of MECHANIC ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19047	19048	3106841	0 - 0.03	0560593 - 0.03	0.03	2	1	0	0	0	1	0	100.0	0.00097	343.31	579.62	0.00
Int of BRATTLE ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19046	19047	3129302	0 - 0.03	0560593 - 0.06	0.03	2	2	0	0	0	0	2	0.0	0.00067	989.64	623.30	1.59
Int of PARRIS ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19045	19046	3106840	0 - 0.05	0560593 - 0.09	0.05	2	1	0	0	0	0	1	0.0	0.00096	345.93	580.57	0.00
Int of HANOVER ST PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19021	19045	3122297	0 - 0.04	0560593 - 0.14	0.04	2	2	0	0	1	0	0	100.0	0.00035	1931.56	671.73	2.88
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19021	19043	3129954	0 - 0.07	0560593 - 0.18	0.07	2	5	0	0	0	1	4	20.0	0.00055	3048.20	644.53	4.73
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60593											Statewide Crash Rate: 155.70		
19019	19020	194721	0 - 0.03	0561200 - 0	0.03	2	1	0	0	0	0	1	0.0	0.00001	37123.66	-9148.89	0.00
Int of LANCASTER ST PARRIS ST				RD INV 05 61200											Statewide Crash Rate: 334.56		
19030	19048	194743	0 - 0.12	0560496 - 0	0.12	2	2	0	0	0	0	0	0.0	0.00023	2866.42	1401.72	2.04
Int of CUMBERLAND AV MECHANIC ST				RD INV 05 60496											Statewide Crash Rate: 334.56		
19006	19020	5080408	0 - 0.07	0560080 - 0	0.07	2	0	0	0	0	0	0	0.0	0.00014	0.00	1441.92	0.00
Int of BRATTLE ST KENNEBEC ST				RD INV 05 60080											Statewide Crash Rate: 334.56		
19020	19047	5080403	0 - 0.09	0560080 - 0.07	0.09	2	0	0	0	0	0	0	0.0	0.00027	0.00	1369.73	0.00
Int of BRATTLE ST LANCASTER ST				RD INV 05 60080											Statewide Crash Rate: 334.56		
19007	19019	194701	0 - 0.06	0560565 - 0	0.06	2	3	0	0	0	0	2	0.0	0.00013	7765.66	1437.52	5.40
0509427 POR,KENNEBEC,PARRIS ST.				RD INV 05 60565											Statewide Crash Rate: 334.56		
19019	19046	5080404	0 - 0.09	0560565 - 0.06	0.09	2	1	0	0	0	0	1	0.0	0.00026	1284.45	1380.99	0.00
Int of LANCASTER ST PARRIS ST				RD INV 05 60565											Statewide Crash Rate: 334.56		
19032	19046	5080406	0 - 0.10	0560565 - 0.15	0.10	2	1	0	0	0	0	0	0.0	0.00022	1492.23	1408.57	1.06
Int of CUMBERLAND AV PARRIS ST				RD INV 05 60565											Statewide Crash Rate: 334.56		
18999	19008	194689	0 - 0.11	0560345 - 0	0.11	2	1	0	0	0	0	1	0.0	0.00091	365.41	1052.54	0.00
Int of HANOVER ST MARGINAL WY				RD INV 05 60345											Statewide Crash Rate: 334.56		
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0.06	2	0	0	0	0	0	0	0.0	0.00026	0.00	1380.48	0.00
Int of HANOVER ST KENNEBEC ST				RD INV 05 60345											Statewide Crash Rate: 334.56		
19018	19045	5080405	0 - 0.09	0560345 - 0.17	0.09	2	3	0	0	0	1	2	33.3	0.00028	3556.24	1364.10	2.61
Int of HANOVER ST LANCASTER ST				RD INV 05 60345											Statewide Crash Rate: 334.56		
19033	19045	194749	0 - 0.08	0560345 - 0.26	0.08	2	0	0	0	0	0	0	0.0	0.00008	0.00	1256.41	0.00
Int of CUMBERLAND AV HANOVER ST				RD INV 05 60345											Statewide Crash Rate: 334.56		

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
69141	19017	3525695	0 - 0.06	0560008 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00016	0.00	1443.34	0.00
Int of ALDER ST KENNEBEC ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
19017	19021	194719	0 - 0.10	0560008 - 0.06	0.10	2	3	0	0	0	0	3	0.0	0.00013	7631.55	1439.08	5.30
Int of ALDER ST LANCASTER ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
19021	19035	194725	0 - 0.06	0560008 - 0.16	0.06	2	4	0	0	0	0	4	0.0	0.00003	41988.14	-86.53	0.00
Int of ALDER ST, OXFORD ST, PORTLAND ST				RD INV 05 60008											Statewide Crash Rate: 334.56		
18523	71633	4210640	0 - 0.06	0560818 - 0.55	0.06	2	1	0	0	0	0	1	0.0	0.00103	322.20	666.66	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60818											Statewide Crash Rate: 190.15		
18523	71633	4210647	0 - 0.06	3210332 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00132	0.00	627.88	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 3210332											Statewide Crash Rate: 190.15		
18523	19010	3940497	0 - 0.13	0560597 - 0	0.13	2	2	0	0	1	0	1	50.0	0.00112	597.87	654.84	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60597											Statewide Crash Rate: 190.15		
19010	19016	3106835	0 - 0.06	0560597 - 0.13	0.06	2	1	0	0	0	0	1	0.0	0.00069	480.00	728.39	0.00
Int of KENNEBEC ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19016	19022	3106836	0 - 0.07	0560597 - 0.19	0.07	2	0	0	0	0	0	0	0.0	0.00091	0.00	687.32	0.00
Int of LANCASTER ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0.04	2	0	0	0	0	0	0	0.0	0.00048	0.00	778.41	0.00
Int of OXFORD ST PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19037	19043	3124005	0 - 0.03	0560597 - 0.30	0.03	2	1	0	0	0	0	1	0.0	0.00060	559.17	750.54	0.00
Int of CUMBERLAND AV PREBLE ST				RD INV 05 60597											Statewide Crash Rate: 190.15		
19023	19038	3122299	0 - 0.07	0560252 - 0.10	0.07	2	3	0	0	0	0	3	0.0	0.00077	1296.42	712.50	1.82
Int of ELM ST OXFORD ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19015	19023	3123553	0 - 0.07	0560252 - 0.17	0.07	2	0	0	0	0	0	0	0.0	0.00041	0.00	796.03	0.00
Int of ELM ST LANCASTER ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19011	19015	3119283	0 - 0.05	0560252 - 0.24	0.05	2	1	0	0	0	0	1	0.0	0.00050	669.78	774.57	0.00
Int of ELM ST KENNEBEC ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
19002	19011	3129301	0 - 0.03	0560252 - 0.29	0.03	2	2	0	0	0	0	2	0.0	0.00040	1649.94	797.93	2.07
Int of ELM ST SOMERSET ST				RD INV 05 60252											Statewide Crash Rate: 190.15		
18523	19002	3106678	0 - 0.12	0560252 - 0.32	0.12	2	1	0	0	0	0	0	0.0	0.00190	175.35	572.86	0.00
Int of ELM ST MARGINAL WY PREBLE ST PREBLE ST EXT				RD INV 05 60252											Statewide Crash Rate: 190.15		
19014	19024	194713	0 - 0.07	0560120 - 0	0.07	2	1	0	0	0	0	0	0.0	0.00010	3245.35	1396.08	2.32
Int of CEDAR ST LANCASTER ST				RD INV 05 60120											Statewide Crash Rate: 334.56		
19024	19039	5080414	0 - 0.07	0560120 - 0.07	0.07	2	0	0	0	0	0	0	0.0	0.00008	0.00	1261.04	0.00
Int of CEDAR ST OXFORD ST				RD INV 05 60120											Statewide Crash Rate: 334.56		
19025	19040	194734	0 - 0.07	0560135 - 0.09	0.07	2	6	0	0	0	0	5	0.0	0.00031	6379.62	1339.33	4.76
Int of CHESTNUT ST OXFORD ST				RD INV 05 60135											Statewide Crash Rate: 334.56		

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
19013	19025	5080419	0 - 0.07	0560135 - 0.16	0.07	2	3	0	0	0	0	1	0.0	0.00034	2956.11	1320.92	2.24
Int of CHESTNUT ST LANCASTER ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19012	19013	194709	0 - 0.04	0560135 - 0.23	0.04	2	1	0	0	0	1	0	100.0	0.00026	1304.63	1384.12	0.00
Int of CHESTNUT ST KENNEBEC ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19001	19012	5080420	0 - 0.04	0560135 - 0.27	0.04	2	0	0	0	0	0	0	0.0	0.00028	0.00	1368.76	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0.01	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Int of CHESTNUT ST SOMERSET ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72191	72192	4348463	0 - 0.02	0560135 - 0.32	0.02	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Non Int CHESTNUT ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72192	72190	4348464	0 - 0.08	0560135 - 0.34	0.08	2	2	0	0	0	0	2	0.0	0.00065	1021.07	1143.91	0.00
Non Int CHESTNUT ST				RD INV 05 60135											Statewide Crash Rate: 334.56		
72192	72191	4348465	0 - 0.02	3210625 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00008	0.00	1303.63	0.00
Non Int CHESTNUT ST				RD INV 3210625											Statewide Crash Rate: 334.56		
18988	18989	194674	0 - 0.08	0560679 - 0	0.08	2	1	0	0	0	0	1	0.0	0.00010	3367.41	1385.06	2.43
0509408 POR,STONE,OXFORD ST.				RD INV 05 60679											Statewide Crash Rate: 334.56		
18990	18991	5080412	0 - 0.08	0560527 - 0.09	0.08	2	1	0	0	0	0	1	0.0	0.00003	10668.72	-133.05	0.00
Int of CUMBERLAND AV MYRTLE ST				RD INV 05 60527											Statewide Crash Rate: 334.56		
18994	18995	5080411	0 - 0.08	0560126 - 0	0.08	2	0	0	0	0	0	0	0.0	0.00007	0.00	1182.89	0.00
Int of CHAPEL ST CUMBERLAND AV				RD INV 05 60126											Statewide Crash Rate: 334.56		
18811	18812	194414	0 - 0.08	0560571 - 0.40	0.08	2	3	0	0	0	0	2	0.0	0.00084	1185.00	1073.50	1.10
0509231 POR,PEARL,OXFORD ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18810	18811	194412	0 - 0.07	0560571 - 0.48	0.07	2	0	0	0	0	0	0	0.0	0.00091	0.00	1052.71	0.00
Int of LANCASTER ST PEARL ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18809	18810	194410	0 - 0.04	0560571 - 0.55	0.04	2	0	0	0	0	0	0	0.0	0.00048	0.00	1230.05	0.00
Int of KENNEBEC ST PEARL ST WHOLE FOODS ENT				RD INV 05 60571											Statewide Crash Rate: 334.56		
18808	18809	194407	0 - 0.04	0560571 - 0.59	0.04	2	0	0	0	0	0	0	0.0	0.00067	0.00	1135.50	0.00
0509228 POR,PEARL,SOMERSET ST				RD INV 05 60571											Statewide Crash Rate: 334.56		
18985	18986	194672	0 - 0.08	0560798 - 0	0.08	2	4	0	0	1	0	2	33.3	0.00007	18119.88	1240.83	14.60
0509405 POR,WILMOT,OXFORD ST.				RD INV 05 60798											Statewide Crash Rate: 334.56		
Study Years: 3.00				Section Totals:	7.75		165	0	4	7	16	121	16.4	0.12123	453.68	257.52	1.76
				Grand Totals:	7.75		542	0	9	35	79	399	22.7	0.12123	1490.26	365.03	4.08

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19029	19049	3106838	0 - 0.14	0100X - 0	6	0	0	0	0	5	2020-3730	02/01/2020	0.03	PD
											2022-10276	03/21/2022	0.04	PD
											2021-19801	08/01/2021	0.05	
											2022-6214	02/21/2022	0.11	PD
											2020-4682	02/10/2020	0.11	PD
											2021-1667	01/22/2021	0.13	PD
72092	19049	4339345	0 - 0.02	0100X - 0.14	1	0	0	0	1	0	2020-9461	04/02/2020	0.15	C
71751	72092	4339344	0 - 0.11	0100X - 0.16	5	0	0	1	2	2	2022-19216	07/09/2022	0.20	PD
											2021-8927	04/11/2021	0.22	B
											2021-26812	10/06/2021	0.24	C
											2022-147	01/04/2022	0.25	C
											2022-32571	11/07/2022	0.25	PD
18528	71751	4312989	0 - 0.02	0100X - 0.27	2	0	0	0	1	1	2021-37365	12/27/2021	0.28	C
											2022-2590	01/16/2022	0.28	PD
18528	19005	3129086	0 - 0.02	0100X - 0.29	0	0	0	0	0	0				
65128	19005	3118890	0 - 0.01	0100X - 0.31	0	0	0	0	0	0				
16836	65128	3130295	0 - 0.02	0100X - 0.32	0	0	0	0	0	0				
16836	60347	3115194	0 - 0.02	0100X - 0.34	0	0	0	0	0	0				
60347	19192	3943967	0.02 - 0.03	0100X - 0.36	0	0	0	0	0	0				
60347	19192	3943967	0 - 0.02	0100X - 0.36	1	0	0	0	0	1	2021-24904	09/17/2021	0.37	PD
19192	19193	3120357	0 - 0.06	0100X - 0.39	0	0	0	0	0	0				
60339	60340	2074091	0 - 0.04	0100S - 10.61	0	0	0	0	0	0				
60340	16836	3115200	0 - 0.09	0100S - 10.65	3	0	0	0	0	3	2021-10785	05/05/2021	10.70	PD
											2021-36152	12/17/2021	10.70	PD
											2020-30920	12/09/2020	10.73	PD
16836	65126	2783058	0 - 0.01	0100S - 10.74	0	0	0	0	0	0				
65126	19005	2783059	0 - 0.02	0100S - 10.75	2	0	1	0	0	1	2021-26947	10/07/2021	10.76	A
											2022-38948	09/19/2022	10.76	PD
60340	60342	3123039	0 - 0.04	3201041 - 0	0	0	0	0	0	0				
60342	60343	3123354	0 - 0.03	3201041 - 0.04	1	0	0	0	0	1	2021-31336	11/12/2021	0.06	PD
60343	71531	4047084	0 - 0.02	3201041 - 0.07	0	0	0	0	0	0				
71531	65126	4047085	0 - 0.01	3201041 - 0.09	0	0	0	0	0	0				
60343	16835	3121818	0 - 0.03	3200506 - 0	0	0	0	0	0	0				
71531	16836	4047087	0 - 0.01	321020S - 0	0	0	0	0	0	0				
18528	71750	4312987	0 - 0.02	3201020 - 0.23	0	0	0	0	0	0				
71750	71751	4313006	0 - 0.01	3210401 - 0	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
16835	71531	4047221	0 - 0.02	321020S - 0.01	0	0	0	0	0	0				
72092	72093	4339351	0 - 0.02	3210576 - 0	0	0	0	0	0	0				
72093	19049	4339348	0 - 0.02	0560563 - 0.02	0	0	0	0	0	0				
63224	18521	3115975	0 - 0.25	0001A - 12.20	2	0	0	0	1	1	2020-1139	01/13/2020	12.36	C
											2022-25279	09/01/2022	12.40	PD
18521	19000	3139409	0 - 0.10	0001A - 12.45	2	0	0	0	0	2	2020-21476	09/04/2020	12.49	PD
											2020-23254	09/29/2020	12.54	PD
19000	63230	3139410	0 - 0.03	0001A - 12.55	0	0	0	0	0	0				
19000	19197	3117265	0 - 0.03	001AS - 1.48	4	0	0	0	0	4	2022-18559	07/01/2022	1.49	PD
											2020-9212	03/30/2020	1.50	PD
											2022-29087	10/12/2022	1.50	PD
											2022-33173	11/12/2022	1.50	PD
18521	19000	3937925	0 - 0.10	001AS - 1.51	1	0	0	0	0	1	2021-17588	07/09/2021	1.52	PD
18520	18521	3106672	0 - 0.24	001AS - 1.61	4	0	0	2	1	1	2022-29644	10/16/2022	1.62	B
											2021-25700	09/25/2021	1.63	PD
											2020-8383	03/19/2020	1.66	C
											2021-14634	06/13/2021	1.83	B
72048	72049	4338622	0 - 0.03	3210555 - 0	0	0	0	0	0	0				
19029	19030	3121772	0 - 0.03	0561238 - 0.17	0	0	0	0	0	0				
19030	19031	194742	0 - 0.03	0561238 - 0.20	2	0	1	0	0	1	2022-1976	01/20/2022	0.22	A
											2022-15401	06/04/2022	0.22	PD
19031	19032	3123724	0 - 0.01	0561238 - 0.23	0	0	0	0	0	0				
19032	19033	3131705	0 - 0.04	0561238 - 0.24	4	0	0	0	0	4	2022-37745	12/16/2022	0.25	PD
											2020-20907	09/02/2020	0.26	PD
											2022-3608	02/02/2022	0.27	PD
											2021-2566	02/01/2021	0.27	PD
19033	19034	3130203	0 - 0.01	0561238 - 0.28	0	0	0	0	0	0				
19034	19035	3123316	0 - 0.03	0561238 - 0.29	1	0	0	0	0	0	2022-13869	05/20/2022	0.30	
19035	19036	3122300	0 - 0.02	0561238 - 0.32	0	0	0	0	0	0				
19036	19037	3106839	0 - 0.07	0561238 - 0.34	0	0	0	0	0	0				
19037	19038	3122301	0 - 0.05	0561238 - 0.41	0	0	0	0	0	0				
19038	19039	3117970	0 - 0.05	0561238 - 0.46	1	0	0	0	0	1	2022-29074	10/12/2022	0.50	PD
19039	19040	3130050	0 - 0.05	0561238 - 0.51	2	0	0	0	0	2	2020-15282	06/26/2020	0.52	PD
											2021-35320	12/13/2021	0.55	PD
18989	19040	3120761	0 - 0.04	0561238 - 0.56	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18989	18990	3120760	0 - 0.02	0561238 - 0.60	0	0	0	0	0	0				
18990	18994	3106833	0 - 0.02	0561238 - 0.62	1	0	0	0	0	0	2022-26146	09/13/2022	0.63	
18812	18994	3119280	0 - 0.04	0561238 - 0.64	1	0	0	0	0	1	2022-37731	10/15/2022	0.65	PD
18812	18986	3122292	0 - 0.05	0561238 - 0.68	4	0	0	0	1	3	2020-3726	01/28/2020	0.70	PD
											2022-8488	03/15/2022	0.70	PD
											2022-2287	01/21/2022	0.72	C
											2022-5187	02/15/2022	0.72	PD
72048	18986	4338619	0 - 0.03	0561238 - 0.73	1	0	0	0	0	1	2022-22558	08/10/2022	0.75	PD
18520	72048	4338618	0 - 0.01	0561238 - 0.76	0	0	0	0	0	0				
18520	63224	3118814	0 - 0.03	0561238 - 0.77	0	0	0	0	0	0				
16836	60346	3115192	0 - 0.03	0560477 - 0	0	0	0	0	0	0				
60346	18999	3115193	0 - 0.13	0560477 - 0.03	8	0	1	0	0	7	2020-17585	07/25/2020	0.04	PD
											2022-30868	10/26/2022	0.04	PD
											2020-17159	07/20/2020	0.06	PD
											2022-35271	11/28/2022	0.06	PD
											2021-25183	09/21/2021	0.10	A
											2021-24650	09/16/2021	0.11	PD
											2022-1136	01/13/2022	0.13	PD
											2021-9593	04/18/2021	0.15	PD
18523	18999	3106676	0 - 0.03	0560477 - 0.16	0	0	0	0	0	0				
18523	71632	4210637	0 - 0.03	0560477 - 0.19	0	0	0	0	0	0				
71632	72190	4348446	0 - 0.11	0560477 - 0.22	13	0	0	1	3	9	2022-38190	12/21/2022	0.23	PD
											2020-14731	06/22/2020	0.24	B
											2021-7076	03/18/2021	0.24	C
											2021-25430	09/23/2021	0.24	C
											2021-25716	09/23/2021	0.26	PD
											2021-24545	09/15/2021	0.29	PD
											2020-18507	08/05/2020	0.30	C
											2021-30499	11/05/2021	0.30	PD
											2020-26950	11/05/2020	0.30	PD
											2021-20285	08/06/2021	0.30	PD
											2020-20822	09/01/2020	0.31	PD
											2022-8207	03/12/2022	0.31	PD
											2020-12382	05/22/2020	0.31	PD

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
72190	71634	4348447	0 - 0.17	0560477 - 0.33	9	0	0	0	2	7	2022-17097	06/17/2022	0.34	PD
											2021-7419	03/23/2021	0.38	C
											2022-23014	08/15/2022	0.43	PD
											2020-3966	02/04/2020	0.45	C
											2022-20212	07/19/2022	0.48	PD
											2020-21477	09/09/2020	0.49	PD
											2020-2144	01/17/2020	0.49	PD
											2020-5431	02/15/2020	0.49	PD
											2021-31009	11/11/2021	0.49	PD
71634	19000	4210710	0 - 0.04	0560477 - 0.50	0	0	0	0	0	0				
19000	71634	4210711	0 - 0.04	3210333 - 0	0	0	0	0	0	0				
71632	18523	4210644	0 - 0.03	3210331 - 0	1	0	0	0	0	1	2022-14105	05/17/2022	0.02	PD
18523	18999	4210645	0 - 0.02	3210331 - 0.03	0	0	0	0	0	0				
60346	65129	3123766	0 - 0.01	3201880 - 0	0	0	0	0	0	0				
65129	16836	3139747	0 - 0.02	3201880 - 0.01	0	0	0	0	0	0				
65129	60347	3116433	0 - 0.02	3200507 - 0	0	0	0	0	0	0				
18809	19012	194411	0 - 0.11	0560414 - 0	2	0	0	0	0	2	2022-5251	02/11/2022	0.02	PD
											2022-12400	05/03/2022	0.07	PD
19011	19012	194707	0 - 0.10	0560414 - 0.11	0	0	0	0	0	0				
19010	19011	194704	0 - 0.05	0560414 - 0.21	0	0	0	0	0	0				
69141	19010	3509369	0 - 0.01	0560414 - 0.26	0	0	0	0	0	0				
19008	69141	5094277	0 - 0.05	0560414 - 0.27	0	0	0	0	0	0				
19007	19008	194700	0 - 0.05	0560414 - 0.32	0	0	0	0	0	0				
19006	19007	194698	0 - 0.03	0560414 - 0.37	1	0	0	0	0	0	2020-3275	01/28/2020	0.38	
65127	19006	5094271	0 - 0.07	0560414 - 0.40	1	0	0	0	0	1	2020-19020	08/11/2020	0.46	PD
16836	65127	2783081	0 - 0.03	0560414 - 0.47	0	0	0	0	0	0				
18809	71487	4046366	0 - 0.01	3210271 - 0	0	0	0	0	0	0				
65128	65127	3121551	0 - 0.02	3201879 - 0	0	0	0	0	0	0				
19001	19002	194691	0 - 0.10	0560667 - 0	3	0	0	0	0	2	2022-23271	08/08/2022	0.03	PD
											2022-7518	03/05/2022	0.08	
											2022-31782	11/02/2022	0.09	PD
18808	19001	194409	0 - 0.11	0560667 - 0.10	2	0	0	0	0	2	2021-25358	09/23/2021	0.13	PD
											2021-25178	09/21/2021	0.18	PD
18808	18961	194408	0 - 0.05	0560667 - 0.21	1	0	0	0	0	1	2022-33394	11/15/2022	0.22	PD
18521	18961	5094284	0 - 0.06	0560667 - 0.26	0	0	0	0	0	0				
18521	18961	4210761	0 - 0.06	3210335 - 0	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18810	18992	5080416	0 - 0.05	0560426 - 0	1	0	0	0	0	1	2022-32257	11/04/2022	0.04	PD
18992	19013	194682	0 - 0.05	0560426 - 0.05	2	0	0	0	0	2	2021-22001	08/02/2021	0.08	PD
											2020-83	01/02/2020	0.09	PD
19013	19014	5080418	0 - 0.05	0560426 - 0.10	0	0	0	0	0	0				
19014	19015	194712	0 - 0.05	0560426 - 0.15	0	0	0	0	0	0				
19015	19016	5080410	0 - 0.05	0560426 - 0.20	0	0	0	0	0	0				
19016	19017	194716	0 - 0.03	0560426 - 0.25	0	0	0	0	0	0				
19017	19018	194718	0 - 0.05	0560426 - 0.28	0	0	0	0	0	0				
19021	19022	3106837	0 - 0.07	0560560 - 0	0	0	0	0	0	0				
19022	19023	3122298	0 - 0.05	0560560 - 0.07	0	0	0	0	0	0				
19023	19024	194730	0 - 0.05	0560560 - 0.12	0	0	0	0	0	0				
19024	19025	194732	0 - 0.05	0560560 - 0.17	1	0	1	0	0	0	2022-368	01/06/2022	0.21	A
18988	19025	194676	0 - 0.04	0560560 - 0.22	1	0	0	0	0	1	2020-8116	03/14/2020	0.23	PD
18988	18991	194675	0 - 0.02	0560560 - 0.26	1	0	0	0	0	1	2022-19506	07/12/2022	0.27	PD
18991	18995	194681	0 - 0.01	0560560 - 0.28	0	0	0	0	0	0				
18811	18995	194416	0 - 0.04	0560560 - 0.29	0	0	0	0	0	0				
18811	18985	194415	0 - 0.05	0560560 - 0.33	0	0	0	0	0	0				
19048	19049	3129303	0 - 0.03	0560593 - 0	3	0	0	0	0	3	2022-26881	09/21/2022	0.02	PD
											2022-36567	12/09/2022	0.02	PD
											2021-4171	02/17/2021	0.02	PD
19047	19048	3106841	0 - 0.03	0560593 - 0.03	1	0	0	0	1	0	2021-11095	05/07/2021	0.04	C
19046	19047	3129302	0 - 0.03	0560593 - 0.06	2	0	0	0	0	2	2022-13438	05/13/2022	0.07	PD
											2022-14111	05/21/2022	0.08	PD
19045	19046	3106840	0 - 0.05	0560593 - 0.09	1	0	0	0	0	1	2020-7317	03/04/2020	0.13	PD
19021	19045	3122297	0 - 0.04	0560593 - 0.14	2	0	0	1	0	0	2022-1557	01/01/2022	0.15	
											2021-8970	04/01/2021	0.15	B
19021	19043	3129954	0 - 0.07	0560593 - 0.18	5	0	0	0	1	4	2022-8486	03/15/2022	0.21	PD
											2021-23574	09/06/2021	0.21	PD
											2022-33653	11/11/2022	0.22	PD
											2020-26608	10/22/2020	0.23	C
											2020-19411	08/07/2020	0.23	PD
19019	19020	194721	0 - 0.03	0561200 - 0	1	0	0	0	0	1	2020-19716	08/19/2020	0.01	PD
19030	19048	194743	0 - 0.12	0560496 - 0	2	0	0	0	0	0	2021-14243	06/08/2021	0.02	
											2021-24167	09/12/2021	0.10	
19006	19020	5080408	0 - 0.07	0560080 - 0	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19020	19047	5080403	0 - 0.09	0560080 - 0.07	0	0	0	0	0	0				
19007	19019	194701	0 - 0.06	0560565 - 0	3	0	0	0	0	2	2022-33473	11/15/2022	0.01	PD
											2022-25470	09/07/2022	0.03	PD
											2022-16276	06/11/2022	0.04	
19019	19046	5080404	0 - 0.09	0560565 - 0.06	1	0	0	0	0	1	2021-4030	02/16/2021	0.11	PD
19032	19046	5080406	0 - 0.10	0560565 - 0.15	1	0	0	0	0	0	2021-36164	12/19/2021	0.24	
18999	19008	194689	0 - 0.11	0560345 - 0	1	0	0	0	0	1	2021-8903	04/11/2021	0.06	PD
19008	19018	5080409	0 - 0.06	0560345 - 0.11	0	0	0	0	0	0				
19018	19045	5080405	0 - 0.09	0560345 - 0.17	3	0	0	0	1	2	2020-11372	04/20/2020	0.18	PD
											2020-18215	07/31/2020	0.18	PD
											2021-13760	05/09/2021	0.21	C
19033	19045	194749	0 - 0.08	0560345 - 0.26	0	0	0	0	0	0				
69141	19017	3525695	0 - 0.06	0560008 - 0	0	0	0	0	0	0				
19017	19021	194719	0 - 0.10	0560008 - 0.06	3	0	0	0	0	3	2021-27344	10/09/2021	0.10	PD
											2022-4561	02/09/2022	0.10	PD
											2022-32255	10/26/2022	0.14	PD
19021	19035	194725	0 - 0.06	0560008 - 0.16	4	0	0	0	0	4	2022-24074	08/24/2022	0.18	PD
											2022-36768	12/10/2022	0.20	PD
											2021-33319	11/29/2021	0.21	PD
											2022-5014	02/11/2022	0.21	PD
18523	71633	4210640	0 - 0.06	0560818 - 0.55	1	0	0	0	0	1	2021-22974	08/31/2021	0.58	PD
18523	71633	4210647	0 - 0.06	3210332 - 0	0	0	0	0	0	0				
18523	19010	3940497	0 - 0.13	0560597 - 0	2	0	0	1	0	1	2022-17686	06/25/2022	0.11	B
											2022-1128	01/13/2022	0.11	PD
19010	19016	3106835	0 - 0.06	0560597 - 0.13	1	0	0	0	0	1	2022-9542	03/25/2022	0.14	PD
19016	19022	3106836	0 - 0.07	0560597 - 0.19	0	0	0	0	0	0				
19022	19043	3117969	0 - 0.04	0560597 - 0.26	0	0	0	0	0	0				
19037	19043	3124005	0 - 0.03	0560597 - 0.30	1	0	0	0	0	1	2021-12331	05/21/2021	0.31	PD
19023	19038	3122299	0 - 0.07	0560252 - 0.10	3	0	0	0	0	3	2022-11742	04/15/2022	0.12	PD
											2021-16503	07/01/2021	0.13	PD
											2021-32496	11/18/2021	0.15	PD
19015	19023	3123553	0 - 0.07	0560252 - 0.17	0	0	0	0	0	0				
19011	19015	3119283	0 - 0.05	0560252 - 0.24	1	0	0	0	0	1	2022-19640	07/14/2022	0.26	PD
19002	19011	3129301	0 - 0.03	0560252 - 0.29	2	0	0	0	0	2	2020-29957	12/02/2020	0.30	PD
											2022-21105	07/27/2022	0.30	PD

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18523	19002	3106678	0 - 0.12	0560252 - 0.32	1	0	0	0	0	0	2022-37747	12/18/2022	0.35	
19014	19024	194713	0 - 0.07	0560120 - 0	1	0	0	0	0	0	2021-1478	01/03/2021	0.05	
19024	19039	5080414	0 - 0.07	0560120 - 0.07	0	0	0	0	0	0				
19025	19040	194734	0 - 0.07	0560135 - 0.09	6	0	0	0	0	5	2022-8675	02/25/2022	0.10	PD
											2021-6671	03/14/2021	0.10	PD
											2020-20020	08/23/2020	0.10	PD
											2022-10623	04/10/2022	0.11	
											2021-12457	05/24/2021	0.14	PD
											2020-5668	02/19/2020	0.14	PD
19013	19025	5080419	0 - 0.07	0560135 - 0.16	3	0	0	0	0	1	2022-38955	12/02/2022	0.19	
											2020-20337	08/25/2020	0.19	PD
											2022-23254	08/17/2022	0.22	
19012	19013	194709	0 - 0.04	0560135 - 0.23	1	0	0	0	1	0	2020-23199	09/29/2020	0.24	C
19001	19012	5080420	0 - 0.04	0560135 - 0.27	0	0	0	0	0	0				
19001	72191	4348461	0 - 0.01	0560135 - 0.31	0	0	0	0	0	0				
72191	72192	4348463	0 - 0.02	0560135 - 0.32	0	0	0	0	0	0				
72192	72190	4348464	0 - 0.08	0560135 - 0.34	2	0	0	0	0	2	2020-7621	02/21/2020	0.37	PD
											2020-10619	04/25/2020	0.41	PD
72192	72191	4348465	0 - 0.02	3210625 - 0	0	0	0	0	0	0				
18988	18989	194674	0 - 0.08	0560679 - 0	1	0	0	0	0	1	2020-10150	04/15/2020	0.02	PD
18990	18991	5080412	0 - 0.08	0560527 - 0.09	1	0	0	0	0	1	2020-27491	11/10/2020	0.16	PD
18994	18995	5080411	0 - 0.08	0560126 - 0	0	0	0	0	0	0				
18811	18812	194414	0 - 0.08	0560571 - 0.40	3	0	0	0	0	2	2021-4519	02/20/2021	0.41	PD
											2021-33255	11/27/2021	0.42	PD
											2022-35265	11/28/2022	0.44	
18810	18811	194412	0 - 0.07	0560571 - 0.48	0	0	0	0	0	0				
18809	18810	194410	0 - 0.04	0560571 - 0.55	0	0	0	0	0	0				
18808	18809	194407	0 - 0.04	0560571 - 0.59	0	0	0	0	0	0				
18985	18986	194672	0 - 0.08	0560798 - 0	4	0	0	1	0	2	2022-24805	09/01/2022	0.01	
											2021-28110	10/17/2021	0.01	PD
											2021-3886	02/08/2021	0.01	PD
											2020-6900	02/28/2020	0.05	B
				Totals:	165	0	4	7	16	121				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	1	6	1	0	0	0	0	1	1	4	1	4	4	5	2	3	7	3	5	1	1	1	1	0	0	52
MONDAY	0	2	0	1	0	1	2	3	6	3	4	6	11	5	3	6	9	6	5	3	2	1	0	1	0	80
TUESDAY	1	0	0	0	0	0	1	6	7	4	5	5	9	14	6	12	1	4	5	4	3	1	2	0	0	90
WEDNESDAY	0	0	0	0	1	1	3	3	3	5	5	5	8	8	9	6	6	3	7	0	2	5	2	0	0	82
THURSDAY	0	0	0	0	0	1	2	3	2	2	2	4	7	2	4	5	10	6	3	4	3	0	0	1	0	61
FRIDAY	1	0	0	0	0	2	1	5	2	5	5	4	7	12	7	11	17	7	3	7	2	2	2	1	0	103
SATURDAY	1	2	3	0	0	1	0	2	0	5	5	9	7	5	6	6	3	2	4	2	3	3	1	4	0	74
Totals	4	10	4	1	1	6	9	23	21	28	27	37	53	51	37	49	53	31	32	21	16	13	8	7	0	542

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	541
2-(Sport) Utility Vehicle	322
3-Passenger Van	12
4-Cargo Van (10K lbs or Less)	12
5-Pickup	92
6-Motor Home	2
7-School Bus	2
8-Transit Bus	7
9-Motor Coach	1
10-Other Bus	0
11-Motorcycle	2
12-Moped	2
13-Low Speed Vehicle	1
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	3
17-Medium/Heavy Trucks (More than 10,000 lbs)	18
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	18

Unit Type	Total
23-Bicyclist	16
24-Witness	65
25-Other	38
26-Construction	1
27-Farm Vehicle	1
Total	1156

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	90	363	19	4	0	0	476
Ran Off Roadway	12	0	0	0	0	0	12
Failed to Yield Right-of-Way	94	16	1	0	0	0	111
Ran Red Light	31	1	0	0	0	0	32
Ran Stop Sign	3	0	0	0	0	0	3
Disregarded Other Traffic Sign	6	1	0	0	0	0	7
Disregarded Other Road Markings	2	0	0	0	0	0	2
Exceeded Posted Speed Limit	1	0	0	0	0	0	1
Drove Too Fast For Conditions	7	1	0	0	0	0	8
Improper Turn	30	6	0	0	0	0	36
Improper Backing	19	0	0	0	0	0	19
Improper Passing	6	2	0	0	0	0	8
Wrong Way	1	0	0	0	0	0	1
Followed Too Closely	111	16	0	0	0	0	127
Failed to Keep in Proper Lane	34	7	0	0	0	0	41
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	6	1	0	0	0	0	7
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	5	0	0	0	0	0	5
Over-Correcting/Over-Steering	8	1	0	0	0	0	9
Other Contributing Action	26	0	0	0	0	0	26
Unknown	6	7	0	0	0	0	13
Total	498	422	20	4	0	0	944

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	461	416	19	4	0	29	929
Physically Impaired	1	0	0	0	0	0	1
Emotional(Depressed, Angry, Disturbed, etc.)	5	1	0	0	0	1	7
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	3	0	0	0	0	0	3
Under the Influence of Medications/Drugs/Alcohol	15	1	0	0	0	3	19
Other	4	3	0	0	0	1	8
Total	490	421	19	4	0	34	968

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	1	0	0	0	0	1
10-14	0	0	0	0	0	0
15-19	58	0	0	0	0	58
20-24	113	0	0	0	0	113
25-29	124	0	0	0	0	124
30-39	199	0	0	0	0	199
40-49	140	0	0	0	0	140
50-59	147	0	0	0	0	147
60-69	106	0	0	0	0	106
70-79	58	0	0	0	0	58
80-Over	21	0	0	0	0	21
Unknown	90	16	0	18	0	124
Total	1057	16	0	18	0	1091

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	3
2-Fire / Explosion	0	39-Unknown	7
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	1015
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	8		
10-Pedalcycle	4		
11-Railway Vehicle - Train, Engine	1		
12-Animal	0		
13-Motor Vehicle in Transport	917		
14-Parked Motor Vehicle	64		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	3		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	2		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	4		
33-Traffic Sign Support	1		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	9	10
B	35	38
C	79	102
PD	399	0
Total	522	150

Road Character

Road Grade	Total
1-Level	418
2-On Grade	104
3-Top of Hill	5
4-Bottom of Hill	13
5-Other	2
Total	542

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	240
2-Traffic Signals (Flashing)	8
3-Advisory/Warning Sign	5
4-Stop Signs - All Approaches	11
5-Stop Signs - Other	57
6-Yield Sign	50
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	1
13-None	166
14-Other	4
Total	542

Light

Light Condition	Total
1-Daylight	402
2-Dawn	3
3-Dusk	13
4-Dark - Lighted	114
5-Dark - Not Lighted	5
6-Dark - Unknown Lighting	1
7-Unknown	4
Total	542

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	15	6	25	46
FEBRUARY	16	15	21	52
MARCH	11	10	12	33
APRIL	4	15	14	33
MAY	8	20	13	41
JUNE	9	11	18	38
JULY	11	17	16	44
AUGUST	18	19	18	55
SEPTEMBER	18	27	17	62
OCTOBER	7	17	23	47
NOVEMBER	9	19	25	53
DECEMBER	8	13	17	38
Total	134	189	219	542

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	102	0	92	96	14	12	0	1	5	0	0	0	0	0	322
Head-on - Sideswipe	6	0	1	0	0	1	0	0	0	0	0	0	0	0	8
Intersection Movement	0	0	33	78	4	29	0	0	0	0	0	0	0	0	144
Pedestrians	4	0	1	9	0	2	0	0	0	0	0	0	0	0	16
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	11	1	6	7	1	2	0	0	1	3	1	0	0	0	33
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	2	0	3	10	0	2	0	0	0	0	0	0	0	0	17
Other	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	126	1	136	201	19	48	0	1	6	3	1	0	0	0	542

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	72	2	1	0	0	0	1	1	0	0	6	83
Dark - Not Lighted	4	0	0	0	0	0	0	0	0	0	0	4
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	296	2	0	0	0	0	0	3	0	0	11	312
Dusk	8	1	0	0	0	0	0	0	0	0	1	10
Unknown	1	0	0	0	0	0	0	0	0	0	0	1
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	3	3
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	1	0	0	0	0	0	0	0	0	0	0	1
Dawn	1	0	0	0	0	0	0	0	0	0	1	2
Daylight	44	0	0	0	0	0	1	0	0	0	9	54
Dusk	2	0	0	0	0	0	0	0	0	0	0	2
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	1	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	1	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	2	0	0	2
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	19	19
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	1	1
Daylight	0	0	0	0	0	0	0	0	0	0	29	29
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	3	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	1	0	0	0	0	0	0	0	0	1	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	5	0	0	0	5
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	2	0	0	1	3
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	1	0	0	0	1
TOTAL	430	6	1	0	0	0	2	13	4	0	86	542

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

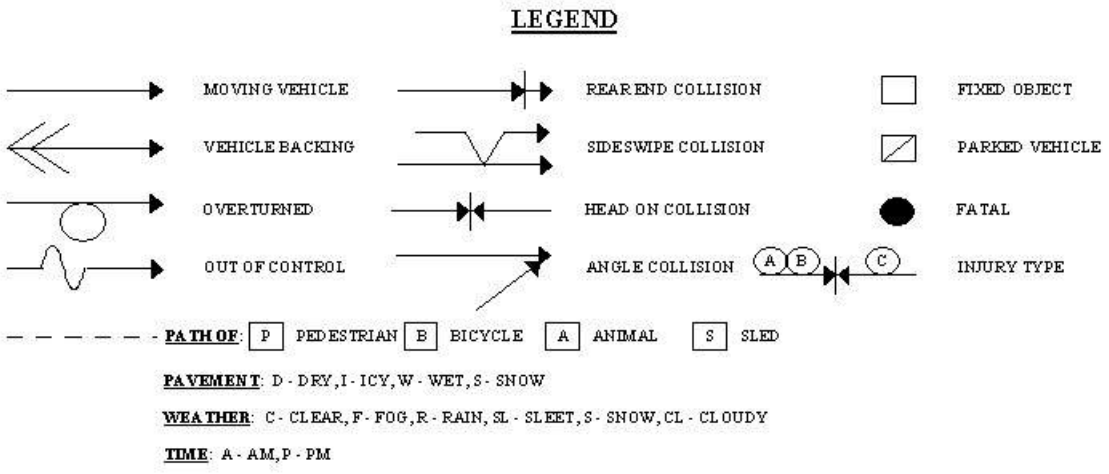
LOW NODE: **16836** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

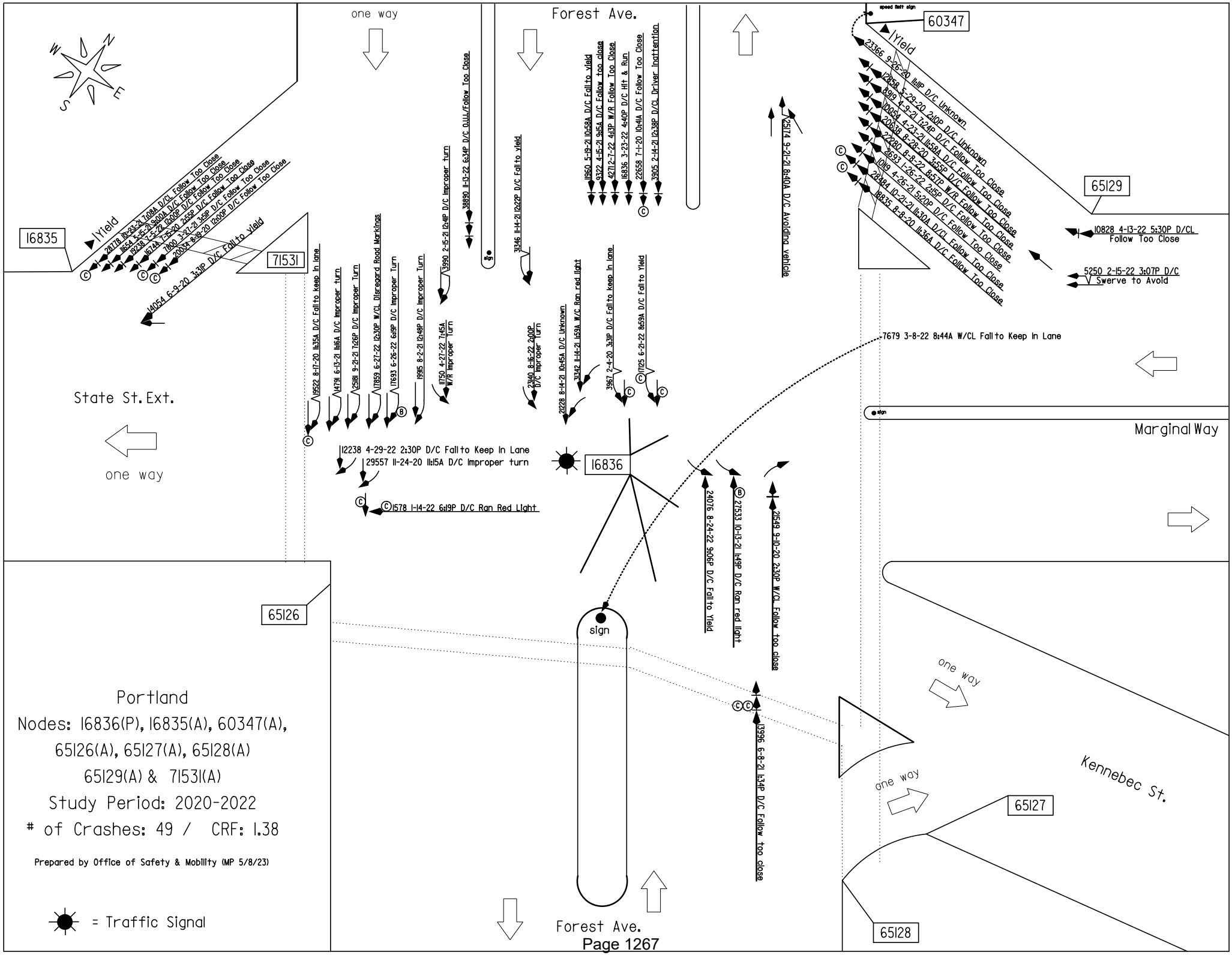
DESCRIPTION: **Int Forest Ave/Marginal Way/Kennebec St/State St**

RTE # / RD #: **0100S** DATE DRAWN: **5/8/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.33** CRF: **1.38** % INJURY: **26.5** TOTAL CRASHES: **49**





Portland

Nodes: 16836(P), 16835(A), 60347(A),
65126(A), 65127(A), 65128(A)
65129(A) & 71531(A)

Study Period: 2020-2022

# of Crashes: 49 / CRF: 1.38

Prepared by Office of Safety & Mobility (MP 5/8/23)

= Traffic Signal

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

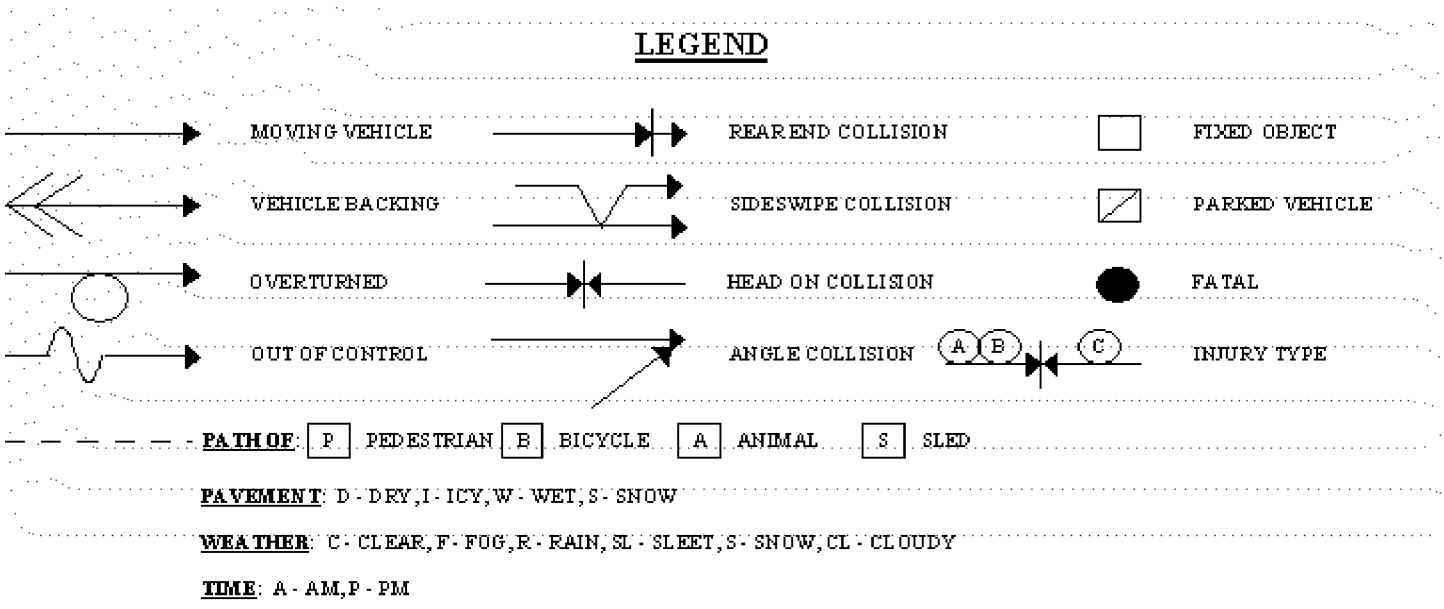
LOW NODE: **18523** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

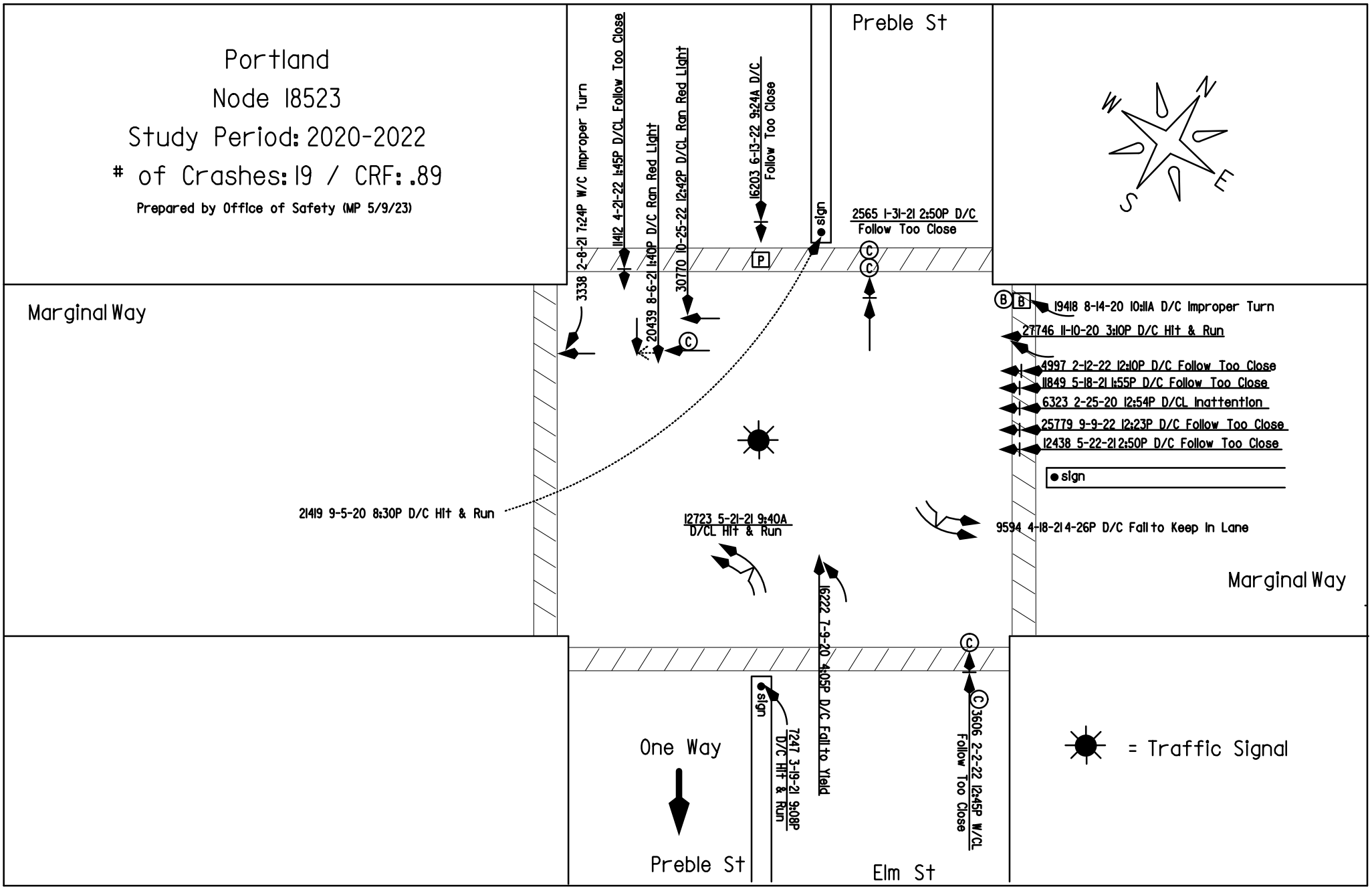
DESCRIPTION: **Int of Marginal Way/Preble St/Preble St Ext**

RTE # / RD #: **0560252** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.95** CRF: **0.89** % INJURY: **21.1** TOTAL CRASHES: **19**




Portland
Node 18523
Study Period: 2020-2022
# of Crashes: 19 / CRF: .89
Prepared by Office of Safety (MP 5/9/23)
Preble St
Marginal Way
2-8-21 7:24P W/C Improper Turn
11412 4-21-22 1:45P D/CL Follow Too Close
30770 10-25-22 12:42P D/CL Ran Red Light
16203 6-13-22 9:24A D/C Follow Too Close
sign
2565 1-31-21 2:50P D/C Follow Too Close
3338
20439 8-6-21 1:40P D/C Ran Red Light
19418 8-14-20 10:11A D/C Improper Turn
27746 11-10-20 3:10P D/C Hit & Run
4997 2-12-22 12:10P D/C Follow Too Close
11849 5-18-21 1:55P D/C Follow Too Close
6323 2-25-20 12:54P D/CL Inattention
25779 9-9-22 12:23P D/C Follow Too Close
12438 5-22-21 2:50P D/C Follow Too Close
sign
21419 9-5-20 8:30P D/C Hit & Run
12723 5-21-21 9:40A D/CL Hit & Run
9594 4-18-21 4:26P D/C Fail to Keep In Lane
Marginal Way
16222 7-9-20 4:05P D/C Fail to Yield
sign
7247 3-19-21 9:08P D/C Hit & Run
3606 2-2-22 12:45P W/CL Follow Too Close
One Way
Preble St
Elm St
= Traffic Signal
N
W
E
S

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

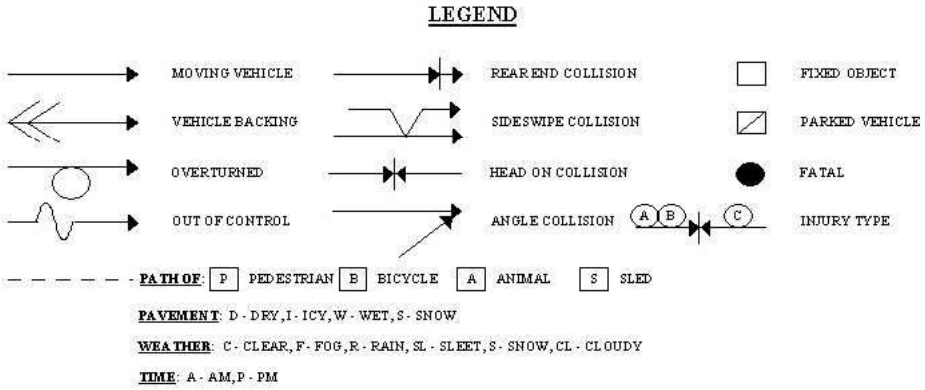
LOW NODE: **19029** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

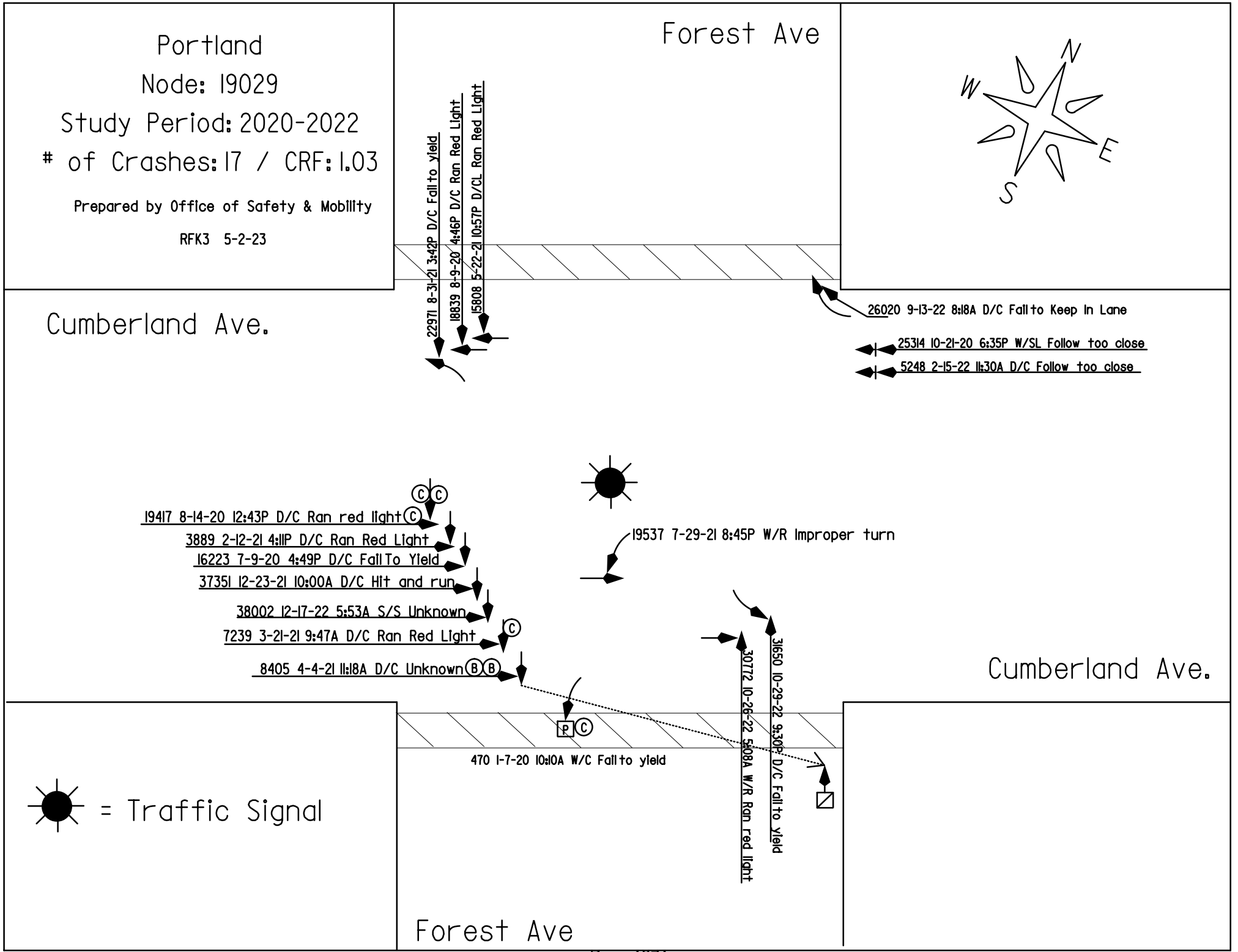
DESCRIPTION: **Int of Cumberland Ave and Forest Ave**

RTE # / RD #: **0100X** DATE DRAWN: **5/2/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.18** CRF: **1.03** % INJURY: **23.5** TOTAL CRASHES: **17**




Portland
Node: 19029
Study Period: 2020-2022
# of Crashes: 17 / CRF: 1.03
Prepared by Office of Safety & Mobility
RFK3 5-2-23
Forest Ave
N
W
E
S
22971 8-31-21 3:42P D/C Fail to yield
18839 8-9-20 4:46P D/C Ran Red Light
15808 5-22-21 10:57P D/CL Ran Red Light
26020 9-13-22 8:18A D/C Fail to Keep In Lane
25314 10-21-20 6:35P W/SL Follow too close
5248 2-15-22 11:30A D/C Follow too close
Cumberland Ave.
19417 8-14-20 12:43P D/C Ran red light
3889 2-12-21 4:11P D/C Ran Red Light
16223 7-9-20 4:49P D/C Fail To Yield
37351 12-23-21 10:00A D/C Hit and run
38002 12-17-22 5:53A S/S Unknown
7239 3-21-21 9:47A D/C Ran Red Light
8405 4-4-21 11:18A D/C Unknown
19537 7-29-21 8:45P W/R Improper turn
31650 10-29-22 9:30P D/C Fail to yield
30772 10-26-22 5:08A W/R Ran red light
Cumberland Ave.
470 1-7-20 10:10A W/C Fail to yield
= Traffic Signal
Forest Ave

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

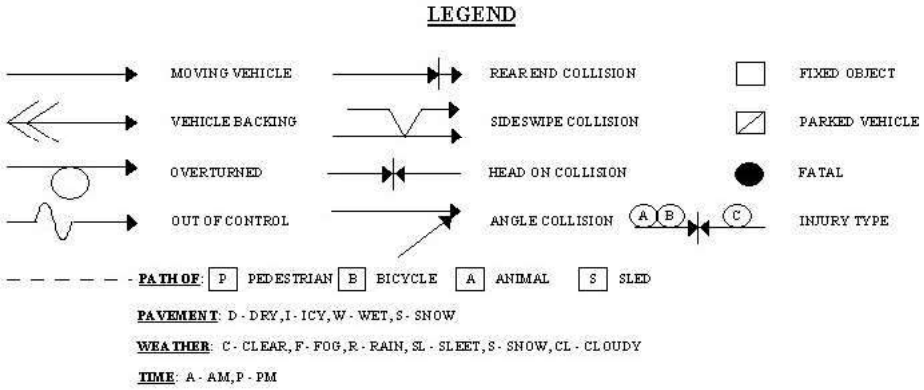
LOW NODE: **19040** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

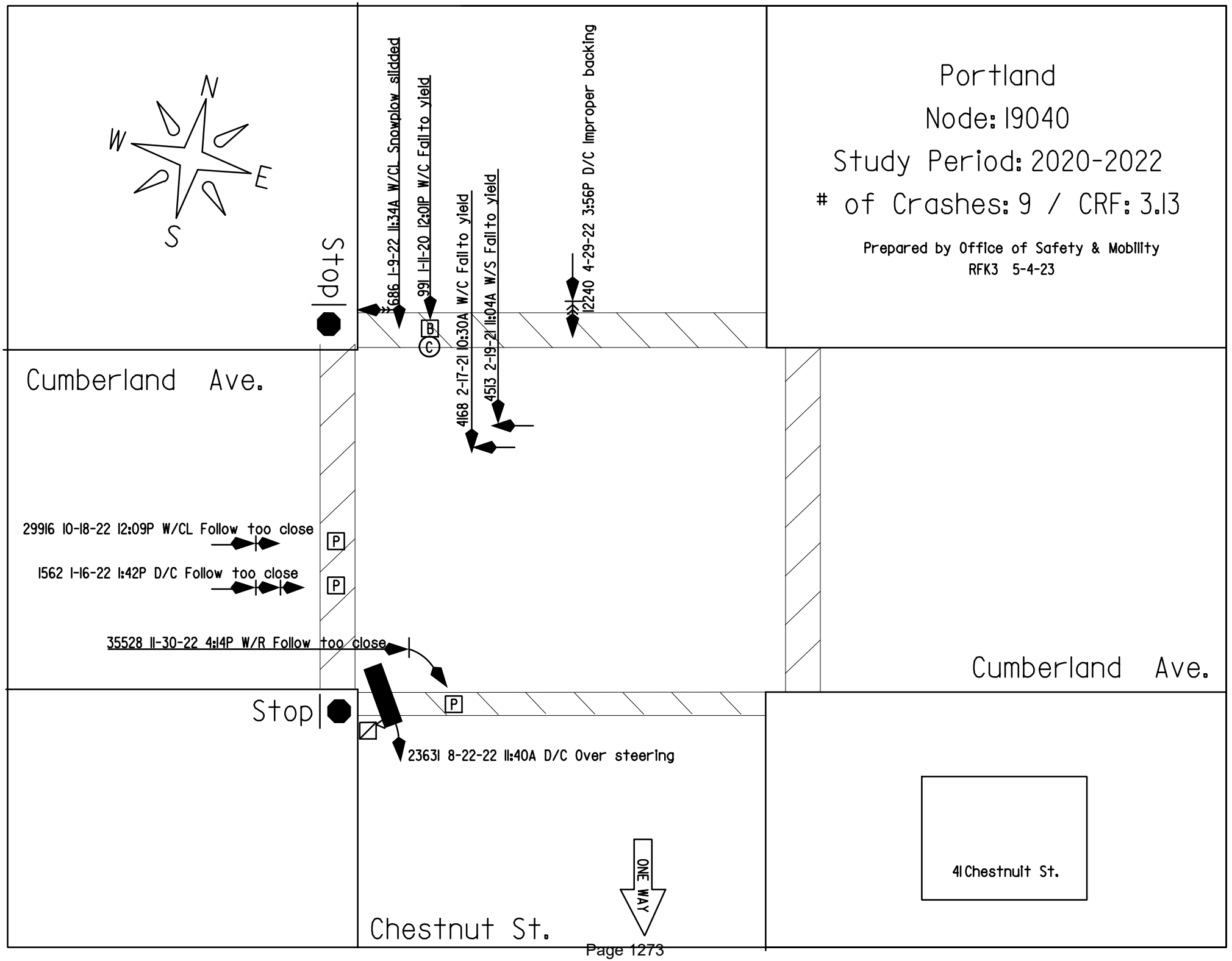
DESCRIPTION: **Int of Chestnut St and Cumberland Ave**

RTE # / RD #: **0560135** DATE DRAWN: **5/4/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.18** CRF: **3.13** % INJURY: **11.1** TOTAL CRASHES: **9**




Portland
Node: 19040
Study Period: 2020-2022
# of Crashes: 9 / CRF: 3.13
Prepared by Office of Safety & Mobility
RFK3 5-4-23
N
W
E
S
Stop
Cumberland Ave.
686 1-9-22 11:34A W/CL Snowplow slidded
991 1-11-20 12:01P W/C Fail to yield
4168 2-17-21 10:30A W/C Fail to yield
4513 2-19-21 11:04A W/S Fail to yield
12240 4-29-22 3:56P D/C Improper backing
29916 10-18-22 12:09P W/CL Follow too close
1562 1-16-22 1:42P D/C Follow too close
35528 11-30-22 4:14P W/R Follow too close
Cumberland Ave.
Stop
23631 8-22-22 11:40A D/C Over steering
41 Chestnut St.
ONE WAY
Chestnut St.

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

LOW NODE: **19049** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

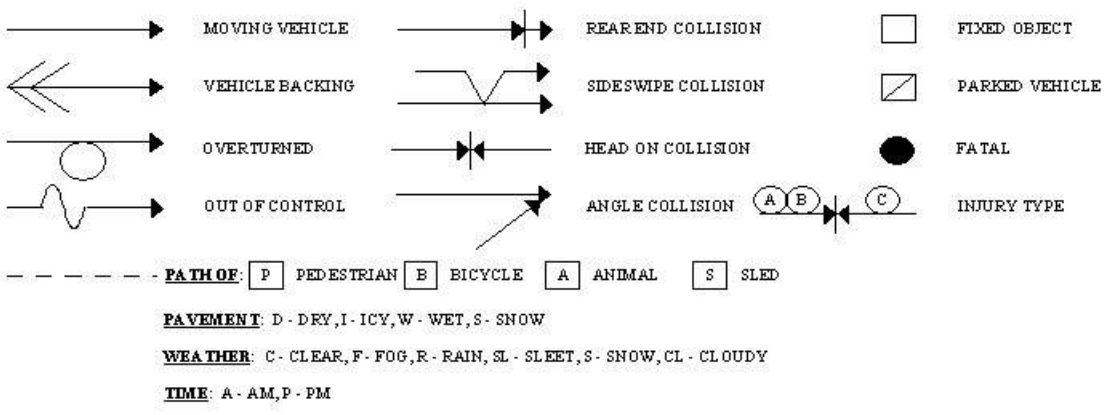
DESCRIPTION: **Int Forest Ave & Park Ave/Portland St**

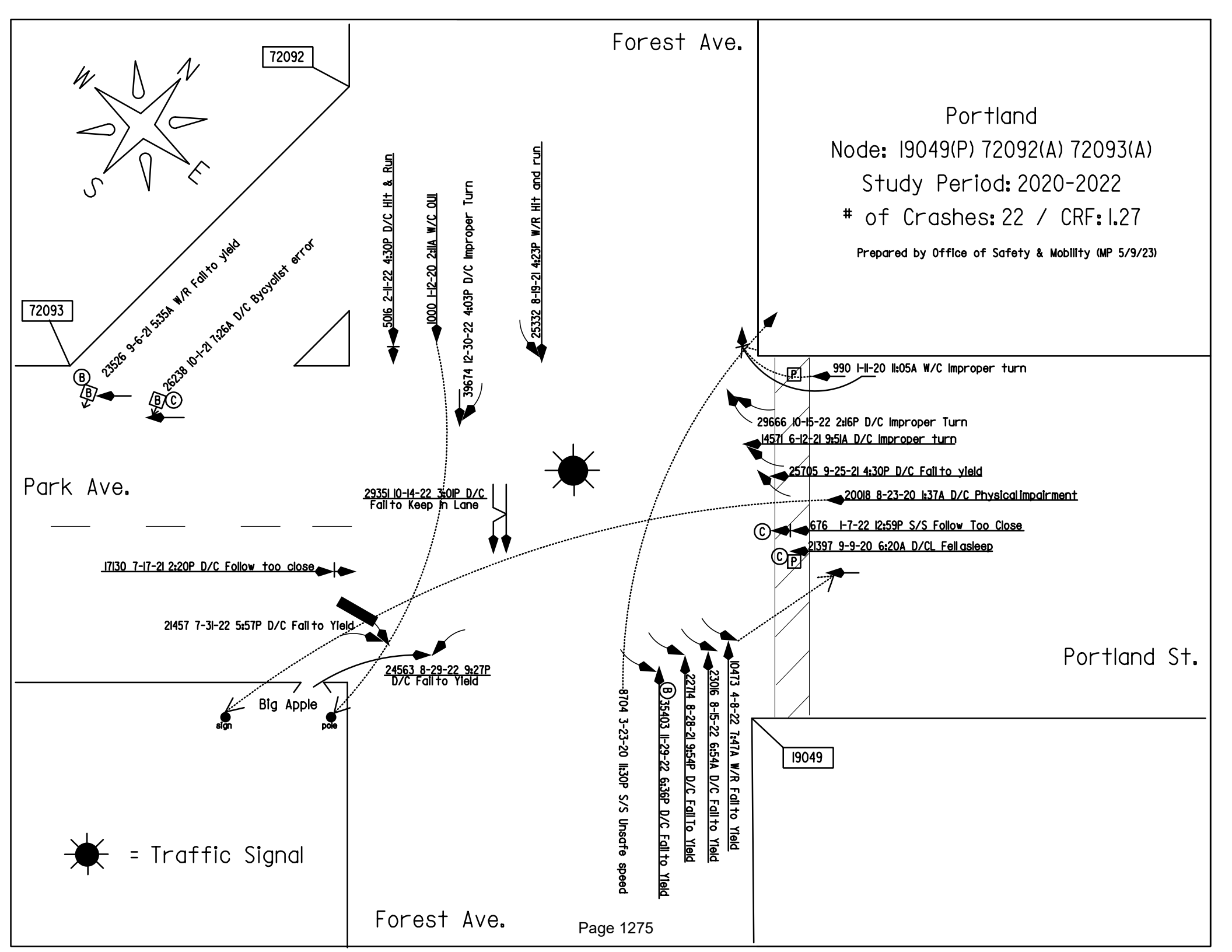
RTE # / RD #: **0100X** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.45** CRF: **1.27** % INJURY: **22.7** TOTAL CRASHES: **22**

LEGEND




Forest Ave.
72092
72093
Portland
Node: 19049(P) 72092(A) 72093(A)
Study Period: 2020-2022
# of Crashes: 22 / CRF: 1.27
Prepared by Office of Safety & Mobility (MP 5/9/23)
23526 9-6-21 5:35A W/R Fail to yield
26238 10-1-21 7:26A D/C Bycyclist error
5016 2-11-22 4:30P D/C Hit & Run
1000 1-12-20 2:11A W/C OUI
39674 12-30-22 4:03P D/C Improper Turn
25332 8-19-21 4:23P W/R Hit and run
990 1-11-20 11:05A W/C Improper turn
29666 10-15-22 2:16P D/C Improper Turn
14571 6-12-21 9:51A D/C Improper turn
25705 9-25-21 4:30P D/C Fail to yield
20018 8-23-20 1:37A D/C Physical Impairment
676 1-7-22 12:59P S/S Follow Too Close
21397 9-9-20 6:20A D/CL Fell asleep
Park Ave.
29351 10-14-22 3:01P D/C Fail to Keep in Lane
17130 7-17-21 2:20P D/C Follow too close
21457 7-31-22 5:57P D/C Fail to Yield
24563 8-29-22 9:27P D/C Fail to Yield
Big Apple
sign
pole
Portland St.
19049
8704 3-23-20 11:30P S/S Unsafe speed
35403 11-29-22 6:36P D/C Fail to Yield
22714 8-28-21 9:54P D/C Fail To Yield
23016 8-15-22 6:54A D/C Fail to Yield
10473 4-8-22 7:47A W/R Fail to Yield
= Traffic Signal
Forest Ave.

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

LOW NODE: **19193** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

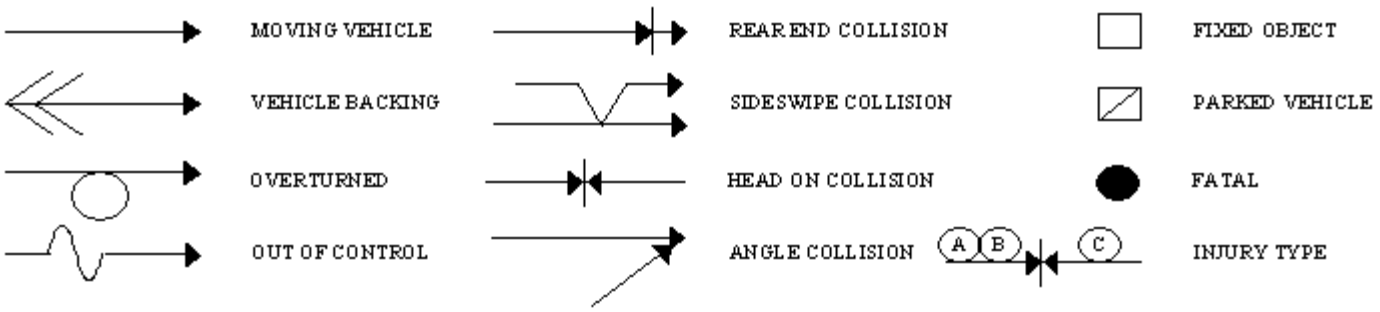
DESCRIPTION: **Int Forest Ave & I-295NB Exit 6B Ramp Off**

RTE # / RD #: **0100X** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.69** CRF: **6.47** % INJURY: **34.4** TOTAL CRASHES: **32**

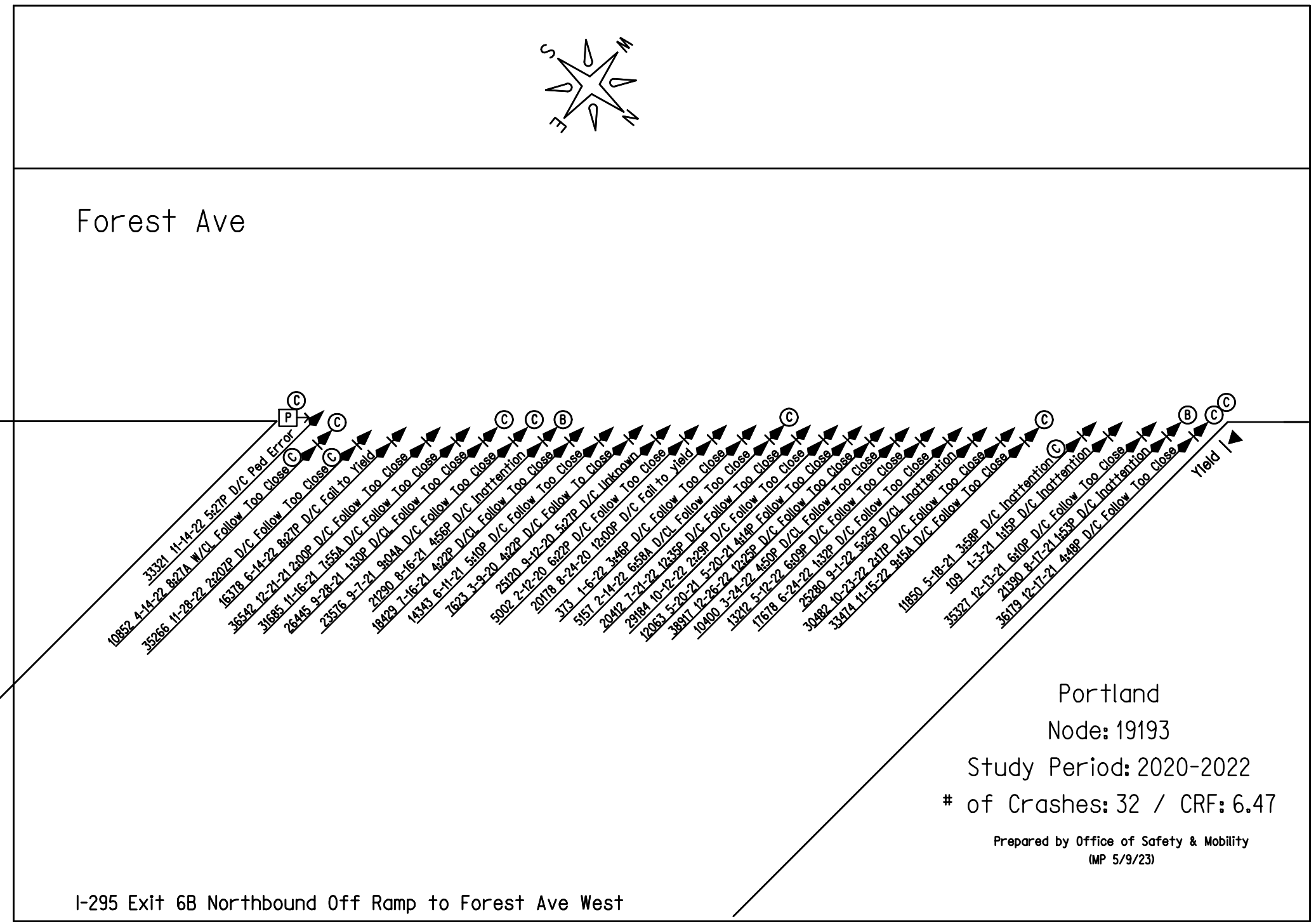
LEGEND



PAVEMENT: D - DRY, I - ICY, W - WET, S - SNOW

WEATHER: C - CLEAR, F - FOG, R - RAIN, SL - SLEET, S - SNOW, CL - CLOUDY

TIME: A - AM, P - PM


Forest Ave
33321 11-14-22 5:27P D/C Ped Error
10852 4-14-22 8:27A W/CL Follow Too Close
35266 11-28-22 2:20?P D/C Follow Too Close
16378 6-14-22 8:27P D/C Fail to Yield
36542 12-21-21 2:00P D/C Follow Too Close
31685 11-16-21 7:55A D/C Follow Too Close
26445 9-28-21 1:30P D/CL Follow Too Close
23576 9-7-21 9:04A D/C Follow Too Close
21290 8-16-21 4:56P D/C Inattention
18429 7-16-21 4:22P D/CL Follow Too Close
14343 6-11-21 5:10P D/C Follow Too Close
7623 3-9-20 4:22P D/C Follow To Close
25120 9-12-20 5:27P D/C Unknown
5002 2-12-20 6:22P D/C Follow Too Close
20178 8-24-20 12:00P D/C Fail to yield
373 1-6-22 3:46P D/C Follow Too Close
5157 2-14-22 6:58A D/CL Follow Too Close
20412 7-21-22 12:35P D/C Follow Too Close
29184 10-12-22 2:29P D/C Follow Too Close
12063 5-20-21 5:20-21 4:14P Follow Too Close
38917 12-26-22 12:25P D/C Follow Too Close
10400 3-24-22 4:50P D/CL Follow Too Close
13212 5-12-22 6:09P D/C Follow Too Close
17678 6-24-22 1:32P D/C Follow Too Close
25280 9-1-22 5:25P D/CL Inattention
30482 10-23-22 2:17P D/C Follow Too Close
33474 11-15-22 9:15A D/C Follow Too Close
11850 5-18-21 3:58P D/C Inattention
109 1-3-21 1:15P D/C Inattention
35327 12-13-21 6:10P D/C Follow Too Close
21390 8-17-21 1:53P D/C Inattention
36179 12-17-21 4:48P D/C Follow Too Close
Yield
Portland
Node: 19193
Study Period: 2020-2022
# of Crashes: 32 / CRF: 6.47
Prepared by Office of Safety & Mobility
(MP 5/9/23)
I-295 Exit 6B Northbound Off Ramp to Forest Ave West

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

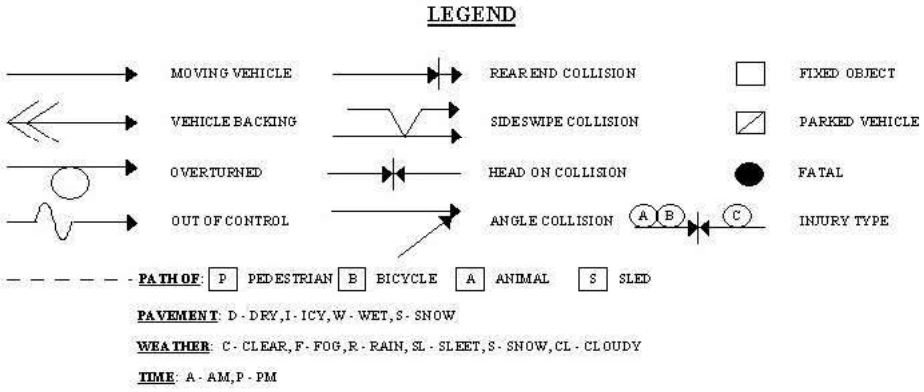
LOW NODE: **19197** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

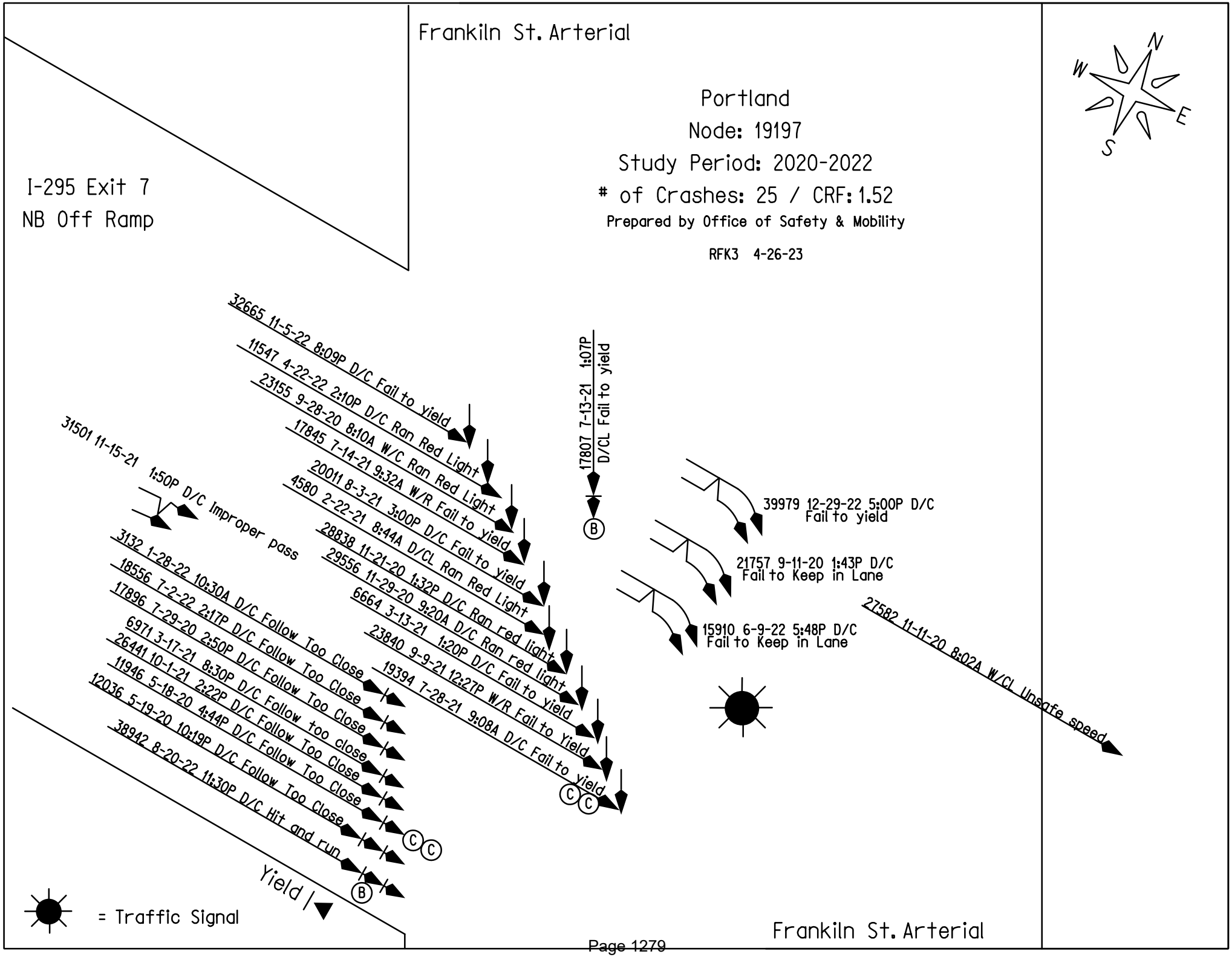
DESCRIPTION: **Int of Franklin St and I-295 NB Exit 7 Off Ramp**

RTE # / RD #: **001AS** DATE DRAWN: **4/26/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.75** CRF: **1.52** % INJURY: **16** TOTAL CRASHES: **25**




Frankiln St. Arterial
Portland
Node: 19197
Study Period: 2020-2022
# of Crashes: 25 / CRF: 1.52
Prepared by Office of Safety & Mobility
RFK3 4-26-23
I-295 Exit 7
NB Off Ramp
N
W
E
S
32665 11-5-22 8:09P D/C Fail to yield
11547 4-22-22 2:10P D/C Ran Red Light
23155 9-28-20 8:10A W/C Ran Red Light
17845 7-14-21 9:32A W/R Fail to yield
20011 8-3-21 3:00P D/C Fail to yield
4580 2-22-21 8:44A D/CL Ran Red Light
28838 11-21-20 1:32P D/C Ran red light
29556 11-29-20 9:20A D/C Ran red light
6664 3-13-21 1:20P D/C Fail to yield
23840 9-9-21 12:27P W/R Fail to Yield
19394 7-28-21 9:08A D/C Fail to yield
C
C
17807 7-13-21 1:07P
D/CL Fail to yield
B
39979 12-29-22 5:00P D/C
Fail to yield
21757 9-11-20 1:43P D/C
Fail to Keep in Lane
15910 6-9-22 5:48P D/C
Fail to Keep in Lane
27582 11-11-20 8:02A W/CL Unsafe speed
31501 11-15-21 1:50P D/C Improper pass
3132 1-28-22 10:30A D/C Follow Too Close
18556 7-2-22 2:17P D/C Follow Too Close
17896 7-29-20 2:50P D/C Follow too close
6971 3-17-21 8:30P D/C Follow Too Close
26441 10-1-21 2:22P D/C Follow Too Close
11946 5-18-20 4:44P D/C Follow Too Close
12036 5-19-20 10:19P D/C Follow Too Close
38942 8-20-22 11:30P D/C Hit and run
C
C
B
Yield
= Traffic Signal
Frankiln St. Arterial

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

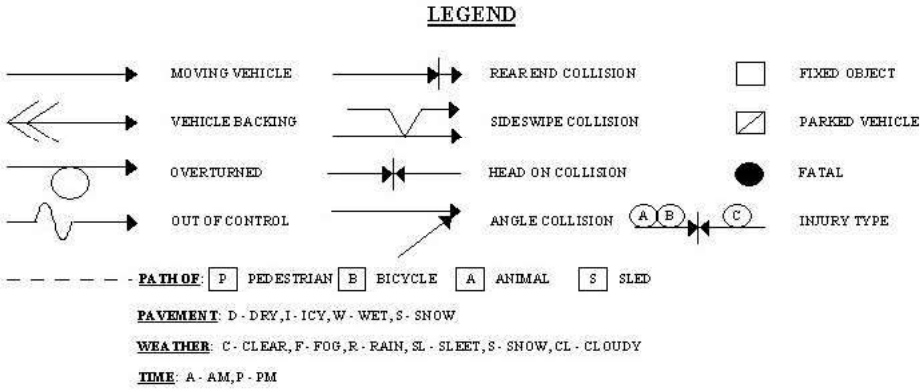
LOW NODE: **60342** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Int of Forest Ave I-295 NB Exit 6A Off Ramp**

RTE # / RD #: **05A1001** DATE DRAWN: **4/27/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.98** CRF: **3.5** % INJURY: **21.4** TOTAL CRASHES: **14**



Portland

Node: 60342

Study Period: 2020-2022

# of Crashes: 14 / CRF: 3.50

Prepared by Office of Safety & Mobility

RFK3 4-27-23



Forest Ave.

sign

6306 2-25-22 7:32A S/S Unsafe speed

31318 11-12-21 4:58P W/R Follow Too Close

19052 7-24-21 11:55A D/C Fail to yield

1333 1-18-21 1:02P D/C Follow Too Close

569 1-8-20 11:44A W/C Follow Too Close

28277 10-4-22 5:44P D/C Fail to yield

25694 9-24-21 4:46P D/C Follow Too Close

24924 9-17-21 10:43A D/C Follow Too Close

14341 5-25-22 8:17A D/C Follow Too Close

19633 7-14-22 8:58A D/C Follow too close

4024 2-5-22 6:38P SL/C Follow Too Close

13566 6-8-20 4:05P D/C Follow Too Close

23154 9-28-20 12:03P D/CL Follow Too Close

25449 10-21-20 6:30P W/R Follow Too Close

Yield

I-295 NB Exit 6A Off Ramp to Forest Ave

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

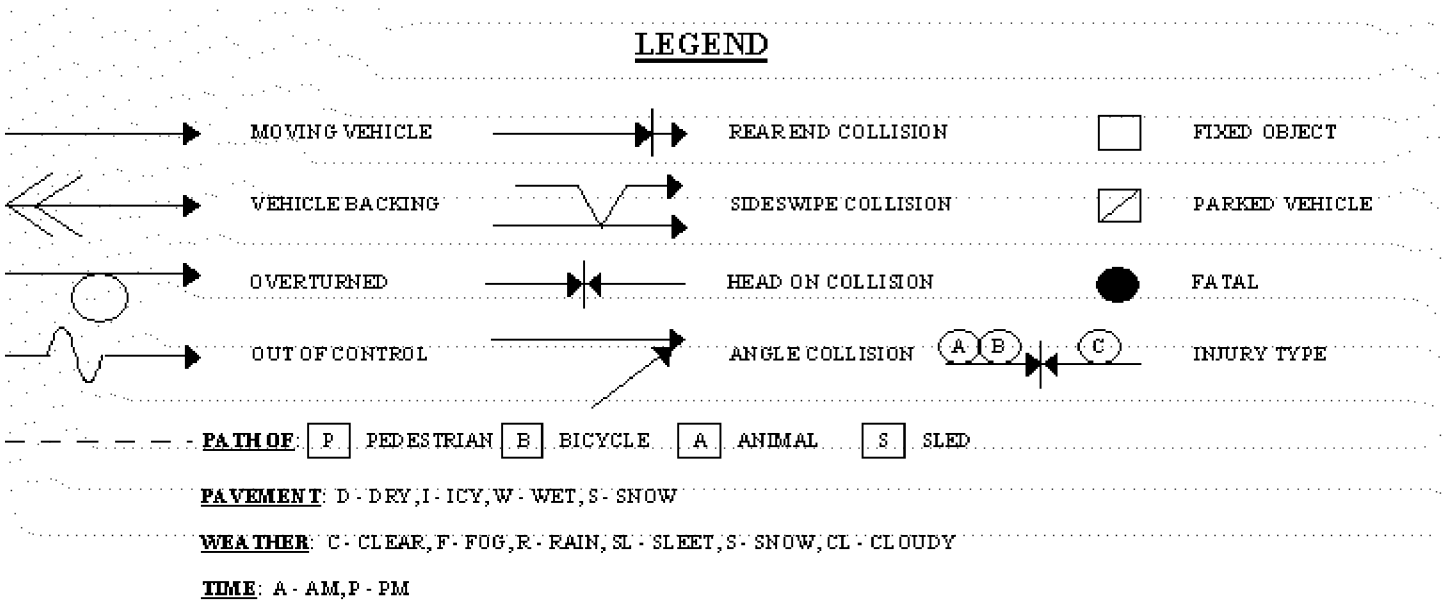
LOW NODE: **60346** HIGH NODE: **18999** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Marginal Way from Forest Ave Island to Hanover St**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **713.19** CRF: **1.48** % INJURY: **12.5** TOTAL CRASHES: **8**



Portland

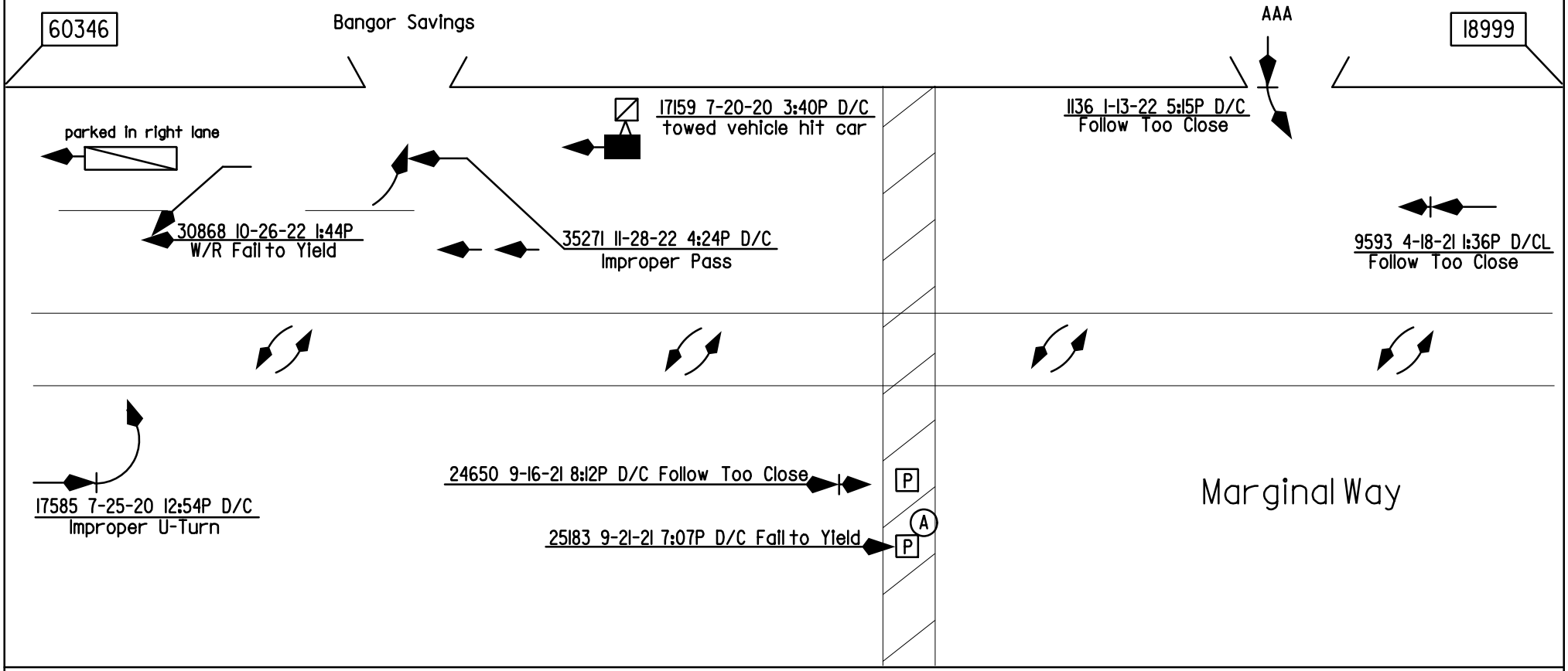
Link: 60346-18999

Element: 3115193

Study Period: 2020-2022

of Crashes: 8 / CRF: 1.48

Prepared by Office of Safety & Mobility (MP 5/10/23)



H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

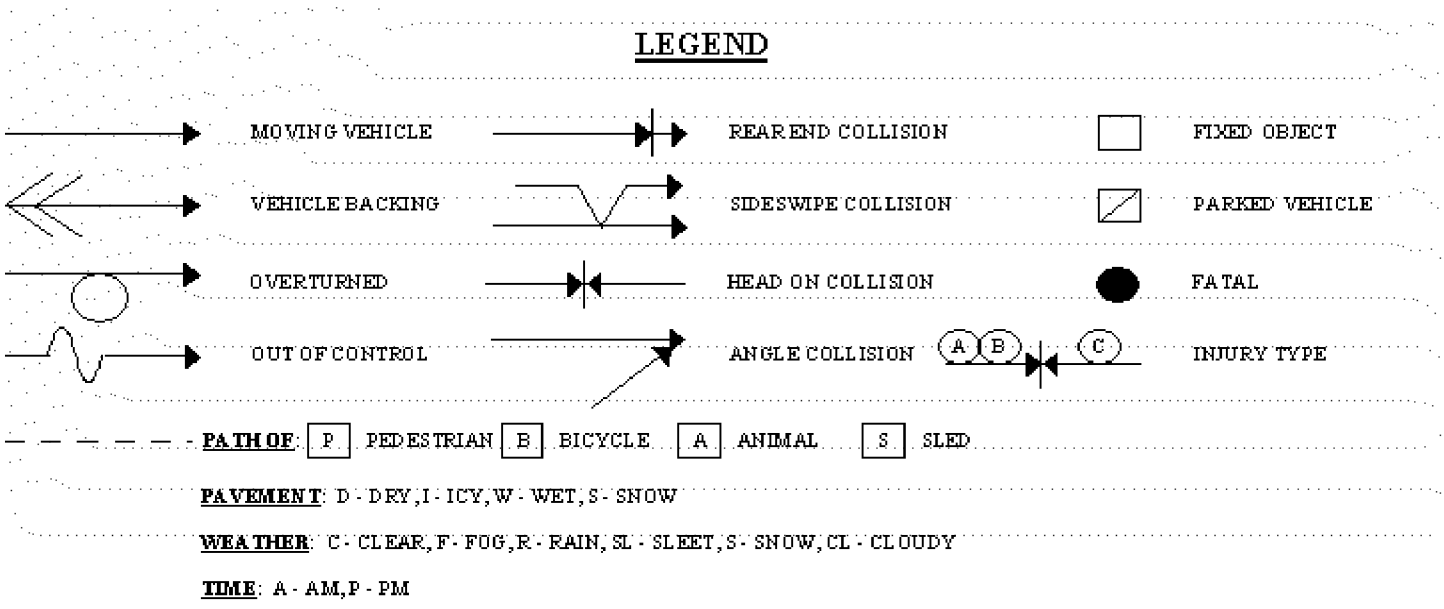
LOW NODE: **71632** HIGH NODE: **72190** REGION: **1** U/R: **URBAN**

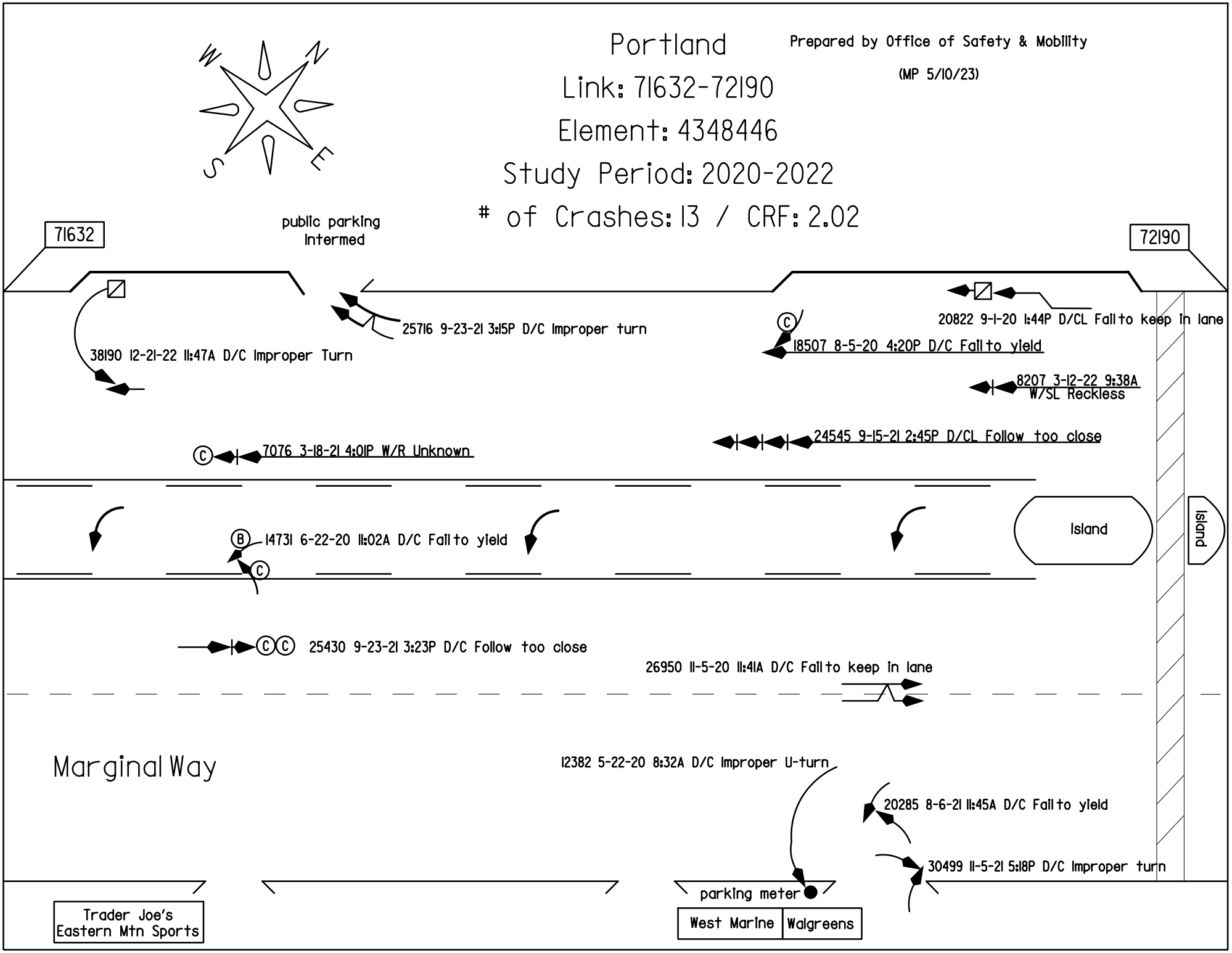
DESCRIPTION: **Marginal Way from Preble St Island to Chestnut St**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **913.87** CRF: **2.02** % INJURY: **30.8** TOTAL CRASHES: **13**




Portland
Prepared by Office of Safety & Mobility
(MP 5/10/23)
Link: 71632-72190
Element: 4348446
Study Period: 2020-2022
# of Crashes: 13 / CRF: 2.02
71632
72190
public parking
intermed
38190 12-21-22 11:47A D/C Improper Turn
25716 9-23-21 3:15P D/C Improper turn
20822 9-1-20 1:44P D/CL Fail to keep in lane
18507 8-5-20 4:20P D/C Fail to yield
8207 3-12-22 9:38A
W/SL Reckless
24545 9-15-21 2:45P D/CL Follow too close
7076 3-18-21 4:01P W/R Unknown
Island
Island
14731 6-22-20 11:02A D/C Fail to yield
25430 9-23-21 3:23P D/C Follow too close
26950 11-5-20 11:41A D/C Fail to keep in lane
Marginal Way
12382 5-22-20 8:32A D/C Improper U-turn
20285 8-6-21 11:45A D/C Fail to yield
30499 11-5-21 5:18P D/C Improper turn
parking meter
Trader Joe's
Eastern Mtn Sports
West Marine
Walgreens

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

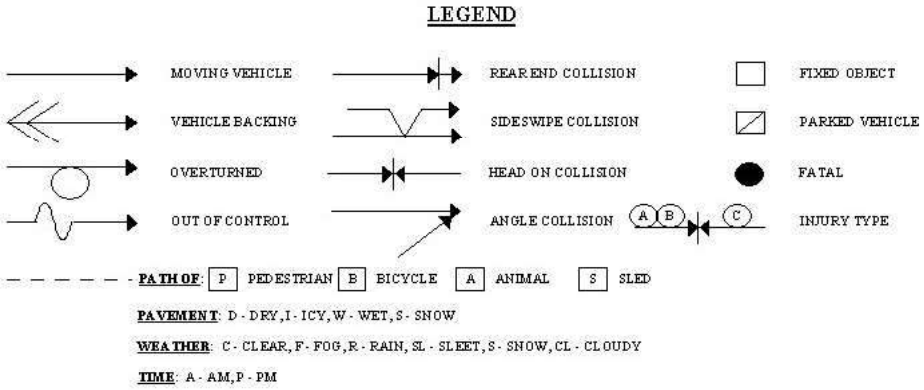
LOW NODE: **72190** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

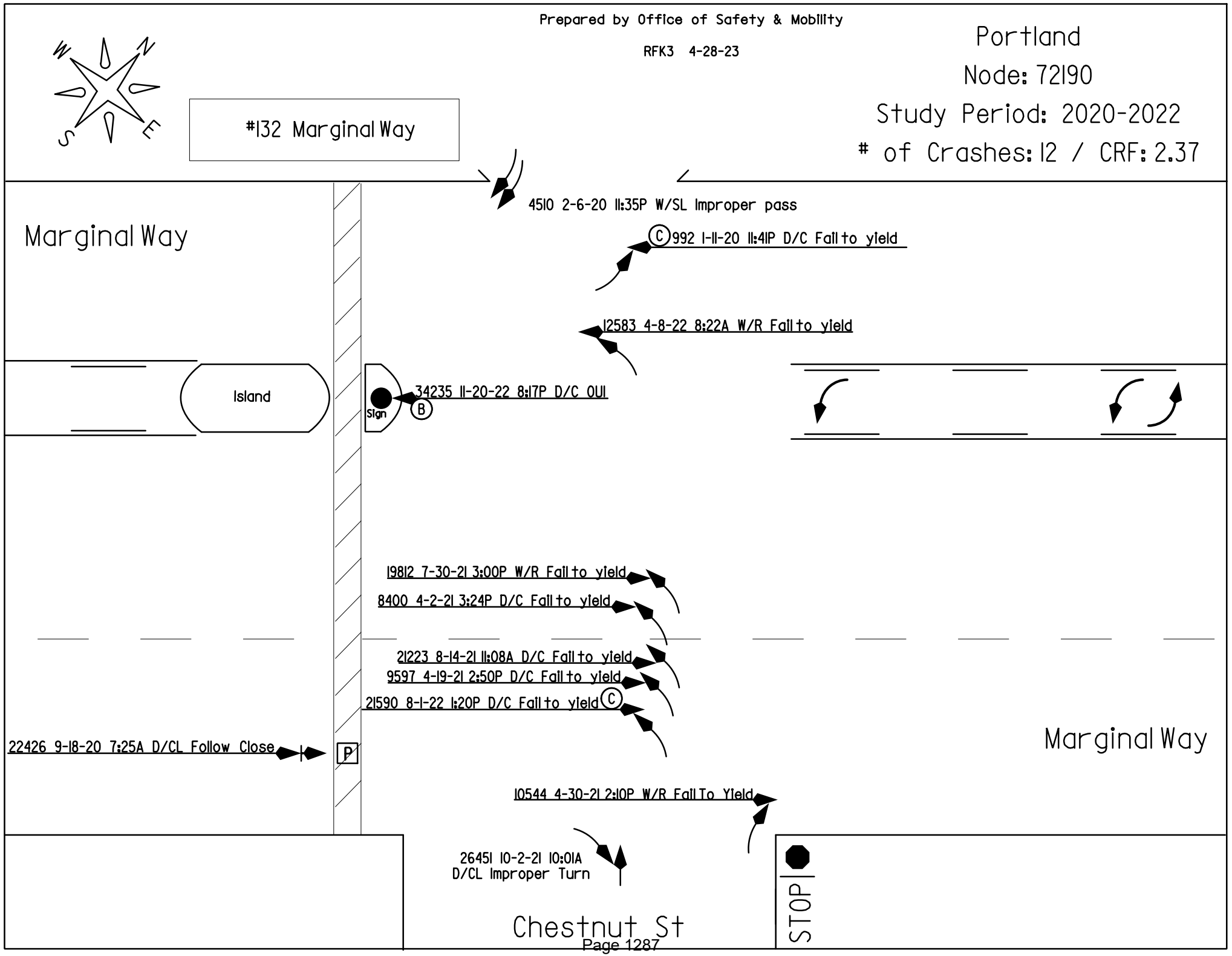
DESCRIPTION: **Int of Chestnut St and Marginal Way**

RTE # / RD #: **0560135** DATE DRAWN: **4/28/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.86** CRF: **2.37** % INJURY: **25** TOTAL CRASHES: **12**




Prepared by Office of Safety & Mobility
RFK3 4-28-23
Portland
Node: 72190
Study Period: 2020-2022
# of Crashes: 12 / CRF: 2.37
#132 Marginal Way
Marginal Way
4510 2-6-20 11:35P W/SL Improper pass
C 992 1-11-20 11:41P D/C Fail to yield
12583 4-8-22 8:22A W/R Fail to yield
Island
Sign
B 34235 11-20-22 8:17P D/C OUI
19812 7-30-21 3:00P W/R Fail to yield
8400 4-2-21 3:24P D/C Fail to yield
21223 8-14-21 11:08A D/C Fail to yield
9597 4-19-21 2:50P D/C Fail to yield
21590 8-1-22 1:20P D/C Fail to yield C
22426 9-18-20 7:25A D/CL Follow Close
P
Marginal Way
10544 4-30-21 2:10P W/R Fail To Yield
26451 10-2-21 10:01A
D/CL Improper Turn
Chestnut St
STOP

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

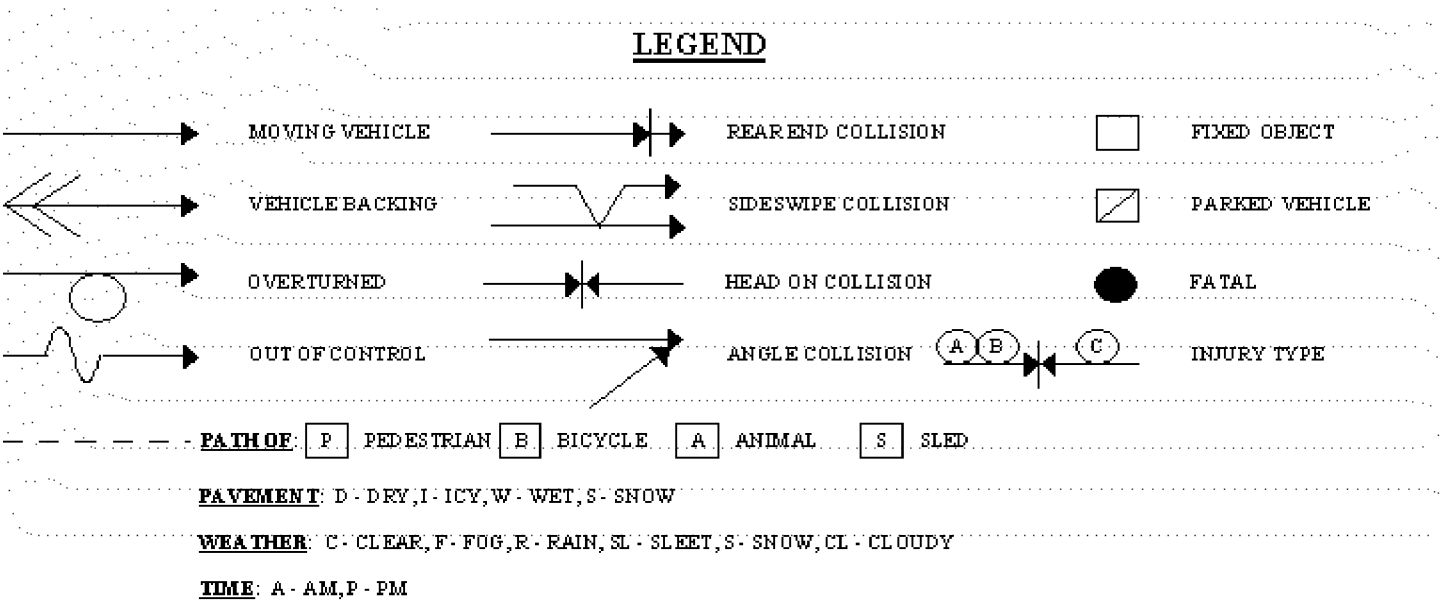
LOW NODE: **72190** HIGH NODE: **71634** REGION: **1** U/R: **URBAN**

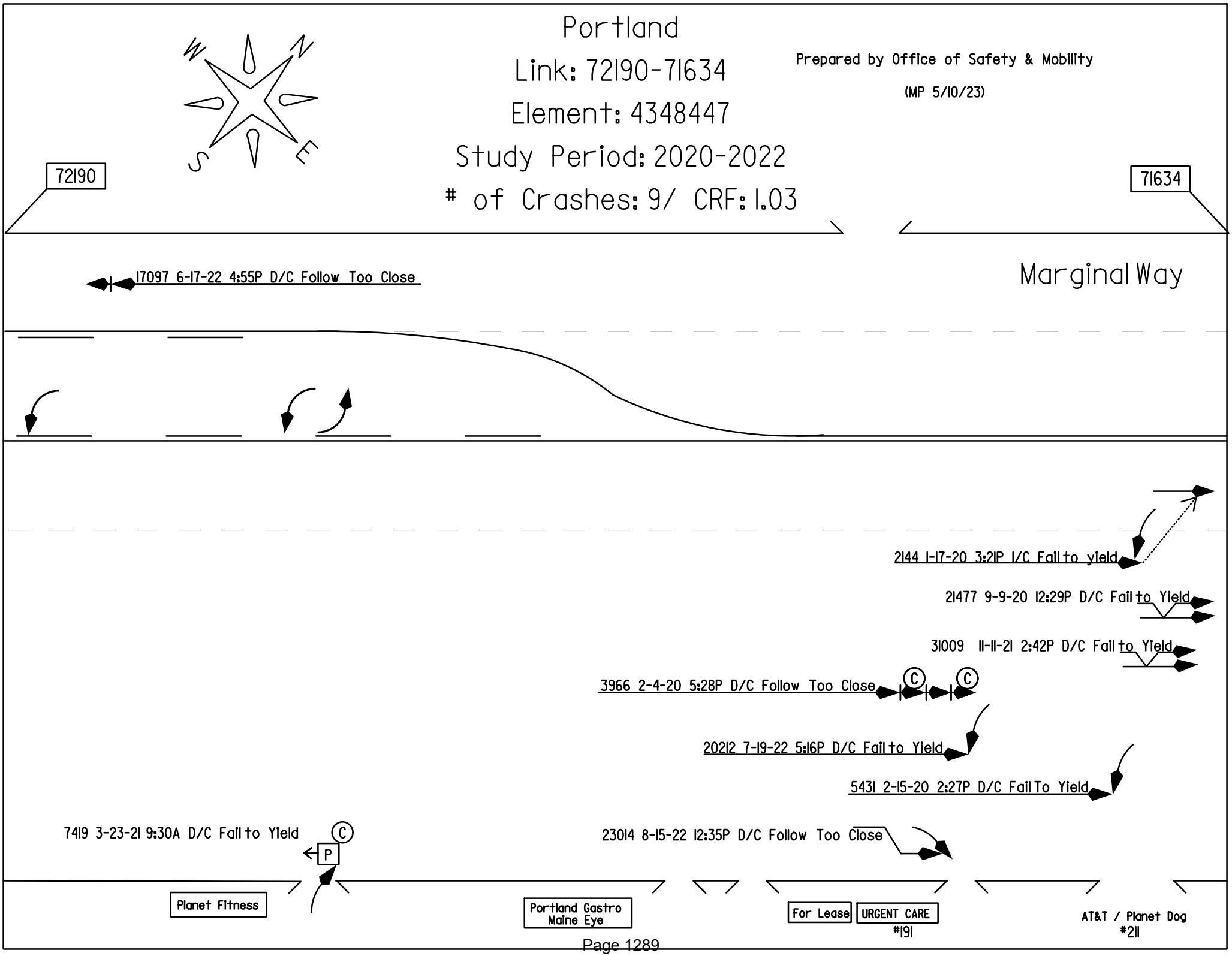
DESCRIPTION: **Marginal Wy from Chestnut St to Franklin St Island**

RTE # / RD #: **0560477** DATE DRAWN: **5/9/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **421.15** CRF: **1.03** % INJURY: **22.2** TOTAL CRASHES: **9**




Portland
Link: 72190-71634
Element: 4348447
Study Period: 2020-2022
# of Crashes: 9/ CRF: 1.03
Prepared by Office of Safety & Mobility
(MP 5/10/23)
72190
71634
Marginal Way
17097 6-17-22 4:55P D/C Follow Too Close
2144 1-17-20 3:21P I/C Fail to yield
21477 9-9-20 12:29P D/C Fail to Yield
31009 11-11-21 2:42P D/C Fail to Yield
3966 2-4-20 5:28P D/C Follow Too Close
C
C
20212 7-19-22 5:16P D/C Fail to Yield
5431 2-15-20 2:27P D/C Fail To Yield
7419 3-23-21 9:30A D/C Fail to Yield
C
P
23014 8-15-22 12:35P D/C Follow Too Close
Planet Fitness
Portland Gastro
Maine Eye
For Lease
URGENT CARE
#191
AT&T / Planet Dog
#211

Attachment 7E

Capacity Analysis Results

Intersection	Lane	Observed AM - Vehicles (Feet)	AM Per Synchro	Observed PM - Vehicles (Feet)	PM Per Synchro
Marginal Way & Preble Street/Elm Street/Preble Street Ext	Preble Street Ext SEL	12 vehicles (300ft)	9 vehicles (225ft)	14 vehicles (350ft)	13 vehicles (325ft)
	Preble Street Ext SETR	8 vehicles (200ft)	5 vehicles (125ft)	9 vehicles (225ft)	4 vehicles (100ft)
	Preble/Elm Street NWL	4 vehicles (100ft)	4 vehicles (100ft)	7 vehicles (175ft)	9 vehicles (225ft)
	Preble/Elm Street NWTR	5 vehicles (125ft)	4 vehicles (100ft)	12 vehicles (300ft)	11 vehicles (275ft)
	Marginal Way NEL	1 vehicle (25ft)	2 vehicles (50ft)	3 vehicles (75ft)	4 vehicles (100ft)
	Marginal Way NETR	6 vehicles (150ft)	6 vehicles (150ft)	5 vehicles (125ft)	8 vehicles (200ft)
	Marginal Way SWL	2 vehicles (50ft)	3 vehicles (75ft)	2 vehicles (50ft)	3 vehicles (75ft)
	Marginal Way SWT	7 vehicles (175ft)	8 vehicles (200ft)	14 vehicles (350ft)	13 vehicles (325ft)
	Marginal Way SWR	2 vehicles (50ft)	1 vehicle (25ft)	3 vehicles (75ft)	3 vehicles (75ft)
Cumberland Avenue & Preble Street	Preble Street SEL	5 vehicles (125ft)	7 vehicles (175ft)	3 vehicles (75ft)	4 vehicles (100ft)
	Preble Street SETR	8 vehicles (200ft)	6 vehicles (150ft)	6 vehicles (150ft)	5 vehicles (125ft)
	Cumberland Avenue NETR	5 vehicles (125ft)	5 vehicles (125ft)	4 vehicles (100ft)	6 vehicles (150ft)
	Cumberland Avenue SWL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Cumberland Avenue SWT	2 vehicles (50ft)	2 vehicles (50ft)	6 vehicles (150ft)	4 vehicles (100ft)
Cumberland Avenue & Elm Street	Elm Street NWL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Elm Street NWTR	4 vehicles (100ft)	3 vehicles (75ft)	9 vehicles (225ft)	7 vehicles (175ft)
	Cumberland Avenue NEL	2 vehicles (50ft)	2 vehicles (50ft)	1 vehicle (25ft)	2 vehicles (50ft)
	Cumberland Avenue NET	6 vehicles (150ft)	5 vehicles (125ft)	5 vehicles (125ft)	5 vehicles (125ft)
	Cumberland Avenue SWT	3 vehicles (75ft)	3 vehicles (75ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Cumberland Avenue SWR	1 vehicle (25ft)	1 vehicle (25ft)	2 vehicles (50ft)	2 vehicles (50ft)
Forest Avenue & Park Avenue / Portland Street	Park Avenue EBL	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)	1 vehicle (25ft)
	Park Avenue EBTR	4 vehicles (100ft)	5 vehicles (125ft)	6 vehicles (150ft)	4 vehicles (100ft)
	Portland Street WBL	1 vehicle (25ft)	1 vehicle (25ft)	2 vehicles (50ft)	1 vehicle (25ft)
	Portland Street WBTR	4 vehicles (100ft)	5 vehicles (125ft)	6 vehicles (150ft)	7 vehicles (175ft)
	Forest Avenue NBLTR	3 vehicles (75ft)	3 vehicles (75ft)	6 vehicles (150ft)	4 vehicles (100ft)
	Forest Avenue SBL	4 vehicles (100ft)	6 vehicles (150ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Forest Avenue SBT	6 vehicles (150ft)	7 vehicles (175ft)	7 vehicles (175ft)	6 vehicles (150ft)
	Forest Avenue SBR	1 vehicle (25ft)	0 vehicles (0ft)	1 vehicle (25ft)	0 vehicles (0ft)

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	22	339	7	0	0	0	0	41	51	11	11	0
Future Volume (Veh/h)	22	339	7	0	0	0	0	41	51	11	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.77	0.77	0.77	0.61	0.61	0.61
Hourly flow rate (vph)	26	399	8	0	0	0	0	53	66	18	18	0
Pedestrians					10						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	4			407			464	459	214	358	463	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			323			382	377	123	272	381	4
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.7	6.9	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.2	3.3
p0 queue free %	98			100			100	90	92	97	96	100
cM capacity (veh/h)	1625			1195			515	530	876	520	490	1080

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	226	208	119	36
Volume Left	26	0	0	18
Volume Right	0	8	66	0
cSH	1625	1700	679	504
Volume to Capacity	0.02	0.12	0.18	0.07
Queue Length 95th (ft)	1	0	16	6
Control Delay (s)	1.0	0.0	11.4	12.7
Lane LOS	A		B	B
Approach Delay (s)	0.5		11.4	12.7
Approach LOS			B	B

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	24.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	239	22	19	43	0	0	18	46
Future Volume (Veh/h)	0	0	0	4	239	22	19	43	0	0	18	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.87	0.87	0.87	0.83	0.83	0.83
Hourly flow rate (vph)	0	0	0	5	278	26	22	49	0	0	22	55
Pedestrians		22										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	304			0			389	314	0	326	301	313
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			0			389	314	0	326	301	313
tC, single (s)	4.1			4.6			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	100			100			96	92	100	100	96	92
cM capacity (veh/h)	1257			1358			513	603	1091	591	603	716

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	309	71	77
Volume Left	5	22	0
Volume Right	26	0	55
cSH	1358	572	679
Volume to Capacity	0.00	0.12	0.11
Queue Length 95th (ft)	0	11	10
Control Delay (s)	0.2	12.2	11.0
Lane LOS	A	B	B
Approach Delay (s)	0.2	12.2	11.0
Approach LOS		B	B

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1	1	0	21	361	18	0	0	0
Future Volume (Veh/h)	0	0	0	1	1	0	21	361	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2	2	0	24	406	20	0	0	0
Pedestrians					9						8	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90					0.90		
vC, conflicting volume	465	473	424	471	483	9	9			426		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	355	364	309	361	375	9	9			312		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	100	100	100	100	98			100		
cM capacity (veh/h)	534	501	665	526	494	1069	1572			1129		

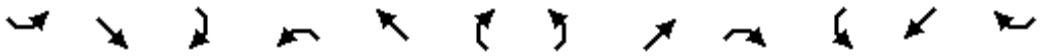
Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	0	4	24	426
Volume Left	0	2	24	0
Volume Right	0	0	0	20
cSH	1700	509	1572	1700
Volume to Capacity	0.00	0.01	0.02	0.25
Queue Length 95th (ft)	0	1	1	0
Control Delay (s)	0.0	12.1	7.3	0.0
Lane LOS	A	B	A	
Approach Delay (s)	0.0	12.1	0.4	
Approach LOS	A	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	10	0	0	0	0	0	0	0	3	260	15
Future Volume (Veh/h)	6	10	0	0	0	0	0	0	0	3	260	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	8	12	0	0	0	0	0	0	0	4	310	18
Pedestrians		2						1				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	330	338	2	333	329	320	328			2		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	338	2	333	329	320	328			2		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	100	100	100	100			100		
cM capacity (veh/h)	624	568	1086	608	587	721	1232			1631		

Direction, Lane #	EB 1	NW 1
Volume Total	20	332
Volume Left	8	4
Volume Right	0	18
cSH	589	1631
Volume to Capacity	0.03	0.00
Queue Length 95th (ft)	3	0
Control Delay (s)	11.3	0.1
Lane LOS	B	A
Approach Delay (s)	11.3	0.1
Approach LOS	B	

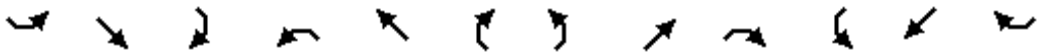
Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	295	1	0	0	0	0	7	1	28	12	0
Future Volume (Veh/h)	66	295	1	0	0	0	0	7	1	28	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.56	0.56	0.56	0.90	0.90	0.90
Hourly flow rate (vph)	74	331	1	0	0	0	0	12	2	31	13	0
Pedestrians					11						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	5			332			486	484	342	504	485	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			259			422	421	270	441	421	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	95			100			100	97	100	93	97	100
cM capacity (veh/h)	1622			1229			483	471	728	456	471	1079

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	406	14	44
Volume Left	74	0	31
Volume Right	1	2	0
cSH	1622	496	460
Volume to Capacity	0.05	0.03	0.10
Queue Length 95th (ft)	4	2	8
Control Delay (s)	1.7	12.5	13.6
Lane LOS	A	B	B
Approach Delay (s)	1.7	12.5	13.6
Approach LOS		B	B

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	34.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	21	184	37	17	46	0	0	40	83
Future Volume (Veh/h)	0	0	0	21	184	37	17	46	0	0	40	83
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.55	0.55	0.55	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	25	216	44	31	84	0	0	50	104
Pedestrians		29						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	260			8			454	318	8	330	296	267
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	260			8			454	318	8	330	296	267
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			98			92	86	100	100	92	86
cM capacity (veh/h)	1304			1581			410	588	1072	549	604	760

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	285	115	154
Volume Left	25	31	0
Volume Right	44	0	104
cSH	1581	526	701
Volume to Capacity	0.02	0.22	0.22
Queue Length 95th (ft)	1	21	21
Control Delay (s)	0.8	13.7	11.6
Lane LOS	A	B	B
Approach Delay (s)	0.8	13.7	11.6
Approach LOS		B	B

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	286	35	0	0	0	0	0	0	8	48	0
Future Volume (Veh/h)	0	286	35	0	0	0	0	0	0	8	48	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	321	39	0	0	0	0	0	0	12	71	0
Pedestrians					40			15				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			375			391	356	396	380	375	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			375			391	356	396	380	375	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	100	100	98	87	100
cM capacity (veh/h)	1636			1183			511	570	654	581	539	1091

Direction, Lane #	SE 1	SW 1
Volume Total	360	83
Volume Left	0	12
Volume Right	39	0
cSH	1700	545
Volume to Capacity	0.21	0.15
Queue Length 95th (ft)	0	13
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	27.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	62	242	24	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	62	242	24	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	67	260	26	0	0	0	0	0	0
Pedestrians								27				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	286			27			434	447	27	407	434	273
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	286			27			434	447	27	407	434	273
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	100	100	100	100	100
cM capacity (veh/h)	1276			1524			514	484	1048	536	492	766

Direction, Lane #	NW 1
Volume Total	353
Volume Left	67
Volume Right	26
cSH	1524
Volume to Capacity	0.04
Queue Length 95th (ft)	3
Control Delay (s)	1.7
Lane LOS	A
Approach Delay (s)	1.7
Approach LOS	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	14	265	8	281	0	0	0	0	2	0
Future Volume (Veh/h)	14	265	8	281	0	0	0	0	2	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.93	0.93	0.88	0.88	0.88	0.92	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	15	285	9	319	0	0	0	0	8	0
Pedestrians				33			20		19	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		2	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	356	339	19			319			668	356
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	356	339	19			319			668	356
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	97	59	99			100			96	100
cM capacity (veh/h)	559	703	1582			1241			210	559

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	300	328	8
Volume Left	0	9	8
Volume Right	285	0	0
cSH	694	1582	210
Volume to Capacity	0.43	0.01	0.04
Queue Length 95th (ft)	55	0	3
Control Delay (s)	14.1	0.2	22.8
Lane LOS	B	A	C
Approach Delay (s)	14.1	0.2	22.8
Approach LOS	B		C

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

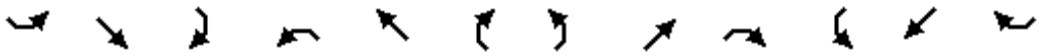


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	NW 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

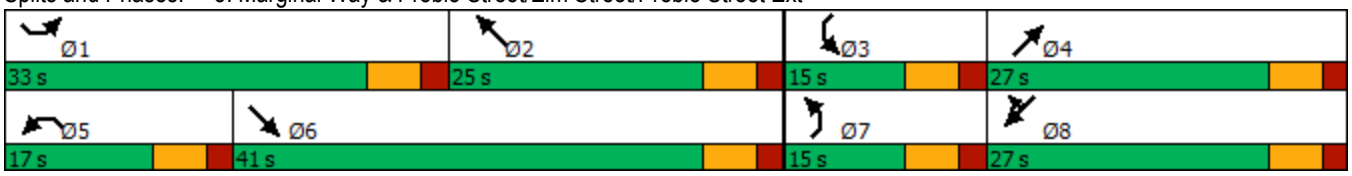
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	249	313	35	81	159	58	44	139	14	63	196	143
Future Volume (vph)	249	313	35	81	159	58	44	139	14	63	196	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.96			0.99			0.97		
Frt		0.985			0.960			0.987				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3493	0	1752	3282	0	1805	1840	0	1770	1845	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1743	3493	0	1678	3282	0	1780	1840	0	1725	1845	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			46			4				229
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	11			23			10			18		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.72	0.72	0.72	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	3%	4%	10%	0%	1%	11%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	274	344	38	91	179	65	61	193	19	71	220	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	382	0	91	244	0	61	212	0	71	220	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



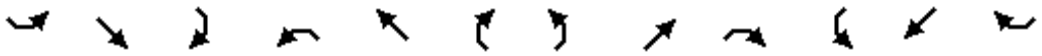
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	33.0	41.0		17.0	25.0		15.0	27.0		15.0	27.0	27.0
Total Split (%)	33.0%	41.0%		17.0%	25.0%		15.0%	27.0%		15.0%	27.0%	27.0%
Maximum Green (s)	27.0	35.0		11.0	19.0		9.0	21.0		9.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	16.8	22.0		9.1	10.3		7.9	14.1		8.1	17.0	17.0
Actuated g/C Ratio	0.24	0.31		0.13	0.14		0.11	0.20		0.11	0.24	0.24
v/c Ratio	0.65	0.35		0.41	0.47		0.31	0.58		0.35	0.50	0.29
Control Delay	34.9	23.3		39.7	29.0		39.5	35.3		40.5	31.8	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.9	23.3		39.7	29.0		39.5	35.3		40.5	31.8	2.6
LOS	C	C		D	C		D	D		D	C	A
Approach Delay		28.1			31.9			36.3			22.7	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	113	75		39	44		26	87		30	92	0
Queue Length 95th (ft)	222	128		99	94		59	139		84	189	14
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	734	1866		293	981		246	590		242	609	681
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.37	0.20		0.31	0.25		0.25	0.36		0.29	0.36	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 71.2			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



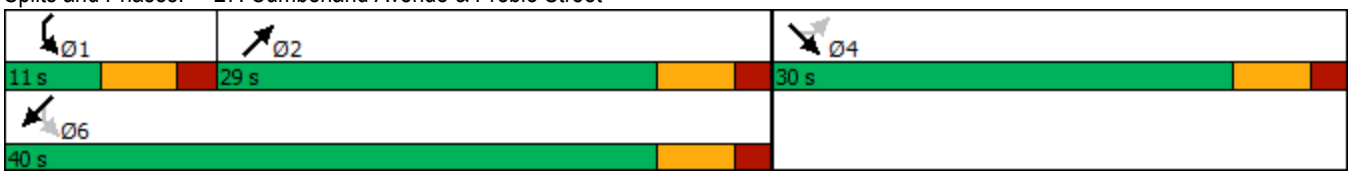
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	282	221	43	0	0	0	0	208	14	12	108	0
Future Volume (vph)	282	221	43	0	0	0	0	208	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.976						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1795	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.374		
Satd. Flow (perm)	1658	1795	0	0	0	0	0	1825	0	647	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	303	238	46	0	0	0	0	285	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	303	284	0	0	0	0	0	304	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



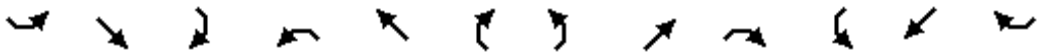
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.7	13.7						12.8		14.1	14.1	
Actuated g/C Ratio	0.33	0.33						0.31		0.34	0.34	
v/c Ratio	0.55	0.47						0.53		0.04	0.19	
Control Delay	16.9	14.4						16.9		9.5	10.4	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.9	14.4						16.9		9.5	10.4	
LOS	B	B						B		A	B	
Approach Delay		15.7						16.9			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	45	38						45		2	16	
Queue Length 95th (ft)	172	150						132		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1072	1167						1133		360	1571	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.28	0.24						0.27		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 41.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	136	357	0	0	106	89
Future Volume (vph)	0	0	0	10	132	23	136	357	0	0	106	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.434					
Satd. Flow (perm)	0	0	0	1422	1688	0	785	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	168	441	0	0	120	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	168	441	0	0	120	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

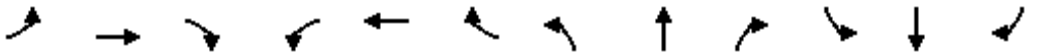


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.3	10.3		20.3	20.3			10.6	10.6
Actuated g/C Ratio				0.26	0.26		0.51	0.51			0.27	0.27
v/c Ratio				0.03	0.39		0.27	0.46			0.24	0.22
Control Delay				14.1	16.9		7.7	9.2			17.5	3.6
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	16.9		7.7	9.3			17.5	3.6
LOS				B	B		A	A			B	A
Approach Delay					16.8			8.8			11.1	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	62			26	0
Queue Length 95th (ft)				12	81		45	119			64	18
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				814	972		652	1580			1143	863
Starvation Cap Reductn				0	0		0	270			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.26	0.34			0.10	0.12

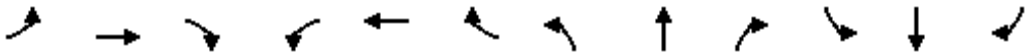
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





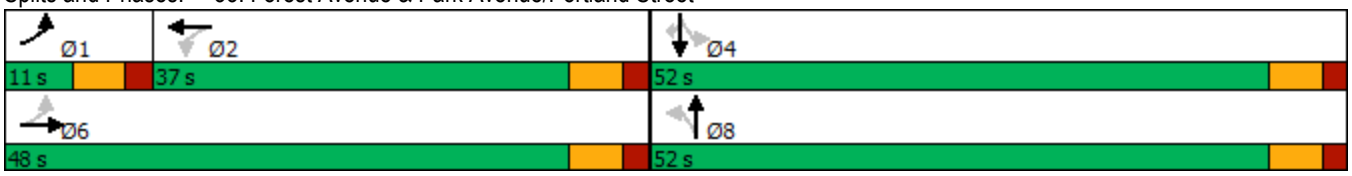
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	186	32	9	106	76	7	128	14	258	332	16
Future Volume (vph)	38	186	32	9	106	76	7	128	14	258	332	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.97				1.00		0.93		
Frt		0.978			0.937			0.987				0.850
Flt Protected	0.950			0.950				0.998		0.950		
Satd. Flow (prot)	1752	1776	0	1805	1656	0	0	1828	0	1752	1845	1524
Flt Permitted	0.424			0.588				0.978		0.748		
Satd. Flow (perm)	776	1776	0	1086	1656	0	0	1789	0	1287	1845	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			38			7				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	5			15			24			33		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.87	0.87	0.87	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	20%	0%	5%	11%	0%	2%	7%	3%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	238	41	11	128	92	8	147	16	269	346	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	279	0	11	220	0	0	171	0	269	346	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	11.0	48.0		37.0	37.0		52.0	52.0		52.0	52.0	52.0
Total Split (%)	11.0%	48.0%		37.0%	37.0%		52.0%	52.0%		52.0%	52.0%	52.0%
Maximum Green (s)	5.0	42.0		31.0	31.0		46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	18.3	18.3		12.9	12.9			18.9		18.9	18.9	18.9
Actuated g/C Ratio	0.36	0.36		0.25	0.25			0.37		0.37	0.37	0.37
v/c Ratio	0.13	0.43		0.04	0.49			0.25		0.56	0.50	0.03
Control Delay	12.4	14.6		19.8	20.6			13.0		19.1	16.2	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	12.4	14.6		19.8	20.6			13.0		19.1	16.2	0.1
LOS	B	B		B	C			B		B	B	A
Approach Delay		14.3			20.5			13.0			17.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	8	52		3	49			36		68	85	0
Queue Length 95th (ft)	29	120		15	120			81		153	176	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	388	1441		730	1126			1520		1093	1566	1309
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.13	0.19		0.02	0.20			0.11		0.25	0.22	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 50.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Avenue & Park Avenue/Portland Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	34	229	16	0	0	0	0	46	45	15	37	0
Future Volume (Veh/h)	34	229	16	0	0	0	0	46	45	15	37	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.92	0.92	0.92	0.60	0.60	0.60	0.75	0.75	0.75
Hourly flow rate (vph)	35	234	16	0	0	0	0	77	75	20	49	0
Pedestrians					19						9	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked												
vC, conflicting volume	9			250			336	321	144	328	329	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			250			336	321	144	328	329	9
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	87	92	96	91	100
cM capacity (veh/h)	1610			1313			547	581	884	483	575	1067

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	152	133	152	69
Volume Left	35	0	0	20
Volume Right	0	16	75	0
cSH	1610	1700	699	545
Volume to Capacity	0.02	0.08	0.22	0.13
Queue Length 95th (ft)	2	0	21	11
Control Delay (s)	1.8	0.0	11.6	12.6
Lane LOS	A		B	B
Approach Delay (s)	1.0		11.6	12.6
Approach LOS			B	B

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	546	21	24	52	0	0	48	124
Future Volume (Veh/h)	0	0	0	7	546	21	24	52	0	0	48	124
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.86	0.86	0.86	0.56	0.56	0.56
Hourly flow rate (vph)	0	0	0	8	620	24	28	60	0	0	86	221
Pedestrians		11										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	644			0			923	660	0	678	648	643
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	644			0			923	660	0	678	648	643
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			75	84	100	100	78	54
cM capacity (veh/h)	941			1636			112	384	1091	323	390	477

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	652	88	307
Volume Left	8	28	0
Volume Right	24	0	221
cSH	1636	217	449
Volume to Capacity	0.00	0.41	0.68
Queue Length 95th (ft)	0	46	126
Control Delay (s)	0.1	32.5	28.6
Lane LOS	A	D	D
Approach Delay (s)	0.1	32.5	28.6
Approach LOS		D	D

Intersection Summary				
Average Delay	11.2			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	3	2	3	10	0	14	223	53	0	0	0
Future Volume (Veh/h)	0	3	2	3	10	0	14	223	53	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.65	0.65	0.65	0.86	0.86	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	3	5	15	0	16	259	62	0	0	0
Pedestrians					8						15	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98					0.98		
vC, conflicting volume	330	330	305	319	361	8	8			321		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	309	309	284	298	341	8	8			300		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	97	100	99			100		
cM capacity (veh/h)	615	587	747	627	564	1072	1613			1239		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	7	20	16	321
Volume Left	0	5	16	0
Volume Right	3	0	0	62
cSH	647	579	1613	1700
Volume to Capacity	0.01	0.03	0.01	0.19
Queue Length 95th (ft)	1	3	1	0
Control Delay (s)	10.6	11.4	7.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.6	11.4	0.3	
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	28.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	12	0	0	0	0	0	0	0	14	563	6
Future Volume (Veh/h)	6	12	0	0	0	0	0	0	0	14	563	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Hourly flow rate (vph)	9	19	0	0	0	0	0	0	0	16	640	7
Pedestrians		8						3				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	686	687	8	685	684	646	647			8		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	687	8	685	684	646	647			8		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	95	100	100	100	100	100			99		
cM capacity (veh/h)	356	366	1072	343	365	471	939			1613		

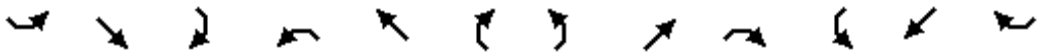
Direction, Lane #	EB 1	NW 1
Volume Total	28	663
Volume Left	9	16
Volume Right	0	7
cSH	363	1613
Volume to Capacity	0.08	0.01
Queue Length 95th (ft)	6	1
Control Delay (s)	15.8	0.3
Lane LOS	C	A
Approach Delay (s)	15.8	0.3
Approach LOS	C	

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	19	193	1	0	0	0	0	4	0	42	27	0
Future Volume (Veh/h)	19	193	1	0	0	0	0	4	0	42	27	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.63	0.63	0.63	0.77	0.77	0.77
Hourly flow rate (vph)	22	219	1	0	0	0	0	6	0	55	35	0
Pedestrians					16						12	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked												
vC, conflicting volume	12			220			281	276	236	294	276	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	12			220			281	276	236	294	276	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	99	100	91	94	100
cM capacity (veh/h)	1602			1349			634	619	808	637	619	1062

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	242	6	90
Volume Left	22	0	55
Volume Right	1	0	0
cSH	1602	619	630
Volume to Capacity	0.01	0.01	0.14
Queue Length 95th (ft)	1	1	12
Control Delay (s)	0.8	10.9	11.7
Lane LOS	A	B	B
Approach Delay (s)	0.8	10.9	11.7
Approach LOS		B	B

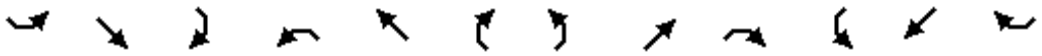
Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	18	464	16	22	20	0	0	49	98
Future Volume (Veh/h)	0	0	0	18	464	16	22	20	0	0	49	98
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.65	0.65	0.65	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	21	533	18	34	31	0	0	56	113
Pedestrians		10						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	551			8			743	601	8	600	592	552
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	551			8			743	601	8	600	592	552
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			85	92	100	100	86	79
cM capacity (veh/h)	1019			1613			230	408	1072	386	413	533

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	572	65	169
Volume Left	21	34	0
Volume Right	18	0	113
cSH	1613	291	486
Volume to Capacity	0.01	0.22	0.35
Queue Length 95th (ft)	1	21	38
Control Delay (s)	0.4	20.9	16.3
Lane LOS	A	C	C
Approach Delay (s)	0.4	20.9	16.3
Approach LOS		C	C

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	191	45	0	0	0	0	0	0	4	59	0
Future Volume (Veh/h)	0	191	45	0	0	0	0	0	0	4	59	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	217	51	0	0	0	0	0	0	6	84	0
Pedestrians					37			26				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			294			310	268	306	280	294	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			294			310	268	306	280	294	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	100	100	99	86	100
cM capacity (veh/h)	1636			1268			574	638	734	651	607	1091

Direction, Lane #	SE 1	SW 1
Volume Total	268	90
Volume Left	0	6
Volume Right	51	0
cSH	1700	610
Volume to Capacity	0.16	0.15
Queue Length 95th (ft)	0	13
Control Delay (s)	0.0	11.9
Lane LOS		B
Approach Delay (s)	0.0	11.9
Approach LOS		B

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	23.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	46	496	6	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	46	496	6	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	53	577	7	0	0	0	0	0	0
Pedestrians								19				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	584			19			706	709	19	686	706	580
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	584			19			706	709	19	686	706	580
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	100	100	100	100	100
cM capacity (veh/h)	991			1541			342	347	1059	352	348	514

Direction, Lane #	NW 1
Volume Total	637
Volume Left	53
Volume Right	7
cSH	1541
Volume to Capacity	0.03
Queue Length 95th (ft)	3
Control Delay (s)	1.0
Lane LOS	A
Approach Delay (s)	1.0
Approach LOS	

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	1	188	2	193	0	0	0	0	6	0
Future Volume (Veh/h)	1	188	2	193	0	0	0	0	6	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	1	211	2	219	0	0	0	0	12	0
Pedestrians				27			24		13	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		1	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	236	243	13			219			472	236
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	236	243	13			219			472	236
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	100	74	100			100			97	100
cM capacity (veh/h)	659	801	1599			1350			364	659

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	212	221	12
Volume Left	0	2	12
Volume Right	211	0	0
cSH	800	1599	364
Volume to Capacity	0.27	0.00	0.03
Queue Length 95th (ft)	27	0	3
Control Delay (s)	11.1	0.1	15.2
Lane LOS	B	A	C
Approach Delay (s)	11.1	0.1	15.2
Approach LOS	B		C

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	35.3%	ICU Level of Service		A
Analysis Period (min)	15			

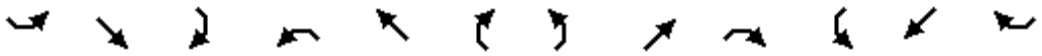


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	NW 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	297	194	98	193	398	109	68	195	25	63	349	336
Future Volume (vph)	297	194	98	193	398	109	68	195	25	63	349	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.93			0.98			0.98		
Frt		0.950			0.968			0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3351	0	1787	3426	0	1805	1839	0	1805	1881	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1755	3351	0	1664	3426	0	1775	1839	0	1760	1881	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			30			6				357
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	13			34			15			19		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	1%	2%	2%	0%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	316	206	104	224	463	127	80	229	29	67	371	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	316	310	0	224	590	0	80	258	0	67	371	357
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



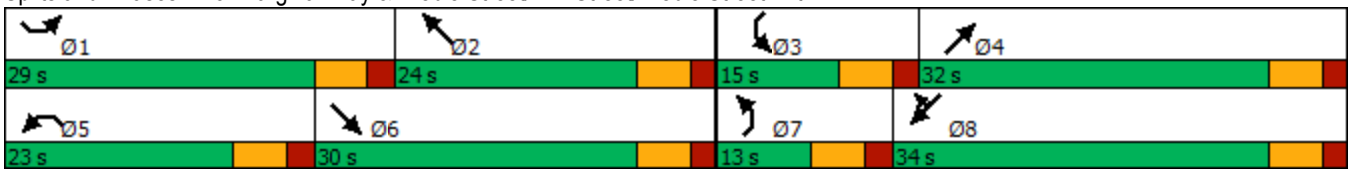
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	29.0	30.0		23.0	24.0		13.0	32.0		15.0	34.0	34.0
Total Split (%)	29.0%	30.0%		23.0%	24.0%		13.0%	32.0%		15.0%	34.0%	34.0%
Maximum Green (s)	23.0	24.0		17.0	18.0		7.0	26.0		9.0	28.0	28.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	19.7	22.2		15.0	17.5		7.1	21.1		8.0	22.3	22.3
Actuated g/C Ratio	0.22	0.25		0.17	0.20		0.08	0.24		0.09	0.25	0.25
v/c Ratio	0.79	0.34		0.73	0.84		0.55	0.58		0.41	0.78	0.53
Control Delay	49.7	22.6		52.9	46.6		59.6	36.2		50.1	44.3	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.7	22.6		52.9	46.6		59.6	36.2		50.1	44.3	6.4
LOS	D	C		D	D		E	D		D	D	A
Approach Delay		36.3			48.3			41.8			27.8	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	181	59		131	178		48	137		39	210	0
Queue Length 95th (ft)	#316	101		#224	#268		#106	203		85	317	66
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	490	1018		362	759		150	574		193	628	771
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.64	0.30		0.62	0.78		0.53	0.45		0.35	0.59	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

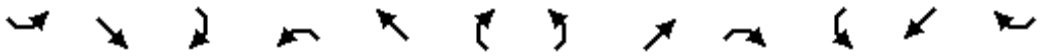
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



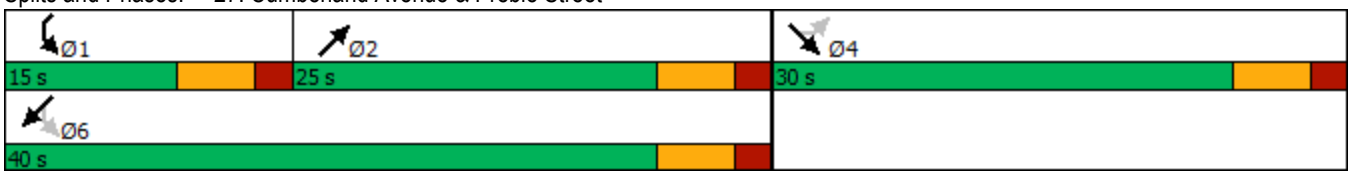
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	165	166	50	0	0	0	0	227	21	25	256	0
Future Volume (vph)	165	166	50	0	0	0	0	227	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.965						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1792	0	0	0	0	0	1858	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1792	0	0	0	0	0	1858	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						7				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	172	173	52	0	0	0	0	249	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	225	0	0	0	0	0	272	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



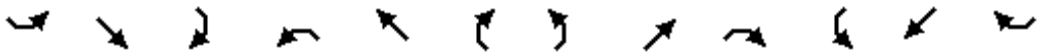
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	10.7	10.7						12.1		15.7	15.7	
Actuated g/C Ratio	0.27	0.27						0.30		0.39	0.39	
v/c Ratio	0.38	0.45						0.48		0.07	0.42	
Control Delay	17.0	16.1						16.3		7.3	10.1	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	17.0	16.1						16.3		7.3	10.2	
LOS	B	B						B		A	B	
Approach Delay		16.5						16.3			9.9	
Approach LOS		B						B			A	
Queue Length 50th (ft)	22	26						33		3	40	
Queue Length 95th (ft)	97	114						140		14	93	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1142	1219						997		548	1587	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.15	0.18						0.27		0.05	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



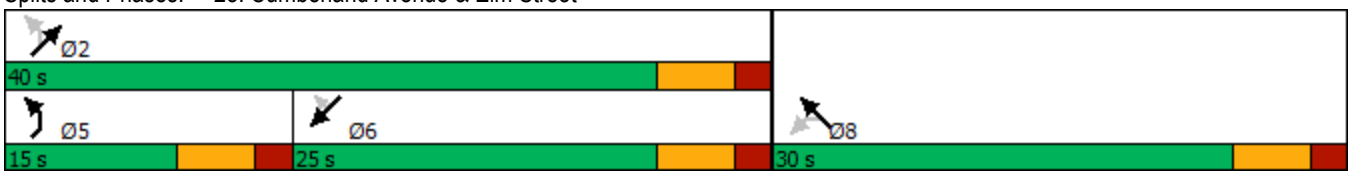
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	107	297	0	0	240	158
Future Volume (vph)	0	0	0	36	241	25	107	297	0	0	240	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.398					
Satd. Flow (perm)	0	0	0	1716	1808	0	719	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							170
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	118	326	0	0	258	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	118	326	0	0	258	170
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

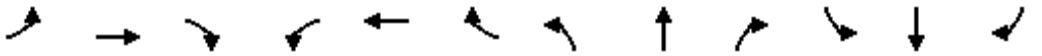


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.2	23.2			12.8	12.8
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.26	0.26
v/c Ratio				0.09	0.59		0.23	0.37			0.54	0.34
Control Delay				16.2	22.5		8.9	10.0			23.0	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.5		8.9	10.2			23.0	5.9
LOS				B	C		A	B			C	A
Approach Delay					21.7			9.8			16.2	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		17	53			71	0
Queue Length 95th (ft)				31	162		48	124			152	40
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				907	959		552	1321			787	707
Starvation Cap Reductn				0	0		0	415			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.21	0.36			0.33	0.24

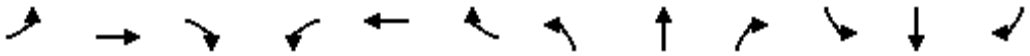
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





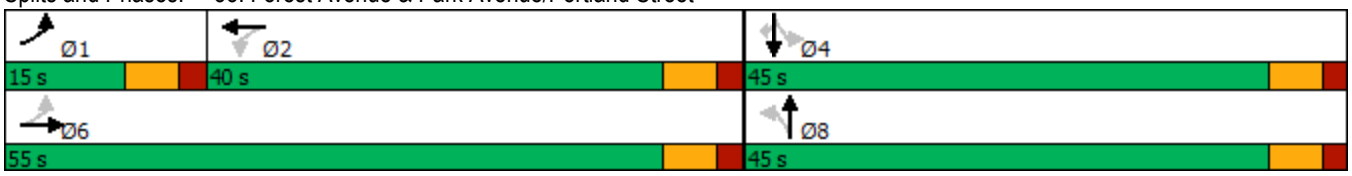
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	173	21	9	141	129	13	145	14	199	216	25
Future Volume (vph)	40	173	21	9	141	129	13	145	14	199	216	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.95				0.99		0.94		
Frt		0.984			0.928			0.989				0.850
Flt Protected	0.950			0.950				0.996		0.950		
Satd. Flow (prot)	1736	1837	0	1805	1705	0	0	1856	0	1787	1863	1615
Flt Permitted	0.374			0.613				0.965		0.678		
Satd. Flow (perm)	674	1837	0	1101	1705	0	0	1785	0	1199	1863	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			50			5				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	11			27			52			34		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.81	0.81	0.81	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	1%	8%	0%	2%	5%	0%	1%	0%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	208	25	9	148	136	16	179	17	221	240	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	233	0	9	284	0	0	212	0	221	240	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												

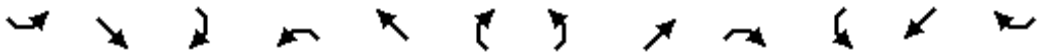


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	15.0	55.0		40.0	40.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	15.0%	55.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	9.0	49.0		34.0	34.0		39.0	39.0		39.0	39.0	39.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	20.5	20.5		14.2	14.2			17.5		17.5	17.5	17.5
Actuated g/C Ratio	0.39	0.39		0.27	0.27			0.34		0.34	0.34	0.34
v/c Ratio	0.12	0.32		0.03	0.57			0.35		0.55	0.38	0.05
Control Delay	10.9	11.9		19.4	21.2			16.6		22.3	17.2	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	10.9	11.9		19.4	21.2			16.6		22.3	17.2	0.2
LOS	B	B		B	C			B		C	B	A
Approach Delay		11.7			21.1			16.6			18.5	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	8	41		2	67			52		60	61	0
Queue Length 95th (ft)	29	103		14	175			109		149	141	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	489	1563		784	1229			1355		909	1413	1248
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.10	0.15		0.01	0.23			0.16		0.24	0.17	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 52.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Avenue & Park Avenue/Portland Street





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	22	382	7	0	0	0	0	41	51	11	11	0
Future Volume (Veh/h)	22	382	7	0	0	0	0	41	51	11	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.77	0.77	0.77	0.61	0.61	0.61
Hourly flow rate (vph)	26	449	8	0	0	0	0	53	66	18	18	0
Pedestrians					10						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	4			457			514	509	238	383	513	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			362			421	416	135	285	420	4
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.7	6.9	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.2	3.3
p0 queue free %	98			100			100	89	92	96	96	100
cM capacity (veh/h)	1625			1150			480	501	857	503	462	1080

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	250	232	119	36
Volume Left	26	0	0	18
Volume Right	0	8	66	0
cSH	1625	1700	651	482
Volume to Capacity	0.02	0.14	0.18	0.07
Queue Length 95th (ft)	1	0	17	6
Control Delay (s)	0.9	0.0	11.8	13.1
Lane LOS	A		B	B
Approach Delay (s)	0.5		11.8	13.1
Approach LOS			B	B

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	26.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	304	29	19	43	0	0	18	46
Future Volume (Veh/h)	0	0	0	4	304	29	19	43	0	0	18	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.87	0.87	0.87	0.83	0.83	0.83
Hourly flow rate (vph)	0	0	0	5	353	34	22	49	0	0	22	55
Pedestrians		22										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	387			0			468	397	0	404	380	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			0			468	397	0	404	380	392
tC, single (s)	4.1			4.6			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	100			100			95	91	100	100	96	91
cM capacity (veh/h)	1171			1358			450	542	1091	520	544	646

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	392	71	77
Volume Left	5	22	0
Volume Right	34	0	55
cSH	1358	509	613
Volume to Capacity	0.00	0.14	0.13
Queue Length 95th (ft)	0	12	11
Control Delay (s)	0.1	13.2	11.7
Lane LOS	A	B	B
Approach Delay (s)	0.1	13.2	11.7
Approach LOS		B	B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1	1	0	21	404	18	0	0	0
Future Volume (Veh/h)	0	0	0	1	1	0	21	404	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2	2	0	24	454	20	0	0	0
Pedestrians					9						8	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90					0.90		
vC, conflicting volume	513	521	472	519	531	9	9			474		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	399	408	354	406	420	9	9			356		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	100	100	100	100	98			100		
cM capacity (veh/h)	496	469	623	488	462	1069	1572			1079		

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	0	4	24	474
Volume Left	0	2	24	0
Volume Right	0	0	0	20
cSH	1700	475	1572	1700
Volume to Capacity	0.01	0.01	0.02	0.28
Queue Length 95th (ft)	0	1	1	0
Control Delay (s)	0.0	12.6	7.3	0.0
Lane LOS	A	B	A	
Approach Delay (s)	0.0	12.6	0.4	
Approach LOS	A	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	34.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	10	0	0	0	0	0	0	0	3	332	15
Future Volume (Veh/h)	6	10	0	0	0	0	0	0	0	3	332	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	8	12	0	0	0	0	0	0	0	4	395	18
Pedestrians								1				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	413	421	0	418	412	405	413			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	413	421	0	418	412	405	413			0		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	100	100	100	100			100		
cM capacity (veh/h)	552	511	1091	535	529	646	1146			1636		

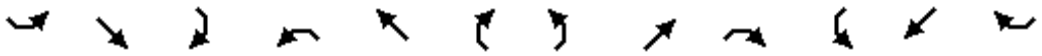
Direction, Lane #	EB 1	NW 1
Volume Total	20	417
Volume Left	8	4
Volume Right	0	18
cSH	526	1636
Volume to Capacity	0.04	0.00
Queue Length 95th (ft)	3	0
Control Delay (s)	12.1	0.1
Lane LOS	B	A
Approach Delay (s)	12.1	0.1
Approach LOS	B	

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	28.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	338	0	0	0	0	0	7	1	28	12	0
Future Volume (Veh/h)	66	338	0	0	0	0	0	7	1	28	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.56	0.56	0.56	0.90	0.90	0.90
Hourly flow rate (vph)	74	380	0	0	0	0	0	12	2	31	13	0
Pedestrians					11						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	5			380			534	533	391	552	533	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			294			460	459	306	479	459	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	95			100			100	97	100	93	97	100
cM capacity (veh/h)	1622			1177			449	443	686	424	443	1079

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	454	14	44
Volume Left	74	0	31
Volume Right	0	2	0
cSH	1622	466	429
Volume to Capacity	0.05	0.03	0.10
Queue Length 95th (ft)	4	2	9
Control Delay (s)	1.6	13.0	14.3
Lane LOS	A	B	B
Approach Delay (s)	1.6	13.0	14.3
Approach LOS		B	B

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	21	256	37	17	46	0	0	40	83
Future Volume (Veh/h)	0	0	0	21	256	37	17	46	0	0	40	83
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.55	0.55	0.55	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	25	301	44	31	84	0	0	50	104
Pedestrians		29						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	345			8			539	403	8	415	381	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	345			8			539	403	8	415	381	352
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			98			91	84	100	100	91	85
cM capacity (veh/h)	1214			1581			350	527	1072	475	542	680

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	370	115	154
Volume Left	25	31	0
Volume Right	44	0	104
cSH	1581	464	628
Volume to Capacity	0.02	0.25	0.25
Queue Length 95th (ft)	1	24	24
Control Delay (s)	0.6	15.3	12.6
Lane LOS	A	C	B
Approach Delay (s)	0.6	15.3	12.6
Approach LOS		C	B

Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	329	35	0	0	0	0	0	0	8	61	0
Future Volume (Veh/h)	0	329	35	0	0	0	0	0	0	8	61	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	370	39	0	0	0	0	0	0	12	90	0
Pedestrians					40			15				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			424			450	404	444	430	424	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			424			450	404	444	430	424	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	100	100	98	82	100
cM capacity (veh/h)	1636			1135			449	535	614	539	505	1091

Direction, Lane #	SE 1	SW 1
Volume Total	409	102
Volume Left	0	12
Volume Right	39	0
cSH	1700	509
Volume to Capacity	0.24	0.20
Queue Length 95th (ft)	0	19
Control Delay (s)	0.0	13.8
Lane LOS		B
Approach Delay (s)	0.0	13.8
Approach LOS		B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	314	40	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	75	314	40	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	81	338	43	0	0	0	0	0	0
Pedestrians								27				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	381			27			548	570	27	522	548	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			27			548	570	27	522	548	360
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	100	100	100	100	100
cM capacity (veh/h)	1177			1524			429	408	1048	447	420	685

Direction, Lane #	NW 1
Volume Total	462
Volume Left	81
Volume Right	43
cSH	1524
Volume to Capacity	0.05
Queue Length 95th (ft)	4
Control Delay (s)	1.7
Lane LOS	A
Approach Delay (s)	1.7
Approach LOS	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	47	265	51	281	0	0	0	0	36	0
Future Volume (Veh/h)	47	265	51	281	0	0	0	0	36	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.93	0.93	0.88	0.88	0.88	0.92	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	51	285	58	319	0	0	0	0	144	0
Pedestrians				33			20		19	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		2	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	454	339	19			319			784	454
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	454	339	19			319			784	454
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	89	59	96			100			11	100
cM capacity (veh/h)	478	703	1582			1241			161	478

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	336	377	144
Volume Left	0	58	144
Volume Right	285	0	0
cSH	656	1582	161
Volume to Capacity	0.51	0.04	0.89
Queue Length 95th (ft)	73	3	159
Control Delay (s)	16.1	1.4	101.4
Lane LOS	C	A	F
Approach Delay (s)	16.1	1.4	101.4
Approach LOS	C		F

Intersection Summary			
Average Delay	24.0		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

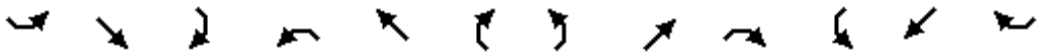


Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	19	376	101	0
Future Volume (Veh/h)	0	0	19	376	101	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	21	409	110	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked					0.95	
vC, conflicting volume			0		451	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		392	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		81	100
cM capacity (veh/h)			1623		572	1085

Direction, Lane #	NW 1	NE 1
Volume Total	430	110
Volume Left	21	110
Volume Right	0	0
cSH	1623	572
Volume to Capacity	0.01	0.19
Queue Length 95th (ft)	1	18
Control Delay (s)	0.5	12.8
Lane LOS	A	B
Approach Delay (s)	0.5	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	249	323	35	112	186	65	44	139	33	77	196	143
Future Volume (vph)	249	323	35	112	186	65	44	139	33	77	196	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.96			0.99			0.98		
Frt		0.985			0.961			0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3493	0	1752	3287	0	1805	1792	0	1770	1845	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1746	3493	0	1679	3287	0	1780	1792	0	1727	1845	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			43			11				229
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	11			23			10			18		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.72	0.72	0.72	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	3%	4%	10%	0%	1%	11%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	274	355	38	126	209	73	61	193	46	87	220	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	393	0	126	282	0	61	239	0	87	220	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	33.0	41.0		17.0	25.0		15.0	27.0		15.0	27.0	27.0
Total Split (%)	33.0%	41.0%		17.0%	25.0%		15.0%	27.0%		15.0%	27.0%	27.0%
Maximum Green (s)	27.0	35.0		11.0	19.0		9.0	21.0		9.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	17.2	23.0		10.1	11.4		7.9	14.9		8.4	18.0	18.0
Actuated g/C Ratio	0.23	0.31		0.14	0.15		0.11	0.20		0.11	0.24	0.24
v/c Ratio	0.66	0.36		0.53	0.52		0.32	0.65		0.43	0.49	0.29
Control Delay	36.3	23.9		44.3	30.8		41.2	37.6		43.9	32.1	2.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	36.3	23.9		44.3	30.8		41.2	37.6		43.9	32.1	2.5
LOS	D	C		D	C		D	D		D	C	A
Approach Delay		29.0			35.0			38.3			24.1	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	120	83		56	56		27	101		39	95	0
Queue Length 95th (ft)	227	132		#146	110		60	156		100	193	13
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	710	1805		283	950		239	561		234	598	673
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.39	0.22		0.45	0.30		0.26	0.43		0.37	0.37	0.24

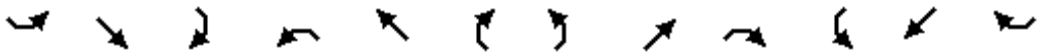
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 73.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

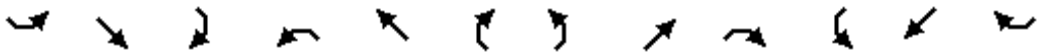
Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext





Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	282	229	69	0	0	0	0	212	14	12	108	0
Future Volume (vph)	282	229	69	0	0	0	0	212	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.965						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1766	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.369		
Satd. Flow (perm)	1658	1766	0	0	0	0	0	1825	0	639	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	303	246	74	0	0	0	0	290	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	303	320	0	0	0	0	0	309	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



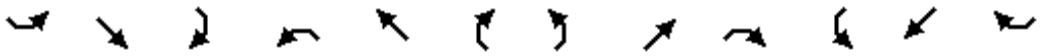
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.9	13.9						13.0		14.3	14.3	
Actuated g/C Ratio	0.33	0.33						0.31		0.34	0.34	
v/c Ratio	0.55	0.53						0.54		0.04	0.19	
Control Delay	16.9	15.2						17.1		9.6	10.5	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.9	15.2						17.1		9.6	10.5	
LOS	B	B						B		A	B	
Approach Delay		16.0						17.1			10.4	
Approach LOS		B						B			B	
Queue Length 50th (ft)	46	44						49		2	17	
Queue Length 95th (ft)	174	170						133		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1062	1140						1123		358	1556	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.29	0.28						0.28		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 41.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	140	357	0	0	106	104
Future Volume (vph)	0	0	0	10	132	23	140	357	0	0	106	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.434					
Satd. Flow (perm)	0	0	0	1422	1688	0	785	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	173	441	0	0	120	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	173	441	0	0	120	118
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

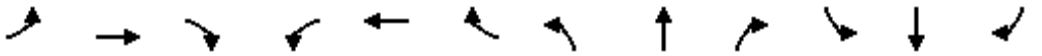


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.3	10.3		20.3	20.3			10.6	10.6
Actuated g/C Ratio				0.26	0.26		0.52	0.52			0.27	0.27
v/c Ratio				0.03	0.39		0.28	0.46			0.24	0.26
Control Delay				14.1	16.9		7.7	9.2			17.5	4.8
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	16.9		7.7	9.3			17.5	4.8
LOS				B	B		A	A			B	A
Approach Delay					16.7			8.8			11.2	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	62			26	0
Queue Length 95th (ft)				12	81		47	119			64	24
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				814	972		655	1580			1143	863
Starvation Cap Reductn				0	0		0	270			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.26	0.34			0.10	0.14

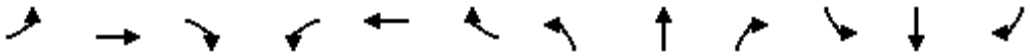
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





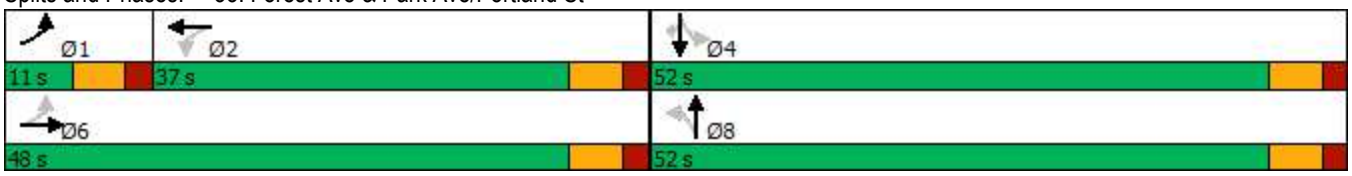
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	190	32	9	119	76	7	148	14	287	332	16
Future Volume (vph)	38	190	32	9	119	76	7	148	14	287	332	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.97				1.00		0.94		
Frt		0.978			0.941			0.989				0.850
Flt Protected	0.950			0.950				0.998		0.950		
Satd. Flow (prot)	1752	1777	0	1805	1666	0	0	1833	0	1752	1845	1524
Flt Permitted	0.417			0.585				0.982		0.700		
Satd. Flow (perm)	764	1777	0	1080	1666	0	0	1801	0	1209	1845	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			34			6				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	5			15			24			33		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.87	0.87	0.87	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	20%	0%	5%	11%	0%	2%	7%	3%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	244	41	11	143	92	8	170	16	299	346	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	285	0	11	235	0	0	194	0	299	346	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	11.0	48.0		37.0	37.0		52.0	52.0		52.0	52.0	52.0
Total Split (%)	11.0%	48.0%		37.0%	37.0%		52.0%	52.0%		52.0%	52.0%	52.0%
Maximum Green (s)	5.0	42.0		31.0	31.0		46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	19.5	19.5		14.1	14.1			22.3		22.3	22.3	22.3
Actuated g/C Ratio	0.35	0.35		0.25	0.25			0.40		0.40	0.40	0.40
v/c Ratio	0.13	0.45		0.04	0.52			0.27		0.62	0.47	0.03
Control Delay	14.3	16.7		21.7	23.2			13.1		20.9	15.6	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	14.3	16.7		21.7	23.2			13.1		20.9	15.6	0.1
LOS	B	B		C	C			B		C	B	A
Approach Delay		16.3			23.1			13.1			17.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	10	63		3	62			44		83	89	0
Queue Length 95th (ft)	32	138		16	143			96		187	183	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	370	1373		683	1066			1454		975	1489	1249
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.13	0.21		0.02	0.22			0.13		0.31	0.23	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 55.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Ave & Park Ave/Portland St



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	34	276	16	0	0	0	0	46	45	15	37	0
Future Volume (Veh/h)	34	276	16	0	0	0	0	46	45	15	37	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.92	0.92	0.92	0.60	0.60	0.60	0.75	0.75	0.75
Hourly flow rate (vph)	35	282	16	0	0	0	0	77	75	20	49	0
Pedestrians					19						9	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		591			1170							
pX, platoon unblocked												
vC, conflicting volume	9			298			384	369	168	352	377	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			298			384	369	168	352	377	9
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	86	91	96	91	100
cM capacity (veh/h)	1610			1260			503	547	853	460	541	1067

Direction, Lane #	SE 1	SE 2	NE 1	SW 1
Volume Total	176	157	152	69
Volume Left	35	0	0	20
Volume Right	0	16	75	0
cSH	1610	1700	664	515
Volume to Capacity	0.02	0.09	0.23	0.13
Queue Length 95th (ft)	2	0	22	12
Control Delay (s)	1.6	0.0	12.0	13.1
Lane LOS	A		B	B
Approach Delay (s)	0.8		12.0	13.1
Approach LOS			B	B

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	25.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	579	24	24	52	0	0	48	124
Future Volume (Veh/h)	0	0	0	7	579	24	24	52	0	0	48	124
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.86	0.86	0.86	0.56	0.56	0.56
Hourly flow rate (vph)	0	0	0	8	658	27	28	60	0	0	86	221
Pedestrians		11										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1171							
pX, platoon unblocked												
vC, conflicting volume	685			0			962	701	0	718	688	682
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			0			962	701	0	718	688	682
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			72	83	100	100	77	51
cM capacity (veh/h)	908			1636			99	364	1091	302	370	453

Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	693	88	307
Volume Left	8	28	0
Volume Right	27	0	221
cSH	1636	197	426
Volume to Capacity	0.00	0.45	0.72
Queue Length 95th (ft)	0	52	140
Control Delay (s)	0.1	37.2	32.3
Lane LOS	A	E	D
Approach Delay (s)	0.1	37.2	32.3
Approach LOS		E	D

Intersection Summary			
Average Delay	12.2		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	0	3	2	3	10	0	14	270	53	0	0	0
Future Volume (Veh/h)	0	3	2	3	10	0	14	270	53	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.65	0.65	0.65	0.86	0.86	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	3	5	15	0	16	314	62	0	0	0
Pedestrians					8						15	
Lane Width (ft)					12.0						0.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								715			1046	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96					0.96		
vC, conflicting volume	384	385	360	374	416	8	8			376		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342	343	317	331	375	8	8			333		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	97	100	99			100		
cM capacity (veh/h)	573	552	702	585	529	1072	1613			1181		

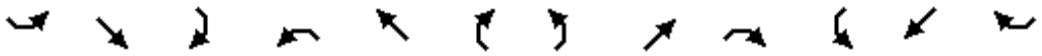
Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	7	20	16	376
Volume Left	0	5	16	0
Volume Right	3	0	0	62
cSH	607	542	1613	1700
Volume to Capacity	0.01	0.04	0.01	0.22
Queue Length 95th (ft)	1	3	1	0
Control Delay (s)	11.0	11.9	7.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	11.9	0.3	
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	31.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	12	0	0	0	0	0	0	0	14	590	6
Future Volume (Veh/h)	6	12	0	0	0	0	0	0	0	14	590	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Hourly flow rate (vph)	9	19	0	0	0	0	0	0	0	16	670	7
Pedestrians		8						3				
Lane Width (ft)		12.0						0.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											995	
pX, platoon unblocked												
vC, conflicting volume	716	717	8	715	714	676	677			8		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	716	717	8	715	714	676	677			8		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	95	100	100	100	100	100			99		
cM capacity (veh/h)	340	352	1072	327	351	453	915			1613		

Direction, Lane #	EB 1	NW 1
Volume Total	28	693
Volume Left	9	16
Volume Right	0	7
cSH	348	1613
Volume to Capacity	0.08	0.01
Queue Length 95th (ft)	7	1
Control Delay (s)	16.3	0.3
Lane LOS	C	A
Approach Delay (s)	16.3	0.3
Approach LOS	C	

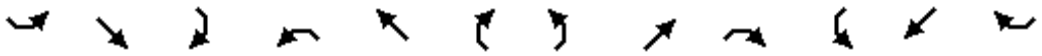
Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	19	240	1	0	0	0	0	4	0	42	27	0
Future Volume (Veh/h)	19	240	1	0	0	0	0	4	0	42	27	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.63	0.63	0.63	0.77	0.77	0.77
Hourly flow rate (vph)	22	273	1	0	0	0	0	6	0	55	35	0
Pedestrians					16						12	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1024			737							
pX, platoon unblocked												
vC, conflicting volume	12			274			335	330	290	348	330	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	12			274			335	330	290	348	330	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	99	100	91	94	100
cM capacity (veh/h)	1602			1289			582	578	754	587	578	1062

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	296	6	90
Volume Left	22	0	55
Volume Right	1	0	0
cSH	1602	578	583
Volume to Capacity	0.01	0.01	0.15
Queue Length 95th (ft)	1	1	14
Control Delay (s)	0.7	11.3	12.3
Lane LOS	A	B	B
Approach Delay (s)	0.7	11.3	12.3
Approach LOS		B	B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	18	500	16	22	20	0	0	49	98
Future Volume (Veh/h)	0	0	0	18	500	16	22	20	0	0	49	98
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.65	0.65	0.65	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	21	575	18	34	31	0	0	56	113
Pedestrians		10						8				
Lane Width (ft)		0.0						12.0				
Walking Speed (ft/s)		3.5						3.5				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					744							
pX, platoon unblocked												
vC, conflicting volume	593			8			785	643	8	642	634	594
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593			8			785	643	8	642	634	594
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			84	92	100	100	86	78
cM capacity (veh/h)	983			1613			211	386	1072	361	391	505

Direction, Lane #	NW 1	NE 1	SW 1
Volume Total	614	65	169
Volume Left	21	34	0
Volume Right	18	0	113
cSH	1613	269	460
Volume to Capacity	0.01	0.24	0.37
Queue Length 95th (ft)	1	23	42
Control Delay (s)	0.4	22.6	17.3
Lane LOS	A	C	C
Approach Delay (s)	0.4	22.6	17.3
Approach LOS		C	C

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	328	45	0	0	0	0	0	0	4	66	0
Future Volume (Veh/h)	0	328	45	0	0	0	0	0	0	4	66	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	373	51	0	0	0	0	0	0	6	94	0
Pedestrians					37			26				
Lane Width (ft)					0.0			0.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			450			472	424	462	436	450	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			450			472	424	462	436	450	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	100	100	99	81	100
cM capacity (veh/h)	1636			1110			429	521	600	512	496	1091

Direction, Lane #	SE 1	SW 1
Volume Total	424	100
Volume Left	0	6
Volume Right	51	0
cSH	1700	497
Volume to Capacity	0.25	0.20
Queue Length 95th (ft)	0	19
Control Delay (s)	0.0	14.1
Lane LOS		B
Approach Delay (s)	0.0	14.1
Approach LOS		B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	30.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	53	532	14	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	53	532	14	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	62	619	16	0	0	0	0	0	0
Pedestrians								19				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	635			19			770	778	19	751	770	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536			19			686	695	19	665	686	527
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	100	100	100	100	100
cM capacity (veh/h)	926			1541			314	315	1059	325	319	494

Direction, Lane #	NW 1
Volume Total	697
Volume Left	62
Volume Right	16
cSH	1541
Volume to Capacity	0.04
Queue Length 95th (ft)	3
Control Delay (s)	1.1
Lane LOS	A
Approach Delay (s)	1.1
Approach LOS	

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Volume (veh/h)	29	188	49	193	0	0	0	0	23	0
Future Volume (Veh/h)	29	188	49	193	0	0	0	0	23	0
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	33	211	56	219	0	0	0	0	46	0
Pedestrians				27			24		13	
Lane Width (ft)				12.0			0.0		12.0	
Walking Speed (ft/s)				3.5			3.5		3.5	
Percent Blockage				3			0		1	
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)							150			
pX, platoon unblocked										
vC, conflicting volume	344	243	13			219			596	344
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	344	243	13			219			596	344
tC, single (s)	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	94	74	96			100			84	100
cM capacity (veh/h)	555	801	1599			1350			280	555

Direction, Lane #	EB 1	SE 1	SW 1
Volume Total	244	275	46
Volume Left	0	56	46
Volume Right	211	0	0
cSH	755	1599	280
Volume to Capacity	0.32	0.04	0.16
Queue Length 95th (ft)	35	3	14
Control Delay (s)	12.0	1.7	20.3
Lane LOS	B	A	C
Approach Delay (s)	12.0	1.7	20.3
Approach LOS	B		C

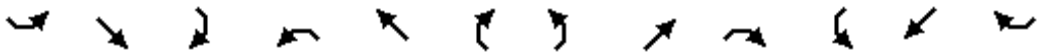
Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		



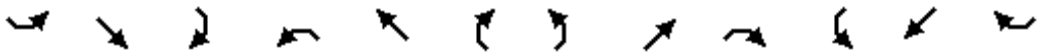
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	0	19	525	51	0
Future Volume (Veh/h)	0	0	19	525	51	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	21	571	55	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked					0.87	
vC, conflicting volume			0		613	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		479	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		88	100
cM capacity (veh/h)			1623		468	1085

Direction, Lane #	NW 1	NE 1
Volume Total	592	55
Volume Left	21	55
Volume Right	0	0
cSH	1623	468
Volume to Capacity	0.01	0.12
Queue Length 95th (ft)	1	10
Control Delay (s)	0.4	13.7
Lane LOS	A	B
Approach Delay (s)	0.4	13.7
Approach LOS		B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	297	208	98	212	408	113	68	195	44	77	349	336
Future Volume (vph)	297	208	98	212	408	113	68	195	44	77	349	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	0		125	185		0	200		215
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98			0.93			0.98			0.98		
Frt		0.952			0.968			0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3357	0	1787	3426	0	1805	1812	0	1805	1881	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1756	3357	0	1666	3426	0	1775	1812	0	1761	1881	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74			31			11				357
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		1689			313			1011			1513	
Travel Time (s)		38.4			8.5			23.0			34.4	
Confl. Peds. (#/hr)	13			34			15			19		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	1%	2%	2%	0%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	316	221	104	247	474	131	80	229	52	82	371	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	316	325	0	247	605	0	80	281	0	82	371	357
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		40	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Prot
Protected Phases	1	6		5	2		7	4		3	8	8
Permitted Phases												
Detector Phase	1	6		5	2		7	4		3	8	8
Switch Phase												



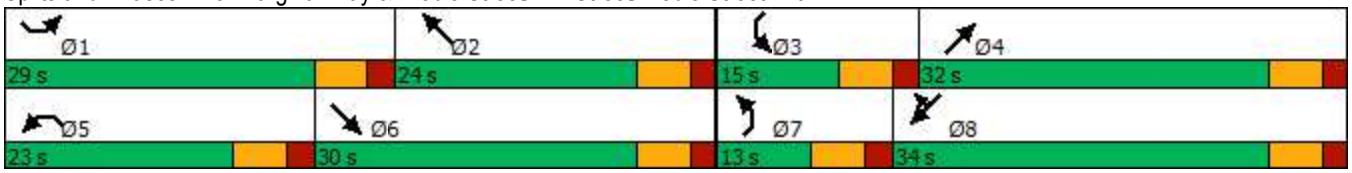
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	22.0		10.0	22.0		10.0	22.0		10.0	22.0	22.0
Total Split (s)	29.0	30.0		23.0	24.0		13.0	32.0		15.0	34.0	34.0
Total Split (%)	29.0%	30.0%		23.0%	24.0%		13.0%	32.0%		15.0%	34.0%	34.0%
Maximum Green (s)	23.0	24.0		17.0	18.0		7.0	26.0		9.0	28.0	28.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	19.7	21.7		15.7	17.8		7.1	21.0		8.3	22.2	22.2
Actuated g/C Ratio	0.22	0.25		0.18	0.20		0.08	0.24		0.09	0.25	0.25
v/c Ratio	0.79	0.37		0.78	0.85		0.55	0.64		0.49	0.78	0.53
Control Delay	49.9	24.1		55.6	47.3		59.8	37.9		52.7	44.4	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.9	24.1		55.6	47.3		59.8	37.9		52.7	44.4	6.4
LOS	D	C		E	D		E	D		D	D	A
Approach Delay		36.9			49.7			42.7			28.5	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	181	66		146	183		48	149		49	210	0
Queue Length 95th (ft)	#316	110		#259	#278		#106	219		99	317	66
Internal Link Dist (ft)		1609			233			931			1433	
Turn Bay Length (ft)	215						185			200		215
Base Capacity (vph)	488	1009		360	756		150	567		193	625	769
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.32		0.69	0.80		0.53	0.50		0.42	0.59	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 88.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

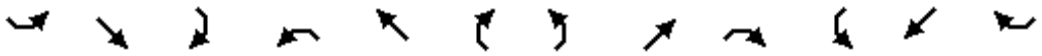
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Marginal Way & Preble Street/Elm Street/Preble Street Ext



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	165	179	63	0	0	0	0	231	21	25	256	0
Future Volume (vph)	165	179	63	0	0	0	0	231	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.961						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1786	0	0	0	0	0	1859	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1786	0	0	0	0	0	1859	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28						6				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	172	186	66	0	0	0	0	254	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	252	0	0	0	0	0	277	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												

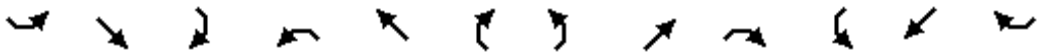


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	11.3	11.3						12.3		15.9	15.9	
Actuated g/C Ratio	0.28	0.28						0.30		0.39	0.39	
v/c Ratio	0.37	0.49						0.49		0.07	0.43	
Control Delay	16.7	16.4						17.0		7.7	10.6	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	16.7	16.4						17.0		7.7	10.6	
LOS	B	B						B		A	B	
Approach Delay		16.5						17.0			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	22	30						35		3	41	
Queue Length 95th (ft)	97	127						148		14	98	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1120	1194						979		540	1573	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.15	0.21						0.28		0.06	0.22	

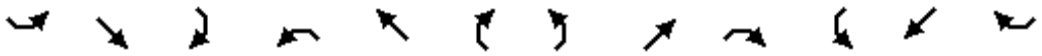
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street





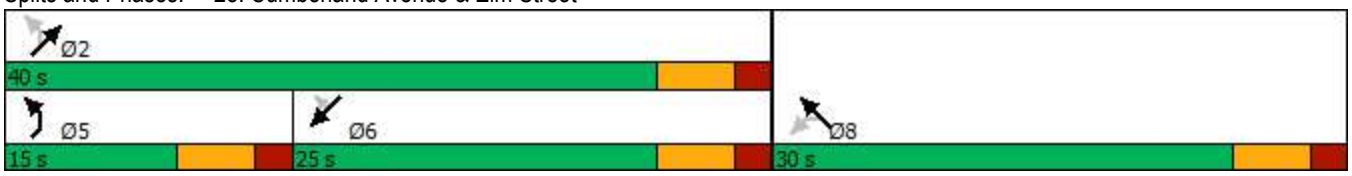
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	111	297	0	0	240	173
Future Volume (vph)	0	0	0	36	241	25	111	297	0	0	240	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.398					
Satd. Flow (perm)	0	0	0	1716	1808	0	719	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							186
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	122	326	0	0	258	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	122	326	0	0	258	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												

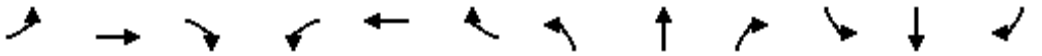


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.3	23.3			12.8	12.8
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.25	0.25
v/c Ratio				0.09	0.59		0.24	0.37			0.54	0.37
Control Delay				16.2	22.5		9.0	9.9			23.1	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.5		9.0	10.1			23.1	5.9
LOS				B	C		A	B			C	A
Approach Delay					21.7			9.8			15.9	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		18	53			71	0
Queue Length 95th (ft)				31	162		50	124			152	42
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				906	958		552	1320			786	716
Starvation Cap Reductn				0	0		0	417			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.22	0.36			0.33	0.26

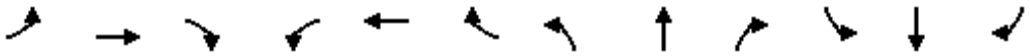
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street





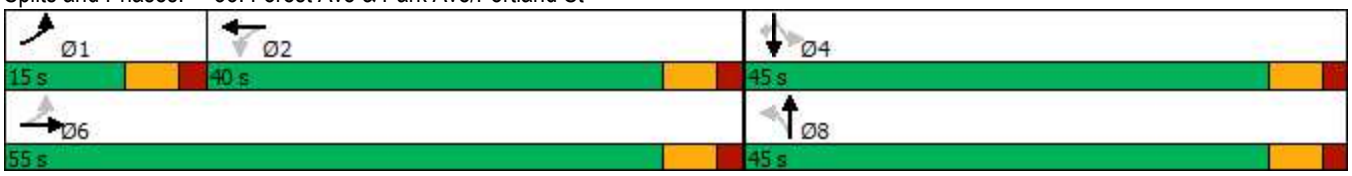
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	177	21	9	148	129	13	155	14	223	216	25
Future Volume (vph)	40	177	21	9	148	129	13	155	14	223	216	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		0	120		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			0.95				0.99		0.94		
Frt		0.984			0.930			0.990				0.850
Flt Protected	0.950			0.950				0.996		0.950		
Satd. Flow (prot)	1736	1838	0	1805	1709	0	0	1858	0	1787	1863	1615
Flt Permitted	0.361			0.611				0.969		0.653		
Satd. Flow (perm)	651	1838	0	1098	1709	0	0	1795	0	1157	1863	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			48			5				98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		950			894			714			865	
Travel Time (s)		21.6			20.3			16.2			19.7	
Confl. Peds. (#/hr)	11			27			52			34		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.81	0.81	0.81	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	1%	8%	0%	2%	5%	0%	1%	0%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	48	213	25	9	156	136	16	191	17	248	240	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	238	0	9	292	0	0	224	0	248	240	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	40	40		40	40		20	40		40	40	40
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		4
Detector Phase	1	6		2	2		8	8		4	4	4
Switch Phase												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	24.0
Total Split (s)	15.0	55.0		40.0	40.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	15.0%	55.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	9.0	49.0		34.0	34.0		39.0	39.0		39.0	39.0	39.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0		0	0		0	0	0
Act Effct Green (s)	21.5	21.5		15.2	15.2			20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.39	0.39		0.27	0.27			0.36		0.36	0.36	0.36
v/c Ratio	0.12	0.33		0.03	0.59			0.35		0.60	0.36	0.04
Control Delay	12.3	13.3		21.2	23.1			16.4		23.7	16.7	0.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	12.3	13.3		21.2	23.1			16.4		23.7	16.7	0.1
LOS	B	B		C	C			B		C	B	A
Approach Delay		13.1			23.0			16.4			19.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	9	47		2	75			57		73	63	0
Queue Length 95th (ft)	32	117		15	197			117		175	143	0
Internal Link Dist (ft)		870			814			634			785	
Turn Bay Length (ft)	75			120								150
Base Capacity (vph)	466	1508		756	1193			1319		849	1367	1211
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.10	0.16		0.01	0.24			0.17		0.29	0.18	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 55.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 33: Forest Ave & Park Ave/Portland St



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	294	35	0	0	0	0	35	0	8	61	0
Future Volume (Veh/h)	0	294	35	0	0	0	0	35	0	8	61	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.68	0.68	0.68
Hourly flow rate (vph)	0	330	39	0	0	0	0	38	0	12	90	0
Pedestrians					40			15				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			384			410	364	404	408	384	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			384			410	364	404	408	384	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			100	93	100	98	83	100
cM capacity (veh/h)	1636			1158			468	556	637	522	525	1091

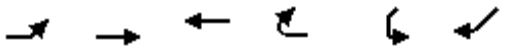
Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	369	38	102
Volume Left	0	0	12
Volume Right	39	0	0
cSH	1700	556	525
Volume to Capacity	0.22	0.07	0.19
Queue Length 95th (ft)	0	5	18
Control Delay (s)	0.0	12.0	13.5
Lane LOS		B	B
Approach Delay (s)	0.0	12.0	13.5
Approach LOS		B	B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	314	40	0	70	0	0	0	0
Future Volume (Veh/h)	0	0	0	75	314	40	0	70	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	81	338	43	0	76	0	0	0	0
Pedestrians								27				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								3				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked												
vC, conflicting volume	381			27			548	570	27	560	548	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			27			548	570	27	560	548	360
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	81	100	100	100	100
cM capacity (veh/h)	1177			1485			409	397	1022	353	409	685

Direction, Lane #	NW 1	NE 1
Volume Total	462	76
Volume Left	81	0
Volume Right	43	0
cSH	1485	397
Volume to Capacity	0.05	0.19
Queue Length 95th (ft)	4	17
Control Delay (s)	1.8	16.2
Lane LOS	A	C
Approach Delay (s)	1.8	16.2
Approach LOS		C

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	33.5%	ICU Level of Service	A	
Analysis Period (min)	15			

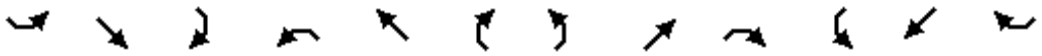


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	35	277	0	0	0	35
Future Volume (Veh/h)	35	277	0	0	0	35
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	301	0	0	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		894				
pX, platoon unblocked						
vC, conflicting volume	0				377	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				377	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	96
cM capacity (veh/h)	1623				610	1085

Direction, Lane #	EB 1	SW 1
Volume Total	339	38
Volume Left	38	0
Volume Right	0	38
cSH	1623	1085
Volume to Capacity	0.02	0.04
Queue Length 95th (ft)	2	3
Control Delay (s)	1.0	8.4
Lane LOS	A	A
Approach Delay (s)	1.0	8.4
Approach LOS		A

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

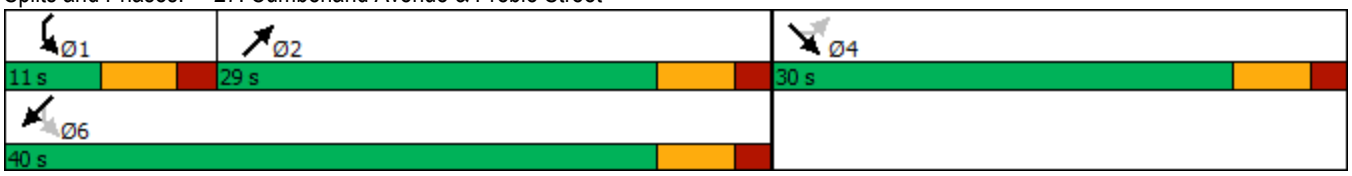
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	212	229	69	0	0	0	0	212	14	12	108	0
Future Volume (vph)	212	229	69	0	0	0	0	212	14	12	108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94							1.00		0.98		
Frt		0.965						0.992				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1766	0	0	0	0	0	1825	0	1671	1845	0
Flt Permitted	0.950									0.372		
Satd. Flow (perm)	1658	1766	0	0	0	0	0	1825	0	644	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						5				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	54								27	17		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	10%	2%	2%	2%	0%	3%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	228	246	74	0	0	0	0	290	19	13	119	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	320	0	0	0	0	0	309	0	13	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



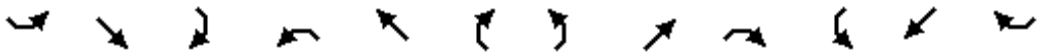
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						29.0		11.0	40.0	
Total Split (%)	42.9%	42.9%						41.4%		15.7%	57.1%	
Maximum Green (s)	24.0	24.0						23.0		5.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	13.2	13.2						12.8		14.1	14.1	
Actuated g/C Ratio	0.32	0.32						0.31		0.35	0.35	
v/c Ratio	0.42	0.54						0.53		0.04	0.19	
Control Delay	14.9	15.5						16.7		9.3	10.2	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	14.9	15.5						16.7		9.3	10.2	
LOS	B	B						B		A	B	
Approach Delay		15.3						16.7			10.1	
Approach LOS		B						B			B	
Queue Length 50th (ft)	32	43						45		2	16	
Queue Length 95th (ft)	129	170						133		11	53	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1086	1166						1148		363	1583	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.21	0.27						0.27		0.04	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	132	23	140	287	0	0	106	104
Future Volume (vph)	0	0	0	10	132	23	140	287	0	0	106	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.95			0.95					0.86
Frt					0.978							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1504	1688	0	1805	1845	0	0	1881	1538
Flt Permitted				0.950			0.425					
Satd. Flow (perm)	0	0	0	1422	1688	0	769	1845	0	0	1881	1329
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							140
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				47			35					61
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	20%	11%	5%	0%	3%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	11	148	26	173	354	0	0	120	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	11	174	0	173	354	0	0	120	118
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				27.0	27.0		14.0	43.0			29.0	29.0
Total Split (%)				38.6%	38.6%		20.0%	61.4%			41.4%	41.4%
Maximum Green (s)				21.0	21.0		8.0	37.0			23.0	23.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				10.2	10.2		19.8	19.8			10.0	10.0
Actuated g/C Ratio				0.26	0.26		0.50	0.50			0.25	0.25
v/c Ratio				0.03	0.39		0.29	0.38			0.25	0.27
Control Delay				14.1	17.0		7.8	8.4			17.7	4.9
Queue Delay				0.0	0.0		0.0	0.1			0.0	0.0
Total Delay				14.1	17.0		7.8	8.5			17.7	4.9
LOS				B	B		A	A			B	A
Approach Delay					16.9			8.2			11.4	
Approach LOS					B			A			B	
Queue Length 50th (ft)				2	35		20	47			26	0
Queue Length 95th (ft)				12	81		47	93			64	24
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				813	971		634	1578			1142	862
Starvation Cap Reductn				0	0		0	290			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.01	0.18		0.27	0.27			0.11	0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 39.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	307	45	0	0	0	0	21	0	4	66	0
Future Volume (Veh/h)	0	307	45	0	0	0	0	21	0	4	66	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70
Hourly flow rate (vph)	0	349	51	0	0	0	0	23	0	6	94	0
Pedestrians					37			26				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					0			2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					353							
pX, platoon unblocked												
vC, conflicting volume	0			426			448	400	438	423	426	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			426			448	400	438	423	426	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.3
p0 queue free %	100			100			100	96	100	99	81	100
cM capacity (veh/h)	1636			1105			427	525	604	495	499	1091

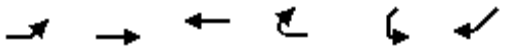
Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	400	23	100
Volume Left	0	0	6
Volume Right	51	0	0
cSH	1700	525	499
Volume to Capacity	0.24	0.04	0.20
Queue Length 95th (ft)	0	3	19
Control Delay (s)	0.0	12.2	14.0
Lane LOS		B	B
Approach Delay (s)	0.0	12.2	14.0
Approach LOS		B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	32.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	53	532	14	0	42	0	0	0	0
Future Volume (Veh/h)	0	0	0	53	532	14	0	42	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	62	619	16	0	46	0	0	0	0
Pedestrians								19				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								3.5				
Percent Blockage								2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					366							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	635			19			770	778	19	774	770	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536			19			687	696	19	691	687	527
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	85	100	100	100	100
cM capacity (veh/h)	926			1513			304	309	1040	273	313	494

Direction, Lane #	NW 1	NE 1
Volume Total	697	46
Volume Left	62	0
Volume Right	16	0
cSH	1513	309
Volume to Capacity	0.04	0.15
Queue Length 95th (ft)	3	13
Control Delay (s)	1.1	18.7
Lane LOS	A	C
Approach Delay (s)	1.1	18.7
Approach LOS		C

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

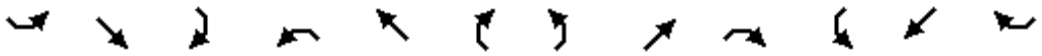


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	21	196	0	0	0	45
Future Volume (Veh/h)	21	196	0	0	0	45
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	213	0	0	0	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		894				
pX, platoon unblocked						
vC, conflicting volume	0				259	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				259	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	95
cM capacity (veh/h)	1623				719	1085

Direction, Lane #	EB 1	SW 1
Volume Total	236	49
Volume Left	23	0
Volume Right	0	49
cSH	1623	1085
Volume to Capacity	0.01	0.05
Queue Length 95th (ft)	1	4
Control Delay (s)	0.8	8.5
Lane LOS	A	A
Approach Delay (s)	0.8	8.5
Approach LOS		A

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

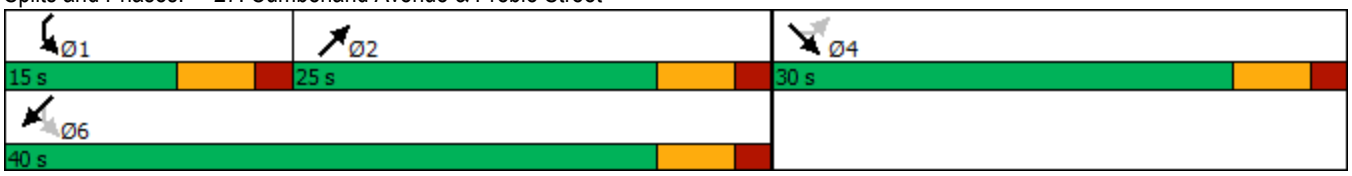
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	123	179	63	0	0	0	0	231	21	25	256	0
Future Volume (vph)	123	179	63	0	0	0	0	231	21	25	256	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95							0.99		0.98		
Frt		0.961						0.989				
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1787	1786	0	0	0	0	0	1859	0	1736	1881	0
Flt Permitted	0.950									0.396		
Satd. Flow (perm)	1689	1786	0	0	0	0	0	1859	0	709	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28						6				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		150			540			1131			266	
Travel Time (s)		4.1			14.7			30.8			7.3	
Confl. Peds. (#/hr)	47								32	20		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	0%	2%	2%	2%	0%	0%	5%	4%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	128	186	66	0	0	0	0	254	23	30	312	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	252	0	0	0	0	0	277	0	30	312	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1		1	1	
Detector Template	Left	Thru						Thru		Left	Thru	
Leading Detector (ft)	40	40						40		40	40	
Trailing Detector (ft)	0	0						0		0	0	
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Detector Phase	4	4						2		1	6	
Switch Phase												



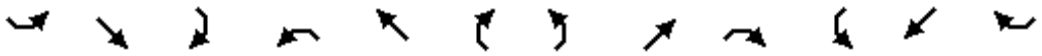
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)	5.0	5.0						5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0						24.0		11.0	24.0	
Total Split (s)	30.0	30.0						25.0		15.0	40.0	
Total Split (%)	42.9%	42.9%						35.7%		21.4%	57.1%	
Maximum Green (s)	24.0	24.0						19.0		9.0	34.0	
Yellow Time (s)	4.0	4.0						4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0						2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0						0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0						6.0		6.0	6.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0						3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0						0.0		0.0	0.0	
Recall Mode	None	None						None		None	None	
Walk Time (s)	7.0	7.0						7.0			7.0	
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	11.3	11.3						12.3		15.9	15.9	
Actuated g/C Ratio	0.28	0.28						0.30		0.39	0.39	
v/c Ratio	0.27	0.49						0.49		0.07	0.43	
Control Delay	15.7	16.4						17.0		7.7	10.6	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	15.7	16.4						17.0		7.7	10.6	
LOS	B	B						B		A	B	
Approach Delay		16.2						17.0			10.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	16	30						35		3	41	
Queue Length 95th (ft)	75	127						148		14	98	
Internal Link Dist (ft)		70			460			1051			186	
Turn Bay Length (ft)												
Base Capacity (vph)	1120	1194						979		540	1573	
Starvation Cap Reductn	0	0						0		0	138	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.11	0.21						0.28		0.06	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 27: Cumberland Avenue & Preble Street



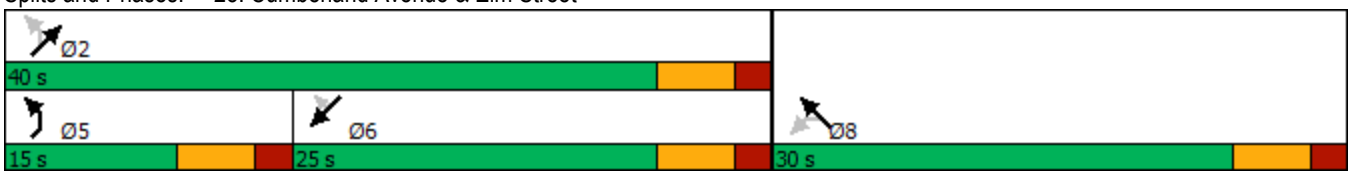
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	241	25	111	255	0	0	240	173
Future Volume (vph)	0	0	0	36	241	25	111	255	0	0	240	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		200
Storage Lanes	0		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98			0.96					0.92
Frt					0.986							0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1752	1808	0	1787	1900	0	0	1881	1583
Flt Permitted				0.950			0.396					
Satd. Flow (perm)	0	0	0	1716	1808	0	716	1900	0	0	1881	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8							186
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		211			558			266			1523	
Travel Time (s)		5.8			15.2			7.3			41.5	
Confl. Peds. (#/hr)				18			38					32
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	3%	4%	0%	1%	0%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	40	265	27	122	280	0	0	258	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	40	292	0	122	280	0	0	258	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1		1	1			1	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				40	40		40	40			40	40
Trailing Detector (ft)				0	0		0	0			0	0
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Minimum Initial (s)				5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)				24.0	24.0		11.0	24.0			24.0	24.0
Total Split (s)				30.0	30.0		15.0	40.0			25.0	25.0
Total Split (%)				42.9%	42.9%		21.4%	57.1%			35.7%	35.7%
Maximum Green (s)				24.0	24.0		9.0	34.0			19.0	19.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Minimum Gap (s)				3.0	3.0		3.0	3.0			3.0	3.0
Time Before Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Time To Reduce (s)				0.0	0.0		0.0	0.0			0.0	0.0
Recall Mode				None	None		None	None			None	None
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)				0	0			0			0	0
Act Effct Green (s)				13.6	13.6		23.1	23.1			12.6	12.6
Actuated g/C Ratio				0.27	0.27		0.46	0.46			0.25	0.25
v/c Ratio				0.09	0.59		0.24	0.32			0.54	0.37
Control Delay				16.2	22.4		9.0	9.5			23.2	5.9
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				16.2	22.4		9.0	9.6			23.2	5.9
LOS				B	C		A	A			C	A
Approach Delay					21.7			9.5			16.0	
Approach LOS					C			A			B	
Queue Length 50th (ft)				9	77		18	44			71	0
Queue Length 95th (ft)				31	162		50	106			152	42
Internal Link Dist (ft)		131			478			186			1443	
Turn Bay Length (ft)				100								200
Base Capacity (vph)				911	964		554	1319			791	719
Starvation Cap Reductn				0	0		0	432			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.04	0.30		0.22	0.32			0.33	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 28: Cumberland Avenue & Elm Street



RYAN SENATORE ARCHITECTURE
RSA
www.senatorearchitecture.com

ACORN ENGINEERING, INC

Planning and Urban Development Department
Planning Division
Attn: Zach Powell, Senior Planner
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

July 20, 2023

Att. X

Subject: Building Division – 89 Elm Street Redevelopment

Zach:

You've asked us to consider providing a +/- 30' gap in the 89 Elm Street building thereby creating two separate buildings. We believe that such a division would have a deleterious effect on the development from both an urban design and programmatic perspective.

Design Considerations:

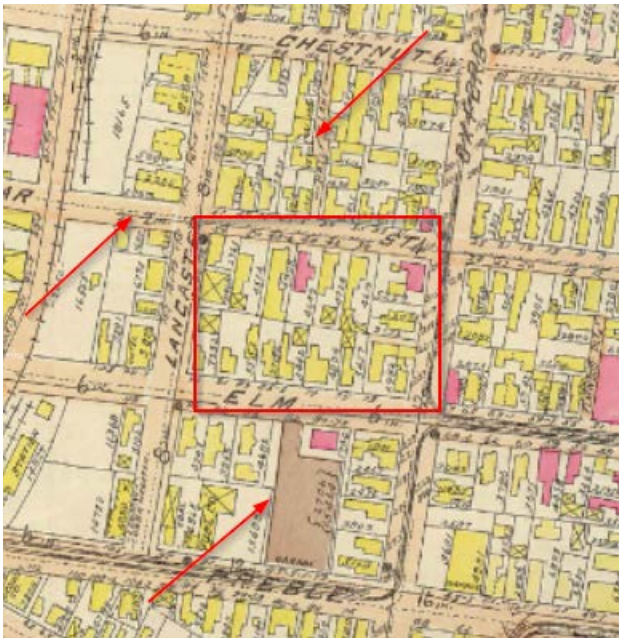
Our development conforms to the existing zoning and meets all applicable City design guidelines, including the B-3 Downtown Business Zone design standards, the Multiple Family Standards as well as the design principles of the recently approved Master Development Plan. As a result of the application of these standards, we believe that the proposed development respects, enhances, and is integrated with the existing character of the general pattern of development in downtown Portland.

89 Elm is designed to be built to the Elm Street right-of-way line to maintain maximum separation from Cedar Street. We consciously avoided extending the building to the rear of the Cedar Street lots in an effort to adhere to the existing neighborhood fabric and pattern of fronts and backs. This is a best practice approach to transitioning between scales in a neighborhood context like this. The transition happens at the midblock point rather than across a street, the goal being that streets are lined on both sides with buildings of similar scales and/or character. The way the Cumberland/Parris/Mechanic/Portland block transitions from the Back Bay Tower at Cumberland Avenue to smaller houses at Portland Street is a good precedent for how this strategy functions elsewhere in the neighborhood.

The 89 Elm Street block is a typically scaled block for downtown B-3 zone. It does not cross the threshold into "excessively long" to the point that it would necessitate a mid-block connection (unlike, for example, the Baxter Academy block of Lancaster). The uses along Elm and Cedar are very different and would not benefit from added permeability (in contrast to Elm/Preble connections). The suggested "break" in the 89 Elm Street building would not create a link all the way to Cedar Street but instead terminate in the back yard area of the existing houses and surface parking lots along Cedar Street. As a result, it would not actually create a new public mid-block connection, but instead provide a 24-hour passage to the lots and houses on Cedar Street. Please refer to the 1914 representative image showing how this block never contemplated cross block connectivity for the reasons identified above.

Stantec

reveler DEVELOPMENT



Reference 1914 Richards Atlas Area Map
*Arrows Reference Mid-Block Permeability being preserved and restored

We understand that mid-block permeability can be an important urban design strategy in places where existing blocks are too large and subdivision can achieve an appropriately walkable scale. However, in this location, the existing blocks are generally already scaled to comfortable walking dimensions. Creating a break in the building façade along Elm Street will disrupt the cohesive street wall that is integral to the Master Development Plan principles previously discussed. There are, however, opportunities within the B-7 portion of the Master Development Plan to add/restore mid-block connections where the added permeability ties active uses together or otherwise anticipates pedestrian desire lines. For example, mid-block connections between Preble and Elm would link two streets anticipated to experience significant pedestrian flows and activity as retail and amenities emerge at and along Lancaster Street.

Programmatic Considerations:

Inserting a +/- 30' gap into the proposed building thereby creating two separate buildings would have a number of programmatic implications.

- An additional egress stair would be required as each building needs two remote means of egress.
- Additional elevators would need to be added to each building as the connected corridor would be eliminated between the existing elevators.
- Additional mechanical, electrical and water rooms would need to be added resulting in a loss of 'rentable' space.
- An additional laundry room and bike room would need to be added resulting in a loss of 'rentable' space.

In total, dividing the building into two buildings would result in a loss of approximately 32 residential units. This reduction of +/- 32 units threatens the project's eligibility for Maine Housing tax credits and subsidy. Maine Housing applies a cap on total development costs per unit. Given the current construction cost environment, we were already projecting the single building program to bump up against the maximum allowable total development cost. Dividing the building in two buildings will not realize meaningful cost savings to the project because fixed costs (e.g., site preparation) will not be reduced while certain costs - elevators, mechanical, electrical and water systems - are being duplicated, thereby increasing those line items in the construction budget.

The loss of +/- 32 units also threatens the project's financial feasibility. The +/- 16% reduction in units will translate into a similar reduction in gross revenue without a commensurate reduction in operating expenses. The resulting reduction in net revenue reduces the amount of debt the project can support. Without a significant additional subsidy source to offset the loss of debt, the project will not be feasible.

Most importantly, 32 new rent- and income-restricted units would be lost to Portland at a time when the City is aggressively seeking to grow its supply of affordable housing in alignment with the Comprehensive Plan. Additionally, per article 18 of the land use code, this site's zoning and affordable housing incentives encourage developments similar to that being proposed.

We would like to conclude by acknowledging the work of your department over the past few months. Your review of our initial submissions through the lens of the applicable design standards have led to significant improvements, particularly as to how the building relates to the pedestrian environments on Elm, Lancaster and Oxford streets. We believe that by following your constructive criticism, we have designed a building that both speaks to the downtown neighborhood that we are creating while also respecting the transition to the residential neighborhood to its east. Ultimately, we are excited to deliver 201 affordable residential units at 60% AMI which will be accomplished through one cohesive building that's integrated into the existing neighborhood context and consistent with the goals of the MDP,

We look forward to discussion and feedback specific to how further enhancements of the proposed building could potentially be integrated into the design based upon feedback from City Staff, members of the Planning Board, and the public.

Sincerely,



Ryan Senatore, AIA LEED AP
Principal
Ryan Senatore Architecture



William H. Savage, P.E.
Principal
Acorn Engineering, Inc.



Jeffrey Sauser
Senior Associate and Urban Planner
Stantec



Michael Barton, LEED AP
Development Director
Reveler Development

89 ELM - REDESIGN

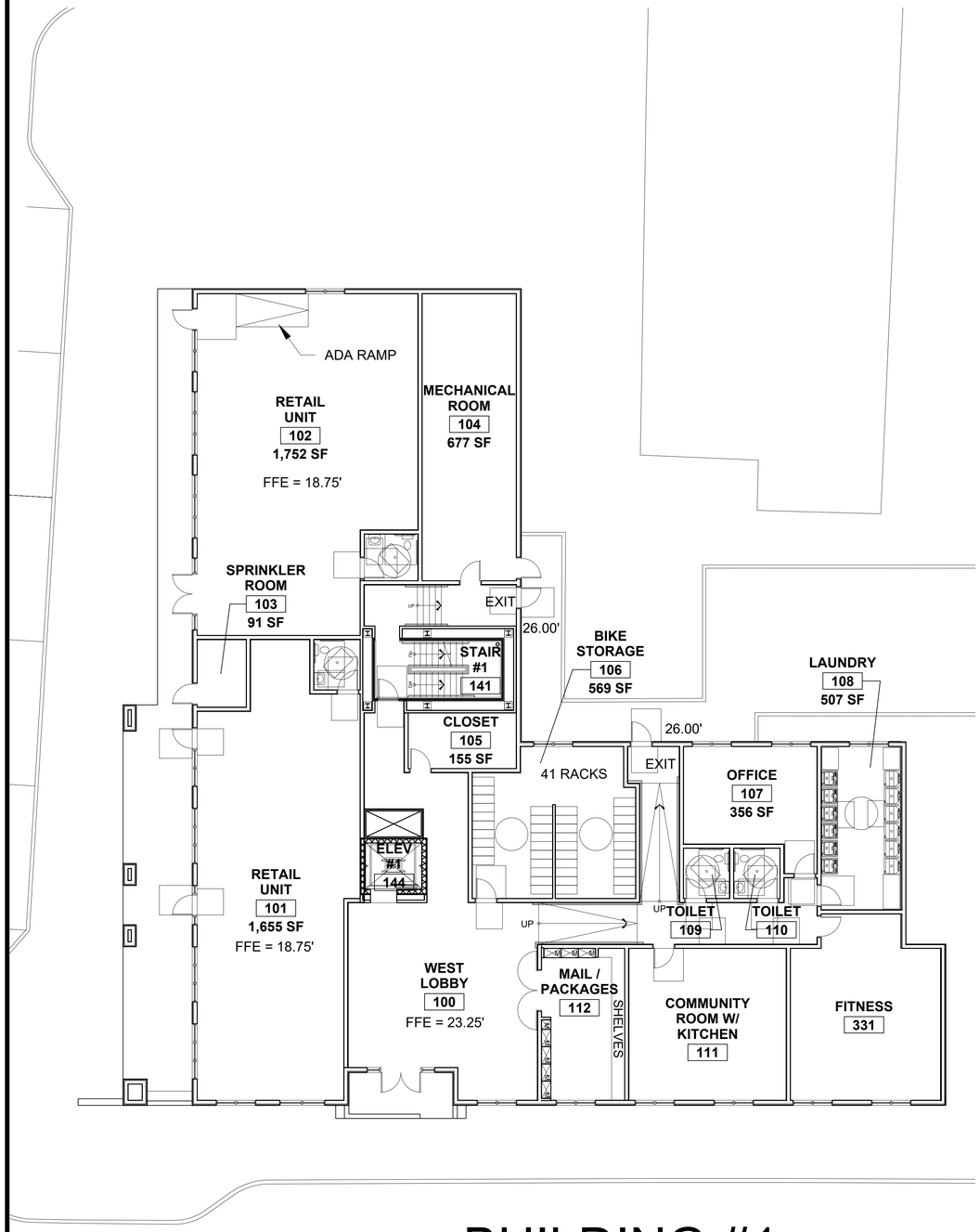
	FIRST FLOOR	SECOND FLOOR	THIRD FLOOR	FOURTH FLOOR	FIFTH FLOOR	SIXTH FLOOR	SEVENTH FLOOR	EIGHTH FLOOR
BUILDING 1								
STUDIO		2	2	2	2	2	2	
1 BED		8	8	8	9	9	7	
2 BED		3	3	3	2	2	2	
TOTALS	**76**	**13**	**13**	**13**	**13**	**13**	**11**	
BUILDING 2								
STUDIO			0	2	3	3	2	2
1 BED			10	13	12	12	12	12
2 BED			2	2	2	2	1	1
TOTALS	**93**		**12**	**17**	**17**	**17**	**15**	**15**
TOTALS								
TOTAL UNITS	**169**							

APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

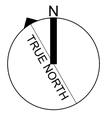
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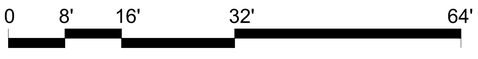




BUILDING #1

BUILDING #2





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RYAN SENATORE **ARCHITECTURE**

APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

2 STUDIOS
8 (1) BEDS
3 (2) BEDS

2

TWO BED
201
845 SF

ONE BED
202
668 SF

ONE BED
203
576 SF

ONE BED
204
576 SF

STAIR #1
241

ONE BED
209
615 SF

ONE BED
211
576 SF

ONE BED
213
576 SF

REMOVED 2 STUDIOS

ADAAG ONE BED
219
576 SF

ONE BED
221
576 SF

32.00' EXIT

36.90'

UNEXCAVATED

CLOSET
235
142 SF

TYPE A TWO BED
205
576 SF

ELEV #1
244

CL CL

34'-7 3/8"

STAIR #3
442

MECHANICAL
223

OFFICE
107

CLOSET
222
450 SF

ELEV #2
245

UP

ELECTRICAL
223
495 SF

40 RACKS

TWO BED
206
791 SF

NO STORAGE

NO STORAGE

34'-11 3/8"

COMMUNITY ROOM W/ KITCHEN
111

MAIL / PACKAGES
112

EAST LOBBY
200
FFE = 36.10'

10 W/D

STAIR #2
442

STUDIO
207
475 SF

STUDIO
208
475 SF

ONE BED
210
576 SF

TYPE A ONE BED
212
576 SF

ONE BED
218
576 SF

ONE BED
220
576 SF

LAUNDRY
225
450 SF

BIKE STORAGE
224
587 SF

REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2

N
TRUE NORTH

0 8' 16' 32' 64'

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APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

2 STUDIOS
8 (1) BEDS
3 (2) BEDS

3

0 STUDIOS
10 (1) BEDS
2 (2) BEDS

TWO BED 301 845 SF
ONE BED 302 668 SF
ONE BED 303 576 SF
ONE BED 304 576 SF
STAIR #1 341
ONE BED 309 615 SF
ONE BED 311 576 SF
CLOSET 335 142 SF
ELEV #1 344
CL
CL
TYPE A TWO BED 305 576 SF
TWO BED 306 791 SF
NO STORAGE
NO STORAGE
STUDIO 307 475 SF
STUDIO 308 475 SF
ONE BED 310 576 SF
ADAAG ONE BED 312 576 SF
ONE BED 313 576 SF
STAIR #2 442

REMOVED 2 STUDIOS

34'-7 3/8"
34'-11 3/8"

TWO BED 328 849 SF
ONE BED 329 710 SF
ONE BED 326 576 SF
ONE BED 327 576 SF
ONE BED 325 576 SF
EXIT
STAIR #3 343
ONE BED 319 576 SF
ONE BED 321 576 SF
TWO BED 323 834 SF
STAIR #3 442
CLOSET 330 312 SF
ELEV #2 345
FFE = 46.10'
RETAIL UNIT 300 1,720 SF
FFE = 44.00'
FITNESS 331 603 SF
UP
H/V ONE BED 318 576 SF
ONE BED 320 576 SF
ONE BED 322 556 SF
ONE BED 324 576 SF

REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2

N
TRUE NORTH

0 8' 16' 32' 64'

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APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

4

2 STUDIOS
8 (1) BEDS
3 (2) BEDS

2 STUDIOS
13 (1) BEDS
2 (2) BEDS

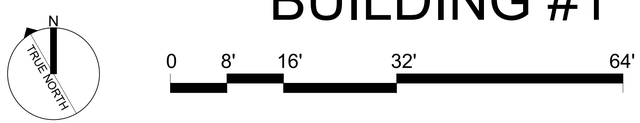


REMOVED 2 STUDIOS

REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2



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APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

5

2 STUDIOS
9 (1) BEDS
2 (2) BEDS

3 STUDIOS
12 (1) BEDS
2 (2) BEDS



REMOVED 2 STUDIOS

REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2

N
TRUE NORTH

0 8' 16' 32' 64'

PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

6

2 STUDIOS
9 (1) BEDS
2 (2) BEDS

3 STUDIOS
12 (1) BEDS
2 (2) BEDS

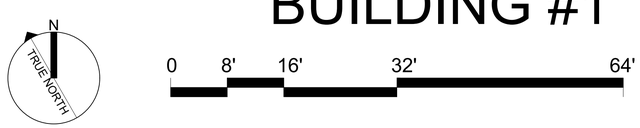
REMOVED 2 STUDIOS

REMOVED 2 (1) BEDS



BUILDING #1

BUILDING #2



PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

APARTMENTS

ELM STREET, PORTLAND, MAINE

JULY 19, 2023

7

2 STUDIOS
7 (1) BEDS
2 (2) BEDS

2 STUDIOS
12 (1) BEDS
1 (2) BEDS



REMOVED 2 STUDIOS

REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2

N
TRUE NORTH

0 8' 16' 32' 64'

PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

APARTMENTS

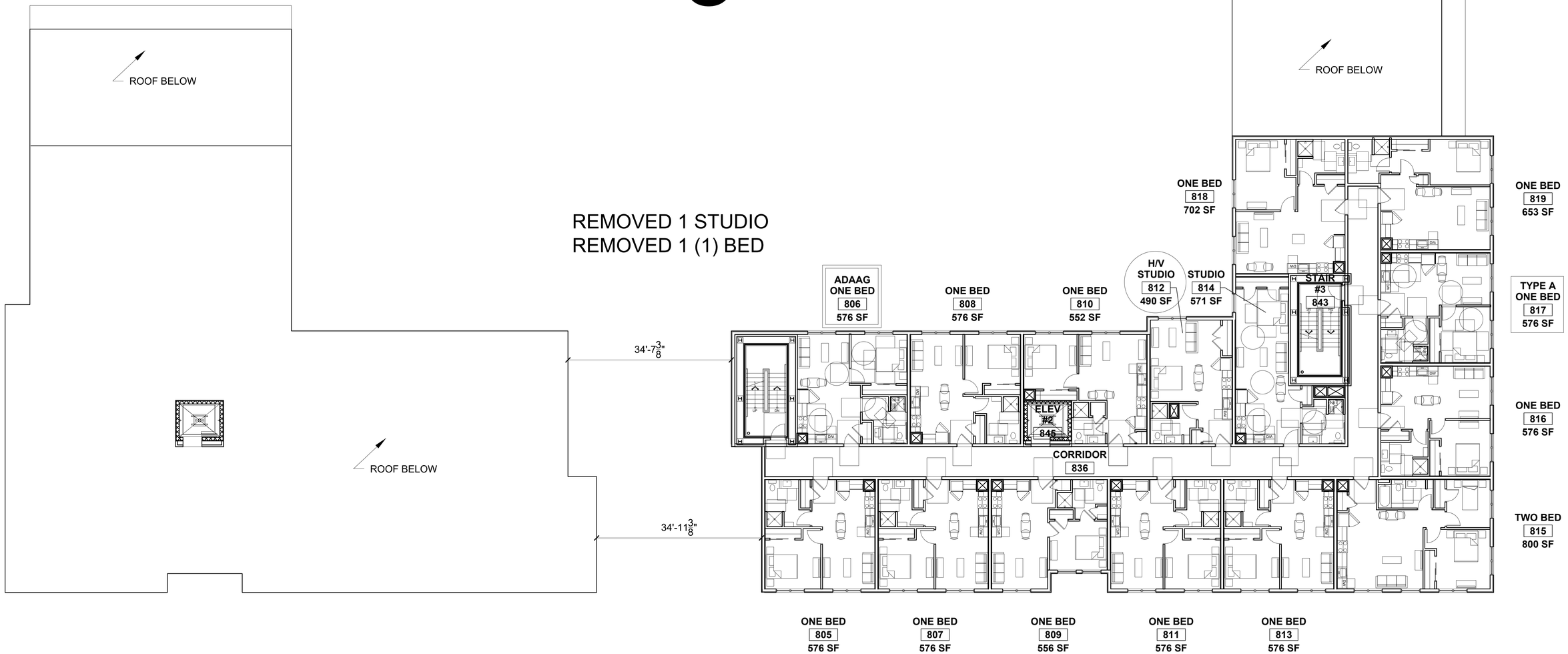
ELM STREET, PORTLAND, MAINE

JULY 19, 2023

8

REMOVED 1 STUDIO
REMOVED 1 (1) BED

2 STUDIOS
12 (1) BEDS
1 (2) BEDS



REMOVED 2 (1) BEDS

BUILDING #1

BUILDING #2

N
TRUE NORTH

0 8' 16' 32' 64'

PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,082 SF[1] (TOTAL AREA OF PARCEL–0.81AC)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	0.3 FT
MINIMUM SIDE YARD SETBACK	N/A	2.88 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[2]	80'	< 80 FT

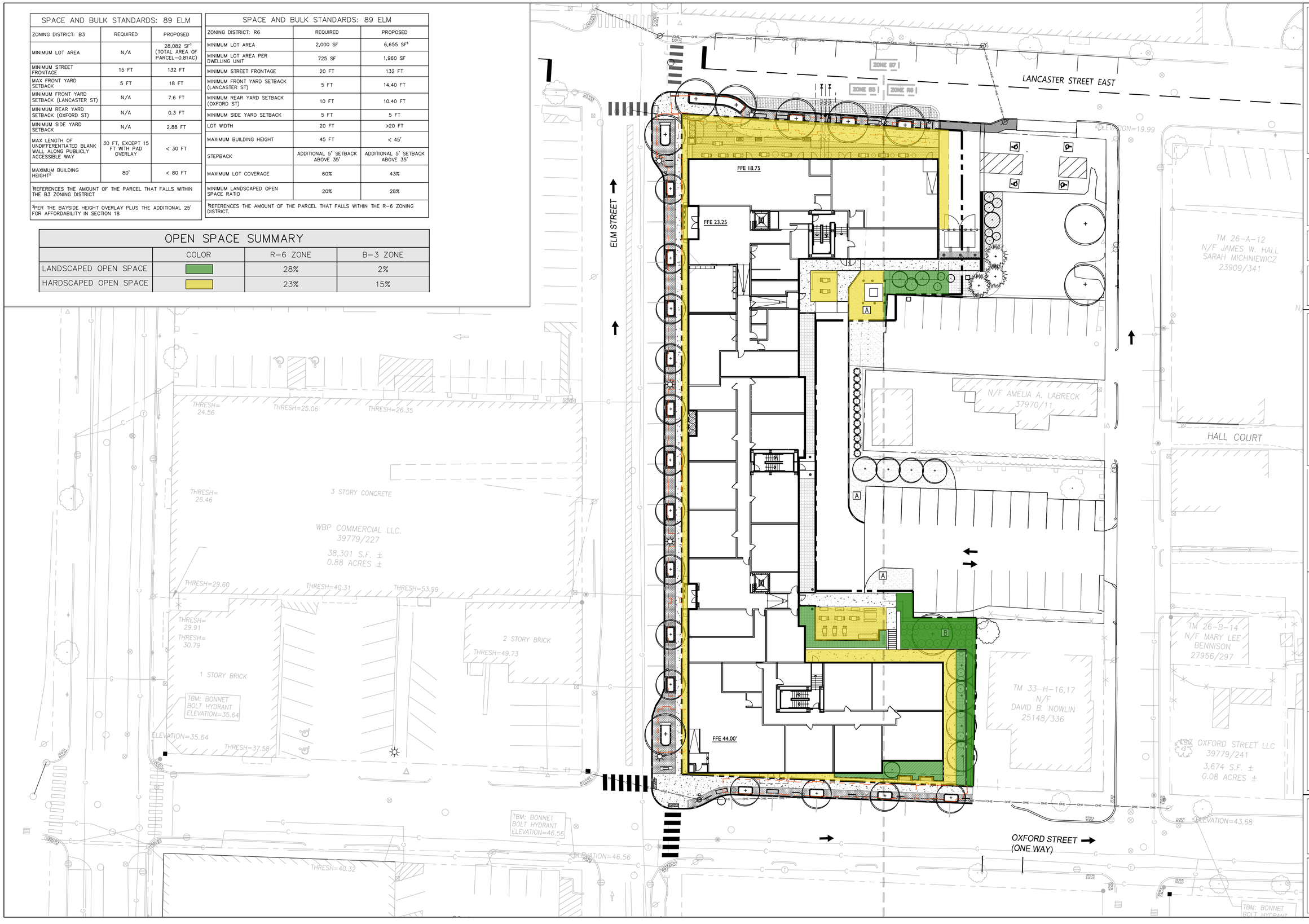
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT

[2]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	6,655 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
MINIMUM SIDE YARD SETBACK	5 FT	5 FT
LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	ADDITIONAL 5' SETBACK ABOVE 35'
MAXIMUM LOT COVERAGE	60%	43%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	28%

[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.

OPEN SPACE SUMMARY			
	COLOR	R–6 ZONE	B–3 ZONE
LANDSCAPED OPEN SPACE		28%	2%
HARDSCAPED OPEN SPACE		23%	15%



Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: OPEN SPACE EXHIBIT

89 Elm Street
Portland ME 04103

Revisions:
CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24

REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 504
6/19/23
STATE OF MAINE

North:

Sheet No.: EX-A

Scale: 1" = 20'-0"

0 10 20 40

C:\Users\DRY-L\OneDrive\Documents\Onshime\DRY LA\Projects\89 Elm\CAD\3D\89 Elm L-BASE 23.06.23 Comment Response Submission REV 1.dwg dry-l 8/29/2023

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,096 SF[1] (TOTAL AREA OF PARCEL–34,771 SF)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK[2]	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	0.3 FT
MINIMUM SIDE YARD SETBACK	N/A	2.88 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[3]	80 FT	74.31 FT
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT		
[2]REFERENCE THE APPROVED MDP WAIVER AND DESIGN MANUAL EXCEPTION.		
[3]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18		

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	6,675 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.25 FT
LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	10.25' (SIDE) 15.40' (REAR)
MAXIMUM LOT COVERAGE	60%	43%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	28%
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.		

OPEN SPACE SUMMARY

	COLOR	R–6 ZONE	B–3 ZONE
PRIVATE/PUBLIC LANDSCAPED OPEN SPACE		28%	5%
PRIVATE/PUBLIC HARDSCAPED OPEN SPACE		23%	17%
PUBLIC OPEN SPACE		8%	7%

ZONE B7
ZONE B3
ZONE R6
LANCASTER STREET (TWO–WAY)
ELM STREET (ONE–WAY)
CEDAR STREET (ONE–WAY)
OXFORD STREET (ONE–WAY)
HALL COURT
PROPOSED BUILDING: 89 ELM STREET 3 RETAIL UNITS 201 RESIDENTIAL UNITS
RETAIL SPACE
SPRINKLER ROOM
LOBBY
BIKE STORAGE
MAIL/PACKAGES
MECHANICAL ROOM
COMMUNITY ROOM
STORAGE/ LAUNDRY
2ND STORY
3RD STORY
RESIDENTIAL
50 CEDAR STREET
WBP COMMERCIAL LLC. 39779/227 38,301 S.F. ± 0.88 ACRES ±
N/F AMELIA A. LABRECK 37970/11
TM 26–A–12 N/F JAMES W. HALL SARAH MICHNIEWICZ 23909/341
TM 26–A–11 N/F ROBERT HYDE 27470/68
TM 26–A–8 N/F ALBERT BRESETTE 7951/275
TM 26–B–1 N/F ROBERT HYDE 27470/68
TM 26–B–2,3 N/F ALBERT BRESETTE
TM 26–B–14 N/F MARY LEE BENNISON 27956/297
TM 33–H–16,17 N/F DAVID B. NOWLIN 25148/336
197 OXFORD STREET LLC 39779/241 3,674 S.F. ± 0.08 ACRES ±
39779/232
5.60'
16.00'
14.40'
5.25'
20.00'
27.30'
11.80'
16.00'
25.90'
0.30'
8.90'
10.40'
14.40'
4.20'
20.70'
22.00'
24.00'
R2'
100.00'
24.40'
20 0 20 40
SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: OPEN SPACE EXHIBIT
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC 188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC. 277 FORE RIVER PARKWAY, SUITE 1A FORE RIVER PARK PO BOX 3207 PORTLAND, MAINE 04104 (207) 775–2655

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

DRAWING NO.
EX

Re:89 Elm Street proposal 0 views

Subscribe



Kristina Minister <krisminister@me.com> May 1, 2023, 1:54:02 PM (19 hours ago)
to planningboard@portlandmaine.gov

To the Planning Board:

The proposal by Acorn Engineering to construct an eight story mixed-use building with 201 affordable dwelling units at 89 Elm Street is not acceptable. I urge the Planning Board not to approve Acorn's proposal.

Qualifying for governmental programs for affordable housing construction benefits the developers and the builders; economic dwelling segregation negatively impacts the residents of affordable housing and the city of Portland.

Children of the families in segregated low income housing will attend the same schools, skewing the school population to low income students. Numerous studies show that economically mixed school populations favor upward mobility for the economically disadvantaged young.

Perpetuating low income imposes huge costs to government and health care systems, which, in turn, raises taxes. Employers' need for well educated workers remains unfulfilled.

In short, an economically mixed school population benefits the entire population.

I urge the Planning Board to require that all the proposed buildings in Bayside be designed for economically diverse dwellers.

Thank you for considering my plea.

Kristina Minister
75 Chestnut Street, #708
Portland, ME 04101

Kristina Minister, Ph.D.
75 Chestnut St. Unit 708
Portland, ME 04101
207-415-8274

Public Comment - 89 Elm Street: Portion of Building in R-6 Zone Not Allowed

External

Why is the Planning Board ignoring the plain language of Section 14.3.2(A) and allowing the two ends of 89 Elm Street's "horseshoe" footprint to extend into the R-6 zone when this is forbidden (see "SHALL NOT" language below) by our Land Use Code?

No part of a Master Development Plan can intrude into a R-6 zone. Full stop.

But the Planning Board doesn't seem to care about the rules with respect to this application from Port Properties.

It would be great to see how the practicing attorneys on the Planning Board (David Silk & Brandon Mazer) rationalize this. This would never fly in Stroudwater or Munjoy Hill. So why is completely ignoring the terms of our Land Use Code acceptable in West Bayside?

14.3.2 Master development plan

A. An applicant may elect to submit a master development plan application for a large, multi-phase development program consisting of multiple buildings and site improvements on a site of one acre or more of total land area which is designed as a cohesive and integrated whole. The master development plan option shall not apply in residential zones, except for institutional, multi-family, congregate care, and intermediate, extended, and long-term care uses in the R-5a and R-6a zones.

Re: Bayside Site Plan PL-002403-2023 / Master Development Plan PL-002315-2022

Subscribe

1 view



Jim Hall <mtjimhall@gmail.com> 8:34 AM (1 hour ago)

to Planning Board, council@portlandmaine.gov, Danielle West-Chuhta, Mark Wiesendanger, dbrennan@mainehousing.org, Christine Grimando, ubalde@portlandmaine.gov

Hi All - I'm Continuing this thread with a letter to the editor I had submitted a month ago, just after the planning board approved this 10-year plan.

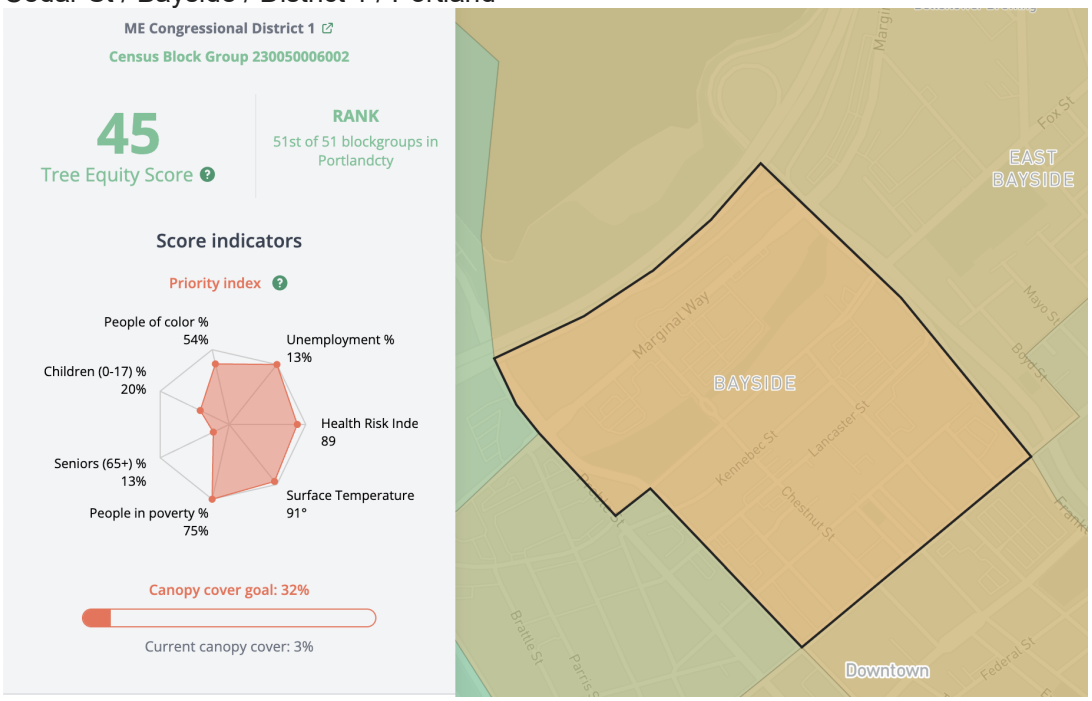
> Systemic biases afflict Bayside
>
> A massive "master development plan" engulfing the Bayside neighborhood was just approved without addressing community requests for better engagement. This result for Bayside is a stark contrast to the recent Roux agreement, which mandated a community advisory panel going forward.
>
> There were different processes triggered, and different governing bodies involved, but given the socioeconomic realities of the neighborhoods involved, it's worth comparing the overall equity outcomes of our civic processes.
>
> Bayside is one of the poorest neighborhoods in the city, with one of the highest ratios of BIPOC residents and the worst tree-equity score.
> The history that got us here includes discriminatory government actions such as redlining, slum-busting, eminent domain seizure of immigrant-owned homes to ease traffic from Interstate 295 to Old Port business, gerrymandered concentration of high-impact services and demonstrable neglect of infrastructure.
>
> So why would similarly impactful proposals receive such different treatment from the powers that be? To me, it suggests at least that Bayside continues to suffer from systemic and implicit biases, which will continue to cause harm until we actively correct them. Pretty soon planning will propose substantive changes for ReCode, the first rewriting of the city's Land Use Code in over 50 years, and I hope the City Council takes that opportunity to think hard about how to engage our communities more equitably going forward.
>
> Jim Hall
> Portland

As I pointed out during the 7/17/23 Council's non-agenda-ed public comment, it's probably too late for Bayside — the city has now granted ten years of development here that won't be required to adhere to ReCode, or any new One Climate ordinance, or anything that may change about inclusionary zoning in the late 2020s / early 2030s. But I do hope that someone on this thread cares about the longer story than "*code complete: approved*," and works to ensure more equitable outcomes in the future.

I was genuinely sad, but I can't say surprised, to see this phase-1 application show up virtually unchanged, after at least one board member flat out said they could only approve the MDP knowing that all the concerns could be addressed at site plan.

The intrusion of entertainment uses into the R6 half-block, the conversion of a small crumbling residential road into a back service garbage alley, the lie of "walkability" with no mid-block permeability — Maybe I can't point to a particular line of code that someone wrote a decade ago that says you're required to care. But it's not right.

Jim Hall
Cedar St / Bayside / District 1 / Portland



On Sun, Jun 11, 2023 at 4:51 PM Jim Hall <mtjimhall@gmail.com> wrote:

> Dear Planning Board Members,
> CC: City Council ordinance-writers,
> CC: City Manager & Planning Director,
> CC MaineHousing allocators of taxpayer funding
>
> RE: Port Property's Bayside Master Development Plan
>
> I continue to have *extremely* mixed feelings about this mostly good proposal as we move toward approval, and I hope you heed the community request to require some real engagement first.

I consider it a positive to utilize existing systems to actively build two-hundred housing units serving 60% AMI – and at the same time – I'm *strongly* against segregating low-income. When we taxpayers are fronting the bill via ARPA, I have serious moral reservations, and will be ashamed for my beloved Portland if we collectively accept that we still have to segregate socioeconomic classes. Worse, the current plan would be setting a new legal precedent supporting exclusionary policy.

Replacing surface parking lots with housing is an immediate improvement. Taking a wider view, approving this plan as proposed invites a gentrification outcome. The city of Portland actively destroyed hundreds of family-owned homes here over the last century, creating vast tracts now basically going to the highest bidder. Low-status neighborhoods need more than "letter-of-the-law" decisions to build a more equitable future.

Another topic that's critical to the community — we don't have a full picture of plans for the *rest* of Port Property's recently purchased holdings dominating this existing neighborhood. Planning staff have in fact asked the applicant *not* to include various relevant facts. The only exception is that we know the developer will continue hosting the Bayside Community Garden, Bayside's only neighborhood green space, for the next five years — but the unstated plan appears most likely to build over that plot at some time in the future. This is another reason we need an instrument like a mandatory neighborhood advisory panel for the impending decades-long transformation, to actively involve the community in the larger plan for our lives and our municipality.

I'm thankful the applicants have designated a single point-of-contact for impacted abutters via a PR firm, but also remain wary of the communications program that's been proposed. The basic elements look promising on paper, though the specifics mostly rely on one-way communications, when the developer is ready to inform us.

So far replies to direct inquiries, including concerns about break-ins at the vacated shelter building, have taken a couple of weeks to elicit a response. This has cooled my initial hope that we in Bayside might

enjoy the kind of proactive consideration that other neighborhoods have lately been granted for large scale, transformative projects.

A reactive approach seems to be the plan for very predictable future impact of retail uses extruding into the R6 zone as well — just rely on "complaints". Please recall that very recently the council actively expressed concern about ongoing noise issues, specifically in Bayside, and stated a desire to pay attention to the changing soundscape as the neighborhood develops. Part of this was based on noise impacts emanating for blocks from businesses at Port Property's semi-woonerf at 82 Hanover Street. This MDP is the perfect place to start developing a better *planned* approach to these and similar known challenges.

I genuinely am appreciative of a number of details in this plan. For example the applicant has added significant open space and requested a street setback for the woonerf, even though existing city policy seemingly encourages building out every possible square inch in Bayside. But positives like this approach will mostly be a boon to the future retail patrons on the woonerf. The foundational concerns of the abutters who already live here have largely gone unanswered.

Under this MDP, Cedar Street residents would live inside the back service alley of a full-block wraparound monolith, within feet of what the applicant describes as "18-hour engagement" hoping to attract uses like bars, outdoor dining and events. The construction plan will have dump trucks squeaking around all sides of little 19th-century homes, and destroying what's left of the degraded asphalt road surface.

We've heard recently that "the planning process works" — e.g. during council approval of Roux zoning *with amendments* satisfying community concerns. But in this case, where no council process happens to be triggered, and no active councilor advocacy present, what's the path for the little people to get representation at the table, without things ending up like Midtown?

This Board's members did respond verbally to some of the community's concerns during the initial workshop — though unfortunately I feel this attention may be fading as we get closer to "code complete." I

understand that Planning generally translates to “helping the developer realize their plans.” Unfortunately that’s why systemic and implicit bias persists in so many of our outcomes. It makes me sad that, in a city as forward-thinking as Portland can sometimes be, that we continue to take a dry ministerial view of urban planning, thereby tacitly endorsing these biases.

To the council members CC'd here – You may believe that a zoning change like Roux has to come from the applicant before you can act. I would argue Portland citizens want a more active role of their elected officials in forming the future of our city. Just witness the recent spate of referenda forcing your legislative hand.

To representatives of MaineHousing, which approved the taxpayer funding that will ultimately segregate income levels: Please consider how you could better actively promote mixed-income development in this critical plan.

And to Port Property: The neighbors within your footprint have been extremely open about our areas of concerns (and our support) from the beginning. We even suggested a voluntary advisory panel at our very first meeting. Your *active support* for that, and for the neighborhood request to schedule a later hearing to allow better collaboration, would affirm that you agree we all want this long-term project to be a successful *partnership*.

No one has to remain passive*,* and I sincerely hope all recipients of this plea take the opportunity to actively advocate for just a few additional steps, to create better outcomes that the community is invested in, or even helped create.

I’m just one of many engaged citizens advocating to those in power to do *something* to actively support our abused and neglected little neighborhood. We very much *want* this master plan to succeed, for *everyone* involved, including Port Property — which can only happen with real engagement and planning for known roadblocks — and many in the community just do not see that happening yet, nor any

valid mechanism to ensure community engagement throughout the process.

As an individual citizen I'm reiterating the neighborhood request not to approve without the community on board. You can easily *bring* the community on-board with a neighborhood advisory panel.

Sincerely,
Jim Hall
Cedar Street

Comments - Major Site Plan - 89 Elm Street - PL 002403-2023

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0 views

Laura S. Underkuffler <lu27@cornell.edu> 10:36 AM (5 minutes ago)
to planningboard@portlandmaine.gov, Zachary Powell

Dear Planning Board Members,

Following are comments on Port Property's revised Site Plan submission documents for its 89 Elm Street building. We are owners of the property at 213-215 Oxford Street, which is approximately 10 feet from the end of the Oxford Street "El" of the proposed building.

We have worked with Port Property on several issues, and have received very good and pleasant cooperation. However, we are still concerned about the following.

1. Very close (10 foot) abutment of dark, hulking building to historic home.

This extremely large building is currently planned to be built 10 feet from the lot line of our historic house (built 1824). The house is one of the very few buildings to survive the Great Fire of 1866. The historic house is 6 feet from the lot line -- making the wall of this very large proposed structure approximately 16 feet from wall of the historic structure on the other side.

Code 14.6.4E3b iv & vii states that "all [new] development shall protect state or local archeological resources, which include built features located on the Portland Peninsula that predate the Great Fire of 1866." This house is clearly such a structure. The very large building within 16 feet of the wall of the house risks the complete overwhelming and diminution of the historic structure.

We previously raised this issue during the approval of the MDP, but were told that it should be raised during the Site Plan review.

The question is how this conflict between the new building and the historic building can be ameliorated. We have suggested the following:

-- the drawings submitted most recently show the color of the building which abuts the historic house to be some sort of dark charcoal gray. See, e.g., Portal Documents "57.L-8 LA Rendering," "29.A-2.0 Elevations South", and "36.A-3.4 Rendering." This is in contrast to an earlier depiction in one of the Applicant's presentation documents, which showed this El in a light green color. *The color of the abutting building is of extreme importance in this context.* A light green building is tasteful, and acceptable, as not overwhelming the historic building only a few feet from it. A dark gray building makes the new building a hulking, foreboding, monolithic structure. There is no reason for this dark color. Note that the main part of the new building -- along Elm Street -- is depicted in a light color that blends with the surroundings. Only this El of the building has this sort of coloring. See Portal Documents "56.L-7 LA Rendering" and "58.L-9 LA Rendering". The changing of this color is necessary to meet the mandate of the Code section above.

--the Code specifies a minimum set-back of 10 feet in the R-6 Zoning District. The Applicant has run out the bulk of this building in this Site Plan to the very minimum set-back stated. This yields a 10 foot-wide alley between the towering new building and the historic structure's lot line. This needs to be increased in order to meet the considerations required by the Code section above. Obviously, if the minimum set-back requirements were always "enough" in any context, the Code section requiring effort to preserve pre-Fire historic structures would be pointless.

--another improvement would be to replace the small shrubs in the space between the two buildings with trees. The shrubs are completely ineffectual in creating any buffer between the new building and the historic structure.

2. Height and location of separating cedar fence to be constructed by the Applicant.

The Applicant proposes the construction of a horizontal cedar slat fence along the boundary line of the two properties. See Portal Document "5. Site Plan" (C-10). This proposal is fine, with two questions. First, as the primary screening mechanism of the new building, how tall is this fence? At least six feet would be required. Second, in the prior Site Plan documents submitted, the boundary line was not shown as following the old chain link fence (which has been there for many decades). This issue has been discussed by us with the Applicant's representatives, and we agreed that the boundary line was marked by the old chain link fence. We appreciated this agreement. It is difficult to tell from the current Site Plan Drawing (C-10) whether this understanding has been implemented. We hope that it has.

Sincerely,

Laura Underkuffler and David Nowlin

Co-owners of 213-215 Oxford Street
Residents of that house for 12 years

89 Elm Site Plan 0 views

Subscribe



Amelia Labreck <labreckestates@gmail.com> 12:30 PM (1 hour ago)

to planningboard@portlandmaine.gov

Good day, Portland Planning Board

Despite planning staff comments the current proposed design at 89 Elm simply does not meet code. If built as proposed, it would cause long shadows, wind tunnels, pollution, snow and ice loading, safety issues, higher heating and electricity bills, lowered property values, death to vegetation, and possible mental and physical health issues - These are all serious concerns.

Please carefully read section 14.6.4 of the city code below.

14.6.4 Site design standards A. Massing, ventilation, and wind Impact 1. The bulk, location, or height of proposed buildings and structures shall not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate that would result in unsafe wind conditions for users of the site and/or adjacent public spaces. 2. The bulk, location, or height of proposed buildings and structure shall minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership and not subject to a legal servitude in favor of the site being developed. 3. Development shall locate all HVAC venting mechanisms to direct exhaust away from public spaces and residential properties directly adjacent to the site. B. Shadow. All development outside the B-3, B-5, B-6 and B-7 zones shall be designed to avoid and/or mitigate the adverse impacts of shadows cast by new structures or building additions from falling on publicly accessible open space in accordance with the shadow standards of the Technical Manual. C. Snow and ice loading. All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.

14.7.1 In general A. Integration with the surrounding context. A master development plan shall be DESIGNED TO INTEGRATE with the SURROUNDING CONTEXT with respect to land use, ARCHITECTURE, open space and pedestrian networks, vehicular access and circulation, off-site public facilities and all other infrastructure.

The structure is currently designed to maximize height in all areas without consideration for the code protecting abutting properties. We are entitled to the same rights as any other Portland Property owners…whose property is both protected by and subject to these rules. These words were written, agreed upon, adhered to, and used in each instance they benefited the developer. They must also apply fairly when they don't. Antique homes constructed in this era were not designed and built to withstand such overshadowing. Snow loading on roofs supported by smaller rafters that were not built to today's codes can cause damage and even cave ins. Excessive shade causes moisture to build and damage brick and mortar masonry homes. I have letters from several masonry professionals stating this fact.

The height and design as it is facing us now, will cause wind tunnels to drive polluted air downward toward abutters.

For a multitude of legitimate reasons, there needs to be a wide channel at a lower height in the middle of 89 Elm.

We ask that you please respect these matters and take them into account when advising how to amend this design.

Thank you for your time.

Sincerely,

Amelia Labreck
44 Cedar Street
Portland, Maine

Public comment: Site Plan PL-002403-2023

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0 views



Winston Lumpkins <winston.lumpkins@gmail.com> 1:29 PM (1 hour ago)

to Planning Board, City Council, cc: Planning and Urban Development

Dear Chair Mazer, Members of the Portland Planning Board,

I want to make sure you have access to the recent Walk Audit of Bayside, which the Portland Bicycle and Pedestrian Advisory Committee held with the Bayside Neighborhood Assoc.

I do think affordable housing is very important, and of course the project is cost constrained, however, I want to highlight one thought I heard from the neighborhood residents who attended that walk audit: it would be consistent to include a pass through of some kind in the 89 Elm building, and they would prefer to see a taller building, with a pass through.

The city must ensure it's safe to cross elm at both ends of this building: most of the parking is going to be across the street, the volume of pedestrians crossing this street, especially at the busiest times of the day, is going to explode. Raised crosswalks may be the only way to do this successfully- with much more extensive daylighting.

Thanks,

~Winston

Winston Lumpkins IV (he/him/his)

Chair, Portland Bicycle & Pedestrian Advisory Committee
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PORTLAND BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE

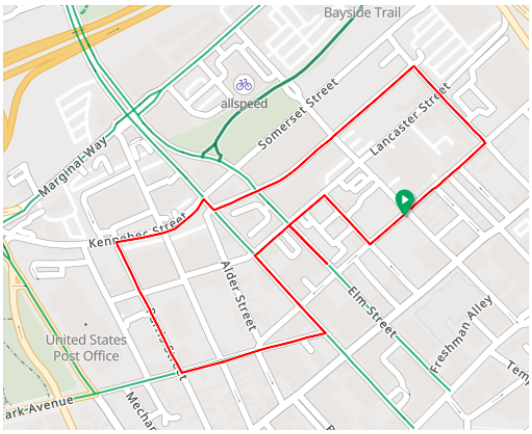
BNA
baysideportland.org

BAYSIDE NEIGHBORHOOD ASSOCIATION
bnaportland@gmail.com

www.portlandbikeped.org
https://baysideportland.org/

Bayside walk Audit

May 21, 2023





On Sunday, May 21st 2023 members of the Bayside Neighborhood Association, The Portland Bicycle and Pedestrian Advisory Committee & members of the public gathered at the corner of Chestnut and Oxford Streets to hold a walk audit of the Bayside neighborhood.

The purpose of this report is to share what we learned about challenges faced by Pedestrians as they traverse the neighborhood, hoping to inform future planning and development efforts so that they can best support and encourage pedestrian safety and convenience. This report is by no means comprehensive but serves to highlight some of the major challenges faced by this community.

What follows is a street by street collection of observations and recommendations gathered on the Walk Audit. Some action steps for the city, developers & planning board are included on page 8.

There is an Appendix on page 9





Oxford Street seen from Chestnut

Chestnut & Oxford Streets

Due to improvements from recent developments the concrete sidewalk on Oxford from Chestnut to Pearl Street looked to be in relatively good condition. However, from Chestnut to Elm the sidewalks are made up of poorly kept asphalt except for one newer concrete corner. Some crosswalks have significantly degraded asphalt.

We discussed the mix of materials which make up the sidewalks in the Bayside neighborhood (see Appendix) - mostly asphalt in varying degrees of repair, concrete, and a small amount of brick.

Rounding the corner from City hall & walking down Chestnut Street creates a feeling of division as the materials change and become more degraded.

Between Chestnut and Cedar, it was evident that it would not be smooth sailing if a person was using a wheelchair. In this case, between a long missing patch in front of the former Oxford Shelter garden, a ramp in lieu of steps going up to one building, and poles interrupting the sidewalk, present infrastructure does not provide even minimal safety or maneuverability. This is an example of a common situation found throughout Bayside's smaller streets (see Appendix).

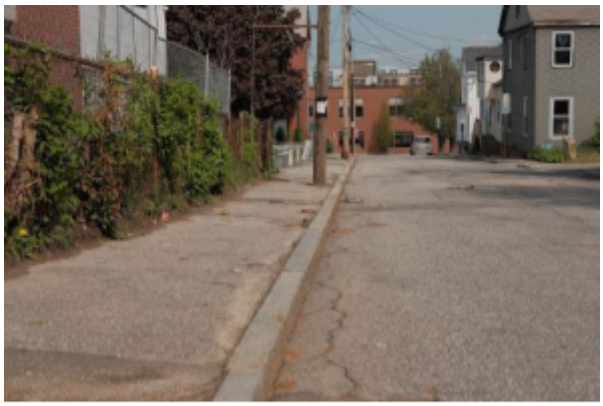


An example of Exposed Aggregate from the walk

While bricks are a symbol of desirable neighborhoods in Portland, and the city had begun installing brick starting from Cumberland before flip-flopping on materials policy – brick can present challenges to certain pedestrians. We discussed compromising on sidewalk design by using more interestingly surfaced concrete, such as Exposed Aggregate, which provides all the grip of regular concrete while adding visual interest, or brick accents. The example provided is poorly maintained but serves to demonstrate the visual interest.

Cedar Street:

Cedar Street is proposed to be the service and parking lot entrance for a 201 unit building to be constructed as phase one of a Master Development Plan from Port Property, currently in review by the planning board. Cedar is a one way street in a poor state of repair – both the sidewalks and travel lane are in somewhat rough shape with many cracks and dozens of patches. Currently there is just one storm drain along Cedar Street, down at the Lancaster end, which makes widening the narrow sidewalks possible. This should be incorporated into future design of the street. Utility and sewer work should accommodate such a future design change.



A Utility Pole & challenging sidewalk conditions narrow the sidewalk on Cedar Street, making it unusable for someone with a walker or wheelchair.



Cedar Street's degraded Asphalt

As things stand, due to poorly maintained gas infrastructure and rough repair patches, telephone poles, and street signs crowding the sidewalk, people using a walker or wheelchair face difficulty traversing Cedar Street. Residents report the most common pedestrian response on streets like this has been to walk in the middle of the roadway, which is very degraded in places. This is likely to remain the case until sidewalk improvements are implemented. No upgrades are said to be planned in conjunction with the proposed development.

Elm Street



Bump-out from Lancaster looking up Elm,
Double poles create visibility obstructions, hasn't slowed traffic

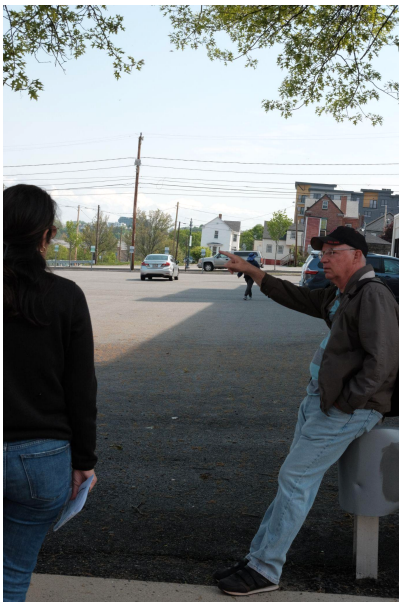
Elm is a long straight one-way hill from Congress Street to Kennebec Street, and cars travel extremely fast through a couple of busy intersections between Cumberland Ave and Kennebec.

At the corner of Elm & Lancaster there is a flashing beacon crossing with a bump out. Perhaps due to insufficient daylighting[1] at the intersection, the bump out has proved ineffective at slowing traffic. There have been at least two serious t-bone crashes at this intersection since the improvements were made and 21 total collisions since 2013, 4 of them since 2020 – 2 crashes occurred only 7 days apart in January 2022.

We discussed the possibility of raised crosswalks for this particular crossing- what's present isn't enough to combat the nature of the street, or the downhill grade. They will likely also be a good idea on the other side of Lancaster onto Preble Street.

Stop signs at this intersection and other high-cross locations would be another strategy to slow cars down.The bike lanes recently painted on both Elm & Preble only show iconography at major intersections, and many motorists appear to interpret them as additional lanes for car usage.

[1] **Daylighting: the practice of removing one or more parking spaces leading up to an intersection so that drivers, cyclists and pedestrians can see each other. It has proven an important tool for achieving vision zero in places which have gone years without traffic fatalities*



In the middle of the planned 89 Elm Street project we stopped to discuss the community's strong desire for a mid-block passage between Oxford and Lancaster & corresponding cut through the 89 Elm building to Cedar and Chestnut Streets. This would align with the planned design of the buildings on the west side of Elm, and with Hall Court, a one-lane paper street off the east side of Cedar, creating a fluid connection across three full blocks, from Preble all the way to Chestnut Street. This would give pedestrians an efficient and safe option to bypass the woonerf and commercial Lancaster Street area.

It was remarked that *"If we want people to walk, we should take every opportunity to make walking the most direct & easy way to get around".* For this reason neighbors voiced a strong preference for the 89 Elm project to be composed of 2 buildings, even if that meant one or both of them would be higher to accommodate displaced housing units.

The former Public Market garage on Cumberland Ave between Preble and Elm will provide parking for much of the proposed development, up to four blocks away from the seven planned residential buildings. Thus, retaining a midblock crossing might benefit the housing on the other side of Elm as well.

Lancaster Street & New Development

Lancaster is not so much a street as a collection of segments, each with different challenges. Starting at Parris Street and heading east on Lancaster, there's a busy retail area between Parris and Hanover while the section from Hanover to Alder passes between two buildings with parking, one traffic lane, and no sidewalks. The next segment, from Alder to Preble, does have sidewalks, then they are again missing from Preble to Elm. (see also Appendix)

The area of Lancaster Street between Elm and Preble is planned to become a woonerf type of calmed or shared street, meant to serve as the centerpiece of an "18-hour community engagement engine" within a multi-building development proposed for this area. Currently cars fly along this strip almost as fast as Elm, often failing to perform even a "rolling" stop at the intersection with Chestnut. This may be because there are no buildings on the four corners, giving an open sight line to see whether cross traffic is approaching.

It's concerning to think of so many people crossing Elm to access all the new retail spaces and housing units. Baxter Academy, a charter high school with 400 students, also occupies the corner of this intersection with minimal "school-zone" signage, and students obtain lunches by walking out into the surrounding streets since there is no cafeteria at the school.

All crossings on Elm should be more protected from cars flying down the hill than they currently are. In the short time we were there we witnessed one near-miss when a car whizzed around a pedestrian crossing the street. Due to the incline of the hill, it's possible that the only way to succeed in slowing cars to a safer average of 25 MPH as they drive down is with a series of raised crosswalks or stop signs at other high-cross location intersections, where residents access shopping, for example.

Given that almost 1000 new residential units are being planned for the area with almost no on-site parking, calming the major arterials will become even more critical to public safety.

Preble Street
It's clear that Preble street could be much more activated than it is, and that it was more activated once, witnessed by the number of storefront windows that now serve other uses. Perhaps this is because it's now a one way Street? Like Elm Street, cars travel quickly on Preble through this area. As more residential units come online and more retail is added in the area, pedestrian crossings and traffic calming mechanisms on Preble will need to be reevaluated.

Portland Street
Portland Street may be suffering from economic and social blight partly caused by the confluence of several one way streets – Preble, Oxford, a section of Portland Street, and Alder going in two different directions – as well as the chaotic nature of the adjoining non-alternating one way streets, some of which are not part of any discernible design or pattern.

The intersection of Portland Street, Oxford & Alder Street is wide, awkward and demands pedestrians make a three-part crossing in order to proceed down Alder. Due to human nature, this leads to jaywalking. This intersection warrants study & is perhaps a candidate for a small roundabout. The outlet of the garage opposite Portland on Preble points directly at an opposite-facing one-way portion of Portland street, which neighbors reported often invites unsafe wrong-way traffic racing to get to the two-way section.

The bike lanes on Portland Street do not match those of Park Ave on the other side of Forest Ave. Neighbors voiced positive opinions of the Park Ave Lanes, and wish that whichever design is chosen it could be consistent along the whole street. One neighbor said that due to the chaotic conditions in this area, her partner was hit twice in front of the Citgo station.

"Bike lanes are only as good as their weakest link" another neighbor said.

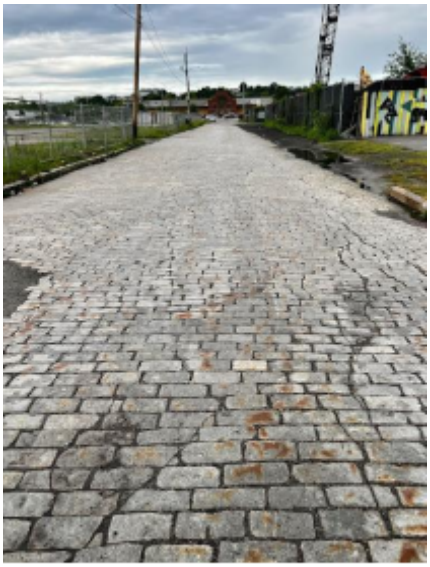
Parris Street
The sidewalks on Parris and Hanover in this area are being upgraded as part of the construction of a 171 unit apartment building between Parris and Hanover Street.

It's clear that Lancaster Street between Parris and Hanover is already a bustling downtown type of street, though it's not open to traffic. As the rest of Lancaster's length is developed in a similar fashion the greatest care really must be taken to prevent highway-style driving as people travel along Preble and Elm.

Kennebec Street
The recently redesigned Kennebec Street area from Brattle to Elm is mostly successful, adding wide sidewalks where before there were none. Few trees were added, though there is plenty of space for them. The lack of tree cover was immediately noticeable - it felt hotter walking along this stretch. There is also a phone pole awkwardly placed in the middle of a sidewalk, apparently intentionally.

The intersection of Alder, Preble and Kennebec provides a clear snapshot of how there seems to be no rhyme or reason to why sidewalk materials have historically been chosen in Bayside. Both sides of Preble are brick,

as is Alder by Bayside Bowl, but the corners are concrete and one side of Kennebec is asphalt. See Appendix for a wider survey of inconsistent materiality throughout Bayside sidewalks.



Kennebec from Elm to Pearl, facing Whole Foods



Kennebec Street & Noyes Storage

Kennebec between Elm and Pearl is predominantly cobblestone in varying states of repair (mostly poor) and there are no sidewalks. Noyes Storage is located here and large moving trucks access the street during the day. This area has been discussed as possibly becoming another woonerf/shared street site in the future.

The challenging conditions for pedestrians on this street are another reason to make the alternative parallel routes like Lancaster, that already have sidewalks, as walkable and safe as possible.



Pearl Place Midblock crossing on Pearl



Pearl Place Midblock crossing on Oxford

Pearl Street

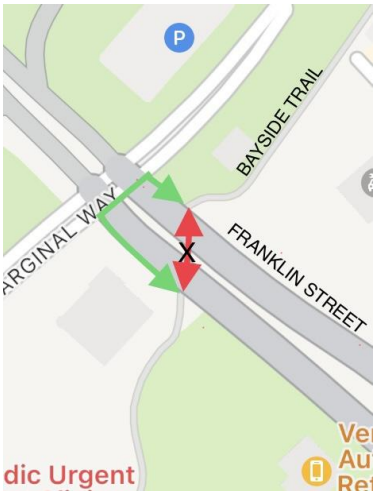
Pearl Street is similar in length and incline as Elm and Preble Streets. Cars move fast along Pearl between Congress and Somerset but not quite as fast as Elm and Preble, possibly because Pearl is two-way.

There is a gap between two of Avesta's Pearl Place buildings on both Oxford Street and Pearl Street between Lancaster and Oxford, which provides a good example of the type of pedestrian access a complete midblock crossing on Elm between Oxford and Lancaster could achieve.

Oxford Street

New development by Avesta in recent years has included sidewalk improvements, and forthcoming development are expected to include similar sidewalk improvements. There was discussion among the group around the 'furnishing' area of the sidewalk that could include more greenery between trees, as with Cumberland, Hanover, Parris, and Mechanic Streets, for example.

Franklin Street



Franklin Street came up as another example of disruption to overall connectivity that this tour didn't happen to cover – in this case isolating Bayside from its once contiguous cousin East Bayside. It's necessary to turn down Franklin to the wide, busy four-way intersection to continue on the Bayside Trail or for kids to get to Fox Field.

With the Franklin Redesign project gaining new traction in committee, members of the neighborhood voiced hope that the Trail might better reconnect Bayside to the rest of the city in the future. Actively connecting this trail to obvious destinations such as Deering Oaks, Back Bay Cove and the Old Port would also improve walkability & bikeability throughout the wider peninsula area.

Pedestrian Obstacles

There are a significant number of phone poles and other infrastructure blocking the sidewalks and impeding movement by people using wheelchairs or walkers. These obstructions make it harder to effectively clear snow, further adding to the difficulty for pedestrians and ADA access on sidewalks that are already very narrow. On Chestnut Street there are four such poles.



Chestnut and Somerset



Chestnut and Kennebec



Chestnut and Lancaster



Oxford and Myrtle





Some of the low lying intersections around Lancaster, Kennebec and Somerset have drainage issues that cause large puddles around the ramps near crossing points.

Actions for City Staff, the Planning Board and Port Property:

- I**nterim sidewalk repairs** should be made to the sidewalk in front of the former Oxford Street shelter and the garden at the corner of Oxford and Chestnut, and code enforced to ensure that abutter ramps & steps don't protrude into the sidewalk too much. There are many other areas that need this same attention.

- **The sidewalk on Cedar street could be much wider**, as it's a one way street. This should be considered in utility work going forward: it will need a new sewer line soon, and currently doesn't have storm drains, making this a great opportunity to build a wide sidewalk, narrow an excessively wide one way street and create planting space for more trees. Ideal street and sidewalk width, in addition to potential tree locations, should be carefully considered whenever new street designs are made.

- **Traffic needs to be slowed and calmed on both Elm and Preble streets**, both to address patterns of collisions and to ensure the planned woonerf area and remote parking garage can be a success: far more people will be walking across both streets, in more than one location. Drivers seem to treat Elm & Preble like highway lanes. Likewise Lancaster from Chestnut to Elm should be greatly slowed down as it is a school zone and is intended to be the "Main Street" of the area.
  The city should be eager to help make Elm & Preble safe streets to cross, and Port Property should do everything it can to help. We discussed using raised crosswalks, stop signs at every cross street & better daylighting around crosswalks, and more frequent indications of bike lanes.
  People will undoubtedly walk from the Hanover & Lancaster Block to the woonerf, thus safety at the crossing of Lancaster and Preble is important. The city should seriously consider what can be done to ensure pedestrians arrive safely on the other side of these streets when they cross. Depending on how successful this project is, a raised intersection might be necessary to truly slow cars, and could serve the purpose of slowing cars as they travel along Lancaster as well, as the Woonerf design lacks some common traffic calming elements such as chicanes & retains a full 22' two way travel lane.

- **Port Property should work to incorporate a midblock crossing into the design of the 89 Elm Street project** in order to improve safety and walkability for pedestrians, either by breaking it up into two buildings or perhaps carving a sizable passageway through the bottom two floors.
  Those present on the walk suggested they would rather see buildings a floor or two higher here, instead of having one continuous block-long building. Running the numbers and studying likely walking habits between the new buildings at the very least would show a strong commitment to the neighborhood.
  Without this option pedestrians will have limited choices for getting around other than the busy commercial Main Street and woonerf.

- **Bicycle infrastructure should be more consistent:** not just in this neighborhood, but throughout the city. Perhaps we could incorporate specific designs into the technical manual, or make our own bicycle infrastructure guide to ensure continuity between interlocking projects. This is likely the responsibility of the planning board, due to their responsibility to make changes to the Technical Manual.

Appendix – Bayside inconsistencies in sidewalk materiality (May ‘21)

Note especially the amount of red “no sidewalk” unsafe walking / biking areas, and the sudden abandonment of new brick the city installed from Cumberland e.g. upper but not lower Cedar

Kennebec west of Preble has since been updated to concrete, but with very few street trees.



Avery Yale Kamila <avery.kamila@gmail.com>
to planningboard, Bayside, Umaru, Evan, colin, Rachel, Tony, tbennett, Anna, Pious, Andrew

Dear Planning Board members,

I'm writing to you about the Port Property application, PL-002403-2023, to build a 201-unit apartment building on Elm Street. I've lived in the neighborhood for 20 years and am glad to see the slum cleared parking lot being turned to housing. However, I'm deeply concerned about the lack of proposed landscaping and recreation amenities planned for this project.

This project is slated to be all low-income apartments, which flouts the spirit of Portland's inclusionary zoning ordinance by segregating buildings by income. Two blocks away, the same developer is building a high-income apartment building that includes copious landscaping and a PRIVATE pool. In contrast, the current proposal for low-income tenants includes zero recreation space and no on-site landscaping, aside from the required sidewalk trees. In addition, the developer intends to build without landscaped buffers between the building and the sidewalk, and as a result intends to kill one of the last remaining heritage trees in this least equitable census tract for tree canopy. https://treeequityscore.org/map/#12.1/43.66644/-70.24516 The oak tree on Oxford Street is owned by city taxpayers, yet Port Property has indicated it is more concerned about maximizing its profits than building a livable neighborhood for the people it rents to and the surrounding taxpayers who own that tree. Since a mature tree delivers ecosystem services that are wildly different than a newly planted sapling, there is no way to kill this heritage oak and repair the loss to taxpayers, since it takes decades to grow a mature tree.

When asked at a neighborhood meeting if any of the project team lived in Bayside or in downtown Portland, the answer was a resounding, "No." It is clear that the project team is unaware of the on-the-ground conditions in Bayside, where last night the low in the neighborhood was 67 degrees. Trees provide tremendous cooling, but the historic discrimination heaped on Bayside has clearcut our trees and failed to replant them.

The Bayside neighborhood has been the subject of historic de jure discrimination carried out by City Hall and private developers for 100 years. This current Port Property proposal continues this tradition. The Bayside neighborhood includes only two recreation spaces: The Bayside Trail (which since the pandemic has become unusable by families and children due to periodic homeless encampments and the high presence of hypodermic needles scattered on the ground). The other recreation space is the overcrowded Stone Street Playground, which is in constant use (yesterday there were hundreds of children who visited the park, many of them brought in multiple groups throughout the day by the Boys & Girls Club and the Youth & Family Outreach daycare). The playground equipment is broken and damaged and there is no schedule for its replacement. Port Property claims that Lancaster Street will be the open space. That road already gets a fair amount of traffic, which will only increase with the build-out of hundreds of surrounding apartments. Since taxpayers already own the street and have the right to use it, the claims by Port Property that their woonerf street solves the lack of recreation and landscaping is disingenuous at best.

Where will the hundreds of families who will move into this new apartment building find safe, nearby recreation space? Why is it acceptable for high-income renters to have a suite of private recreation amenities while the nearby low-income renters get nothing?

The Bayside neighborhood, with high levels of food insecurity, also lacks a publicly-owned community garden. Since the city refused to provide space for one before selling off all its Bayside properties to developers such as Port Property, the neighbors had to find stop gap solutions and at present they have created three privately-owned community gardens. However, all of them are in various states of peril, because they are all owned by large developers or property owners. Port Property now owns one of these gardens (acquired in the same real estate deal whereby they acquired the Elm Street parking lot), and it is the Bayside Community Garden, run by the neighborhood association (because City Hall refuses to provide funding to run the Bayside Garden). Port Property has been asked to deed the garden to the city in exchange for the lack of landscaping and recreation space, but they have declined.

Remember, the discriminatory planning and zoning policies and practices of City Hall led to the devaluation of this neighborhood. Now, Port Property is set to profit from that historic discrimination and resulting devaluation. Even though Port Property stands to gain tremendously, they have, as yet, indicated no willingness to address the lack of landscaping and recreation in their low-income plan and seemingly lack concern about the quality of life for its future low-income tenants who will be living in one of the hottest neighborhoods with the least tree canopy, open space and recreation areas.

Thank you for considering my comments.

Sincerely,
Avery

—

'Sarah Michniewicz' via Planning Board
to planningboard

Dear Chair Mazer and Members of the Planning Board,

I am writing to express concerns that this "Phase 1A" site plan as submitted hasn't changed since the MDP phase and still doesn't address concerns that have been ongoing since the MDP's initial submission.

At the most fundamental level, this proposal adversely impacts abutting properties on the residential block. These include:

- A full-block, impenetrable monolithic building pushed up next to neighbors in eighteenth century single family homes
- Attempting to convert a poorly maintained, narrow residential street to a service alley without acknowledging its limitations, and *deferring any improvements that would mitigate the construction damage and impact of 800 new apartments*
- Pushing retail uses into the abutting residential zone, *as close as possible to existing homes*

Regarding the impacts to Cedar Street, attached is a link to a video of 26' U Haul demonstrating the unrealistic trash truck turning template. It's simply not possible. The tolerances in the template are extraordinarily tight to begin with, and rely on cars of a specific size parking only in a specific way. I hope we can all agree this is unrealistic, particularly in light of the massive volume of traffic that will be using this space. I appreciate the applicant's desire to make their plans work, and believe they can find other ways to configure this building that make it more successful for abutters and themselves.

I'm also re-sending pictures of Pearl Place, which spans almost the exact amount of space that 89 Elm proposes to. Pearl Place is a successful building that demonstrates that:

1) A building split achieves benefits to the residents and the community that the current design of 89 Elm cannot possibly achieve
2) Creating an entrance on a slope is achievable and would enhance ground floor activation via additional retail/community uses

A split in the building would reduce the number of on-site affordable units, but there's nothing to stop them moving from 1A to another building - the second building of this first phase, 1B, would be a natural fit. This would also present *an opportunity to disperse some of the low-income units within other buildings, which I think we all agree is what the IZ ordinance intended*.

Or the overall unit count for the project could be reduced, alleviating some of the density-driven collateral impacts to the community. Either outcome is a win-win for the new tenants and the community as a whole. I hope the applicant would want their building to be at least as successful as a building by Avesta, Portland's leader in affordable housing.

I'd also like to address the construction management plan. All projects cause impacts, that's not a problem in and of itself. But when issues are excessive or even in abject violation, it's hard to put that genie back in the bottle. For example, noise ordinance dictates no construction noise before 7 AM, but workers typically arrive, settle in, and start warming up machinery up to an hour earlier. That may be technically allowed, but it isn't in the spirit of the ordinance; it erodes trust and the social contract; and it violates the community's rights to quiet enjoyment.

To that end, I suggest you consider conditioning any future approvals for this project with measures to mitigate those types of issues. I'll have some suggestions that I'll send separately, but suffice it to say for the moment that this project, and the ensuing development of the remaining block and a half of Port Property's holdings - the building, the digging, the disruption, the parking and traffic impacts - will go on essentially forever for us who already live here, and likely 20 years for the low-income people who will be moving in at the start of this project. If you can help ensure the community has tools to leverage in the case of problems, we'll all be happier in the long run.

Respectfully,

Sarah Michniewicz
Cedar Street

Ned Payne <nedpayne@gmail.com>
to PlanningBoard

To the members of the Portland Planning Board - I'm writing in support of the 89 Elm Street project as part of Phase 1 of the Bayside Master Development Plan. While I have great respect for the opinions of the groups and individuals throughout Bayside, I want to express my concern that the challenges and risks that Port Property is taking are respected.

At this time in Portland, between the difficulties brought on by The Green New Deal, the strictest rent control in the country, sky high interest rates, anti developer/landlord sentiment, and ballooning construction costs, many investors and developers are putting things on pause or looking outside of Portland to put their money to work.

In a city that desperately needs housing, my hope is that we recognize the challenges and do not take Port Property for granted. Ensuring this project is handled fairly will not only lead to a successful outcome, but also prompt the next developer in line to see that they can have success in Portland despite the challenges faced. While the Federated project had nothing to do with the planning board, my hope is that community concerns can be heard, implemented where reasonable, but not stop much needed housing.

Thank you for the work you do. I'm always blown away by the time and commitment your group sacrifices to shape the city and am grateful for your effort.

Ned Payne
Vice President - Rental Housing Alliance of Southern Maine

Laura S. Underkuffler <lu27@cornell.edu> 10:56 AM (22 minutes ago)
to planningboard@portlandmaine.gov, Zachary Powell

Dear Planning Board Members,

At the first workshop held last week (July 25, 2023), a suggestion was made regarding possible outdoor gathering places for the 89 Elm Street building (balconies, etc). Although I know that this suggestion was made with the best intentions, there is a very serious downside to outdoor, multi-person gathering spaces in the interior courtyard area and sides of the building that face the beleaguered single-family homes (ours on the corner of Cedar and Elm, and those on Cedar). This new building -- particularly the rear of this building -- will be a concrete canyon. Any noise that is generated will be amplified by the concrete walls, concrete parking lots, absolutely no trees or grass on that side of the building, and so on. This is not a new problem in this area. For that reason, and upon the request of residential neighbors (ourselves and those on Cedar Street), the idea of a rooftop gathering area (which would have been 14 feet from our second story bedroom windows) was abandoned by Port Property. We were greatly appreciated Port Property's understanding of this. If any additional balconies are eventually created, they need to be restricted to the Elm Street side of the building.

Thank you very much.

Sincerely, Laura Underkuffler and David Nowlin

215 Oxford Street

89 ELM STREET REDEVELOPMENT

89 ELM, LLC
PORTLAND, MAINE

LEGEND

EXISTING

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

PROPOSED

	UNDERDRAIN
	GREEN SPACE
	UTILITY PAVEMENT CUTS
	STRIPING
	SEDIMENTATION BARRIER
	EDGE OF EX. PAVEMENT
	CURB
	SIGN
	LAMP OR LIGHT POLE
	UTILITY POLE
	GUY WIRE
	WATER VALVE
	FIRE HYDRANT
	SEWER MANHOLE
	CATCH BASIN
	DRAIN MANHOLE
UGE	UNDERGROUND ELECTRIC LINE
W	UNDERGROUND WATER LINE
64	MINOR CONTOURS (1 FT)
65	MAJOR CONTOURS (5 FT)
GI	GAS LINE
SD	STORM DRAIN LINE
S	SEWER LINE
	EXISTING/PROPOSED BUILDING
OHE/T/C	OVERHEAD ELECTRICAL/TELEPHONE/CABLE
	PROPERTY LINE
	SETBACKS

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CALL BEFORE YOU DIG
1-888-DIG-SAFE
1-888-344-7233

PROJECT TEAM

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CONTACT: PAT MORRISON
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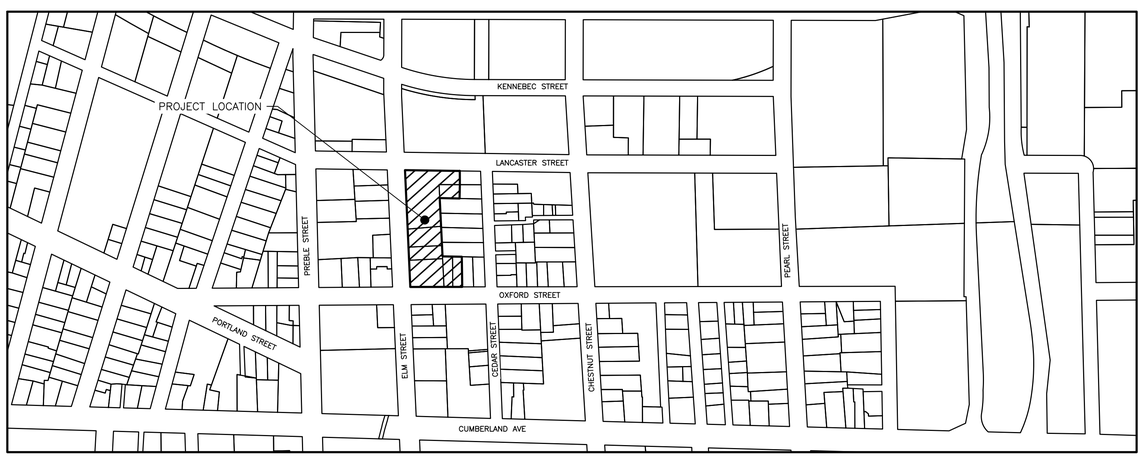
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14 RESILIENT CIRCLE
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NATURAL GAS

UNITIL SERVICE CORP
1075 FOREST AVENUE
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VICINITY MAP
SCALE: 1:200

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APPROX.	APPROXIMATE
BC	BOTTOM OF CURB
BMP	BEST MANAGEMENT PRACTICE
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PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
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DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.
C-01

89 ELM STREET REDEVELOPMENT

89 ELM, LLC
PORTLAND, MAINE

LEGEND

EXISTING

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

PROPOSED

- UNDERDRAIN
- GREEN SPACE
- UTILITY PAVEMENT CUTS
- STRIPING
- SEDIMENTATION BARRIER
- EDGE OF EX. PAVEMENT
- CURB
- SIGN
- LAMP OR LIGHT POLE
- UTILITY POLE
- GUY WIRE
- WATER VALVE
- FIRE HYDRANT
- SEWER MANHOLE
- CATCH BASIN
- DRAIN MANHOLE
- UNDERGROUND ELECTRIC LINE
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C-43	UTILITY DETAILS – 2
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C-45	DRAINAGE DETAILS – 2
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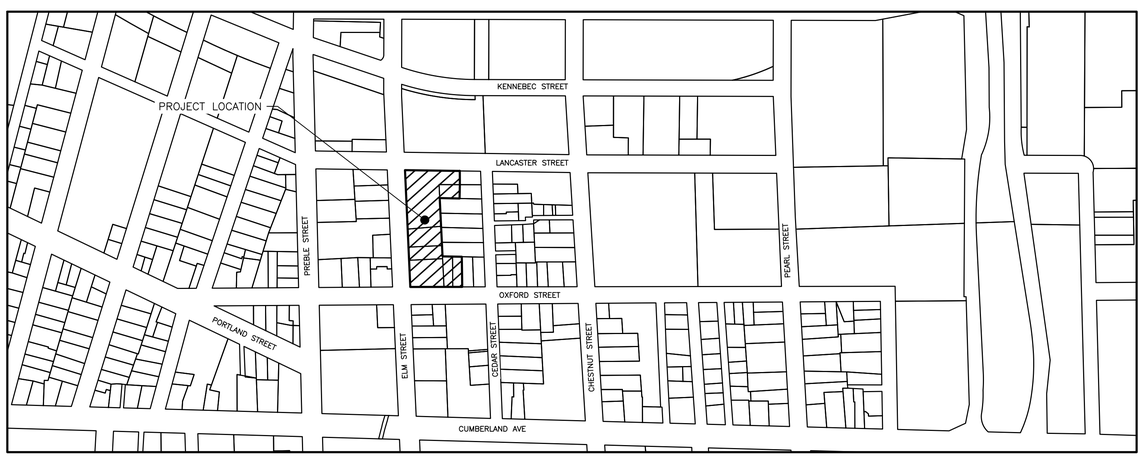
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3/3/23

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UNDERGROUND ELECTRIC LINE	UGE
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MINOR CONTOURS (1 FT)	64
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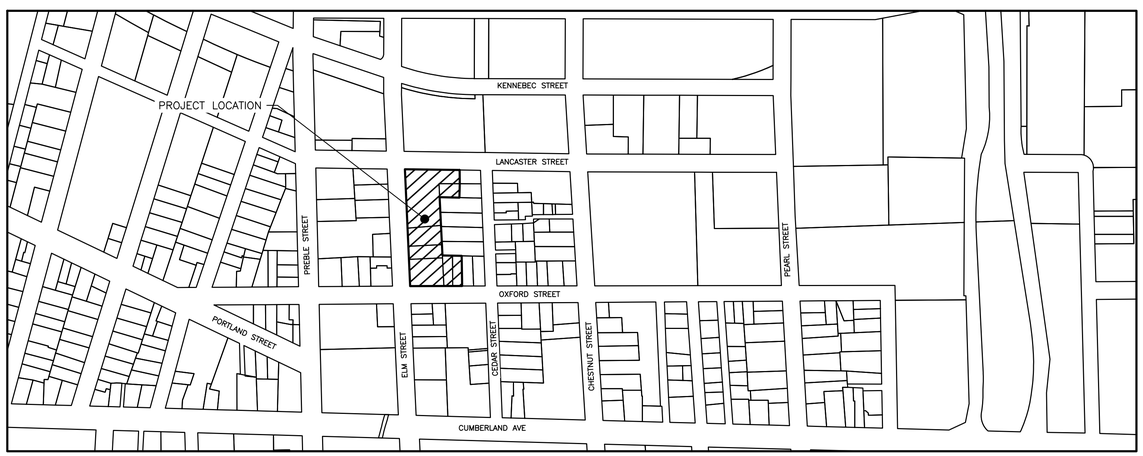
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(802) 497-6191

PLANNER

LEVINE PLANNING STRATEGIES
PORTLAND, MAINE
CONTACT: JEFF LEVINE, AICP
(617) 817-0424

LANDSCAPE ARCHITECT

DRY LANDSCAPE ARCHITECT
BOSTON, MA
CONTACT: BRADEN DRYPOLCHER
(603) 496-8020

MEP ENGINEER

BENNETT ENGINEERING
FREEPORT, MAINE
CONTACT: WILL BENNETT, P.E.
(205) 865-9475

ENVIRONMENTAL PROFESSIONAL

TRC COMPANIES, INC.
6 ASHLEY DRIVE
SCARBOROUGH, MAINE 04074
(207) 879-1930

UTILITIES

SEWER

DEPARTMENT OF PUBLIC WORKS (DPW)
212 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: BRADLEY ROLAND
(207) 874-8834

WATER

PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

ELECTRIC

CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: JAMIE COUGH
(207) 828-2882

TELEPHONE

CONSOLIDATED COMMUNICATIONS
(FORMERLY FAIRPOINT)
45 FOREST AVENUE
PORTLAND, MAINE 04101
CONTACT: PAT MORRISON
(207) 745-9363

CABLE

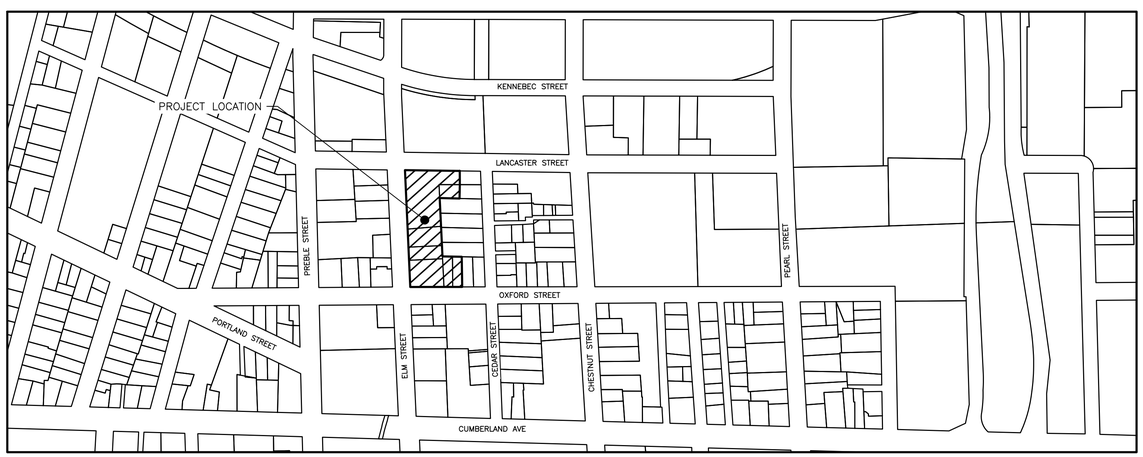
CHARTER COMMUNICATIONS
444 PERRY ROAD
BANGOR, MAINE, 04401
CONTACT: STEVEN HOLMES
(207) 631-1618

CABLE

FIRST LIGHT FIBER
14 RESILIENT CIRCLE
BRUNSWICK, MAINE, 04011
CONTACT: JONATHAN ROVILLARD
(207) 631-1618

NATURAL GAS

UNITIL SERVICE CORP
1075 FOREST AVENUE
PORTLAND, ME 04103
CONTACT: SCOTT CARPENTER
(207) 541-2543



VICINITY MAP
SCALE: 1:200

ABBREVIATIONS

PARTIAL LIST OF ABBREVIATIONS AND THEIR CORRESPONDING MEANING. PLEASE CONTACT THE ENGINEER FOR ANY CLARIFICATION

APPROX.	APPROXIMATE
BC	BOTTOM OF CURB
BMP	BEST MANAGEMENT PRACTICE
BOT.	BOTTOM
CB	CATCH BASIN
CF	CUBIC FOOT
CIP	CAST IN PLACE
CL	CENTERLINE
CM	CONSTRUCTION MANAGER
CMP	CENTRAL MAINE POWER
CONC.	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARD
DI	DUCTILE IRON PIPE
DIA.	DIAMETER
DIM.	DIMENSION
EA.	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EQUIV.	EQUIVALENT
EST.	ESTIMATE
EX.	EXISTING
FFE	FINISH FLOOR ELEVATION
FT.	FEET
HDPE	HIGH DENSITY POLY ETHYLENE
ID	INNER DIAMETER
IN.	INCH
INV.	INVERT
L	LENGTH
MAX.	MAXIMUM
MDEP	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
MDOT	MAINE DEPARTMENT OF TRANSPORTATION
M.E.P	MECHANICAL, ELECTRICAL, PLUMBING DESIGNER
MFG.	MANUFACTURED
MH	MANHOLE
MIN.	MINIMUM
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OHE/T/C	OVERHEAD ELECTRIC/TELEPHONE/CABLE
PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
RD	ROOF DRAIN
RET.	RETAINING
ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SMH	SEWER MANHOLE
SPEC.	SPECIFICATION
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
UD	UNDERDRAIN
UGE	UNDERGROUND ELECTRIC
VIF	VERIFY IN FIELD

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
162 CANCO ROAD, PORTLAND, MAINE 04103
PO BOX 3323, PORTLAND, MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.
C-01

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS-BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED TOPTOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBEL, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE BY **OWEN HASKELL, INC, DATED 12/8/22.**
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY **SUMMIT GEOENGINEERING SERVICES, INC.** AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
11. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
12. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. **THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES IMMEDIATELY ABUTTING THE SITE.** A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
13. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILLING, CONCRETE SHALL BE CURED PER STRUCTURAL ENGINEER'S SPECIFICATIONS.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY 89 ELM, LLC AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF **MAJOR SITE PLAN – FROM THE CITY OF PORTLAND.**
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE **CITY OF PORTLAND.** ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. 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. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS. **SEE BORING LOGS FOR ADDITIONAL INFORMATION.**
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES WHERE NOT NOTED ON THE GRADING PLAN. SLOPES IDENTIFIED ON THE GRADING PLAN TAKE PRECEDENT. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST **GEOTECHNICAL REPORT PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.**
6. CONTRACTOR TO REVIEW EXISTING SOIL CONDITIONS, TEST PITS, AND BORINGS. THERE WILL BE NO ADDITIONAL PAYMENT FOR UNSUITABLE SOILS.
7. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT **GEOTECHNICAL** ENGINEER, IF APPLICABLE.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED AND SHOWN TO PASS PRIOR TO BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT ''WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE'', MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH **CITY OF PORTLAND,** STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE **PORTLAND WATER DISTRICT** SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH **THE CITY OF PORTLAND TECHNICAL MANUAL** PRIOR TO ANY WORK.
15. 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.
16. ALL UTILITY PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS, PADS AND BLOCKS
   - BITUMINOUS ASPHALT PAVEMENT
   - GRANITE, CONCRETE, AND BITUMINOUS CURBING
   - CONCRETE AND BLOCK RETAINING WALLS
   - GUARDRAILS, FENCE POSTS AND FENCING
   - UNDERGROUND AND OVERHEAD UTILITY LINES
   - LIGHT POLES AND BASES
   - ABOVE AND OR BELOW GROUND FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. **CONTRACTOR TO REFER TO ENVIRONMENTAL REPORTS AND EMMP PREPARED BY TRC**

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY / DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: GENERAL NOTES
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC, 188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, MODIFICATIONS OR REUSE SHALL BE AT USER'S RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 4/3/23

DRAWING NO.
C-02

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS-BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED TOPTOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBEL, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE BY **OWEN HASKELL, INC, DATED 12/8/22.**
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY **SUMMIT GEOENGINEERING SERVICES, INC.** AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
11. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
12. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. **THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES IMMEDIATELY ABUTTING THE SITE.** A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
13. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILLING, CONCRETE SHALL BE CURED PER STRUCTURAL ENGINEER'S SPECIFICATIONS.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY 89 ELM, LLC AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF **MAJOR SITE PLAN – FROM THE CITY OF PORTLAND.**
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE **CITY OF PORTLAND.** ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. 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. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS. **SEE BORING LOGS FOR ADDITIONAL INFORMATION.**
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES WHERE NOT NOTED ON THE GRADING PLAN. SLOPES IDENTIFIED ON THE GRADING PLAN TAKE PRECEDENT. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST **GEOTECHNICAL REPORT PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.**
6. CONTRACTOR TO REVIEW EXISTING SOIL CONDITIONS, TEST PITS, AND BORINGS. THERE WILL BE NO ADDITIONAL PAYMENT FOR UNSUITABLE SOILS.
7. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT **GEOTECHNICAL** ENGINEER, IF APPLICABLE.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED AND SHOWN TO PASS PRIOR TO BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT ''WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE'', MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH **CITY OF PORTLAND,** STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE **PORTLAND WATER DISTRICT** SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH **THE CITY OF PORTLAND TECHNICAL MANUAL** PRIOR TO ANY WORK.
15. 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.
16. ALL UTILITY PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS, PADS AND BLOCKS
   - BITUMINOUS ASPHALT PAVEMENT
   - GRANITE, CONCRETE, AND BITUMINOUS CURBING
   - CONCRETE AND BLOCK RETAINING WALLS
   - GUARDRAILS, FENCE POSTS AND FENCING
   - UNDERGROUND AND OVERHEAD UTILITY LINES
   - LIGHT POLES AND BASES
   - ABOVE AND OR BELOW GROUND FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. **CONTRACTOR TO REFER TO ENVIRONMENTAL REPORTS AND EMMP PREPARED BY TRC**
5. UPON A FINDING OF ARCHAEOLOGICAL RESOURCES ON THE SITE, CONSULTATION WITH THE CITY OF PORTLAND'S HISTORIC PRESERVATION PROGRAM AND THE MAINE HISTORIC PRESERVATION COMMISSION IS REQUIRED TO DETERMINE APPROPRIATE NEXT STEPS.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY / DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: GENERAL NOTES
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, MODIFICATIONS, USE OR REUSE WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-02

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS–BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED TOPTOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBEL, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE BY **OWEN HASKELL, INC, DATED 12/8/22.**
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY **SUMMIT GEOENGINEERING SERVICES, INC.** AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
11. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT–OF–WAY.
12. THE CONTRACTOR SHALL CONDUCT A PRE–CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. **THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES IMMEDIATELY ABUTTING THE SITE.** A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
13. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON–STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILLING, CONCRETE SHALL BE CURED PER STRUCTURAL ENGINEER'S SPECIFICATIONS.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650–.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS–RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE–RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY 89 ELM, LLC AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF **MAJOR SITE PLAN – FROM THE CITY OF PORTLAND.**
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT–OF–WAY REQUIRES A STREET OPENING PERMIT FROM THE **CITY OF PORTLAND.** ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. 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. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS. **SEE BORING LOGS FOR ADDITIONAL INFORMATION.**
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES WHERE NOT NOTED ON THE GRADING PLAN. SLOPES IDENTIFIED ON THE GRADING PLAN TAKE PRECEDENT. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST **GEOTECHNICAL REPORT PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.**
6. CONTRACTOR TO REVIEW EXISTING SOIL CONDITIONS, TEST PITS, AND BORINGS. THERE WILL BE NO ADDITIONAL PAYMENT FOR UNSUITABLE SOILS.
7. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT **GEOTECHNICAL** ENGINEER, IF APPLICABLE.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED AND SHOWN TO PASS PRIOR TO BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR–16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT ''WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE'', MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH **CITY OF PORTLAND,** STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE **PORTLAND WATER DISTRICT** SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH **THE CITY OF PORTLAND TECHNICAL MANUAL** PRIOR TO ANY WORK.
15. 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.
16. ALL UTILITY PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
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   - BITUMINOUS ASPHALT PAVEMENT
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   - CONCRETE AND BLOCK RETAINING WALLS
   - GUARDRAILS, FENCE POSTS AND FENCING
   - UNDERGROUND AND OVERHEAD UTILITY LINES
   - LIGHT POLES AND BASES
   - ABOVE AND OR BELOW GROUND FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. **CONTRACTOR TO REFER TO ENVIRONMENTAL REPORTS AND EMMP PREPARED BY TRC**
5. UPON A FINDING OF ARCHAEOLOGICAL RESOURCES ON THE SITE, CONSULTATION WITH THE CITY OF PORTLAND'S HISTORIC PRESERVATION PROGRAM AND THE MAINE HISTORIC PRESERVATION COMMISSION IS REQUIRED TO DETERMINE APPROPRIATE NEXT STEPS.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: GENERAL NOTES
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, MODIFICATIONS, OR USES OF THIS PLAN WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
8/25/23

DRAWING NO.
C-02

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS-BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED TOPTOGRAPHIC SURVEY BAYSIDE PARCELS LANCASTER, PREBEL, ELM, CEDAR, CHESTNUT AND OXFORD STREETS, PORTLAND, MAINE BY **OWEN HASKELL, INC, DATED 12/8/22.**
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY **SUMMIT GEOENGINEERING SERVICES, INC.** AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
11. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
12. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. **THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES IMMEDIATELY ABUTTING THE SITE.** A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
13. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILLING, CONCRETE SHALL BE CURED PER STRUCTURAL ENGINEER'S SPECIFICATIONS.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY 89 ELM, LLC AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF **MAJOR SITE PLAN – FROM THE CITY OF PORTLAND.**
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE **CITY OF PORTLAND**. ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. 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. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS. **SEE BORING LOGS FOR ADDITIONAL INFORMATION.**
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES WHERE NOT NOTED ON THE GRADING PLAN. SLOPES IDENTIFIED ON THE GRADING PLAN TAKE PRECEDENT. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST **GEOTECHNICAL REPORT PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.**
6. CONTRACTOR TO REVIEW EXISTING SOIL CONDITIONS, TEST PITS, AND BORINGS. THERE WILL BE NO ADDITIONAL PAYMENT FOR UNSUITABLE SOILS.
7. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT **GEOTECHNICAL** ENGINEER, IF APPLICABLE.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED AND SHOWN TO PASS PRIOR TO BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT ''WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE'', MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH **CITY OF PORTLAND,** STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE **PORTLAND WATER DISTRICT** SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH **THE CITY OF PORTLAND TECHNICAL MANUAL** PRIOR TO ANY WORK.
15. 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.
16. ALL UTILITY PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS, PADS AND BLOCKS
   - BITUMINOUS ASPHALT PAVEMENT
   - GRANITE, CONCRETE, AND BITUMINOUS CURBING
   - CONCRETE AND BLOCK RETAINING WALLS
   - GUARDRAILS, FENCE POSTS AND FENCING
   - UNDERGROUND AND OVERHEAD UTILITY LINES
   - LIGHT POLES AND BASES
   - ABOVE AND OR BELOW GROUND FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. **CONTRACTOR TO REFER TO ENVIRONMENTAL REPORTS AND EMMP PREPARED BY TRC**
5. UPON A FINDING OF ARCHAEOLOGICAL RESOURCES ON THE SITE, CONSULTATION WITH THE CITY OF PORTLAND'S HISTORIC PRESERVATION PROGRAM AND THE MAINE HISTORIC PRESERVATION COMMISSION IS REQUIRED TO DETERMINE APPROPRIATE NEXT STEPS.

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PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: GENERAL NOTES
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, ANY ALTERATIONS, SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER, AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.
C-02

MATCH LINE SHT. 2

LANCASTER STREET EAST (50' WIDE)

ELM STREET (49.5' WIDE)

CEDAR STREET (13' WIDE)

CHESTNUT STREET (49.5' WIDE)

PREBLE STREET (56.5' WIDE)

OXFORD STREET (49.5' WIDE)

HALL COURT

ONE WAY

PASSAGE

PORTLAND ST.

CUMBERLAND AVE.

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39779/232
28,591 S.F. ±
0.66 ACRES ±

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39779/246
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38,462 S.F. ±
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23909/341

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N/F ROBERT HYDE
27470/68

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

N/F AMELIA A. LABRECK
37970/11

TM 26-B-1
N/F ROBERT HYDE
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TM 26-B-7
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TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

TM 33-M-4
N/F
WBP GARAGE LLC
39746/216
PARKING GARAGE

OWNERS UNKNOWN

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- MANHOLE
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STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

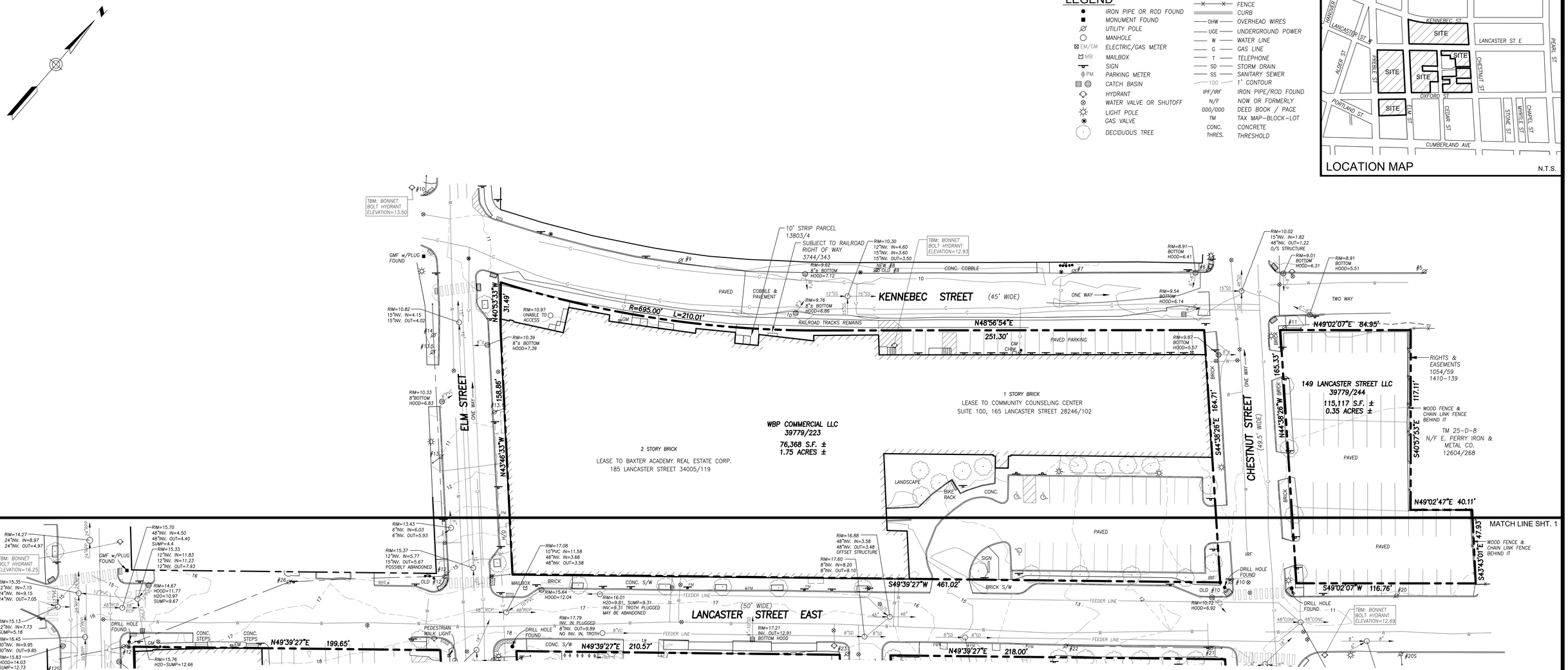
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Bayside Parcels
Lancaster, Preble, Elm, Cedar, Chestnut and Oxford Streets, Portland, Maine
Made for
Bush-Watson
188 State Street, 3rd Floor, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: RS / JLW	DATE: FEB. 17, 2023	JOB NO. 2022-162 P	
CHECKED BY: RRL	SCALE: 1" = 30'	DRWG. NO. 1	



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STATE OF MAINE
RANDY R. LOUBIER 2407
PROFESSIONAL LAND SURVEYOR

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N/F
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39746/216
PARKING GARAGE

OWNERS UNKNOWN

1 STORY CONCRETE

3 STORY CONCRETE

1 STORY BRICK

2 STORY BRICK

2-1/2 STORY WOOD FRAME

GARAGE

PARKING GARAGE

EASEMENT 3216/374 NO POLE 11.01 FOUND

CMP UGE EASEMENT 6103/54

EASEMENT CMP/NET&T 4811/70

EASEMENT 6921/185

APPROXIMATE 7' PASSAGEWAY IN DEEDS

APPROXIMATE 10' PASSAGEWAY IN DEEDS

INTERMITTENT GUARDRAIL

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STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

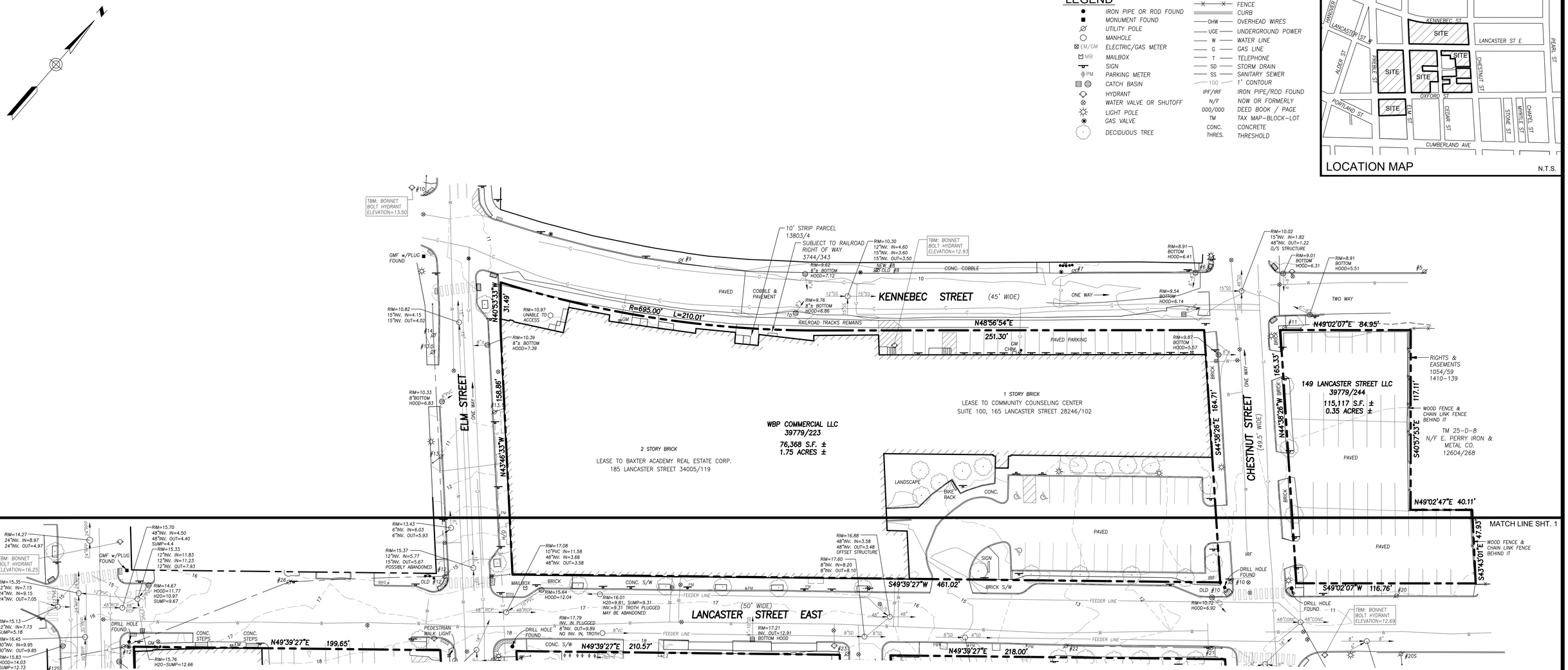
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STATE OF MAINE
RANDY R. LOUBIER 2407
PROFESSIONAL LAND SURVEYOR

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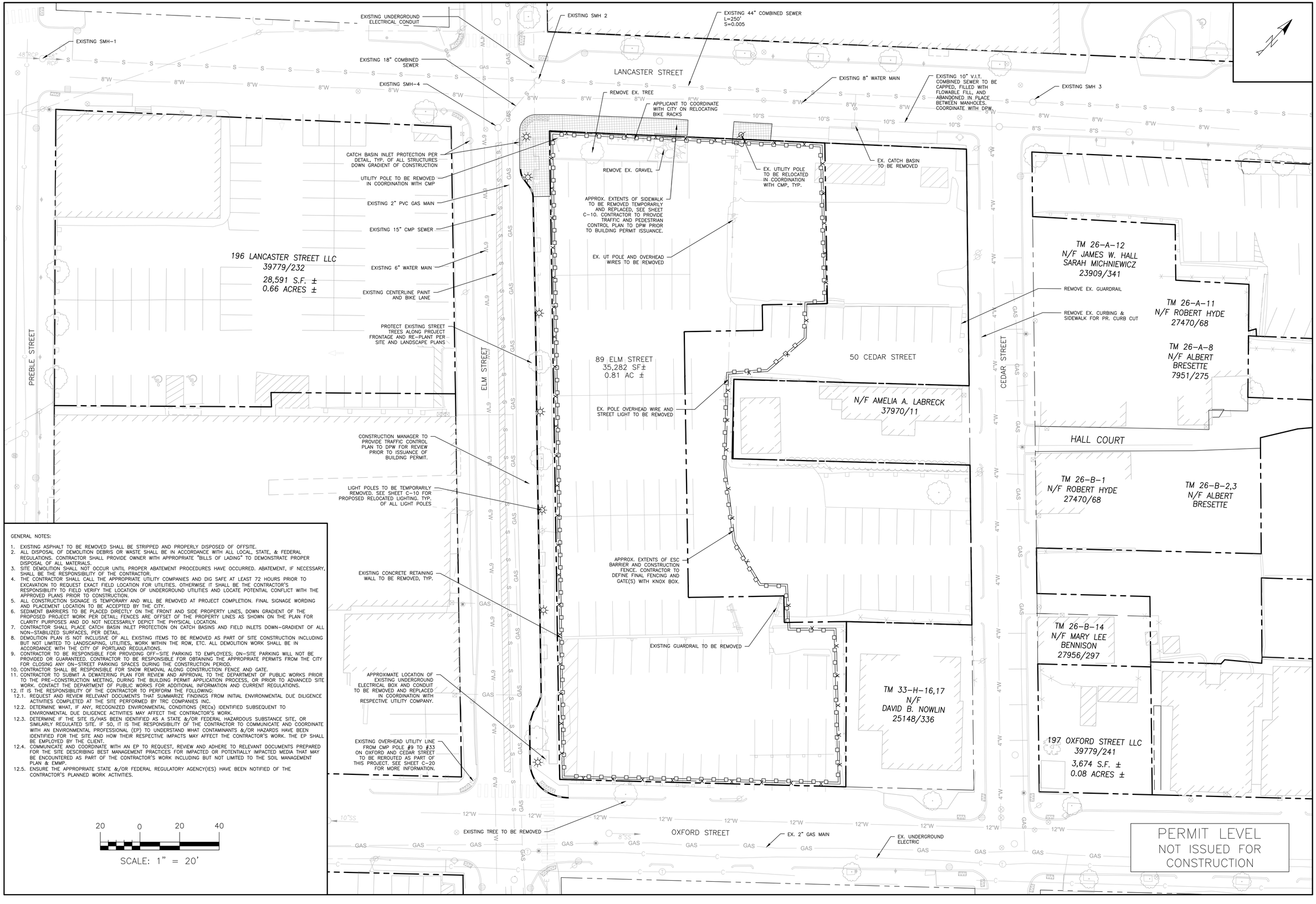
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GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE FOLLOWING:
    - 12.1. REQUEST AND REVIEW RELEVANT DOCUMENTS THAT SUMMARIZE FINDINGS FROM INITIAL ENVIRONMENTAL DUE DILIGENCE ACTIVITIES COMPLETED AT THE SITE PERFORMED BY TRC COMPANIES INC.
    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
    - 12.4. COMMUNICATE AND COORDINATE WITH AN EP TO REQUEST, REVIEW AND ADHERE TO RELEVANT DOCUMENTS PREPARED FOR THE SITE DESCRIBING BEST MANAGEMENT PRACTICES FOR IMPACTED OR POTENTIALLY IMPACTED MEDIA THAT MAY BE ENCOUNTERED AS PART OF THE CONTRACTOR'S WORK INCLUDING BUT NOT LIMITED TO THE SOIL MANAGEMENT PLAN & EMMP.
    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23
SITE PLAN	SJL	4/3/23

DRAWING NAME: CONSTRUCTION MANAGEMENT PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS TO THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM ACORN ENGINEERING, INC. SHALL RELIEVE ACORN ENGINEERING, INC. OF ALL RESPONSIBILITY FOR SUBSEQUENT USE OF THIS PLAN AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 CENTRE STREET, SANFORD, MAINE 04104
PO BOX 3357
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.

C-03

EXISTING UNDERGROUND ELECTRICAL CONDUIT

EXISTING SMH 2

EXISTING 44" COMBINED SEWER L=250' S=0.005

EXISTING SMH-1

EXISTING 18" COMBINED SEWER

EXISTING SMH-4

LANCASTER STREET

REMOVE EX. TREE

APPLICANT TO COORDINATE WITH CITY ON RELOCATING BIKE RACKS

EXISTING 8" WATER MAIN TO BE REPLACED. SEE SHEET C-20 FOR MORE INFORMATION.

EXISTING 10" V.I.T. COMBINED SEWER TO BE CAPPED, FILLED WITH FLOWABLE FILL, AND ABANDONED IN PLACE BETWEEN MANHOLES. COORDINATE WITH DPW.

EXISTING SMH 3

CATCH BASIN INLET PROTECTION PER DETAIL, TYP. OF ALL STRUCTURES DOWN GRADIENT OF CONSTRUCTION

REMOVE EX. GRAVEL

EX. CATCH BASIN TO BE REMOVED

UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP

EX. UTILITY POLE TO BE RELOCATED IN COORDINATION WITH CMP, TYP.

EXISTING 2" PVC GAS MAIN

APPROX. EXTENTS OF SIDEWALK TO BE REMOVED TEMPORARILY AND REPLACED. SEE SHEET C-10. CONTRACTOR TO PROVIDE TRAFFIC AND PEDESTRIAN CONTROL PLAN TO DPW PRIOR TO BUILDING PERMIT ISSUANCE.

EXISITNG 15" CMP SEWER

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

EX. UT POLE AND OVERHEAD WIRES TO BE REMOVED

EXISTING 6" WATER MAIN

EXISTING CENTERLINE PAINT AND BIKE LANE

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

REMOVE EX. GUARDRAIL

REMOVE EX. CURBING & SIDEWALK FOR PR. CURB CUT

TM 26-A-11
N/F ROBERT HYDE
27470/68

EXISTING STREET TREES ALONG PROJECT FRONTAGE TO BE TEMPORARILY REMOVED. REFER TO SHEET C-10 AND THE LANDSCAPE PLAN FOR MORE INFORMATION ON THE PROPOSED STREET TREE CONDITION.

PREBLE STREET

ELM STREET

89 ELM STREET
35,282 SF±
0.81 AC ±

50 CEDAR STREET

CEDAR STREET

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

EX. POLE OVERHEAD WIRE AND STREET LIGHT TO BE REMOVED

N/F AMELIA A. LABRECK
37970/11

HALL COURT

CONSTRUCTION MANAGER TO PROVIDE TRAFFIC CONTROL PLAN TO DPW FOR REVIEW PRIOR TO ISSUANCE OF BUILDING PERMIT.

LIGHT POLES TO BE TEMPORARILY REMOVED. SEE SHEET C-10 FOR PROPOSED RELOCATED LIGHTING. TYP. OF ALL LIGHT POLES

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

APPROX. EXTENTS OF ESC BARRIER AND CONSTRUCTION FENCE. CONTRACTOR TO DEFINE FINAL FENCING AND GATE(S) WITH KNOX BOX.

EXISTING CONCRETE RETAINING WALL TO BE REMOVED, TYP.

EXISTING GUARDRAIL TO BE REMOVED

EX. LILAC TO REMAIN AND BE PROTECTED DURING CONSTRUCTION.

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

APPROXIMATE LOCATION OF EXISTING UNDERGROUND ELECTRICAL BOX AND CONDUIT TO BE REMOVED AND REPLACED IN COORDINATION WITH RESPECTIVE UTILITY COMPANY.

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

EXISTING OVERHEAD UTILITY LINE FROM CMP POLE #9 TO #33 ON OXFORD AND CEDAR STREET TO BE REROUTED AS PART OF THIS PROJECT. SEE SHEET C-20 FOR MORE INFORMATION.

EXISTING 21" DBH TREE TO BE REMOVED

OXFORD STREET

EX. 2" GAS MAIN

EX. UNDERGROUND ELECTRIC

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE FOLLOWING:
    - 12.1. REQUEST AND REVIEW RELEVANT DOCUMENTS THAT SUMMARIZE FINDINGS FROM INITIAL ENVIRONMENTAL DUE DILIGENCE ACTIVITIES COMPLETED AT THE SITE PERFORMED BY TRC COMPANIES INC.
    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
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    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: CONSTRUCTION MANAGEMENT AND EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
70 COMMERCIAL STREET, SUITE 104
PO BOX 3372 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.

C-03

EXISTING UNDERGROUND ELECTRICAL CONDUIT

EXISTING SMH-1

EXISTING 18" COMBINED SEWER

EXISTING SMH-4

EXISTING SMH 2

EXISTING 44" COMBINED SEWER L=250' S=0.005

EXISTING 8" WATER MAIN TO BE REPLACED. SEE SHEET C-20 FOR MORE INFORMATION.

PROPOSED TO REMOVE EXISTING 1904 10" V.I.T. WHERE NEW MS4 IS TO BE INSTALLED. EXISTING SEWER ON THE NE SIDE OF THE PROPOSED DMH, TO BE CAPPED, FILLED WITH FLOWABLE FILL, AND ABANDONED IN PLACE BETWEEN MANHOLES, IN COORDINATION WITH DPW. SEE GRADING PLAN FOR MORE INFORMATION.

EX. CATCH BASIN TO BE REMOVED

LANCASTER STREET (TWO-WAY)

EXISTING SMH 3 TO REMAIN

REMOVE EX. TREE

APPLICANT TO COORDINATE WITH CITY ON RELOCATING BIKE RACKS

CATCH BASIN INLET PROTECTION PER DETAIL, TYP. OF ALL STRUCTURES DOWN GRADIENT OF CONSTRUCTION

UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP

EXISTING 2" PVC GAS MAIN

EXISITNG 15" CMP SEWER

EXISTING 6" WATER MAIN

EXISTING CENTERLINE PAINT AND BIKE LANE

EXISTING STREET TREES ALONG PROJECT FRONTAGE TO BE TEMPORARILY REMOVED. REFER TO SHEET C-10 AND THE LANDSCAPE PLAN FOR MORE INFORMATION ON THE PROPOSED STREET TREE CONDITION.

CONSTRUCTION MANAGER TO PROVIDE TRAFFIC CONTROL PLAN TO DPW FOR REVIEW PRIOR TO ISSUANCE OF BUILDING PERMIT.

LIGHT POLES TO BE TEMPORARILY REMOVED. SEE SHEET C-10 FOR PROPOSED RELOCATED LIGHTING. TYP. OF ALL LIGHT POLES

EXISTING CONCRETE RETAINING WALL TO BE REMOVED, TYP.

APPROXIMATE LOCATION OF EXISTING UNDERGROUND ELECTRICAL BOX AND CONDUIT TO BE REMOVED AND REPLACED IN COORDINATION WITH RESPECTIVE UTILITY COMPANY.

EXISTING OVERHEAD UTILITY LINE FROM CMP POLE #9 TO #33 ON OXFORD AND CEDAR STREET TO BE REROUTED AS PART OF THIS PROJECT. SEE SHEET C-20 FOR MORE INFORMATION.

PROPOSED EXTENT OF SAWCUT AND PAVEMENT REPAIR TO FACILITATE CONSTRUCTION OF CURB BUMPOUT. SEE SITE PLAN OR MORE INFORMATION.

EXISTING 21" DBH TREE TO BE REMOVED

REMOVE EX. GRAVEL

APPROX. EXTENTS OF SIDEWALK TO BE REMOVED TEMPORARILY AND REPLACED. SEE SHEET C-10. CONTRACTOR TO PROVIDE TRAFFIC AND PEDESTRIAN CONTROL PLAN TO DPW PRIOR TO BUILDING PERMIT ISSUANCE.

EX. UTILITY POLE TO BE RELOCATED IN COORDINATION WITH CMP, TYP.

EX. UT POLE AND OVERHEAD WIRES TO BE REMOVED

EX. POLE OVERHEAD WIRE AND STREET LIGHT TO BE REMOVED

APPROX. EXTENTS OF ESC BARRIER AND CONSTRUCTION FENCE. CONTRACTOR TO DEFINE FINAL FENCING AND GATE(S) WITH KNOX BOX.

EXISTING GUARDRAIL TO BE REMOVED

EX. CURB CUT, SIDEWALK, AND PARKING TO REMAIN. SEE THE SITE PLAN FOR PROPOSED IMPROVEMENTS

PRESERVE EXISTING CURB FOR 7' FROM EXISTING CURB CUT NORTHEAST

EX. LILAC TO REMAIN AND BE PROTECTED DURING CONSTRUCTION.

PROPOSED EXTENTS OF TRENCHING FOR UTILITY INSTALLATION. SEE THE UTILITY AND GRADING PLAN FOR MORE INFORMATION.

EX. 2" GAS MAIN

EX. UNDERGROUND ELECTRIC

REMOVE EX. GUARDRAIL

REMOVE EX. CURBING & SIDEWALK FOR PR. CURB CUT

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

89 ELM STREET
35,282 SF±
0.81 AC ±

50 CEDAR STREET

N/F AMELIA A. LABRECK
37970/11

TM 26-A-12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

TM 26-A-11
N/F ROBERT HYDE
27470/68

TM 26-A-8
N/F ALBERT
BRESETTE
7951/275

HALL COURT

TM 26-B-1
N/F ROBERT HYDE
27470/68

TM 26-B-2,3
N/F ALBERT
BRESETTE

TM 26-B-14
N/F MARY LEE
BENNISON
27956/297

TM 33-H-16,17
N/F
DAVID B. NOWLIN
25148/336

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

ELM STREET (ONE-WAY)
ELM STREET MORATORIUM
6/2022-6/2027

CEDAR STREET (ONE-WAY)

OXFORD STREET (ONE-WAY)

GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
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    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
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    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40
SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/16/23
COMMENT RESPONSE 2	SJL 8/28/23

DRAWING NAME: CONSTRUCTION MANAGEMENT AND EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

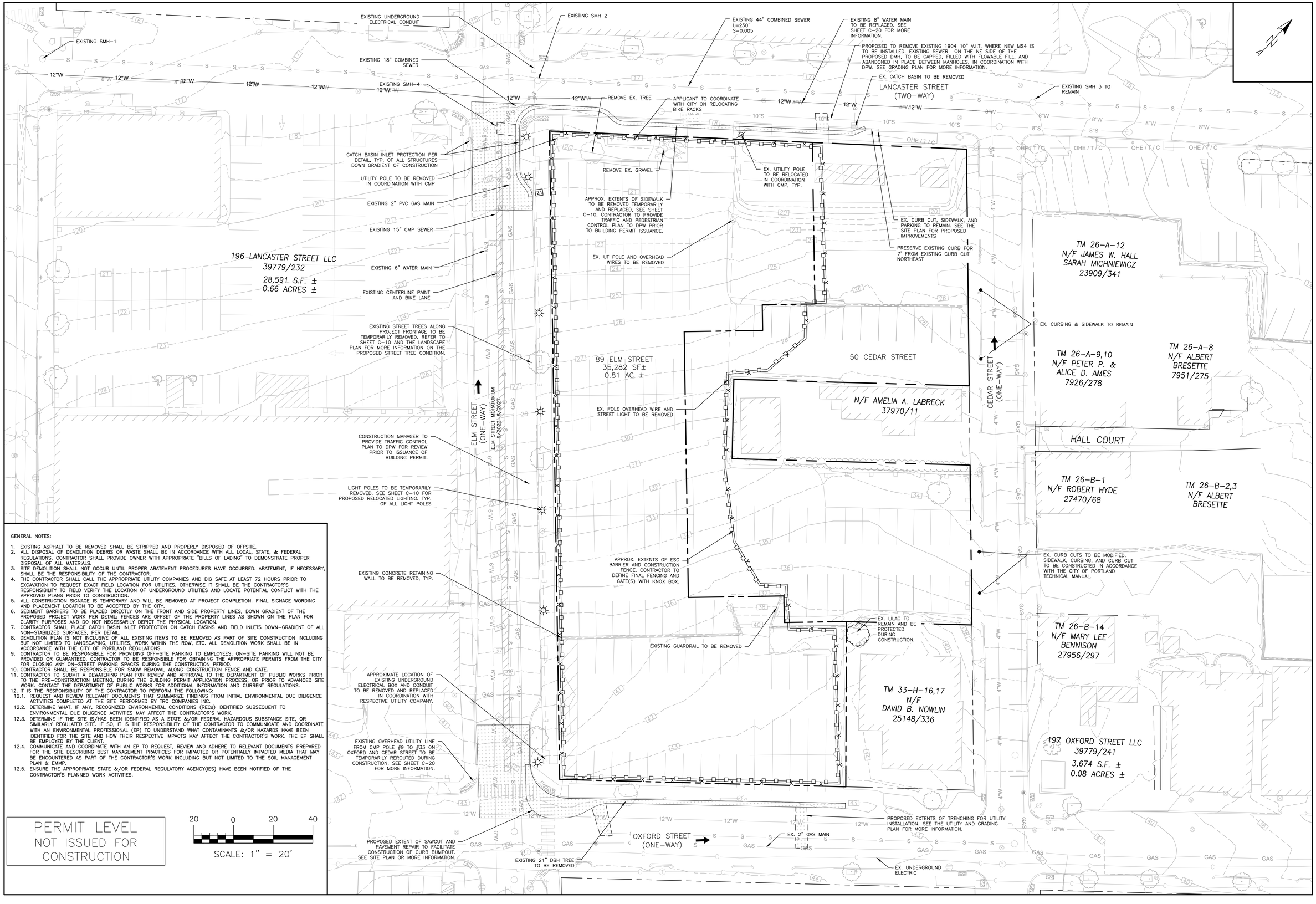
ACORN ENGINEERING, INC.
ENGINEERING
ACORN ENGINEERING, INC.
53 SKYLINE DRIVE, PORTLAND, MAINE 04104
PO BOX 3339
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THIS PLAN WITHOUT THE WRITTEN CONSENT OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
8/25/23

DRAWING NO.
C-03



GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
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5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
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9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
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    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
    - 12.4. COMMUNICATE AND COORDINATE WITH AN EP TO REQUEST, REVIEW AND ADHERE TO RELEVANT DOCUMENTS PREPARED FOR THE SITE DESCRIBING BEST MANAGEMENT PRACTICES FOR IMPACTED OR POTENTIALLY IMPACTED MEDIA THAT MAY BE ENCOUNTERED AS PART OF THE CONTRACTOR'S WORK INCLUDING BUT NOT LIMITED TO THE SOIL MANAGEMENT PLAN & EMMP.
    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/16/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: CONSTRUCTION MANAGEMENT AND EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
ENGINEERING

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THIS PLAN WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

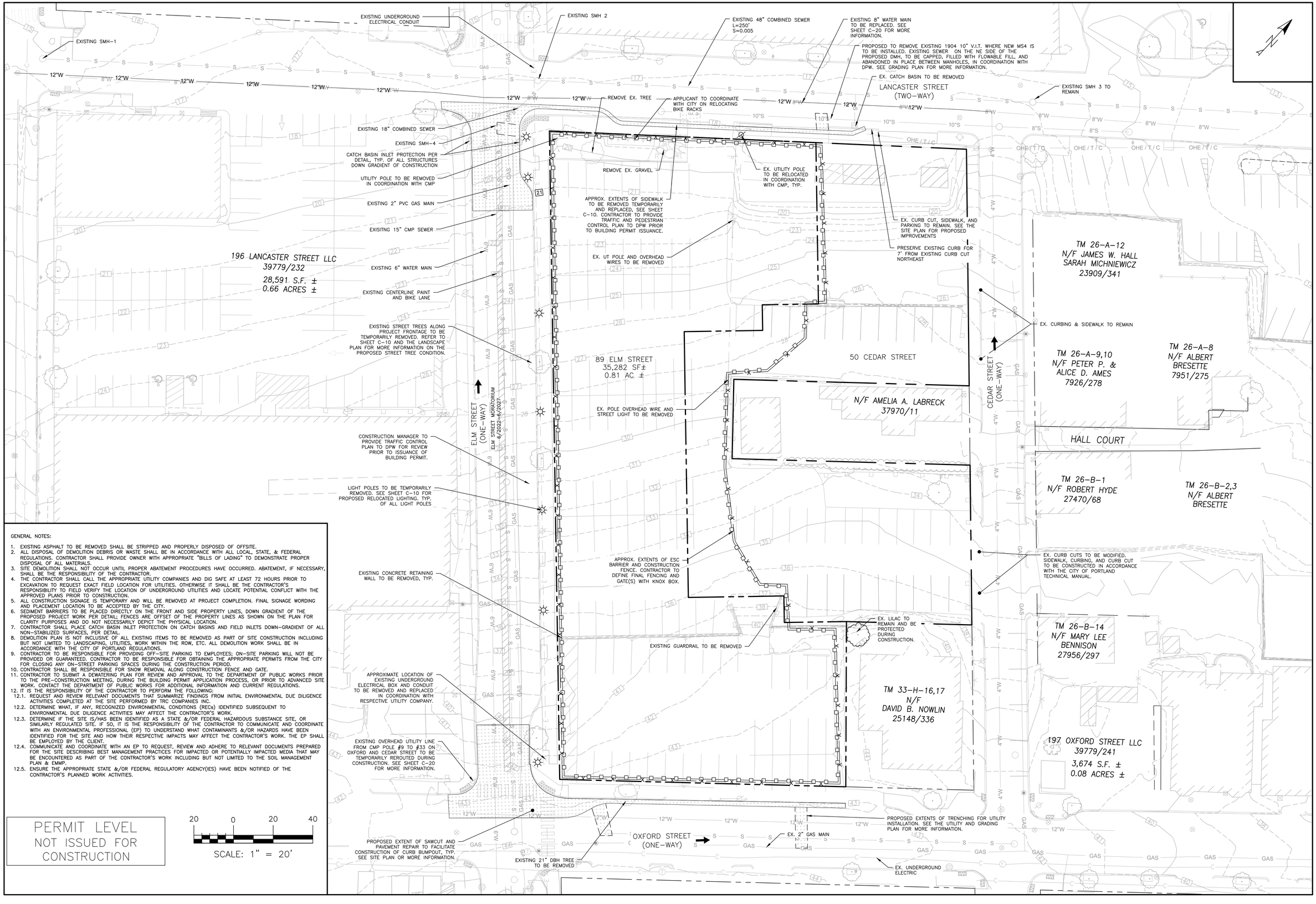
ACORN ENGINEERING, INC.
70 MILLBROOK STREET, SUITE 04104
PO BOX 3391 (207) 775-2855

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.

C-03



GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE FOLLOWING:
    - 12.1. REQUEST AND REVIEW RELEVANT DOCUMENTS THAT SUMMARIZE FINDINGS FROM INITIAL ENVIRONMENTAL DUE DILIGENCE ACTIVITIES COMPLETED AT THE SITE PERFORMED BY TRC COMPANIES INC.
    - 12.2. DETERMINE WHAT, IF ANY, RECOGNIZED ENVIRONMENTAL CONDITIONS (RECs) IDENTIFIED SUBSEQUENT TO ENVIRONMENTAL DUE DILIGENCE ACTIVITIES MAY AFFECT THE CONTRACTOR'S WORK.
    - 12.3. DETERMINE IF THE SITE IS/HAS BEEN IDENTIFIED AS A STATE &/OR FEDERAL HAZARDOUS SUBSTANCE SITE, OR SIMILARLY REGULATED SITE. IF SO, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE AND COORDINATE WITH AN ENVIRONMENTAL PROFESSIONAL (EP) TO UNDERSTAND WHAT CONTAMINANTS &/OR HAZARDS HAVE BEEN IDENTIFIED FOR THE SITE AND HOW THEIR RESPECTIVE IMPACTS MAY AFFECT THE CONTRACTOR'S WORK. THE EP SHALL BE EMPLOYED BY THE CLIENT.
    - 12.4. COMMUNICATE AND COORDINATE WITH AN EP TO REQUEST, REVIEW AND ADHERE TO RELEVANT DOCUMENTS PREPARED FOR THE SITE DESCRIBING BEST MANAGEMENT PRACTICES FOR IMPACTED OR POTENTIALLY IMPACTED MEDIA THAT MAY BE ENCOUNTERED AS PART OF THE CONTRACTOR'S WORK INCLUDING BUT NOT LIMITED TO THE SOIL MANAGEMENT PLAN & EMMP.
    - 12.5. ENSURE THE APPROPRIATE STATE &/OR FEDERAL REGULATORY AGENCY(IES) HAVE BEEN NOTIFIED OF THE CONTRACTOR'S PLANNED WORK ACTIVITIES.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
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DRAWING NAME: CONSTRUCTION MANAGEMENT AND EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.
ENGINEERING
ACORN ENGINEERING, INC.
70 MAIN STREET, NORTH YARMOUTH, MAINE 04104
PO BOX 3355 (207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THIS PLAN WITHOUT THE WRITTEN CONSENT OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1192.2_CIVIL
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SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.

C-03

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,082 SF[1] (TOTAL AREA OF PARCEL–0.81AC)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	0.3 FT
MINIMUM SIDE YARD SETBACK	N/A	2.88 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[2]	80'	< 80 FT
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT		
[2]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18		

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	7,185 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
MINIMUM SIDE YARD SETBACK	5 FT	11.50 FT
LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	ADDITIONAL 5' SETBACK ABOVE 35'
MAXIMUM LOT COVERAGE	60%	40%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	38%
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.		

GENERAL NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
7. IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL, EXISTING VEGETATION WILL BE PRESERVED BY PUTTING A FENCE OR OTHER BARRIER ALONG WITH SIGNAGE DURING CONSTRUCTION.

REFERENCES:
1. PLAN REFERENCE
   - 1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022, LAST REVISED MARCH 29TH, 2023.
   - 1.2. PLANSET TITLED "PREBLE ST/KENNEBEC ST/SOMERSET ST SEWER SEPARATION" PREPARED BY GORRILL PALMER, DATED JANUARY 2019.

LEGEND:
- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

PROPOSED STREET TREE WELL PER DETAIL AND LA, TYP. TREE SPECIES TBD
EX. ADA PARKING SPACES TO REMAIN
EX. "5 MINUTE DROP–OFF PARKING SCHOOL HOURS ONLY" ZONE TO REMAIN
PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
"30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
ZONING DISTRICT BOUNDARY, TYP.
ZONE B7
ZONE B3
ZONE R6
LANCASTER STREET (TWO–WAY)
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
PROPOSED REINFORCED CONCRETE SIDEWALK AND SEATING AREA
PR. STREET LIGHT PER OWNER AND PORTLAND'S TECHNICAL MANUAL
PR. BUILDING CANOPY ABOVE
EXISTING FIRE HYDRANT TO REMAIN
EX. RRFB TO REMAIN
PROPOSED SEAT WALL PER LA
EXISTING PARKING LOT TO REMAIN
PROPOSED RETAINING WALL AND DECORATIVE FENCING PER ARCHITECT
"30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL, TYP.
END "30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
PROPOSED 60 BIKE STORAGE SPACES
196 LANCASTER STREET LLC 39779/232 28,591 S.F. ± 0.66 ACRES ±
ELM STREET (ONE–WAY)
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
PR. KNOX BOX TO BE INSTALLED ON ENTRANCES PER FIRE AND MEP.
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
PROPOSED PROPERTY LINE, TYP.
LOBBY
BIKE STORAGE
MECHANICAL ROOM
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
MAIL/PACKAGES
SETBACK LINE, TYP.
#1 PR. LOCATION OF 9'X9' PAD FOR 3–PHASE TRANSFORMER WITH PROTECTIVE BOLLARDS, PER DETAIL
COMMUNITY ROOM
STORAGE/ LAUNDRY
POTENTIAL EXTENTS OF MAINTENANCE AND PAVEMENT REPAIR ON 50 CEDAR EX. PARKING LOT
50 CEDAR STREET
PROPOSED SNOW STORAGE
PROPOSED BUILDING: 89 ELM STREET 3 RETAIL UNITS 201 RESIDENTIAL UNITS
PR. PLANTINGS PER LANDSCAPE ARCHITECT
PROPOSED WOOD GUARDRAIL PER DETAIL
N/F AMELIA A. LABRECK 37970/11
CEDAR STREET (ONE–WAY)
EXISTING "1–HOUR" ONSTREET PARKING TO REMAIN
EXISTING HOME TO REMAIN
PR. PAVEMENT PER DETAIL
HALL COURT
PR. STREET TREE PLANTED, TYP.
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
PR. BREAK IN GUARDRAIL
PR. 7" VERTICAL CURB, TYP.
EXISTING PARKING LOT TO REMAIN.
R15'
PROPOSED ACCESS EASEMENT
EX. ADA PARKING SPACE TO REMAIN
EXISTING DRIVEWAY
EXISTING UTILITY POLE TO REMAIN, TYP.
PROPOSED PENINSULA DECORATIVE LIGHTING PER CITY TECHNICAL MANUAL. PROPOSED TO RE–USE EXISTING DECORATIVE LIGHTING WHEN FEASIBLE ALONG ELM STREET, TYP.
WBP COMMERCIAL LLC. 39779/227 38,301 S.F. ± 0.88 ACRES ±
2ND STORY
PR. SEAT WALL AT ELM ST. ENTRY, TYP. OF 3
PR. LOCATION OF SOLID WASTE
PR. TRASH CHUTE INTO PR. DUMPSTERS, PER OWNER
6' SIDEWALK PER DETAIL
PR. MULCH AND SHRUBS PER LANDSCAPE ARCHITECT
PR. STAIRS AND RAILINGS PER STRUCTURAL ENGINEER
RESIDENTIAL
PR. CAST IN PLACE RETAINING WALL AND GUARDRAIL PER STRUCTURAL ENGINEER
TM 33–H–16,17 N/F DAVID B. NOWLIN 25148/336
EX. "1 HOUR" ONSTREET PARKING TO REMAIN. PORTLAND HIGH SCHOOL "PHS" PARKING ZONE
POTENTIAL 3' WIDE PUBLIC ACCESS EASEMENT BETWEEN PROPERTY LINE AND BUILDING
3RD STORY
RETAIL SPACE
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C–20
REMOVE EX. CHAIN LINK FENCE AND REPLACE WITH NEW HORIZONTAL CEDAR SLAT FENCE
PR. CURBING WITH VARYING REVEAL, SEE SHEET C–30
POTENTIAL LICENSE REQUIRED FOR CANOPY ENCROACHMENT
OXFORD STREET (ONE–WAY)
ABUTTER'S CURB CUT TO REMAIN
TM 26–A–12 N/F JAMES W. HALL SARAH MICHNIEWICZ 23909/341
TM 26–A–11 N/F ROBERT HYDE 27470/68
TM 26–A–8 N/F ALBERT BRESETTE 7951/275
TM 26–B–1 N/F ROBERT HYDE 27470/68
TM 26–B–2,3 N/F ALBERT BRESETTE
TM 26–B–14 N/F MARY LEE BENNISON 27956/297
OXFORD STREET LLC 39779/241 3,674 S.F. ± 0.08 ACRES ±

20 0 20 40
SCALE: 1" = 20'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23
SITE PLAN	SJL	4/3/23

DRAWING NAME: SITE PLAN
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
FOREST LAKE, MAINE 04104
PO BOX 3257 (207) 775–2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 4/3/23

DRAWING NO.
C-10

SPACE AND BULK STANDARDS		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,082 SF[1] (TOTAL AREA OF PARCEL–0.81AC)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	0.3 FT
MINIMUM SIDE YARD SETBACK	N/A	2.88 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[2]	80'	< 80 FT
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT		
[2]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18		

SPACE AND BULK STANDARDS		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	7,185 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
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LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	ADDITIONAL 5' SETBACK ABOVE 35'
MAXIMUM LOT COVERAGE	60%	40%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	38%
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.		

GENERAL NOTES:

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2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
3. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
6. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
7. IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL, EXISTING VEGETATION WILL BE PRESERVED BY PUTTING A FENCE OR OTHER BARRIER ALONG WITH SIGNAGE DURING CONSTRUCTION.
8. PER CITY OF PORTLAND ZONING ORDINANCE SECTION 5.2.3 EXTENSION OF ZONE LINES, FOR LOCATIONS WHERE THE BOUNDARY LINE DIVIDES A SINGLE LOT, THE PROVISIONS OF THE LAND USE CODE FOR THE LESS RESTRICTED PORTION OF THE LOT EXTEND NO MORE THAN 30 FEET INTO THE MORE RESTRICTED PORTION. THE ZONING PROVISIONS FOR THE B–3 ZONING DISTRICT REGULATIONS WILL EXTEND 30 FT INTO THE R–6 ZONE. THE PORTIONS OF THE DEVELOPMENT THAT ARE WITHIN THE 30–FOOT ZONE EXTENSION ARE STILL SUBJECTED TO THE R–6 CRITERIA PERTAINING TO THE BUILDING HEIGHT AND OTHER DIMENSIONAL REQUIREMENTS.

REFERENCES:

1. PLAN REFERENCE
   - 1.1. PLAN TITLED "TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 8TH, 2022, LAST REVISED MARCH 29TH, 2023.
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LEGEND:

- PROPERTY LINE
- SETBACK LINE
- FLUSH GRANITE CURB
- VERTICAL GRANITE CURB

196 LANCASTER STREET LLC
39779/232
28,591 S.F. ±
0.66 ACRES ±

WBP COMMERCIAL LLC.
39779/227
38,301 S.F. ±
0.88 ACRES ±

PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS

LANCASTER STREET (TWO–WAY)
ELM STREET (ONE–WAY)
CEDAR STREET (ONE–WAY)
OXFORD STREET (ONE–WAY)
50 CEDAR STREET
HALL COURT

ZONE B7
ZONE B3
ZONE R6

TM 26–A–12
N/F JAMES W. HALL
SARAH MICHNIEWICZ
23909/341

TM 26–A–11
N/F ROBERT HYDE
27470/68

TM 26–A–8
N/F ALBERT BRESETTE
7951/275

N/F AMELIA A. LABRECK
37970/11

TM 26–B–1
N/F ROBERT HYDE
27470/68

TM 26–B–2,3
N/F ALBERT BRESETTE

TM 26–B–14
N/F MARY LEE BENNISON
27956/297

TM 33–H–16,17
N/F
DAVID B. NOWLIN
25148/336

197 OXFORD STREET LLC
39779/241
3,674 S.F. ±
0.08 ACRES ±

PROPOSED STREET TREE PER LA
EX. ADA PARKING SPACES TO REMAIN
EX. "5 MINUTE DROP–OFF PARKING SCHOOL HOURS ONLY" ZONE TO REMAIN
PROPOSED MODIFICATION OF CURBLINE WITH VERTICAL GRANITE CURB PER DETAIL
"30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
PROPOSED REINFORCED CONCRETE SIDEWALK, PER DETAIL
ZONING DISTRICT BOUNDARY, TYP. SEE NOTE 8
PROPOSED PAVER WITHIN SEATING AREA PER LA
PROPOSED CURB EXTENSION, CROSSWALK, AND DETECTABLE PAD
PROPOSED 7' PARKING FLEX ZONE WITH PAVERS
PROPOSED 4' WIDE FURNISHING ZONE WITH PAVERS
POTENTIAL LOCATION OF PROPOSED BIKE SHARE
EXISTING FIRE HYDRANT TO REMAIN
EX. RRFB TO REMAIN
PROPOSED SEAT WALL PER LA
8.00' PEDESTRIAN ZONE
7.60'
16.00'
14.40'
PR. BENCH, TYP.
PROPOSED RETAINING WALL AND DECORATIVE FENCING PER ARCHITECT
PR. BUILDING CANOPY ABOVE
EXISTING PARKING LOT TO REMAIN WITH MODIFICATIONS AS NECESSARY
PR. BIKE RACK, TYP. REFER TO LANDSCAPE PLAN FOR MORE INFORMATION.
RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
PR. KNOX BOX TO BE INSTALLED ON ENTRANCES PER FIRE AND MEP.
27.30'
REFER TO LANDSCAPE ARCHITECTURE PLANS FOR PROPOSED PLANTING, TYP.
"30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
PROPOSED PROPERTY LINE, TYP.
5.00'
PROPOSED 60 BIKE STORAGE SPACES
LOBBY
MECHANICAL ROOM
MECHANICAL AND ELECTRICAL ROOM WITH FUTURE EV AND SOLAR PROVISIONS
END "30 MINUTE PARKING AND LOADING ZONE" SIGNAGE COORDINATE WITH DPW FOR APPLICABILITY AND FINAL PLACEMENT
BIKE STORAGE
11.50'
11.80'
5.20'FURNISHING ZONE
6.00'PEDESTRIAN ZONE
MAIL/PACKAGES
EX. RETAINING WALL TO REMAIN WITH MODIFICATIONS AS NECESSARY
SETBACK LINE, TYP.
EXISTING PARKING AND CURB CUT TO REMAIN
#1 PR. LOCATION OF 9'X9' PAD FOR 3–PHASE TRANSFORMER WITH PROTECTIVE BOLLARDS, PER DETAIL
POTENTIAL EXTENTS OF MAINTENANCE AND PAVEMENT REPAIR ON 50 CEDAR EX. PARKING LOT
COMMUNITY ROOM
STORAGE/ LAUNDRY
PROPOSED BENCH PER LA
EX. 21.40'
15.80'
PROPOSED SNOW STORAGE
EXISTING "1–HOUR" ONSTREET PARKING TO REMAIN
PR. PLANTINGS PER LANDSCAPE ARCHITECT
PR. STREET LIGHT PER OWNER AND PORTLAND'S TECHNICAL MANUAL
PROPOSED WOOD GUARDRAIL PER DETAIL
EXISTING HOME TO REMAIN
PR. STREET TREE PLANTED, TYP.
PR. PAVEMENT PER DETAIL
20.00'
PR. BREAK IN GUARDRAIL
EXISTING GRANITE CURB ALONG ELM STREET TO REMAIN. IF DISTURBANCE OCCURS DURING CONSTRUCTION, RESET PER DETAIL
PR. 7" VERTICAL CURB, TYP.
EXISTING PARKING LOT TO REMAIN.
7.00'
EX. ADA PARKING SPACE TO REMAIN
EXISTING CONCRETE SIDEWALK TO BE REMOVED AND REPLACED PER DETAIL, TYP.
R15'
PROPOSED ACCESS EASEMENT
20.70'
EXISTING UTILITY POLE RELOCATION IN COORDINATION WITH CMP
REBUILD TWO EXISTING DRIVEWAYS INTO ONE DRIVEWAY
PROPOSED PENINSULA DECORATIVE LIGHTING PER CITY TECHNICAL MANUAL. PROPOSED TO RE–USE EXISTING DECORATIVE LIGHTING WHEN FEASIBLE ALONG ELM STREET, TYP.
16.00'
24.00'
R2'
2ND STORY
EXISTING PARKING SPACE (TYP.)
PR. SEAT WALL AT ELM ST. ENTRY, TYP. OF 3
EX. LILAC TO REMAIN
PR. LOCATION OF SOLID WASTE
6' SIDEWALK PER DETAIL
PR. TRASH CHUTE INTO PR. DUMPSTERS, PER OWNER
PR. MULCH AND SHRUBS PER LANDSCAPE ARCHITECT
PR. STAIRS AND RAILINGS PER STRUCTURAL ENGINEER
RESIDENTIAL
PR. CAST IN PLACE RETAINING WALL AND GUARDRAIL PER STRUCTURAL ENGINEER
EX. "1 HOUR" ONSTREET PARKING TO REMAIN, PORTLAND HIGH SCHOOL "PHS" PARKING ZONE
POTENTIAL 3' WIDE PUBLIC ACCESS EASEMENT BETWEEN PROPERTY LINE AND BUILDING
3RD STORY
4.20'
RETAIL SPACE
REMOVE EX. CHAIN LINK FENCE AND REPLACE WITH NEW HORIZONTAL CEDAR SLAT FENCE IN THE SAME LOCATION.
PR. ELM STREET GATEWAY SIGN
14.40'
10.40'
PR. CURBING WITH VARYING REVEAL, SEE SHEET C–30
0.30'
8.90'
100.00'
EXISTING OVERHEAD UTILITIES TO BE REROUTED, SEE SHEET C–20
POTENTIAL LICENSE REQUIRED FOR CANOPY ENCROACHMENT
ABUTTER'S CURB CUT TO REMAIN
EX. ONSTREET PARKING TO REMAIN

20 0 20 40
SCALE: 1" = 20'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

SITE PLAN

DRAWING NAME:

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

USE OF THESE PLANS, IN WHOLE OR IN PART, IS NOT PERMITTED WITHOUT THE EXPRESS WRITTEN PERMISSION OF ACORN ENGINEERING, INC. THESE PLANS SHALL NOT BE ALTERED WITHOUT THE WRITTEN AUTHORIZATION OF ACORN ENGINEERING, INC. ANY ALTERATIONS MADE TO THESE PLANS WITHOUT THE WRITTEN AUTHORIZATION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 MILK STREET, SUITE 201, PORTLAND, MAINE 04104
PO BOX 3357, PORTLAND, MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.
C-10

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,096 SF[1] (TOTAL AREA OF PARCEL–34,771 SF)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK[2]	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	N/A	0.3 FT
MINIMUM SIDE YARD SETBACK	N/A	2.88 FT
MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[3]	80 FT	74.31 FT
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT		
[2]REFERENCE THE APPROVED MDP WAIVER AND DESIGN MANUAL EXCEPTION.		
[3]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18		

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	6,675 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.25 FT
LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	10.25' (SIDE) 15.40' (REAR)
MAXIMUM LOT COVERAGE	60%	43%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	28%
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.		

GENERAL NOTES:

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2. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
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4. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
5. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
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7. IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL, EXISTING VEGETATION WILL BE PRESERVED BY PUTTING A FENCE OR OTHER BARRIER ALONG WITH SIGNAGE DURING CONSTRUCTION.
8. PER CITY OF PORTLAND ZONING ORDINANCE SECTION 5.2.3 EXTENSION OF ZONE LINES, FOR LOCATIONS WHERE THE BOUNDARY LINE DIVIDES A SINGLE LOT, THE PROVISIONS OF THE LAND USE CODE FOR THE LESS RESTRICTED PORTION OF THE LOT EXTEND NO MORE THAN 30 FEET INTO THE MORE RESTRICTED PORTION. THE ZONING PROVISIONS FOR THE B–3 ZONING DISTRICT REGULATIONS WILL EXTEND 30 FT INTO THE R–6 ZONE. THE PORTIONS OF THE DEVELOPMENT THAT ARE WITHIN THE 30–FOOT ZONE EXTENSION ARE STILL SUBJECTED TO THE R–6 CRITERIA PERTAINING TO THE BUILDING HEIGHT AND OTHER DIMENSIONAL REQUIREMENTS.

REFERENCES:

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PUBLIC SIGNAGE SCHEDULE

A

NO PARKING ANY TIME

B

B1: 2 HR PARKING, 9:00 AM TO 5:00 PM

B2: 2 HR PARKING, 9:00 AM TO 5:00 PM

C

C1: 30 MIN PARKING, 6:00 AM TO 6:00 PM

C2: 30 MIN PARKING, 6:00 AM TO 6:00 PM

D

D1: 15 MIN PARKING, 6:00 AM TO 6:00 PM

D2: 15 MIN PARKING, 6:00 AM TO 6:00 PM

E

E1: NO PARKING THIS SIDE OF THE STREET 1ST & 3RD WEDNESDAY OF THE MONTH 12:01AM TO 7AM (OCTOBER 1st – MAY 31st)

F

F1: NO PARKING ANY TIME

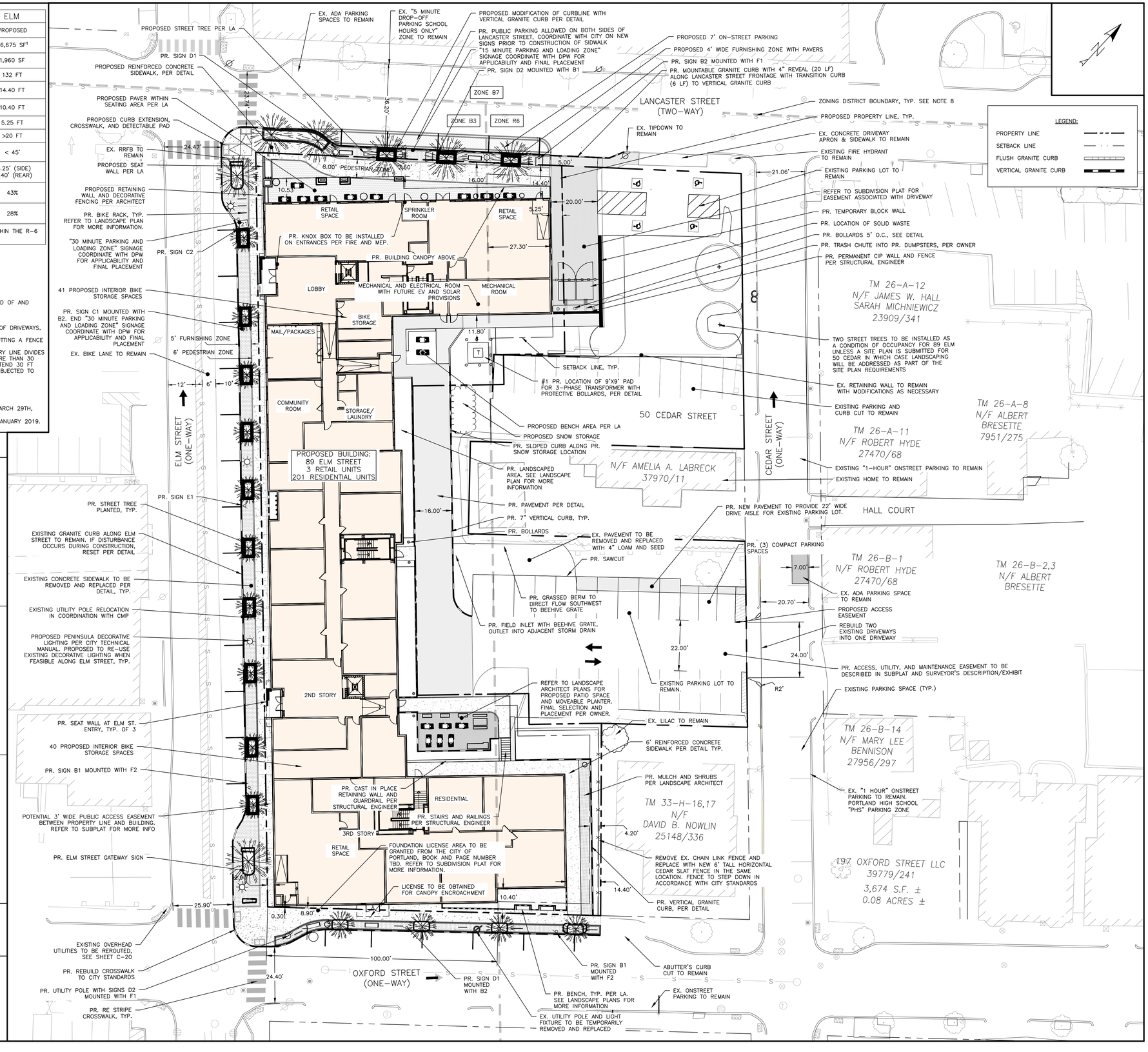
F2: NO PARKING ANY TIME

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3. SIGN POST SHALL BE ALIGNED WITH CENTERLINE DENOTATION.
4. SIGN POSTS ARE OFFSET 5' FROM DRIVEWAYS AND 25' FROM INTERSECTIONS.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'



ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 7/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 9/29/23

SITE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

DRAWING NAME:

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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70 FORT ALLEN AVENUE, 04104
PO BOX 3287, PORTLAND, ME 04104
(207) 775–2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
9/25/23

DRAWING NO.

C-10

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,096 SF[1] (TOTAL AREA OF PARCEL–34,771 SF)
MINIMUM STREET FRONTAGE	15 FT	132 FT
MAX FRONT YARD SETBACK[2]	5 FT	18 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	N/A	7.6 FT
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MAX LENGTH OF UNDIFFERENTIATED BLANK WALL ALONG PUBLICLY ACCESSIBLE WAY	30 FT, EXCEPT 15 FT WITH PAD OVERLAY	< 30 FT
MAXIMUM BUILDING HEIGHT[3]	80 FT	74.31 FT
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE B3 ZONING DISTRICT		
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[3]PER THE BAYSIDE HEIGHT OVERLAY PLUS THE ADDITIONAL 25' FOR AFFORDABILITY IN SECTION 18		

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	6,675 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
MINIMUM FRONT YARD SETBACK (LANCASTER ST)	5 FT	14.40 FT
MINIMUM REAR YARD SETBACK (OXFORD ST)	10 FT	10.40 FT
MINIMUM SIDE YARD SETBACK	5 FT	5.25 FT
LOT WIDTH	20 FT	>20 FT
MAXIMUM BUILDING HEIGHT	45 FT	< 45'
STEPBACK	ADDITIONAL 5' SETBACK ABOVE 35'	10.25' (SIDE) 15.40' (REAR)
MAXIMUM LOT COVERAGE	60%	43%
MINIMUM LANDSCAPED OPEN SPACE RATIO	20%	28%
[1]REFERENCES THE AMOUNT OF THE PARCEL THAT FALLS WITHIN THE R–6 ZONING DISTRICT.		

GENERAL NOTES:

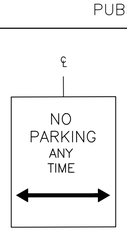
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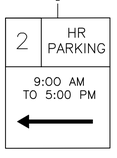
PUBLIC SIGNAGE SCHEDULE

A

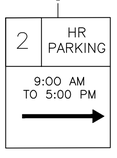


B

B1



B2



C

C1



C2

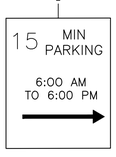


D

D1



D2



E

E1



F

F1



F2

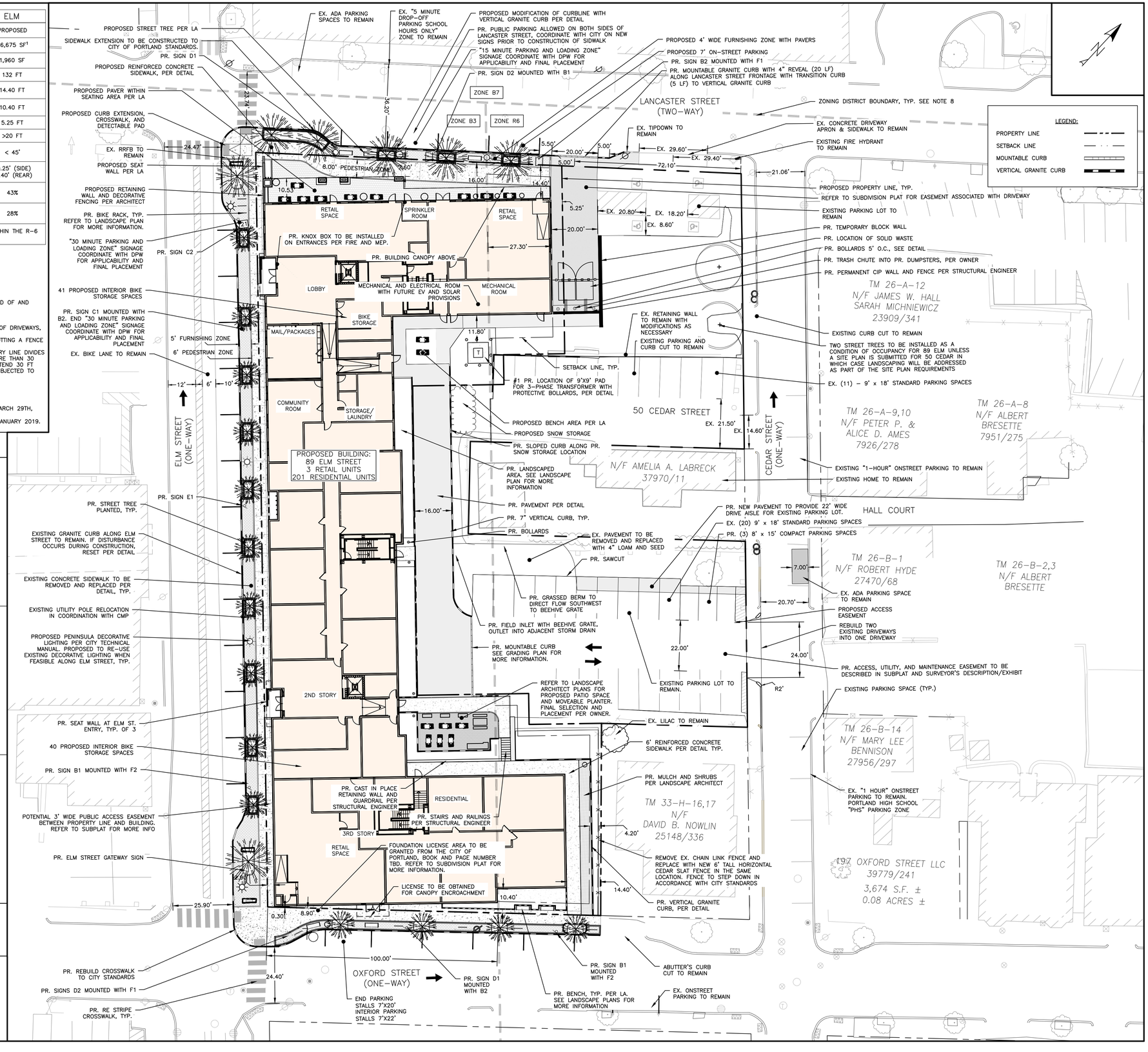


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PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'



ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: SITE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PO BOX 3294 PORTLAND, ME 04104
(207) 775–2655

FILE:	1192.2_CIVIL
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CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/3/23

DRAWING NO.

C-10

SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: B3	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	28,096 SF[1] (TOTAL AREA OF PARCEL–34,771 SF)
MINIMUM STREET FRONTAGE	15 FT	132 FT
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SPACE AND BULK STANDARDS: 89 ELM		
ZONING DISTRICT: R6	REQUIRED	PROPOSED
MINIMUM LOT AREA	2,000 SF	6,675 SF[1]
MINIMUM LOT AREA PER DWELLING UNIT	725 SF	1,960 SF
MINIMUM STREET FRONTAGE	20 FT	132 FT
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GENERAL NOTES:

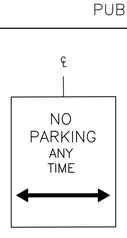
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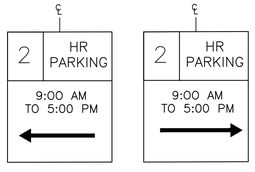
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PUBLIC SIGNAGE SCHEDULE

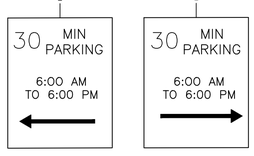
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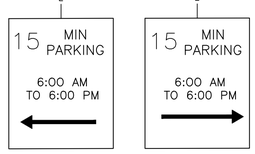
B



C



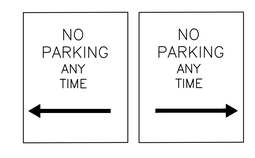
D



E



F

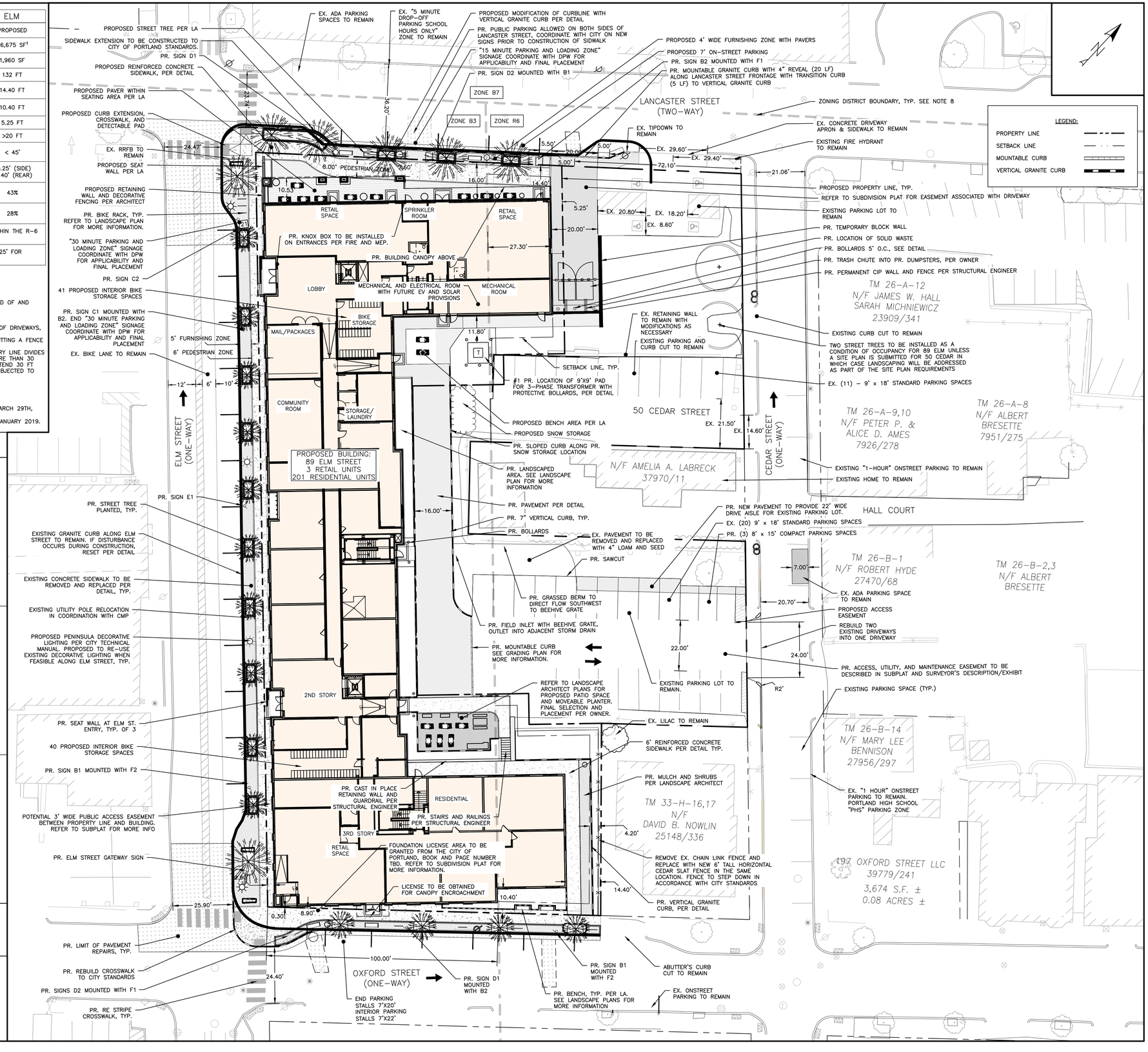


1. ILLUSTRATIONS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL SIGNAGE SHALL BE APPROVED AND INSTALLED BY THE TRAFFIC DIVISION OF THE DEPARTMENT OF PUBLIC WORKS.
2. CONTRACTOR TO INSTALL POST SLEEVES WITHIN THE CONCRETE SIDEWALK. LOCATIONS TO BE REVIEWED IN FIELD BY TRAFFIC DIVISION PRIOR TO POURING CONCRETE.
3. SIGN POST SHALL BE ALIGNED WITH CENTERLINE DENOTATION.
4. SIGN POSTS ARE OFFSET 5' FROM DRIVEWAYS AND 25' FROM INTERSECTIONS.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'



ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/16/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: SITE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR OUTRIGHT USE OF THESE PLANS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 FORT ALLEN AVENUE 04104
PO BOX 3287 PORTLAND, ME
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.

C-10

SMH-1
RIM: 15.70'
44" RCP INV. IN: 4.50'
44" RCP INV. OUT: 4.40'

EX. 4" CAST WATER MAIN (1880)

EXISTING SEWER MANHOLE
RIM: 15.37'
12" INV. IN: 5.77'
15" INV. OUT: 5.67'
POSSIBLY ABNADONED

EX. 44" BRICK RCP
SEWER MAIN
L=247'
S:0.003

EX. SMH-2 RIM: 17.08'
18" INV. IN: DROP INLET UNKNOWN INVERT
10" PVC INV. IN: 11.58'
44" RCP INV. IN: 3.68'
44" RCP INV. OUT: 3.58'

PR. UTILITY POLE 1 WITH
3-PHASE EXTENSION

EXISTING SMH-4
RIM: 18.65'
15" INV. IN: 10.05'
APPROX. PR. 8" INV. IN: 11.55'
18" INV. OUT: 9.85'

PR. 8" SEWER TO TIE INTO
EXISTING SEWER MANHOLE

EXISTING CATCH BASIN RIM: 18.66'
8" INV. OUT: 13.55'

PROPOSED BACKFLOW VALVE, PER DETAIL, TYP.

PROPOSED MANHOLE RIM: 18.75'
APPROX. 8" INV. OUT: 11.58'-11.69'
8" INV. IN: 11.79'
4" INV. IN: 12.70'

PROPOSED 1,000 GAL., 2 COMPARTMENT GREASE TRAP. AMERICAN CONCRETE INDUSTRIES ITEM #8827 OR APPROVED EQUIVALENT. GREASE TRAP SHALL ONLY TAKE PLUMBING FROM KITCHEN SINKS AND DISHWASHER.

8" PVC SDR 35
SEWER LATERAL
L=36'
S=0.01 MIN. -
0.04 MAX.

PR. UTILITY POLE 2

PROPOSED 4" DOMESTIC SERVICE FOR RESIDENTIAL UNITS WITH 8" X 4" TAPPING SLEEVE AND 4" GATE VALVE.

PROPOSED 2" DOMESTIC SERVICE FOR COMMERCIAL UNITS. 2" SERVICE SADDLE AND CORPORATION STOP

PROPOSED 8" D.I. FIRE SERVICE WITH 8"x8" TAPPING SLEEVE AND 8" GATE VALVE

2" CURB STOP, 2' OFF CURB

PR. GATE VALVES ON 4" AND 8" WATER LINES

TESTABLE DVCA BACKFLOW PREVENTION AFTER THE METER AND BEFORE THE SPRINKLER - RISER

EX. 44" BRICK RCP
SEWER MAIN
L=247'
S:0.000

SMH-3
RIM: 16.88'
44" BRICK INV. IN: 3.58'
44" BRICK INV. OUT: 3.48'

EX. 8" CAST WATER MAIN (1887)

LANCASTER STREET
(TWO-WAY)

SEE SHEET C-30 FOR MORE INFORMATION

SMH RIM: 17.60'
10" INV. IN: 8.20'
10" INV. OUT: 8.10'

PR. UTILITY POLE WITH RISER

PR. PULL BOX MANHOLE PER CMP & MEP.

EX. 10" V.I.T
L=168'
S:0.01

RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE
LOBBY
BIKE STORAGE
MAIL/PACKAGES
COMMUNITY ROOM
STORAGE/ LAUNDRY
MECHANICAL ROOM

PR. 8" SEWER TO RUN UNDER SLAB TO MECHANICAL ROOM.

PROPOSED ELECTRICAL PATHWAY TO FUTURE ROOF-TOP SOLAR ARRAY

PROPOSED ELEVATOR SUMP WITH POTENTIAL PUMP ROUTED TO SEWER PER MEP, TYP.

PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS

2ND STORY

RESIDENTIAL

3RD STORY

RETAIL SPACE

PROPOSED UNDERGROUND CONDUIT TRENCH

REFER TO MEP PLANS FOR CMP METER LOCATION(S)

PROPOSED LOCATION OF 9'X9' TRANSFORMER WITH UNDERGROUND ELECTRIC AND TELECOM ROUTED TO MECHANICAL ROOM.

PR. LOCATION OF R-TANKS, SEE SHEET C-30 FOR MORE INFORMATION

50 CEDAR STREET

PR. LOCATION OF STORMFILTER CARTRIDGES SEE SHEET C-30 FOR MORE INFORMATION

ELM STREET
(ONE-WAY)

CEDAR STREET
(ONE-WAY)

HALL COURT

EXISTING 15" SANITARY SEWER MAIN

EX. 6" CAST WATER MAIN (1887)

APPROX. LOCATION OF EXISTING 2" PLASTIC GAS MAIN (2020)

4" CAST WATER MAIN (1886)

EX. 12" CAST WATER MAIN (1886)

4.15'

CONTRACTOR TO RELOCATE EX. POLE AND EX. OVERHEAD LINES OR PROVIDE UNDERGROUND SERVICES TO EX. BUILDINGS ON LINE. COORDINATE WITH OWNER AND RESPECTIVE UTILITIY COMPANIES

EXISTING 2" PLASTIC GAS MAIN (2020)

PROPOSED GAS SERVICE

EX. OVERHEAD TELEPHONE, AND CABLE UTILITIES TO BE TEMPORARILY DISABLED AND REROUTED.

OXFORD STREET
(ONE-WAY)

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH CITY SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND CITY OF PORTLAND.
7. GAS UTILITIES: PROJECT GAS LOAD, GAS UTILITY DESIGN, AND FINAL GAS SERVICE LOCATION AND METERS TO BE DEFINED BY M.E.P. AND IN ACCORDANCE WITH UNITIL.
8. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION AND TRANSFORMER SIZE, IF NECESSARY DEFINED BY M.E.P. M.E.P. TO FINALIZE SERVICE CONNECTION TO BUILDING. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.
9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY CHARTER COMMUNICATIONS AND FAIRPOINT PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.

SEWER STRUCTURE SCHEDULE

STRUCTURE	RIM	INVERT IN	INVERT OUT
PR. SMH	18.75'	8" INV. IN: 11.79' – BUILDING 4" INV. IN: 12.70' (GREASE TRAP)	8" INV. OUT: 11.58'–11.59'
SMH-4	18.65'	15" INV. IN: 10.05' 8" INV. IN: 11.55'	18" INV. OUT: 9.85'

20 0 20 40

SCALE: 1" = 20'

ISSUED FOR	BY	DATE
CONCEPT	WHS	8/4/22
PRELIM SITE	SJL	2/13/23
SITE PLAN	SJL	4/3/23

DRAWING NAME: UTILITY PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ALL PLANS, DRAWINGS, SPECIFICATIONS AND COMPUTER FILES PREPARED BY ACORN ENGINEERING, INC. SHALL NOT BE MODIFIED OR ASSIGNED TO ANY THIRD PARTY WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ACORN ENGINEERING, INC. SHALL BE HELD HARMLESS FOR ANY AND ALL MODIFICATIONS, ASSIGNMENTS OR REUSE OF THESE PLANS, DRAWINGS, SPECIFICATIONS AND COMPUTER FILES BY OTHERS WITHOUT ACORN ENGINEERING, INC.'S EXPRESS WRITTEN CONSENT. ANY REUSE OF THESE PLANS, DRAWINGS, SPECIFICATIONS AND COMPUTER FILES BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC.
P.O. BOX 3339, KENNEBUNK, MAINE 04043
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.

C-20

SMH-1
RIM: 15.70'
44" RCP INV. IN: 4.50'
44" RCP INV. OUT: 4.40'

EX. 4" CAST WATER MAIN (1880)

EXISTING SEWER MANHOLE
RIM: 15.37'
12" INV. IN: 5.77'
15" INV. OUT: 5.67'
POSSIBLY ABNADONED

EX. 44" BRICK RCP SEWER MAIN
L=247'
S:0.003

EX. SMH-2 RIM: 17.08'
18" INV. IN: DROP INLET UNKNOWN INVERT
10" PVC INV. IN: 11.58'
44" RCP INV. IN: 3.68'
44" RCP INV. OUT: 3.58'

PR. UTILITY POLE 1 WITH 3-PHASE EXTENSION

EXISTING SMH-4
RIM: 18.65'
15" INV. IN: 10.05'
APPROX. PR. 8" INV. IN: 11.55'
18" INV. OUT: 9.85'

PR. 8" SEWER TO TIE INTO EXISTING SEWER MANHOLE

EXISTING CATCH BASIN RIM: 18.66'
8" INV. OUT: 13.55'

PROPOSED BACKFLOW VALVE, PER DETAIL, TYP.

PROPOSED MANHOLE RIM: 18.75'
APPROX. 8" INV. OUT: 11.58'-11.69'
8" INV. IN: 11.79'
4" INV. IN: 12.70'

PROPOSED 1,000 GAL., 2 COMPARTMENT GREASE TRAP. AMERICAN CONCRETE INDUSTRIES ITEM #8827 OR APPROVED EQUIVALENT. GREASE TRAP SHALL ONLY TAKE PLUMBING FROM KITCHEN SINKS AND DISHWASHER.

8" PVC SDR 35 SEWER LATERAL
L=36'
S=0.01 MIN. - 0.04 MAX.

PR. UTILITY POLE 2

PROPOSED 4" DOMESTIC SERVICE FOR RESIDENTIAL UNITS WITH 12" X 4" TAPPING SLEEVE AND 4" GATE VALVE.

PROPOSED 2" DOMESTIC SERVICE FOR COMMERCIAL UNITS. 2" SERVICE SADDLE AND CORPORATION STOP

PROPOSED 8" D.I. FIRE SERVICE WITH 12"X8" TAPPING SLEEVE AND 8" GATE VALVE

2" CURB STOP, 2' OFF CURB

PR. GATE VALVES ON 4" AND 8" WATER LINES

TESTABLE DVCA BACKFLOW PREVENTION AFTER THE METER AND BEFORE THE SPRINKLER RISER

EX. 44" BRICK RCP SEWER MAIN
L=247'
S:0.000

SMH-3
RIM: 16.88'
44" BRICK INV. IN: 3.58'
44" BRICK INV. OUT: 3.48'

PR. 12" WATER MAIN

LANCASTER STREET
(TWO-WAY)

SEE SHEET C-30 FOR MORE INFORMATION

SMH RIM: 17.60'
10" INV. IN: 8.20'
10" INV. OUT: 8.10'

EX. 10" V.I.T
L=168'
S:0.01

PR. UTILITY POLE WITH RISER

PR. PULL BOX MANHOLE PER CMP & MEP.

RETAIL SPACE
SPRINKLER ROOM
RETAIL SPACE

PR. 8" SEWER TO RUN UNDER SLAB TO MECHANICAL ROOM.

PROPOSED ELECTRICAL PATHWAY TO FUTURE ROOF-TOP SOLAR ARRAY

PROPOSED ELEVATOR SUMP WITH POTENTIAL PUMP ROUTED TO SEWER PER MEP, TYP.

LOBBY
MECHANICAL ROOM
BIKE STORAGE
MAIL/PACKAGES
COMMUNITY ROOM
STORAGE/ LAUNDRY

PROPOSED UNDERGROUND CONDUIT TRENCH

REFER TO MEP PLANS FOR CMP METER LOCATION(S)

POTENTIAL LOCATION OF PULL BOX, PER CMP & MEP

PROPOSED LOCATION OF 9'X9' TRANSFORMER WITH UNDERGROUND ELECTRIC AND TELECOM ROUTED TO MECHANICAL ROOM.

PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS

PR. LOCATION OF R-TANKS, SEE SHEET C-30 FOR MORE INFORMATION

50 CEDAR STREET

PR. LOCATION OF STORMFILTER CARTRIDGES SEE SHEET C-30 FOR MORE INFORMATION

ELM STREET
(ONE-WAY)

CEDAR STREET
(ONE-WAY)

HALL COURT

EXISTING 15" SANITARY SEWER MAIN

EX. 6" CAST WATER MAIN (1887)

APPROX. LOCATION OF EXISTING 2" PLASTIC GAS MAIN (2020)

2ND STORY

4" CAST WATER MAIN (1886)

POTENTIAL LOCATION OF REROUTED UNDERGROUND ELECTRIC FEEDING PROPOSED LIGHTING.

RESIDENTIAL

3RD STORY

RETAIL SPACE

EX. 12" CAST WATER MAIN (1886)

EXISTING 2" PLASTIC GAS MAIN (2020)

PROPOSED EXTENTS OF TRENCHING WITHIN ROW, TYP.

PROPOSED GAS SERVICE

OXFORD STREET
(ONE-WAY)

POTENTIAL RECONFIGURATION OF EXISTING OVERHEAD TELEPHONE, AND CABLE UTILITIES. FINAL LAYOUT PER OWNER AND CMP.

CONTRACTOR TO RELOCATE EX. POLE AND EX. OVERHEAD LINES OR PROVIDE UNDERGROUND SERVICES TO EX. BUILDINGS ON LINE. COORDINATE WITH OWNER AND RESPECTIVE UTILITIY COMPANIES

PERMIT LEVEL
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SEWER STRUCTURE SCHEDULE

STRUCTURE	RIM	INVERT IN	INVERT OUT
PR. SMH	18.75'	8" INV. IN: 11.79' - BUILDING 4" INV. IN: 12.70' (GREASE TRAP)	8" INV. OUT: 11.58'-11.59'
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20 0 20 40
SCALE: 1" = 20'

ISSUED FOR

BY	DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: UTILITY PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3369, PORTLAND, MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
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SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
6/23

DRAWING NO.
C-20

SMH-1
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44" RCP INV. IN: 4.50'
44" RCP INV. OUT: 4.40'

EX. 4" CAST WATER MAIN (1880)

EXISTING SEWER MANHOLE
RIM: 15.37'
12" INV. IN: 5.77'
15" INV. OUT: 5.67'
POSSIBLY ABNADONED

8" PVC SDR 35 SEWER LATERAL L=36' S=0.01 MIN. – 0.04 MAX.

PR. UTILITY POLE 2

PROPOSED 4" DOMESTIC SERVICE FOR RESIDENTIAL UNITS WITH 12" X 4" TAPPING SLEEVE AND 4" GATE VALVE.

PROPOSED 2" DOMESTIC SERVICE FOR COMMERCIAL UNITS. 2" SERVICE SADDLE AND CORPORATION STOP

PROPOSED 8" D.I. FIRE SERVICE WITH 12"X8" TAPPING SLEEVE AND 8" GATE VALVE

2" CURB STOP, 2' OFF CURB

PR. GATE VALVES ON 4" AND 8" WATER LINES

TESTABLE DVCA BACKFLOW PREVENTION AFTER THE METER AND BEFORE THE SPRINKLER RISER

EX. 44" BRICK RCP SEWER MAIN L=247' S:0.003

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18" INV. IN: DROP INLET UNKNOWN INVERT
10" PVC INV. IN: 11.58'
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RIM: 18.65'
15" INV. IN: 10.05'
APPROX. PR. 8" INV. IN: 11.55'
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PROPOSED MANHOLE RIM: 18.75'
APPROX. 8" INV. OUT: 11.69'
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4" INV. IN: 12.70'

PROPOSED 1,000 GAL., 2 COMPARTMENT GREASE TRAP. AMERICAN CONCRETE INDUSTRIES ITEM #8827 OR APPROVED EQUIVALENT. GREASE TRAP SHALL ONLY TAKE PLUMBING FROM KITCHEN SINKS AND DISHWASHER.

PR. RESET AND REBED EX. CONDUIT

EXISTING 15" SANITARY SEWER MAIN

EX. 6" CAST WATER MAIN (1887)

APPROX. LOCATION OF EXISTING 2" PLASTIC GAS MAIN (2020)

POTENTIAL LOCATION OF REROUTED UNDERGROUND ELECTRIC FEEDING PROPOSED LIGHTING.

EX. 12" CAST WATER MAIN (1886)

POTENTIAL FOR NEW UTILITY POLE AND RECONFIGURATION OF EXISTING OVERHEAD TELEPHONE, AND CABLE UTILITIES. FINAL LAYOUT PER OWNER AND RESPECTIVE UTILITY COMPANIES.

ELM STREET (ONE-WAY)

CEDAR STREET (ONE-WAY)

LANCASTER STREET (TWO-WAY)

OXFORD STREET (ONE-WAY)

50 CEDAR STREET

HALL COURT

PROPOSED BUILDING:
89 ELM STREET
3 RETAIL UNITS
201 RESIDENTIAL UNITS

RETAIL SPACE
SPRINKLER ROOM
LOBBY
BIKE STORAGE
MAIL/PACKAGES
COMMUNITY ROOM
STORAGE/ LAUNDRY
MECHANICAL ROOM
2ND STORY
RESIDENTIAL
3RD STORY

PR. 8" SEWER TO RUN UNDER SLAB TO MECHANICAL ROOM.

PROPOSED ELECTRICAL PATHWAY TO FUTURE ROOF-TOP SOLAR ARRAY

PROPOSED ELEVATOR SUMP WITH POTENTIAL PUMP ROUTED TO SEWER PER MEP, TYP.

REFER TO MEP PLANS FOR CMP METER LOCATION(S)

PR. LOCATION OF R-TANKS, SEE SHEET C-30 FOR MORE INFORMATION

PR. LOCATION OF STORMFILTER CARTRIDGES SEE SHEET C-30 FOR MORE INFORMATION

PROPOSED LOCATION OF 9'X9' TRANSFORMER WITH UNDERGROUND ELECTRIC AND TELECOM ROUTED TO MECHANICAL ROOM.

PROPOSED EXTENTS OF TRENCHING WITHIN ROW, TYP.

PROPOSED GAS SERVICE

CONTRACTOR TO TEMPORARILY REMOVE UTILITIES ON EX. UTILITY AND LIGHT POLE AND REMOVE UTILITY POLE. UTILITY POLE TO BE REPLACED WITH ONE LIGHT OVERHANGING INTO OXFORD STREET AND EX. OVERHEAD LINES TO BE REESTABLISHED. CONTRACTOR TO COORDINATE WITH OWNER AND RESPECTIVE UTILITY COMPANIES

EX. 44" BRICK RCP SEWER MAIN L=247' S:0.000

SMH-3
RIM: 16.88'
44" BRICK INV. IN: 3.58'
44" BRICK INV. OUT: 3.48'

PR. 12" WATER MAIN

SEE SHEET C-30 FOR MORE INFORMATION

SMH RIM: 17.60'
10" INV. IN: 8.20'
10" INV. OUT: 8.10'

EX. 10" V.I.T L=168' S:0.01

PR. UTILITY POLE WITH RISER

PR. PULL BOX MANHOLE PER CMP & MEP.

PR. UNDERGROUND COMMUNICATIONS LINE. FINAL ROUTING AND PLACEMENT TO BE COORDINATED WITH RESPECTIVE UTILITY COMPANIES, MEP, AND OWNER.

PROPOSED UNDERGROUND CONDUIT TRENCH, PER DETAIL

PR. UGE AT APPROX. 16.50'

POTENTIAL LOCATION OF PULL BOX, PER CMP & MEP

BEGIN TO DROP UGE 3-PHASE LINE

4" CAST WATER MAIN (1886)

EXISTING 2" PLASTIC GAS MAIN (2020)

GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH CITY SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND CITY OF PORTLAND.
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9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY CHARTER COMMUNICATIONS AND FAIRPOINT PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.

SEWER STRUCTURE SCHEDULE

STRUCTURE	RIM	INVERT IN	INVERT OUT
PR. SMH	18.75'	8" INV. IN: 11.79' – BUILDING 4" INV. IN: 12.70' (GREASE TRAP)	8" INV. OUT: 11.58'–11.59'
EX. SMH–4	18.65'	15" INV. IN: 10.05' 8" INV. IN: 11.55'	18" INV. OUT: 9.85'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

20 0 20 40
SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/25/23

DRAWING NAME: UTILITY PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

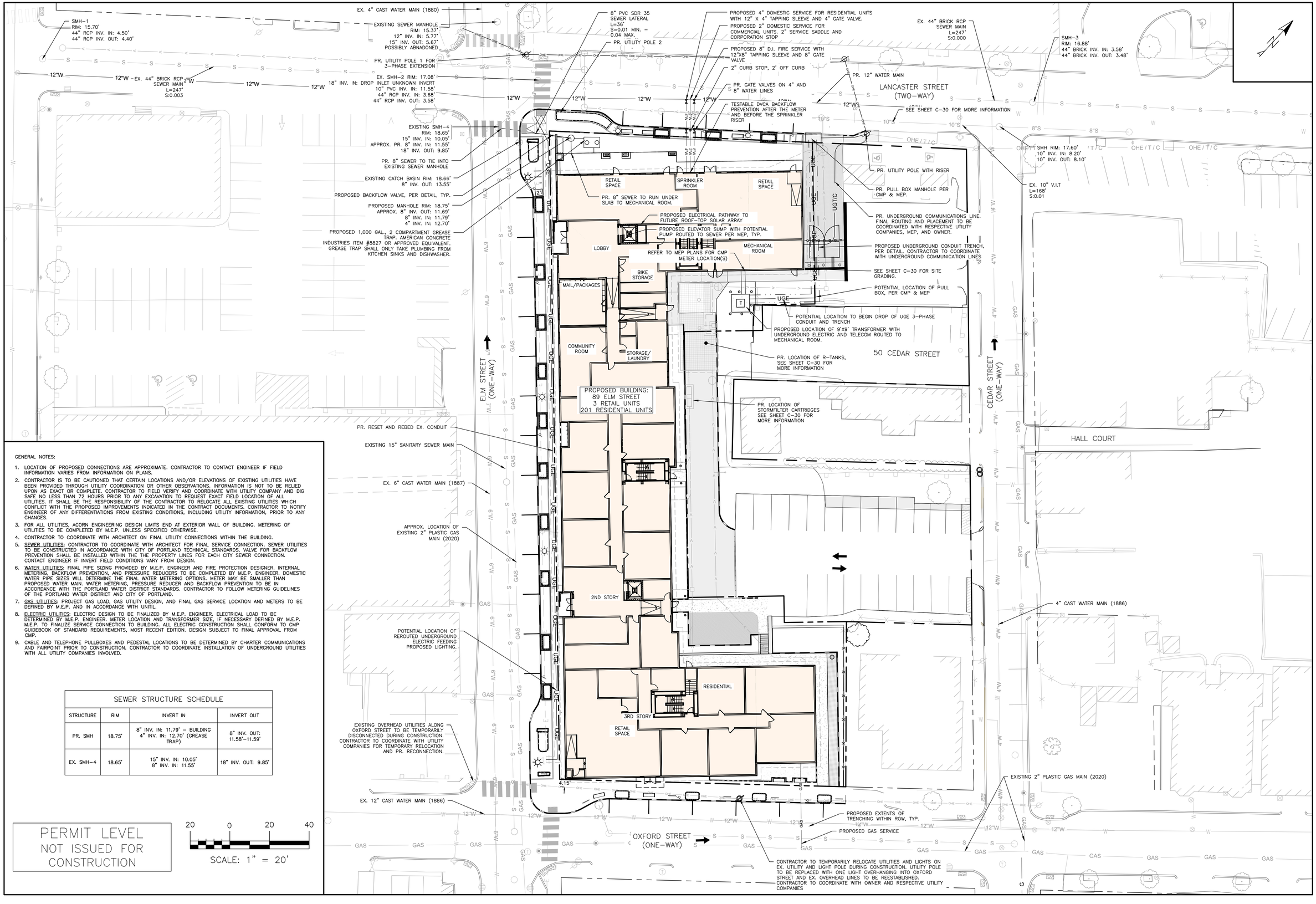
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ACORN ENGINEERING, INC.
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PO BOX 3287, PORTLAND, ME 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
8/25/23

DRAWING NO.
C-20



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PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

20 0 20 40
SCALE: 1" = 20'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 7/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 9/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: UTILITY PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 3287 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

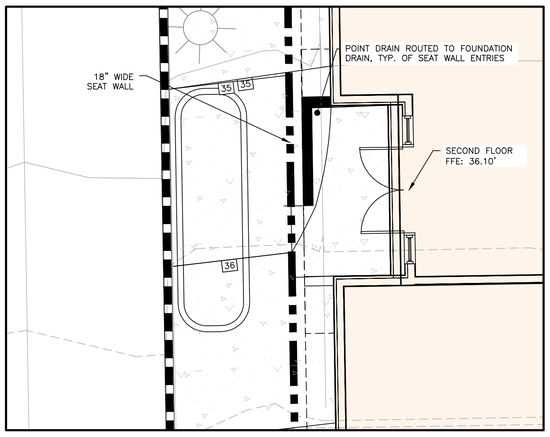
DRAWING NO.
C-20

GENERAL NOTES:

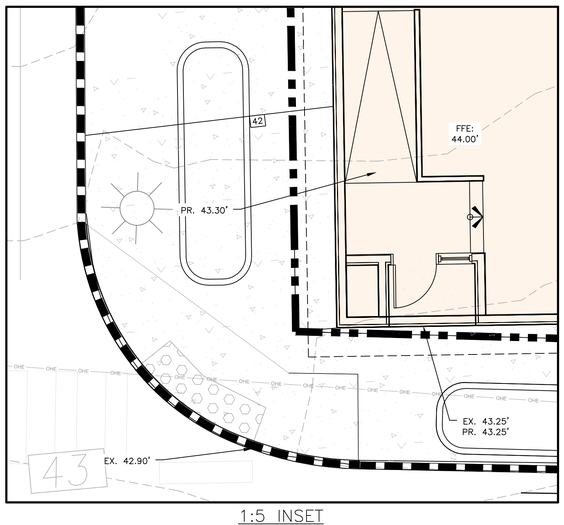
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6. AS-BUILT PLANSET TITLED "PREBLE ST/KENNEBEC ST/ SOMERSET ST SEWER SEPARATION" PREPARED BY GORRILL PALMER, DATED JANUARY 2019.

BUILDING HEIGHT CALCULATION:
AVERAGE GRADE: (19.34' + 17.55' + 25.28' + 24.25' + 42.26' + 41.40' + 41.85' + 43.72') / 8 = 31.93'

BUILDING HEIGHT: 108.50' – 31.93' = 76.54'

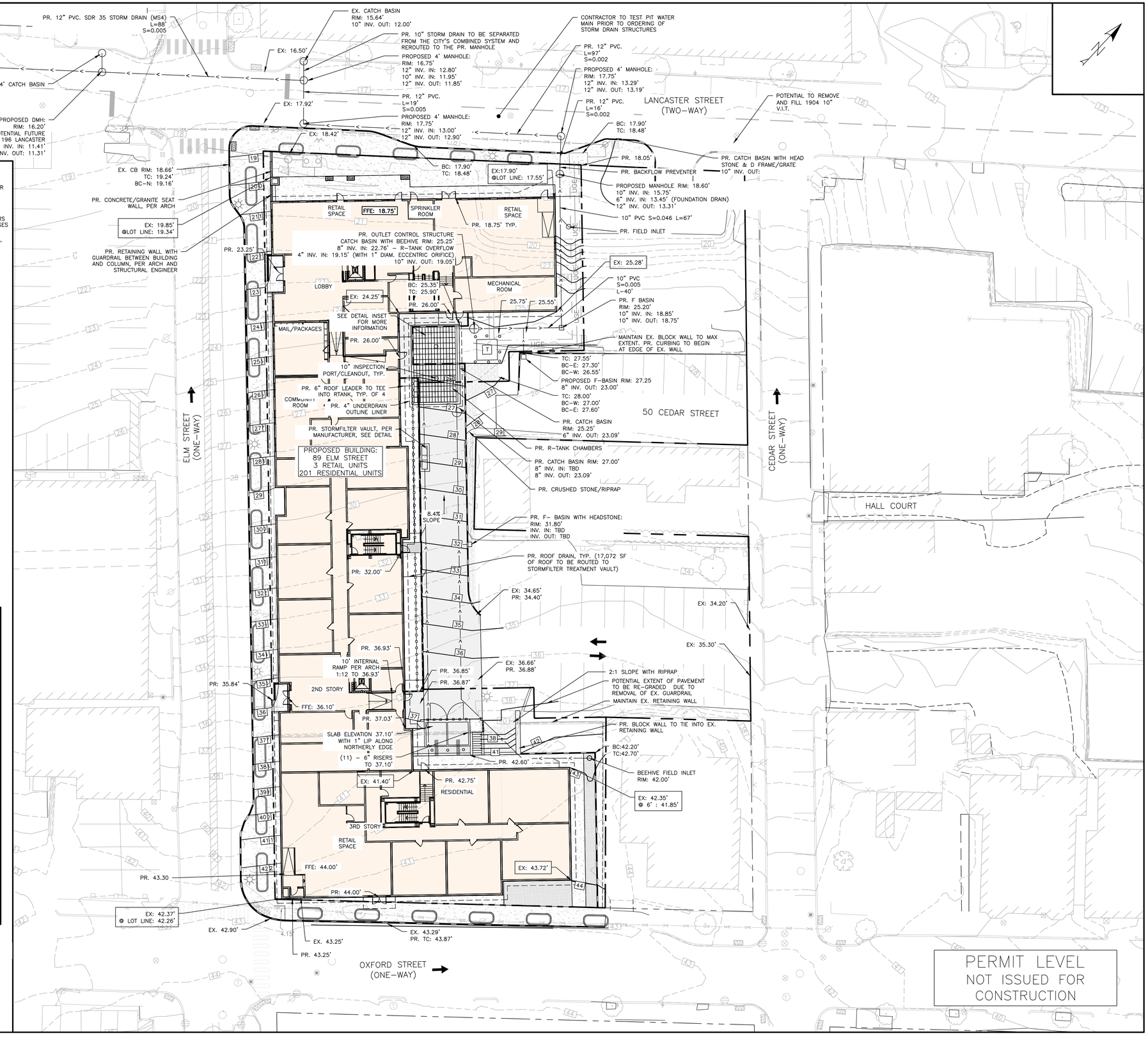


1:5 INSET
SECOND FLOOR ENTRANCE FROM ELM STREET



1:5 INSET
RETAIL ENTRANCE AT CORNER OF ELM AND OXFORD STREET

20 0 20 40
SCALE: 1" = 20'



PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

GRADING & DRAINAGE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

DRAWING NAME:

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
70 MILK STREET, SUITE 201, PORTLAND, MAINE 04104
PO BOX 3294, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
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CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
PROFESSIONAL ENGINEER
LICENSED
4/3/23

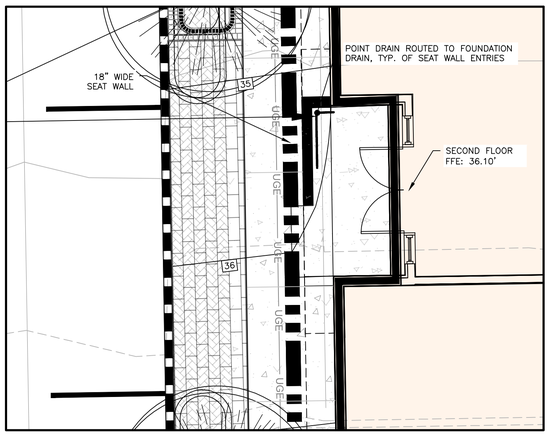
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C-30

GENERAL NOTES:

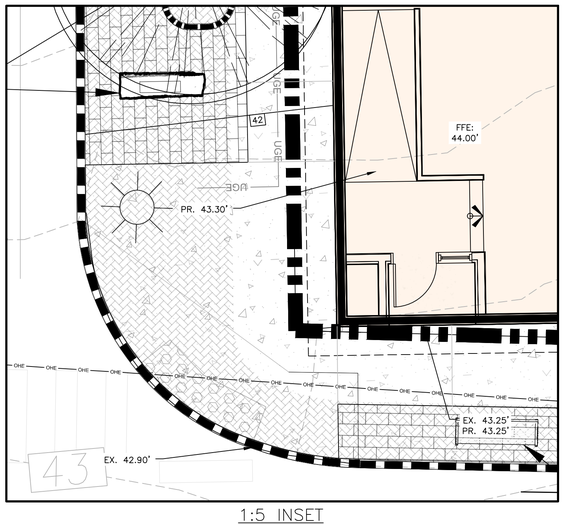
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BUILDING HEIGHT CALCULATION:
AVERAGE GRADE: (18.75' + 18.75' + 26.00' + 26.00' + 43.00' + 42.75' + 43.00' + 44.00') / 8 = 32.78'

BUILDING HEIGHT: 107.09' - 32.78' = 74.31'

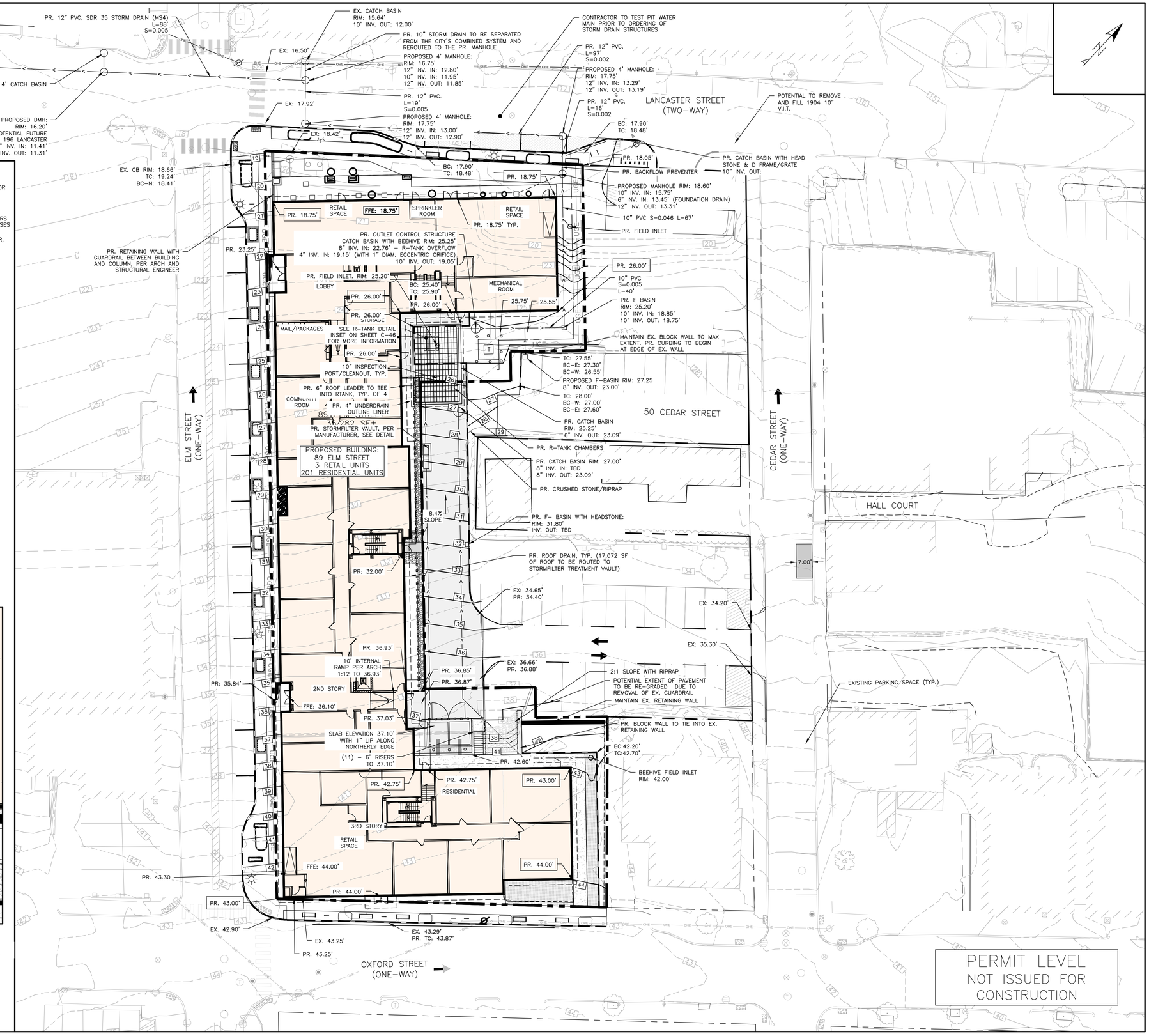


1:5 INSET
SECOND FLOOR ENTRANCE FROM ELM STREET



1:5 INSET
RETAIL ENTRANCE AT CORNER OF ELM AND OXFORD STREET

20 0 20 40
SCALE: 1" = 20'



PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: GRADING & DRAINAGE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
FALMOUTH, MAINE 04104
PO BOX 3294
(207) 775-2655

FILE:	1192.2_CIVIL
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STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
6/3/23

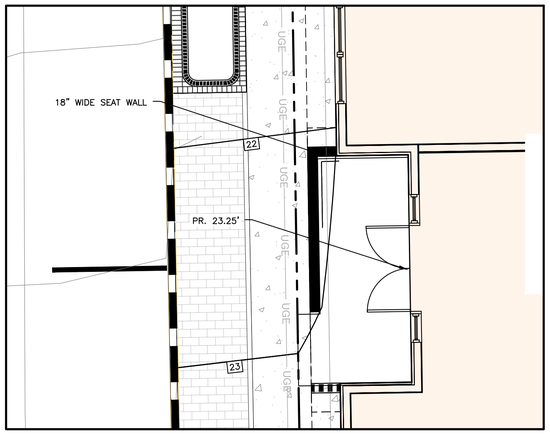
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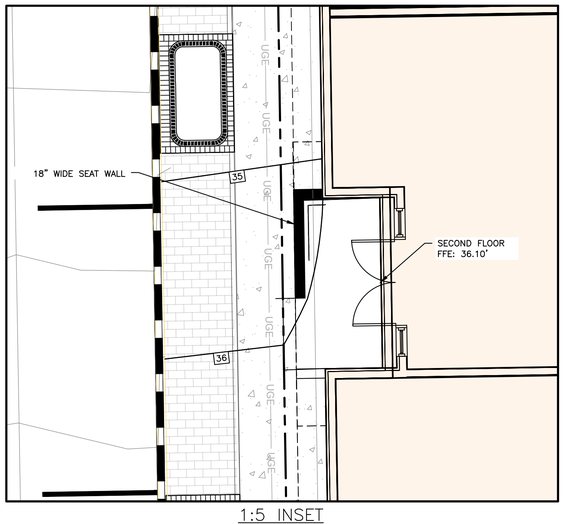
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1:5 INSET

FIRST RESIDENTIAL FLOOR ENTRANCE FROM ELM STREET



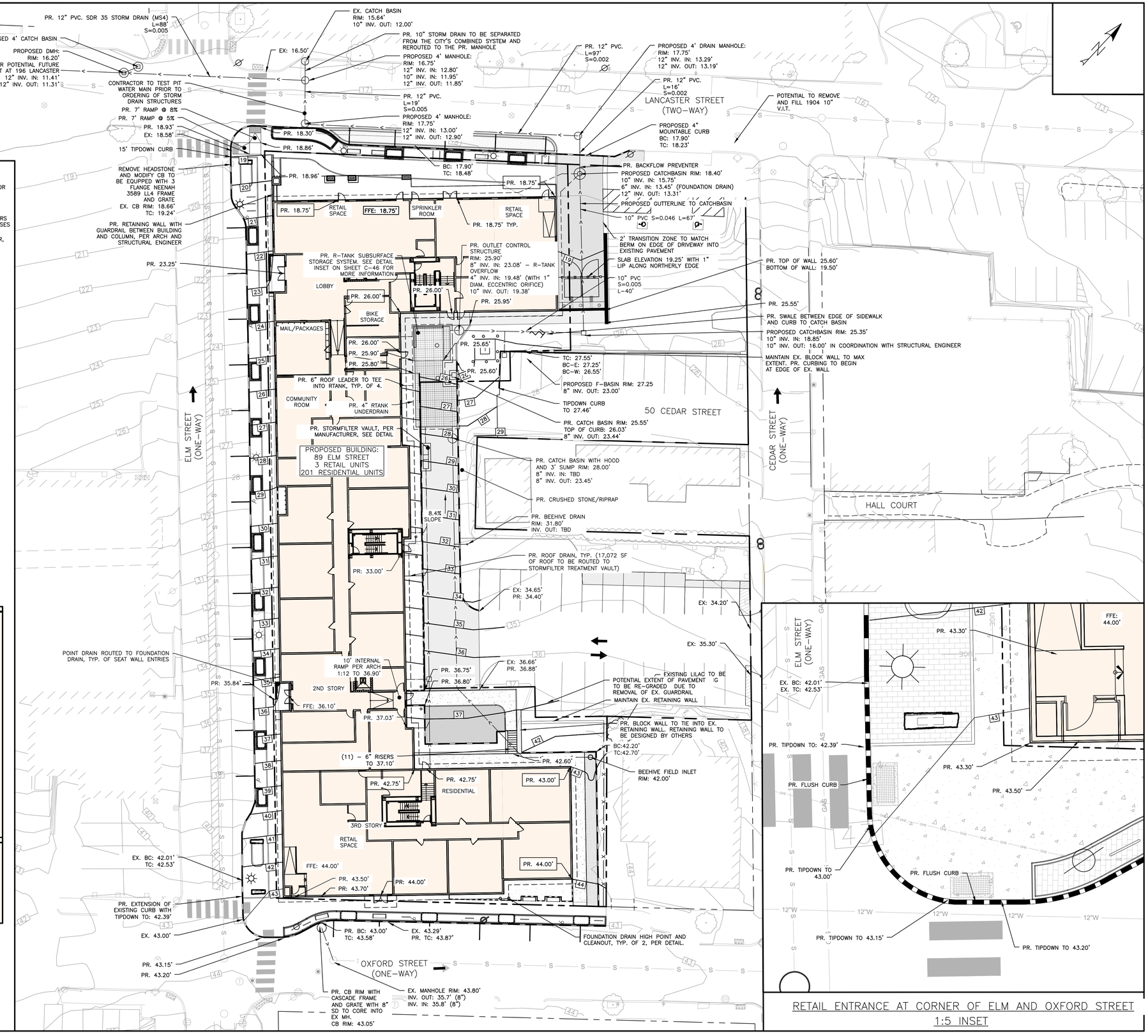
1:5 INSET

SECOND FLOOR ENTRANCE FROM ELM STREET

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'



RETAIL ENTRANCE AT CORNER OF ELM AND OXFORD STREET
1:5 INSET

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23

DRAWING NAME: GRADING & DRAINAGE PLAN

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70 COMMERCIAL STREET, SUITE 104
PO BOX 3294 SCARBOROUGH, MAINE 04104
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No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
8/25/23

DRAWING NO.

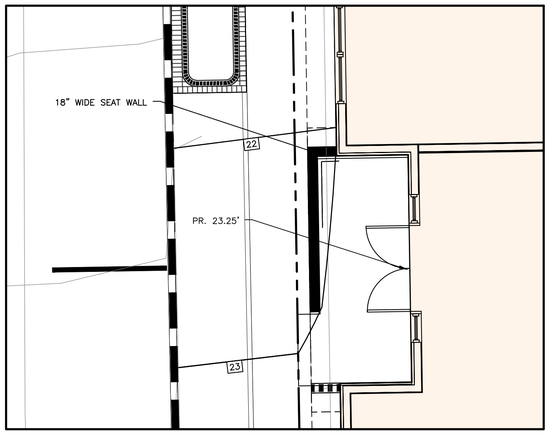
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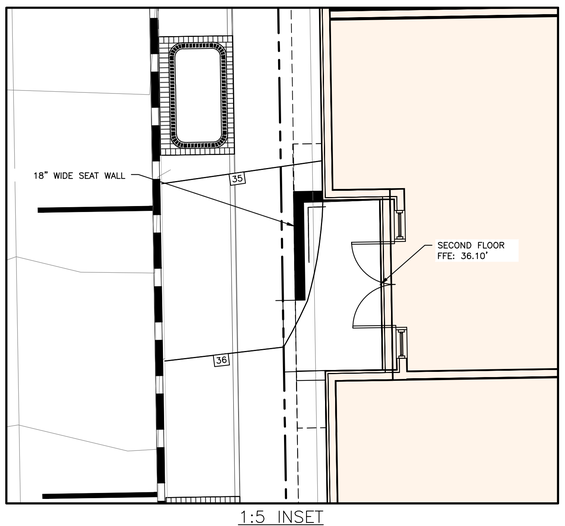
BUILDING HEIGHT CALCULATION:
AVERAGE GRADE: (18.75' + 18.75' + 26.00' + 25.72' + 43.50' + 42.75' + 43.00' + 44.00') / 8 = 32.81'

BUILDING HEIGHT: 107.09' - 32.81' = 74.28'



1:5 INSET

FIRST RESIDENTIAL FLOOR ENTRANCE FROM ELM STREET



1:5 INSET

SECOND FLOOR ENTRANCE FROM ELM STREET

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

20 0 20 40

SCALE: 1" = 20'

RETAIL ENTRANCE AT CORNER OF ELM AND OXFORD STREET
1:5 INSET

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: GRADING & DRAINAGE PLAN

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE RETURNED UPON REQUEST OR, OTHERWISE, AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 JOHN ROAD, SUITE 4 CAPE ELIZABETH, MAINE 04107
PO BOX 3294 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

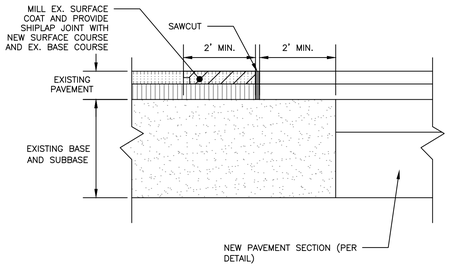
STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED
PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.

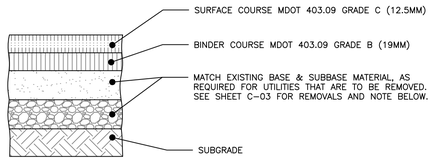
C-30

NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
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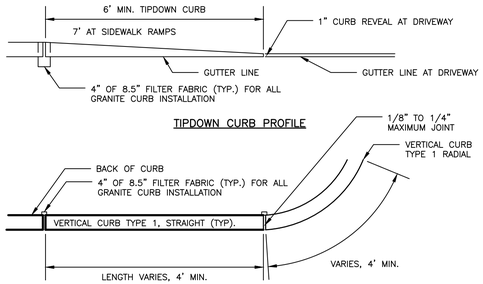
PAVEMENT SAWCUT DETAIL
NOT TO SCALE

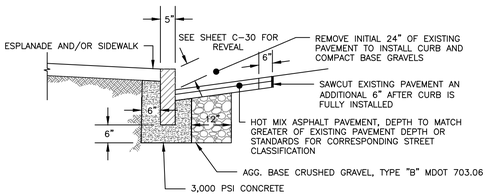


NOTE:
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
2. CONTRACTOR TO VERIFY EXISTING GOOCH STREET BASE AND SUBBASE MATERIALS AND MATCH EXISTING.
3. PROJECT PROPOSES TO MILL EXISTING PAVEMENT AND INSTALL NEW BITUMINOUS PAVEMENT PER DETAIL. REFER TO APPLICABLE UTILITY CROSS SECTIONS FOR NEW UTILITY INSTALLATION.

	THICKNESS OF LAYERS
STANDARD	LAYERS
1.25"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
4"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B OR A
18"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

PAVEMENT PROFILE:
NOT TO SCALE



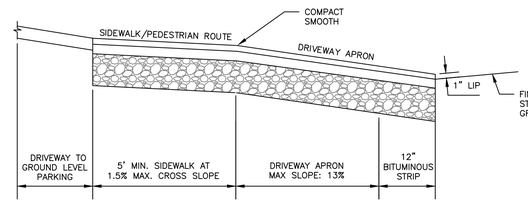


VERTICAL GRANITE CURB CROSS SECTION

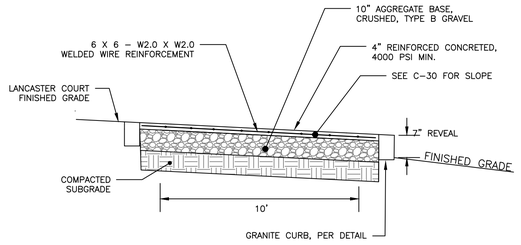
NOTES:
1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.
2. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
3. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10 INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF THE CURB.
4. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
5. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION IN EXISTING STREETS DETAIL
NOT TO SCALE

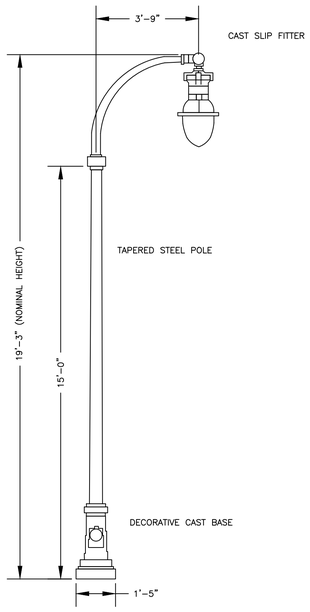
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2. WELDED WIRE FABRIC SHALL BE PLACED 2 INCHES ABOVE THE CRUSHED GRAVEL, AND 2 INCHES FROM ALL FINISHED EDGES, EXPANSION JOINTS AND CURBS. ALL FABRIC JOINTS SHALL BE OVERLAPPED A MINIMUM OF 1 FOOT AND BE PROPERLY TIED. IF THE CONTRACTOR ELECTS TO USE REBAR, ONLY 4-GAUGE WILL BE ACCEPTABLE. IF THE CONTRACTOR ELECTS TO USE A PRE-MIXED FIBER MESH, A SPECIFICATION SHEET MUST BE SUBMITTED AND PRE-APPROVED BY THE ENGINEER PRIOR TO ITS APPLICATION.
3. SLABS SHALL BE PLACED ALTERNATELY IN LENGTHS NOT TO EXCEED 30 FEET OR AS DIRECTED AND SHALL BE SEPARATED BY AN EXPANSION JOINT OF PREFORMED EXPANSION FILLER ½ INCH IN THICKNESS.
4. WHEN CONSTRUCTED ADJACENT TO A BUILDING, RETAINING WALL OR OTHER FIXED STRUCTURE, A ½ INCH THICK PREFORMED JOINT FILLER SHALL BE USED BETWEEN THE SLAB AND THE STRUCTURE.
5. THE SIDEWALK SURFACE SHALL BE SCORED INTO BLOCK UNITS NO GREATER THAN 40 SQUARE FEET AS DIRECTED. THE DEPTH OF THE SCORING SHALL BE AT LEAST ONE QUARTER OF THE THICKNESS OF THE SLAB.
6. ANY MATCHING INTO EXISTING SIDEWALKS SHALL BE DONE SO WITH A CLEAN VERTICAL FACE CONNECTION.
7. THE SURFACE SHALL BE FINISHED TO PRODUCE A BROOMLIKE "BRUSHED" PATTERN. NO PLASTERING OF THE SURFACE WITH MORTAR WILL BE PERMITTED. THE FINISH SHALL RESULT IN A SURFACE OF UNIFORM TEXTURE AND COLOR. ALL OUTSIDE EDGES OF THE SLAB AND ALL JOINTS SHALL BE ROUNDED WITH A ½ INCH RADIUS EDGING TOOL.
8. CONCRETE SHALL BE CURED FOR 72 HOURS. CURING SHALL BE BY MEANS OF THOMPSON'S WATER SEAL AS MANUFACTURED BY E.A. THOMPSON CO., INC. OF MEMPHIS, TENNESSEE, BOILED LINSEED OIL, WHITE PIGMENTED CURING COMPOUND, OR BY OTHER APPROVED METHODS. CONCRETE SIDEWALK TO BE SEALED WITH CONSOLIDECK SALTGUARD WB OR APPROVED EQUAL 28 DAYS AFTER PLACEMENT. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION.
9. GENERAL CONTRACTOR TO COLLECT DELIVERY SLIPS AND TRANSFER TO THE OWNER.
10. REFER TO CITY OF PORTLAND CONCRETE SPECIFICATIONS SECTION 608 FOR MORE INFORMATION.



DRIVEWAY APRON SECTION
NOT TO SCALE



REINFORCED CONCRETE SIDEWALK
NOT TO SCALE



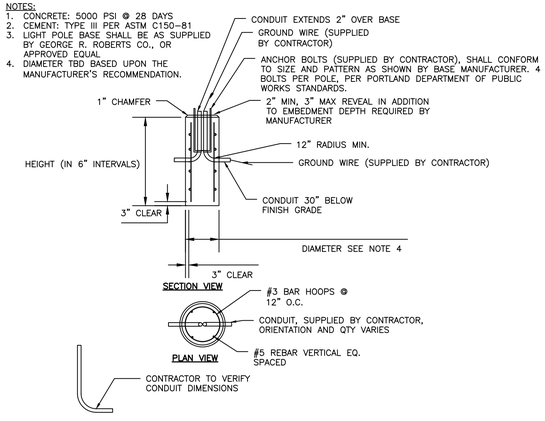
NOTES:

1. LUMINAIRE
   HOLOPHANE ESPLANADE LED II
   MODEL:ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BHDF13-200CMC
   OR SPRING CITY COLUMBIA SERIES MODEL
   ALMCLU-LE080/EVX/X2-30-CR3-GR14-LACLB-FED-CU
   PENDANT MOUNT, CAST ALUMINUM HOUSING WITH STAINLESS STEEL HARDWARE. DROPPED REFRACTOR SHALL BE THERMAL RESISTANT BOROSILICATE GLASS. INTERNAL REFLECTOR AND PRISMATIC DIFFUSER SHALL PROVIDE AN IES TYPE IV DISTRIBUTION PATTERN. LED 3000K COLOR TEMPERATURE.
2. BRACKET ARM
   HOLOPHANE OUC ROADWAY ARM MODEL OUC 6063-T6 OR SPRING COLUMBIA ARM MODEL AARCLA-1S-51-53-TN2.38/7.00-CU
   ALUMINUM CROSSARM WITH A POST-TOP FITTING FOR A 3 ½" BY 8" TENON. SINGLE ARM 45° ORIENTED 180 DEGREES.
3. SLIP FITTER
   HOLOPHANE BOSTON HARBOR SERIES MODEL BHLF-200-SCA/AS
   2 ⅜" O.D. WITH SWIVEL CAST FITTER.
4. LIGHTING POLE
   HOLOPHANE MODEL CM17CSB-CA-RAL6012
   OR SPRING CITY CAMBRIDGE SERIES MODEL
   SSHSM-G11-7.00-15.00-TN3.50/8.00-CU
   SMOOTH, TAPERED STEEL POLE SMOOTH SHAFT RATED FOR A 90 MPH WIND LOAD WITH A 1.3 GUST FACTOR. PROVIDE FOUR HOT-TIPPED GALVANIZED STEEL L-TYPE ANCHOR BOLTS. LIGHTING POLE SHALL BE HOT TIP GALVANIZED PRIOR TO POWDER COAT PAINT.
5. DECORATIVE POLE BASE
   HOLOPHANE CAMBRIDGE SERIES MODEL CM17CSB OR SPRING CITY CAMBRIDGE SERIES MODEL DWBCMB-17-CU
   DECORATIVE CLAMSHELL CAST ALUMINUM BASE. HARDWARE SHALL BE STAINLESS STEEL.
6. DIMENSIONS
   OVERALL HEIGHT = 19' 3"
   POLE HEIGHT = 15' 0"
   BRACKET ARM = 3' 9"
   BASE DIAMETER = 17" TO 18"
7. FINISH
   BLACK (STANDARD)

APPLICATION:
STREET/SIDEWALK LIGHTING
SPACING:
ONE SIDE: 80'-110' ON CENTER
PLACE IN FURNISHING ZONE OVERHANG TOWARDS STREET; WHERE FIXTURE CONFLICTS WITH OVERHEAD UTILITIES, MAY BE PLACED ON BACK OF SIDEWALK.

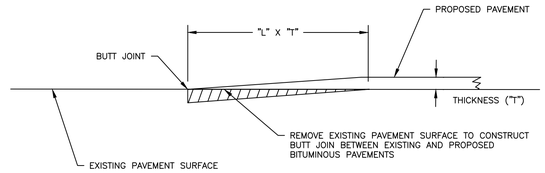
PENINSULA DECORATIVE LIGHTING
NOT TO SCALE

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.



LIGHT POLE BASE
NOT TO SCALE

NOTES:
1. THE LENGTHS ARE INTENDED FOR PROFILE GRADES OF 2% OR LESS. WHEN PROFILE GRADES ARE GREATER THAN 2% "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.
2. WHEN CONSTRUCTING BUTT JOINTS AT INTERSECTIONS OR RAMPS "L" SHALL BE 15'/INCH OF THICKNESS UNLESS OTHERWISE DIRECTED BY THE RESIDENT
3. SPECIAL ATTENTION SHALL BE PAID TO CURB SECTION TO ASSURE PROPER DRAINAGE AND THAT THERE ARE NO FLAT AREAS. "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.



DESIGN OR POSTED SPEED (MILES/H):	65	55	50	45	40	35	30	25
"L" IN FEET/INCH OF THICKNESS:	65	55	50	45	40	35	30	25

SHIPLAP JOINT OVERLAY
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: SITE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, INCLUDING SCALE, MADE BY ANY PARTY WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

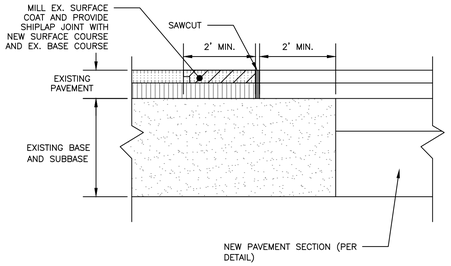
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
4/3/23

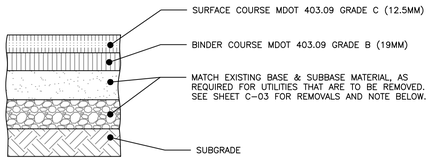
DRAWING NO.
C-40

NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
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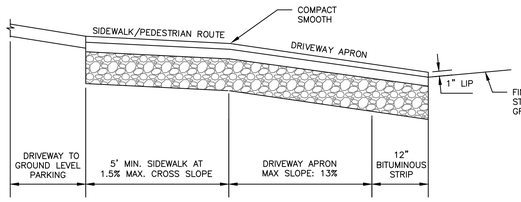
PAVEMENT SAWCUT DETAIL
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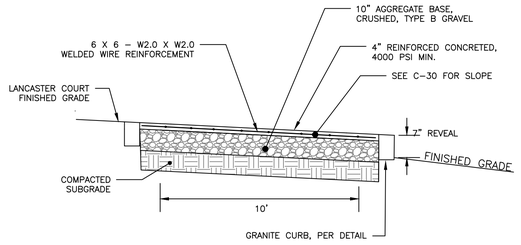
NOTE:
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THICKNESS OF LAYERS	
STANDARD	LAYERS
1.25"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
4"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B OR A
18"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

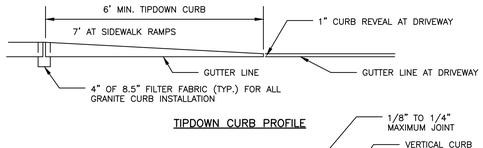
PAVEMENT PROFILE:
NOT TO SCALE



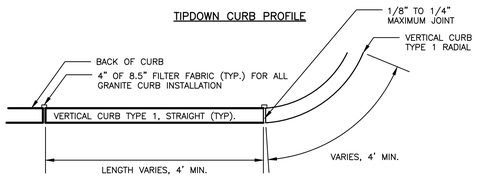
DRIVEWAY APRON SECTION
NOT TO SCALE



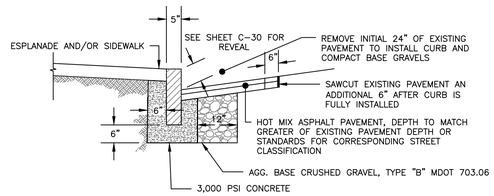
REINFORCED CONCRETE SIDEWALK
NOT TO SCALE



TIPDOWN CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



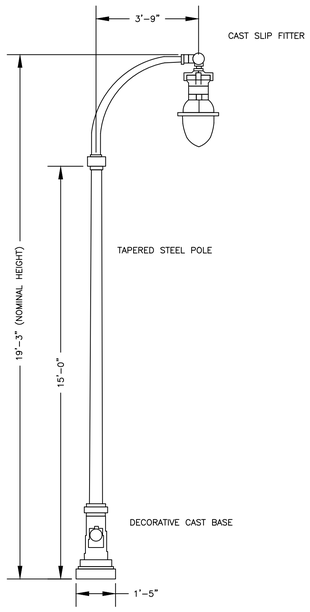
VERTICAL GRANITE CURB CROSS SECTION

NOTES:

1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.
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3. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10 INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF THE CURB.
4. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
5. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION IN EXISTING STREETS DETAIL
NOT TO SCALE

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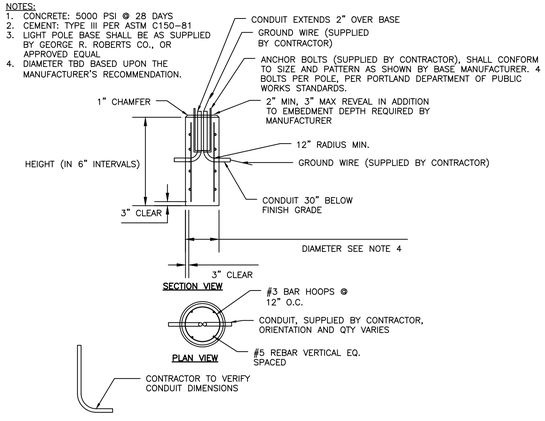
NOTES:

1. LUMINAIRE
   HOLOPHANE ESPLANADE LED II
   MODEL:ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BHDF13-200CMC
   OR SPRING CITY COLUMBIA SERIES MODEL
   ALMCLU-LE080/EVX/X2-30-CR3-GR14-LACLB-FED-CU
   PENDANT MOUNT, CAST ALUMINUM HOUSING WITH STAINLESS STEEL HARDWARE. DROPPED REFRACTOR SHALL BE THERMAL RESISTANT BOROSILICATE GLASS. INTERNAL REFLECTOR AND PRISMATIC DIFFUSER SHALL PROVIDE AN IES TYPE IV DISTRIBUTION PATTERN. LED 3000K COLOR TEMPERATURE.
2. BRACKET ARM
   HOLOPHANE OUC ROADWAY ARM MODEL OUC 6063-T6 OR SPRING COLUMBIA ARM MODEL AARCLA-1S-51-53-TN2.38/7.00-CU
   ALUMINUM CROSSARM WITH A POST-TOP FITTING FOR A 3 ½" BY 8" TENON. SINGLE ARM 45° ORIENTED 180 DEGREES.
3. SLIP FITTER
   HOLOPHANE BOSTON HARBOR SERIES MODEL BHLF-200-SCA/AS
   2 ⅜" O.D. WITH SWIVEL CAST FITTER.
4. LIGHTING POLE
   HOLOPHANE MODEL CM17CSB-CA-RAL6012
   OR SPRING CITY CAMBRIDGE SERIES MODEL
   SSHSM-G11-7.00-15.00-TN3.50/8.00-CU
   SMOOTH, TAPERED STEEL POLE SMOOTH SHAFT RATED FOR A 90 MPH WIND LOAD WITH A 1.3 GUST FACTOR. PROVIDE FOUR HOT-TIPPED GALVANIZED STEEL L-TYPE ANCHOR BOLTS. LIGHTING POLE SHALL BE HOT TIP GALVANIZED PRIOR TO POWDER COAT PAINT.
5. DECORATIVE POLE BASE
   HOLOPHANE CAMBRIDGE SERIES MODEL CM17CSB OR SPRING CITY CAMBRIDGE SERIES MODEL DWBCMB-17-CU
   DECORATIVE CLAMSHELL CAST ALUMINUM BASE. HARDWARE SHALL BE STAINLESS STEEL.
6. DIMENSIONS
   OVERALL HEIGHT = 19' 3"
   POLE HEIGHT = 15' 0"
   BRACKET ARM = 3' 9"
   BASE DIAMETER = 17" TO 18"
7. FINISH
   BLACK (STANDARD)

APPLICATION:
STREET/SIDEWALK LIGHTING
SPACING:
ONE SIDE: 80'-110' ON CENTER
PLACE IN FURNISHING ZONE OVERHANG TOWARDS STREET; WHERE FIXTURE CONFLICTS WITH OVERHEAD UTILITIES, MAY BE PLACED ON BACK OF SIDEWALK.

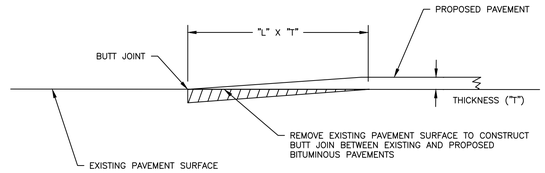
PENINSULA DECORATIVE LIGHTING
NOT TO SCALE

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.



LIGHT POLE BASE
NOT TO SCALE

NOTES:
1. THE LENGTHS ARE INTENDED FOR PROFILE GRADES OF 2% OR LESS. WHEN PROFILE GRADES ARE GREATER THAN 2% "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.
2. WHEN CONSTRUCTING BUTT JOINTS AT INTERSECTIONS OR RAMPS "L" SHALL BE 15'/INCH OF THICKNESS UNLESS OTHERWISE DIRECTED BY THE RESIDENT
3. SPECIAL ATTENTION SHALL BE PAID TO CURB SECTION TO ASSURE PROPER DRAINAGE AND THAT THERE ARE NO FLAT AREAS. "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.



DESIGN OR POSTED SPEED (MILES/H):	65	55	50	45	40	35	30	25
"L" IN FEET/INCH OF THICKNESS:	65	55	50	45	40	35	30	25

SHIPLAP JOINT OVERLAY
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: SITE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, ADDITIONS, OR REUSE OF THIS PLAN BY OTHERS SHALL BE DONE WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

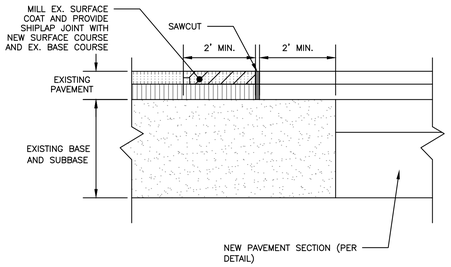
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JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

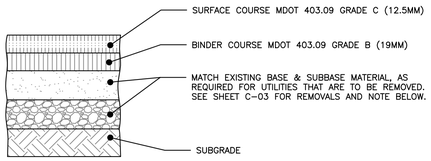
DRAWING NO.
C-40

NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
2. THE NEW PAVEMENT SECTION SHALL MEET PAVEMENT SECTION DETAIL AT A MINIMUM OR THE THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.



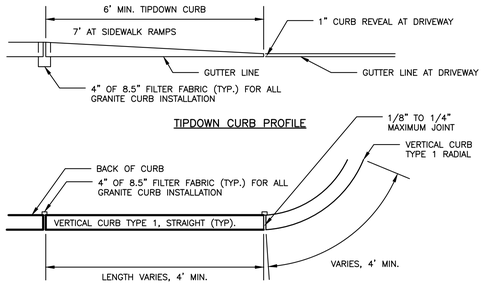
PAVEMENT SAWCUT DETAIL
NOT TO SCALE



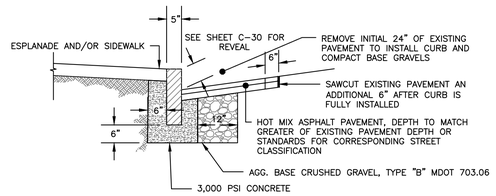
NOTE:
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
2. CONTRACTOR TO VERIFY EXISTING GOOCH STREET BASE AND SUBBASE MATERIALS AND MATCH EXISTING.
3. PROJECT PROPOSES TO MILL EXISTING PAVEMENT AND INSTALL NEW BITUMINOUS PAVEMENT PER DETAIL. REFER TO APPLICABLE UTILITY CROSS SECTIONS FOR NEW UTILITY INSTALLATION.

	THICKNESS OF LAYERS
STANDARD	LAYERS
1.25"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
4"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B OR A
18"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

PAVEMENT PROFILE:
NOT TO SCALE



VERTICAL GRANITE CURB PLAN VIEW

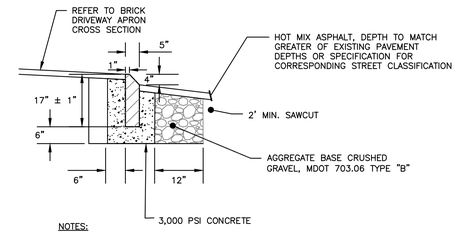


VERTICAL GRANITE CURB CROSS SECTION

NOTES:

1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.
2. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
3. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10 INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF THE CURB.
4. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
5. WOODEN SHIMS MAY BE USED TO SET CURB.

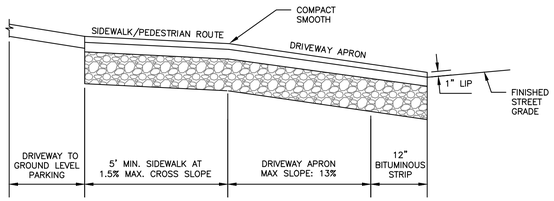
VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION IN EXISTING STREETS DETAIL
NOT TO SCALE



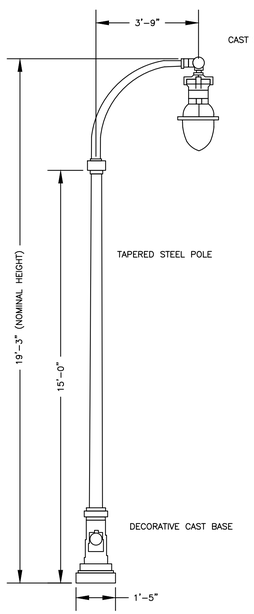
NOTES:

1. INSTALL PER MANUFACTURER'S SPEC'S.
2. PROVIDE CUSTOM TRANSITION CURB THAT TIPS DOWN 3" IN BETWEEN MOUNTABLE AND VERTICAL CURBS.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.

MOUNTABLE BEVELED GRANITE CURB
NOT TO SCALE



DRIVEWAY APRON SECTION
NOT TO SCALE



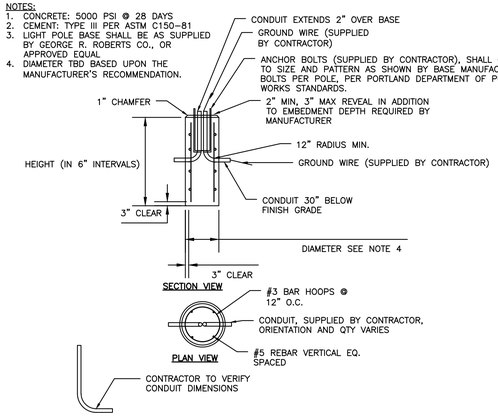
NOTES:

1. LUMINAIRE
   HOLOPHANE ESPLANADE LED II
   MODEL:ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BHDF13-200CMC
   OR SPRING CITY COLUMBIA SERIES MODEL
   ALMCLU-LE080/EVX/X2-30-CR3-GR14-LACLB-FED-CU
   PENDANT MOUNT, CAST ALUMINUM HOUSING WITH STAINLESS STEEL HARDWARE. DROPPED REFRACTOR SHALL BE THERMAL RESISTANT BOROSILICATE GLASS. INTERNAL REFLECTOR AND PRISMATIC DIFFUSER SHALL PROVIDE AN IES TYPE IV DISTRIBUTION PATTERN. LED 3000K COLOR TEMPERATURE.
2. BRACKET ARM
   HOLOPHANE OUC ROADWAY ARM MODEL OUC 6063-T6 OR SPRING COLUMBIA ARM MODEL AARCLA-1S-51-53-TN2.38/7.00-CU
   ALUMINUM CROSSARM WITH A POST-TOP FITTING FOR A 3 ½" BY 8" TENON. SINGLE ARM 45° ORIENTED 180 DEGREES.
3. SLIP FITTER
   HOLOPHANE BOSTON HARBOR SERIES MODEL BHLF-200-SCA/AS
   2 ⅜" O.D. WITH SWIVEL CAST FITTER.
4. LIGHTING POLE
   HOLOPHANE MODEL CM17CSB-CA-RAL6012
   OR SPRING CITY CAMBRIDGE SERIES MODEL
   SSHSM-G11-7.00-15.00-TN3.50/8.00-CU
   SMOOTH, TAPERED STEEL POLE SMOOTH SHAFT RATED FOR A 90 MPH WIND LOAD WITH A 1.3 GUST FACTOR. PROVIDE FOUR HOT-TIPPED GALVANIZED STEEL L-TYPE ANCHOR BOLTS. LIGHTING POLE SHALL BE HOT TIP GALVANIZED PRIOR TO POWDER COAT PAINT.
5. DECORATIVE POLE BASE
   HOLOPHANE CAMBRIDGE SERIES MODEL CM17CSB OR SPRING CITY CAMBRIDGE SERIES MODEL DWBCMB-17-CU
   DECORATIVE CLAMSHELL CAST ALUMINUM BASE. HARDWARE SHALL BE STAINLESS STEEL.
6. DIMENSIONS
   OVERALL HEIGHT = 19' 3"
   POLE HEIGHT = 15' 0"
   BRACKET ARM = 3' 9"
   BASE DIAMETER = 17" TO 18"
7. FINISH
   BLACK (STANDARD)

APPLICATION:
STREET/SIDEWALK LIGHTING
SPACING:
ONE SIDE: 80'-110' ON CENTER
PLACE IN FURNISHING ZONE OVERHANG TOWARDS STREET; WHERE FIXTURE CONFLICTS WITH OVERHEAD UTILITIES, MAY BE PLACED ON BACK OF SIDEWALK.

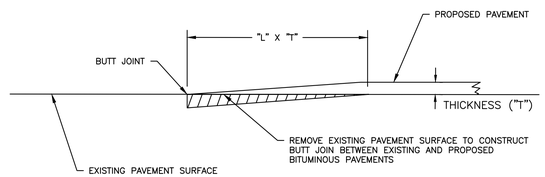
PENINSULA DECORATIVE LIGHTING
NOT TO SCALE

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.



LIGHT POLE BASE
NOT TO SCALE

NOTES:
1. THE LENGTHS ARE INTENDED FOR PROFILE GRADES OF 2% OR LESS. WHEN PROFILE GRADES ARE GREATER THAN 2% "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.
2. WHEN CONSTRUCTING BUTT JOINTS AT INTERSECTIONS OR RAMPS "L" SHALL BE 15'/INCH OF THICKNESS UNLESS OTHERWISE DIRECTED BY THE RESIDENT
3. SPECIAL ATTENTION SHALL BE PAID TO CURB SECTION TO ASSURE PROPER DRAINAGE AND THAT THERE ARE NO FLAT AREAS. "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.



DESIGN OR POSTED SPEED (MILES/H):	35	30	25
"L" IN FEET/INCH OF THICKNESS:	35	30	25

SHIPLAP JOINT OVERLAY
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: SITE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

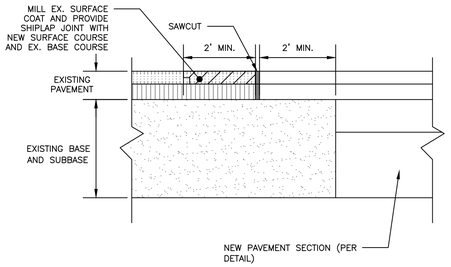
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
8/25/23

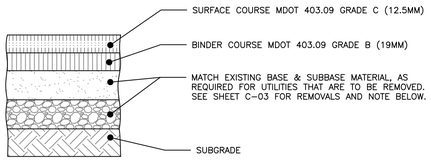
DRAWING NO.
C-40

NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
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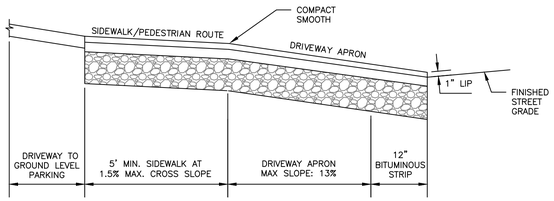
PAVEMENT SAWCUT DETAIL
NOT TO SCALE



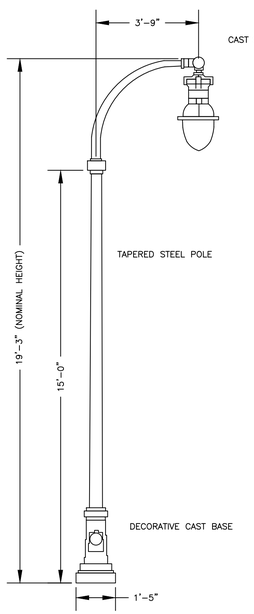
NOTE:
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
2. CONTRACTOR TO VERIFY EXISTING GOOCH STREET BASE AND SUBBASE MATERIALS AND MATCH EXISTING.
3. PROJECT PROPOSES TO MILL EXISTING PAVEMENT AND INSTALL NEW BITUMINOUS PAVEMENT PER DETAIL. REFER TO APPLICABLE UTILITY CROSS SECTIONS FOR NEW UTILITY INSTALLATION.

THICKNESS OF LAYERS	
STANDARD	LAYERS
1.25"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
4"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B OR A
18"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

PAVEMENT PROFILE:
NOT TO SCALE



DRIVEWAY APRON SECTION
NOT TO SCALE

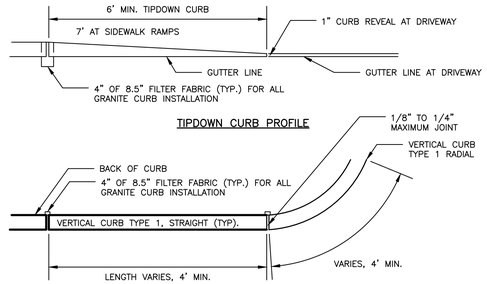


NOTES:

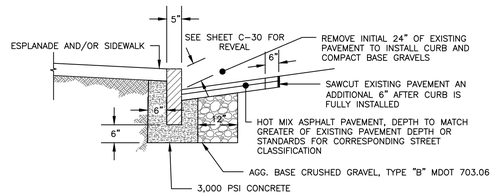
1. LUMINAIRE
   HOLOPHANE ESPLANADE LED II
   MODEL:ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BHDF13-200CMC
   OR SPRING CITY COLUMBIA SERIES MODEL
   ALMCLU-LE080/EVX/X2-30-CR3-GR14-LACLB-FED-CU
   PENDANT MOUNT, CAST ALUMINUM HOUSING WITH STAINLESS STEEL HARDWARE. DROPPED REFRACTOR SHALL BE THERMAL RESISTANT BOROSILICATE GLASS. INTERNAL REFLECTOR AND PRISMATIC DIFFUSER SHALL PROVIDE AN IES TYPE IV DISTRIBUTION PATTERN. LED 3000K COLOR TEMPERATURE.
2. BRACKET ARM
   HOLOPHANE OUC ROADWAY ARM MODEL OUC 6063-T6 OR SPRING COLUMBIA ARM MODEL AARCLA-1S-51-53-TN2.38/7.00-CU
   ALUMINUM CROSSARM WITH A POST-TOP FITTING FOR A 3 ½" BY 8" TENON. SINGLE ARM 45° ORIENTED 180 DEGREES.
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   HOLOPHANE BOSTON HARBOR SERIES MODEL BHLF-200-SCA/AS
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   SSHSM-G11-7.00-15.00-TN3.50/8.00-CU
   SMOOTH, TAPERED STEEL POLE SMOOTH SHAFT RATED FOR A 90 MPH WIND LOAD WITH A 1.3 GUST FACTOR. PROVIDE FOUR HOT-TIPPED GALVANIZED STEEL L-TYPE ANCHOR BOLTS. LIGHTING POLE SHALL BE HOT TIP GALVANIZED PRIOR TO POWDER COAT PAINT.
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   POLE HEIGHT = 15' 0"
   BRACKET ARM = 3' 9"
   BASE DIAMETER = 17" TO 18"
7. FINISH
   BLACK (STANDARD)

APPLICATION:
STREET/SIDEWALK LIGHTING
SPACING:
ONE SIDE: 80'-110' ON CENTER
PLACE IN FURNISHING ZONE OVERHANG TOWARDS STREET; WHERE FIXTURE CONFLICTS WITH OVERHEAD UTILITIES, MAY BE PLACED ON BACK OF SIDEWALK.

PENINSULA DECORATIVE LIGHTING
NOT TO SCALE



VERTICAL GRANITE CURB PLAN VIEW



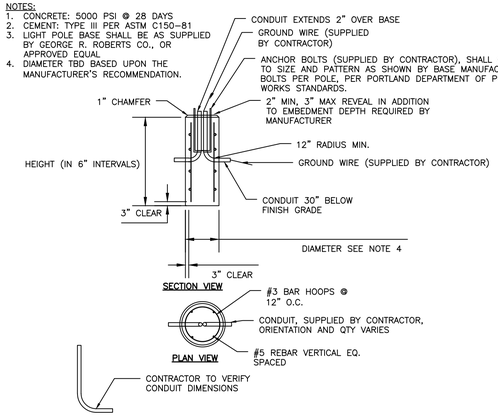
VERTICAL GRANITE CURB CROSS SECTION

NOTES:

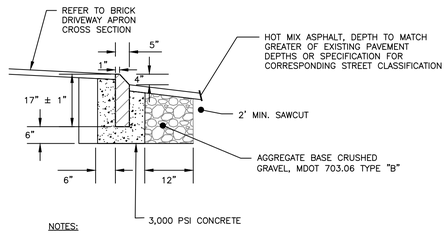
1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.
2. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
3. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10 INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF THE CURB.
4. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
5. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION IN EXISTING STREETS DETAIL
NOT TO SCALE

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.



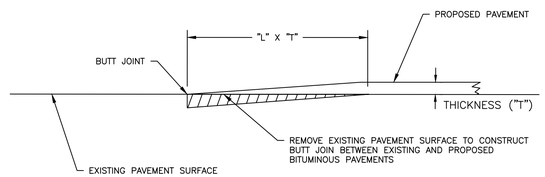
LIGHT POLE BASE
NOT TO SCALE



NOTES:
1. INSTALL PER MANUFACTURER'S SPEC'S.
2. PROVIDE CUSTOM TRANSITION CURB THAT TIPS DOWN 3" IN BETWEEN MOUNTABLE AND VERTICAL CURBS.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.

MOUNTABLE BEVELED GRANITE CURB
NOT TO SCALE

NOTES:
1. THE LENGTHS ARE INTENDED FOR PROFILE GRADES OF 2% OR LESS. WHEN PROFILE GRADES ARE GREATER THAN 2% "L" MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WHEN DIRECTED BY THE RESIDENT.
2. WHEN CONSTRUCTING BUTT JOINTS AT INTERSECTIONS OR RAMPS "L" SHALL BE 15'/INCH OF THICKNESS UNLESS OTHERWISE DIRECTED BY THE RESIDENT
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DESIGN OR POSTED SPEED (MILES/H):	35	30	25
"L" IN FEET/INCH OF THICKNESS:	35	30	25

SHIPLAP JOINT OVERLAY
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: SITE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

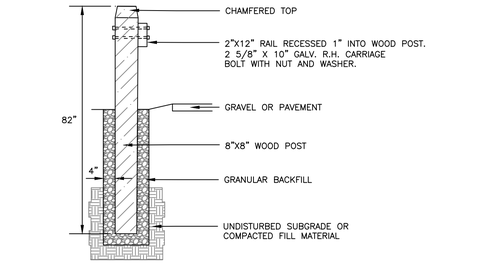
THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, ADDITIONS OR DELETIONS SHALL RELIEVE ACORN ENGINEERING, INC. OF ALL RESPONSIBILITY AND LIABILITY FOR THE PLAN.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

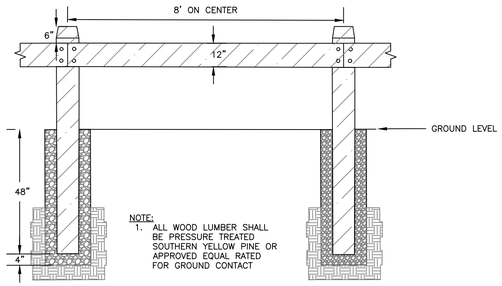
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 10/3/23

DRAWING NO.
C-40



SIDE ELEVATION



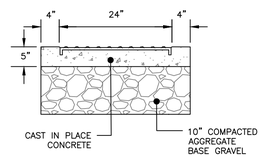
NOTE:
1. ALL WOOD LUMBER SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE OR APPROVED EQUAL RATED FOR GROUND CONTACT

FRONT ELEVATION

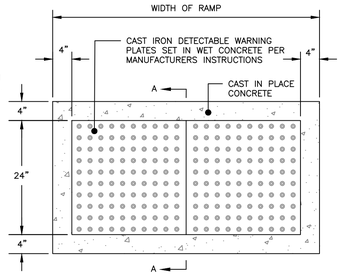
WOODEN GUARDRAIL DETAIL
NOT TO SCALE

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 FORM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SECTION A–A

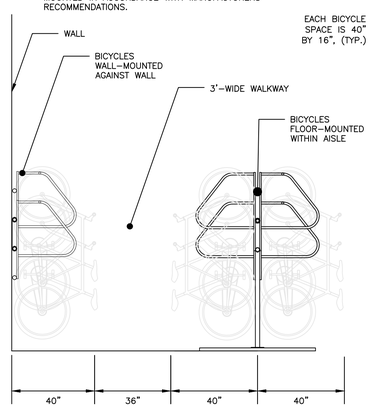


PLAN VIEW

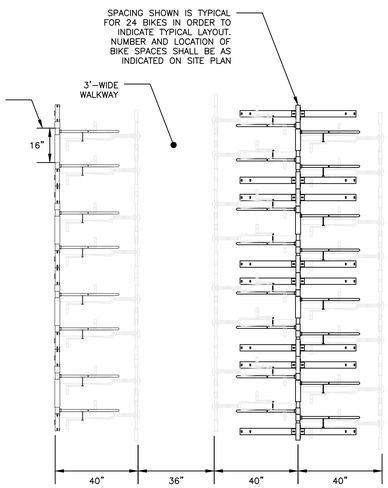
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL.
3. BICYCLES SHALL BE WALL MOUNTED OR FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.



CROSS SECTION VIEW

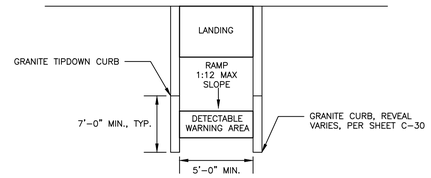


PLAN VIEW

BICYCLE RACK INTERIOR
NOT TO SCALE

NOTES:

1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.

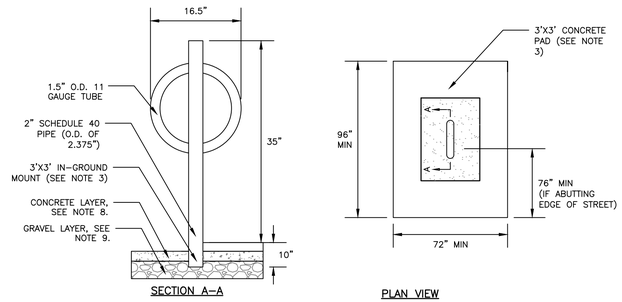


DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAX	2%
LANDING	2%	2%
RAMP	8.33% MAX	MATCH STREET GRADE
SIDEWALK	PER C–30	2%

SIDEWALK RAMP LAYOUT
NOT TO SCALE

NOTES:

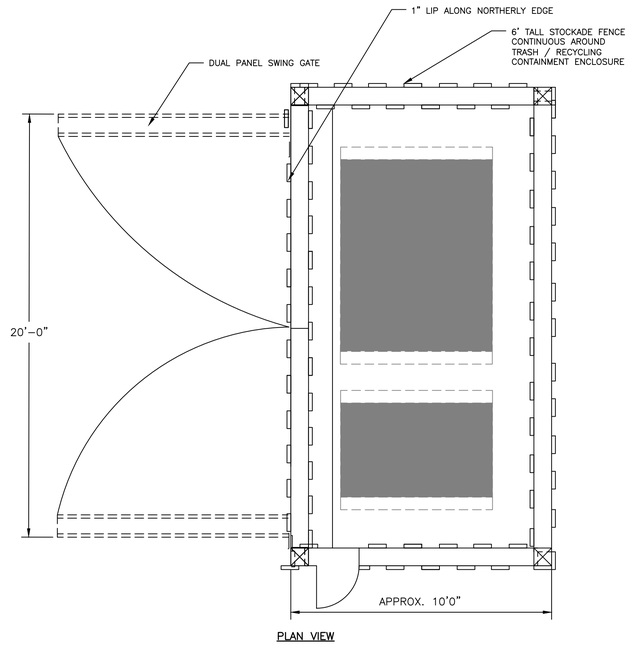
1. BICYCLE RACK SHALL HAVE CAPACITY FOR TWO BICYCLES.
2. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION. PER CITY OF PORTLAND TECHNICAL STANDARDS ALL BIICYCLE RACKS WITHIN THE RIGHT–OF–WAY SHALL MATCH THE FURNITURE COLOR FOR THAT LOCATION AS DESCRIBED IN THE MUNICIPAL LIGHTING STANDARDS; IF NO DESIGNATED COLOR FOR THAT AREA EXISTS, BICYCLE RACKS SHALL BE BLACK.
3. BICYCLE RACK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION RECOMMENDATIONS, AND SHALL BE INSTALLED WITH AN IN–GROUND MOUNT UNLESS OTHERWISE APPROVED BY ENGINEER.
4. BICYCLE RACK SHALL BE "DERO BIKE HITCH", AS MANUFACTURED BY DERO BIKE RACKS.
5. MINIMUM OFFSETS SHOWN. MANUFACTURER'S RECOMMENDED OFFSETS SHALL BE ENFORCED WHERE POSSIBLE.
6. MINIMUM DISTANCE BETWEEN BICYCLE RACKS SHALL BE 24". RECOMMENDED DISTANCE BETWEEN BICYCLE RACKS SHALL BE 36".
7. ALL OFFSETS ARE FROM OUTSIDE EDGES OF ITEMS.
8. CONCRETE SHALL BE 4000 PSI @28 DAYS. BOTTOM OF CONCRETE SHALL BE AT TOP OF SIDEWALK GRAVEL ELEVATION. DEPTH VARIES APRROX. 4"–7".
9. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL, AND SHALL BE MAINEDOT 703.06 TYPE B.



SECTION A–A

PLAN VIEW

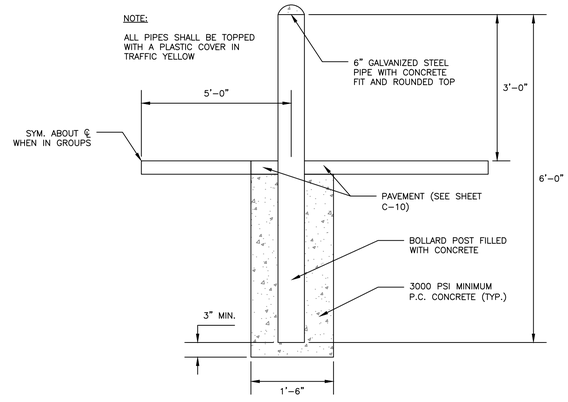
BICYCLE RACK DETAIL
NOT TO SCALE



PLAN VIEW

TRASH ENCLOSURE DETAIL
NOT TO SCALE

NOTE:
ALL PIPES SHALL BE TOPPED WITH A PLASTIC COVER IN TRAFFIC YELLOW



PIPE BOLLARD
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: SITE DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

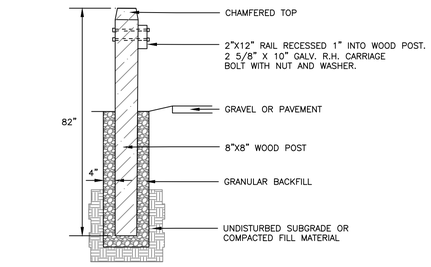
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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
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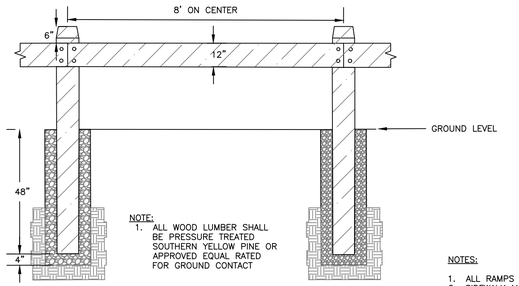
FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-41



SIDE ELEVATION



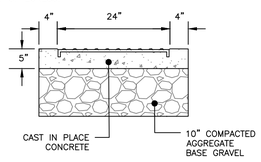
NOTE:
1. ALL WOOD LUMBER SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE OR APPROVED EQUAL RATED FOR GROUND CONTACT

FRONT ELEVATION

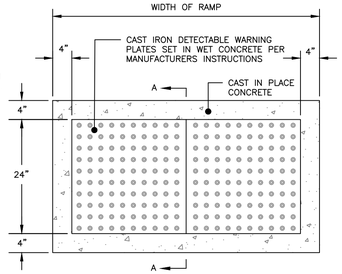
WOODEN GUARDRAIL DETAIL
NOT TO SCALE

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.
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SECTION A–A

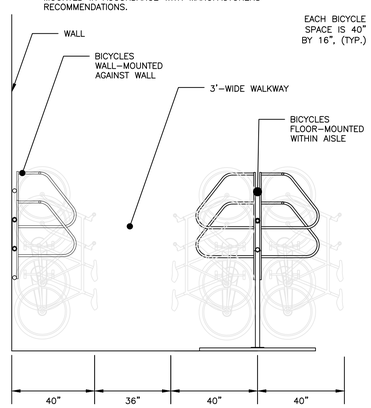


PLAN VIEW

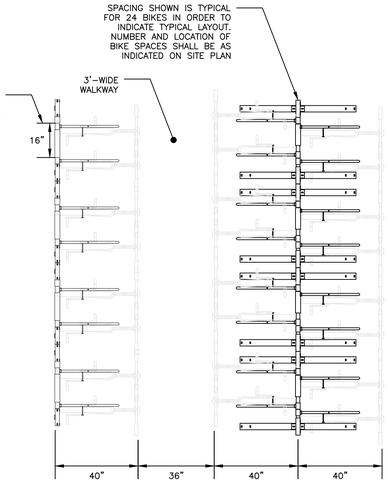
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL
3. BICYCLES SHALL BE WALL MOUNTED OR FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.



CROSS SECTION VIEW



PLAN VIEW

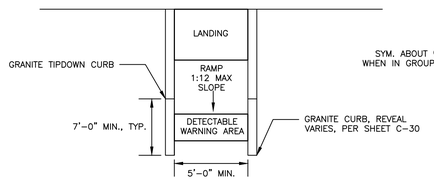
BICYCLE RACK INTERIOR
NOT TO SCALE

NOTES:

1. BICYCLE RACK SHALL HAVE CAPACITY FOR TWO BICYCLES.
2. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION. PER CITY OF PORTLAND TECHNICAL STANDARDS ALL BICYCLE RACKS WITHIN THE RIGHT–OF–WAY SHALL MATCH THE FURNITURE COLOR FOR THAT LOCATION AS DESCRIBED IN THE MUNICIPAL LIGHTING STANDARDS; IF NO DESIGNATED COLOR FOR THAT AREA EXISTS, BICYCLE RACKS SHALL BE BLACK.
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6. MINIMUM DISTANCE BETWEEN BICYCLE RACKS SHALL BE 24". RECOMMENDED DISTANCE BETWEEN BICYCLE RACKS SHALL BE 38".
7. ALL OFFSETS ARE FROM OUTSIDE EDGES OF ITEMS.
8. CONCRETE SHALL BE 4000 PSI @28 DAYS. BOTTOM OF CONCRETE SHALL BE AT TOP OF SIDEWALK GRAVEL ELEVATION. DEPTH VARIES APPROX. 4"–7".
9. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL, AND SHALL BE MAINEDOT 703.06 TYPE B.

NOTES:

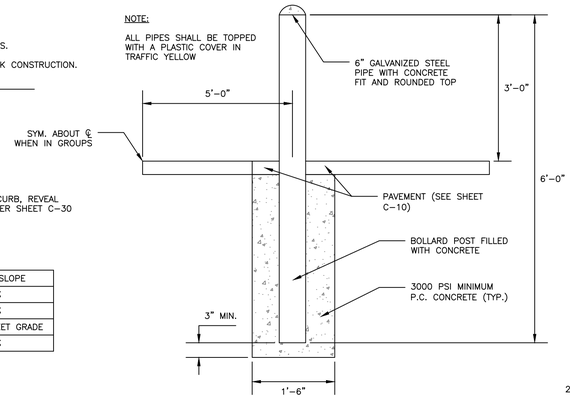
1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.



DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAX	2%
LANDING	2%	2%
RAMP	8.33% MAX	MATCH STREET GRADE
SIDEWALK	PER C–30	2%

SIDEWALK RAMP LAYOUT
NOT TO SCALE

NOTE:
ALL PIPES SHALL BE TOPPED WITH A PLASTIC COVER IN TRAFFIC YELLOW

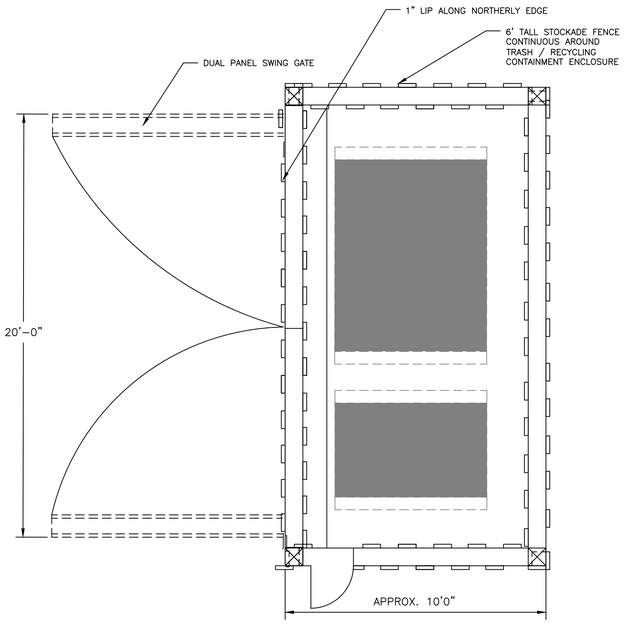


PIPE BOLLARD
NOT TO SCALE

SECTION A–A

PLAN VIEW

BICYCLE RACK DETAIL
NOT TO SCALE

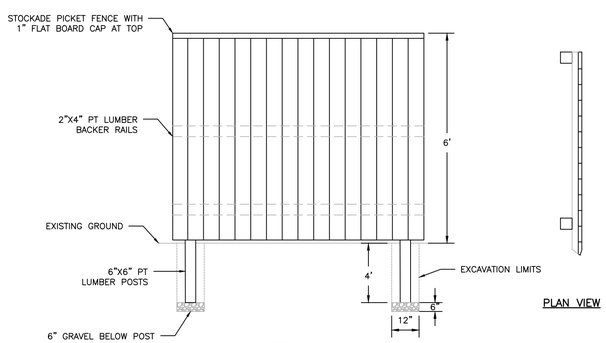


PLAN VIEW

TRASH ENCLOSURE DETAIL
NOT TO SCALE

NOTES:

1. INSTALL FENCE PER MANUFACTURERS SPECIFICATIONS
2. SEE SHEET C–10 FOR FENCE LOCATIONS



PROFILE VIEW

PLAN VIEW

STOCKADE FENCE DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: SITE DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

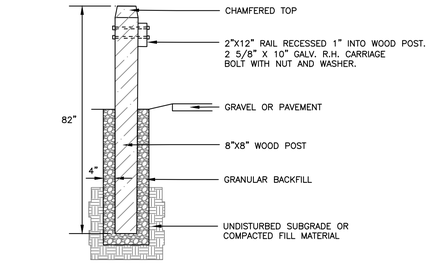
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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
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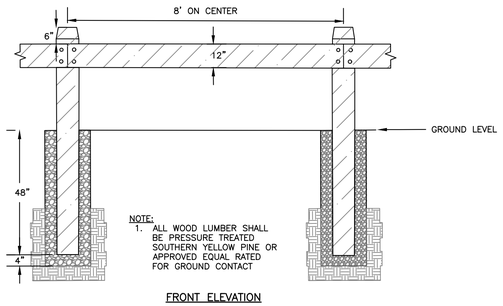
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SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 4/3/23

DRAWING NO.
C-41



SIDE ELEVATION



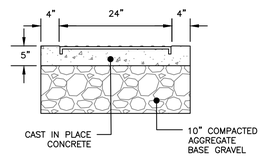
NOTE:
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FRONT ELEVATION

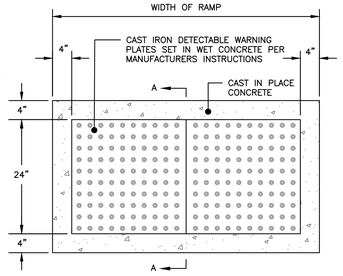
WOODEN GUARDRAIL DETAIL
NOT TO SCALE

NOTES:

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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 FORM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SECTION A–A

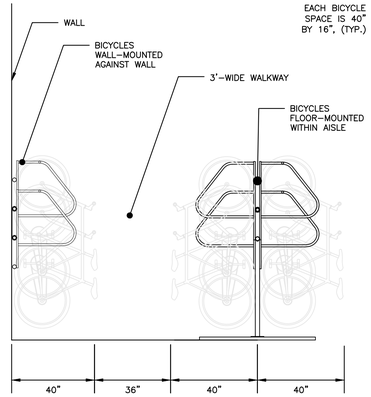


PLAN VIEW

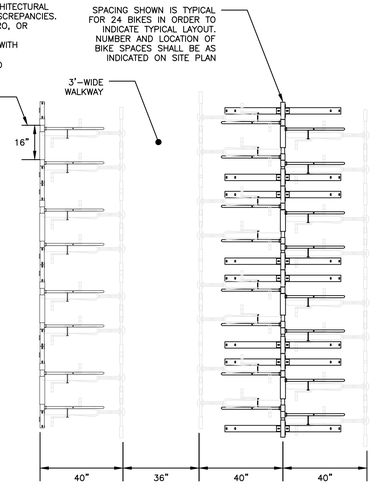
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL.
3. BICYCLES SHALL BE WALL MOUNTED OR FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
4. BICYCLE SIGNAGE TO BE PROVIDED IN COMPLIANCE WITH CITY OF PORTLAND REQUIREMENTS. SIGNAGE DESIGNED BY OTHERS, PER OWNERS DISCRETION.



CROSS SECTION VIEW

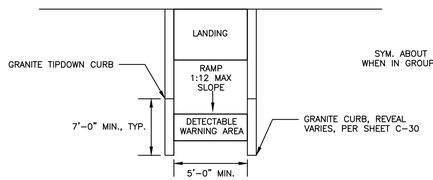


PLAN VIEW

INTERIOR BICYCLE RACK DETAIL
NOT TO SCALE

NOTES:

1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.

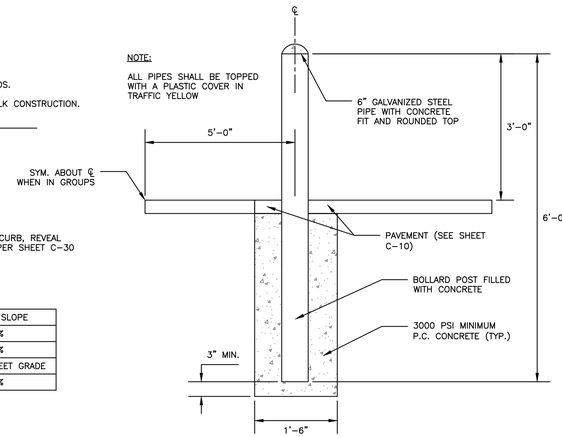


DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAX	2%
LANDING	2%	2%
RAMP	8.33% MAX	MATCH STREET GRADE
SIDEWALK	PER C–30	2%

SIDEWALK RAMP LAYOUT
NOT TO SCALE

NOTE:

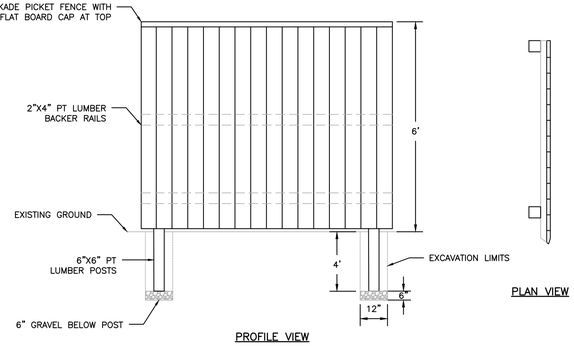
ALL PIPES SHALL BE TOPPED WITH A PLASTIC COVER IN TRAFFIC YELLOW



PIPE BOLLARD
NOT TO SCALE

NOTES:

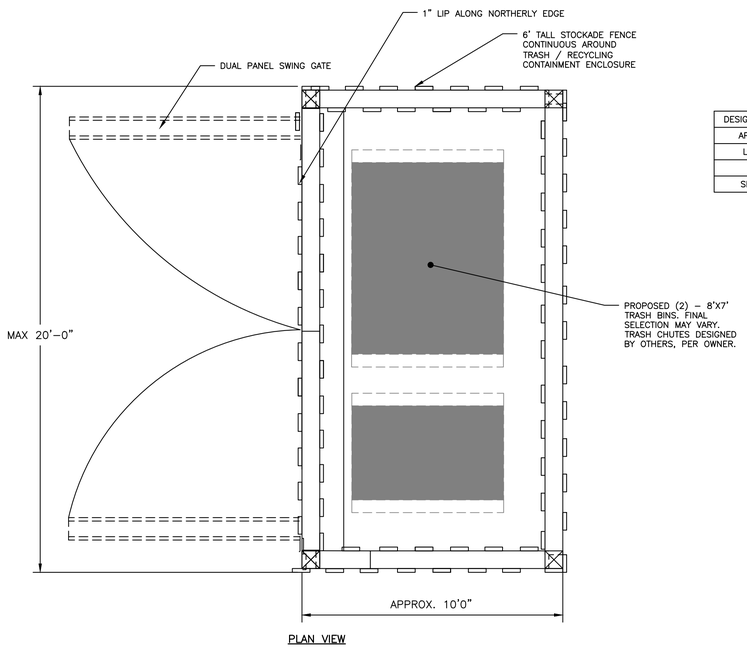
1. INSTALL FENCE PER MANUFACTURERS SPECIFICATIONS
2. SEE SHEET C–10 FOR FENCE LOCATIONS



PROFILE VIEW

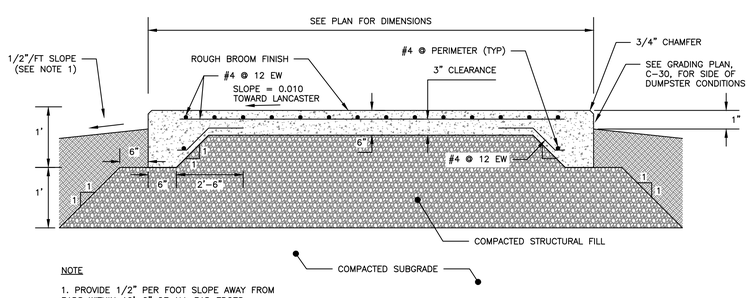
PLAN VIEW

STOCKADE FENCE DETAIL
NOT TO SCALE



PLAN VIEW

TRASH ENCLOSURE DETAIL
NOT TO SCALE



NOTE

1. PROVIDE 1/2" PER FOOT SLOPE AWAY FROM PADS WITHIN 10'–0" OF ALL PAD EDGES

SECTION

DUMPSTER PAD DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: SITE DETAILS – 2

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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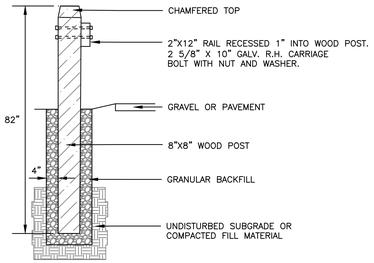
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND, MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

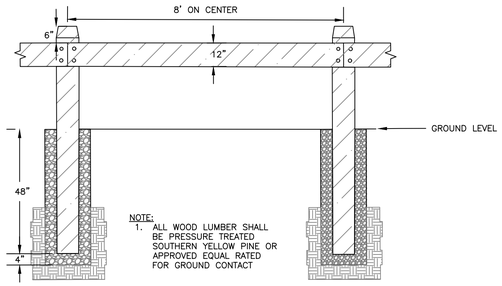
STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 8/25/23

DRAWING NO.

C-41



SIDE ELEVATION



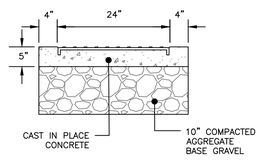
NOTE:
1. ALL WOOD LUMBER SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE OR APPROVED EQUAL RATED FOR GROUND CONTACT

FRONT ELEVATION

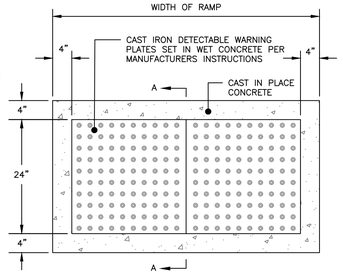
WOODEN GUARDRAIL DETAIL
NOT TO SCALE

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 FORM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SECTION A–A

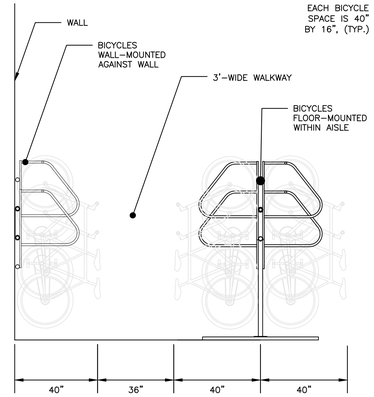


PLAN VIEW

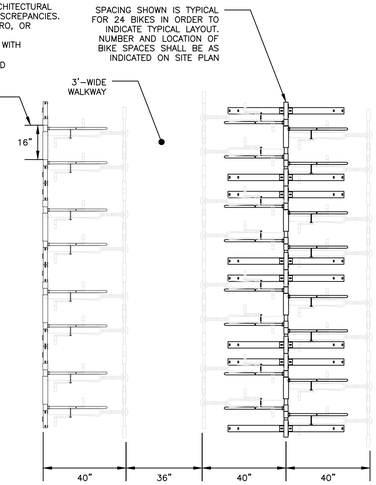
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL.
3. BICYCLES SHALL BE WALL MOUNTED OR FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
4. BICYCLE SIGNAGE TO BE PROVIDED IN COMPLIANCE WITH CITY OF PORTLAND REQUIREMENTS. SIGNAGE DESIGNED BY OTHERS, PER OWNERS DISCRETION.



CROSS SECTION VIEW

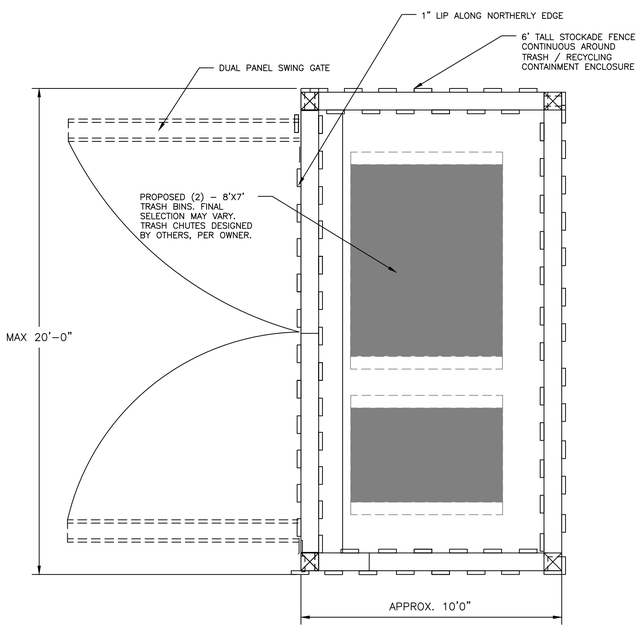


PLAN VIEW

INTERIOR BICYCLE RACK DETAIL
NOT TO SCALE

NOTES:

1. BICYCLE RACK SHALL HAVE CAPACITY FOR TWO BICYCLES.
2. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION. PER CITY OF PORTLAND TECHNICAL STANDARDS ALL BICYCLE RACKS WITHIN THE RIGHT–OF–WAY SHALL MATCH THE FURNITURE COLOR FOR THAT LOCATION AS DESCRIBED IN THE MUNICIPAL LIGHTING STANDARDS; IF NO DESIGNATED COLOR FOR THAT AREA EXISTS, BICYCLE RACKS SHALL BE BLACK.
3. BICYCLE RACK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION RECOMMENDATIONS, AND SHALL BE INSTALLED WITH AN IN–GROUND MOUNT UNLESS OTHERWISE APPROVED BY ENGINEER.
4. BICYCLE RACK SHALL BE "DERO BIKE HITCH", AS MANUFACTURED BY DERO BIKE RACKS.
5. MINIMUM OFFSETS SHOWN. MANUFACTURER'S RECOMMENDED OFFSETS SHALL BE ENFORCED WHERE POSSIBLE.
6. MINIMUM DISTANCE BETWEEN BICYCLE RACKS SHALL BE 24". RECOMMENDED DISTANCE BETWEEN BICYCLE RACKS SHALL BE 38".
7. ALL OFFSETS ARE FROM OUTSIDE EDGES OF ITEMS.
8. CONCRETE SHALL BE 4000 PSI @28 DAYS. BOTTOM OF CONCRETE SHALL BE AT TOP OF SIDEWALK GRAVEL ELEVATION. DEPTH VARIES APPROX. 4"–7".
9. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL, AND SHALL BE MAINEDOT 703.06 TYPE B.

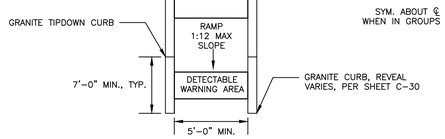


PLAN VIEW

TRASH ENCLOSURE DETAIL
NOT TO SCALE

NOTES:

1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.

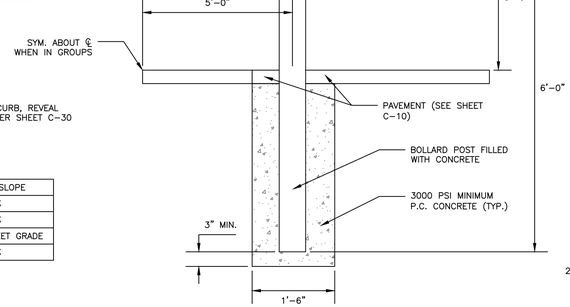


DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAX	2%
LANDING	2%	2%
RAMP	8.33% MAX	MATCH STREET GRADE
SIDEWALK	PER C–30	2%

SIDEWALK RAMP LAYOUT
NOT TO SCALE

NOTE:

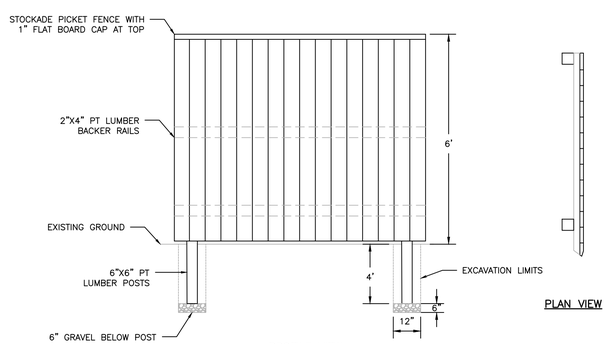
ALL PIPES SHALL BE TOPPED WITH A PLASTIC COVER IN TRAFFIC YELLOW



PIPE BOLLARD
NOT TO SCALE

NOTES:

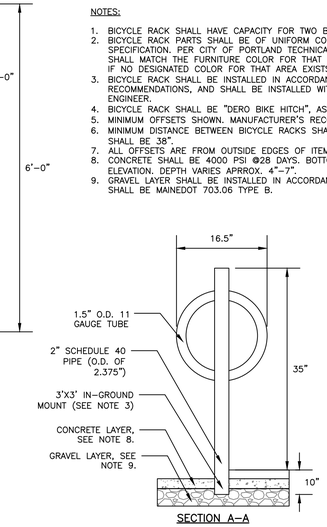
1. INSTALL FENCE PER MANUFACTURERS SPECIFICATIONS
2. SEE SHEET C–10 FOR FENCE LOCATIONS



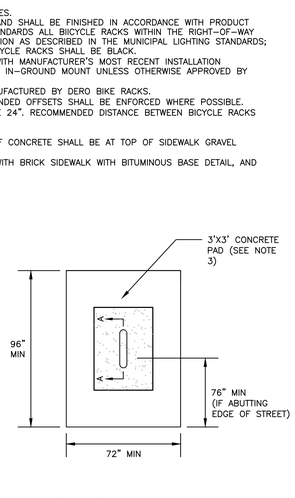
PROFILE VIEW

PLAN VIEW

STOCKADE FENCE DETAIL
NOT TO SCALE

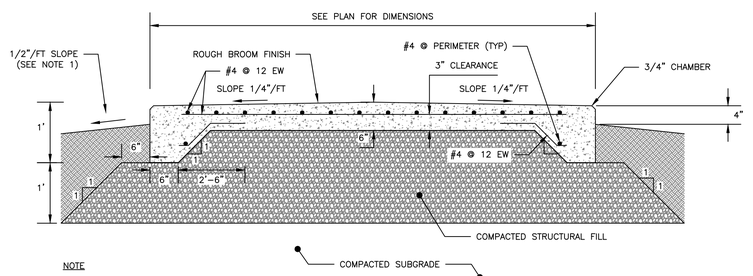


SECTION A–A



PLAN VIEW

EXTERIOR BICYCLE RACK DETAIL
NOT TO SCALE



NOTE

1. PROVIDE 1/2" PER FOOT SLOPE AWAY FROM PADS WITHIN 10'–0" OF ALL PAD EDGES

SECTION

DUMPSTER PAD DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: SITE DETAILS – 2

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND, MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

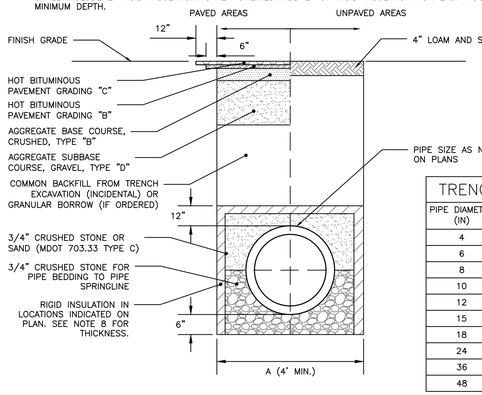
STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — LICENSED PROFESSIONAL ENGINEER — 10/3/23

DRAWING NO.

C-41

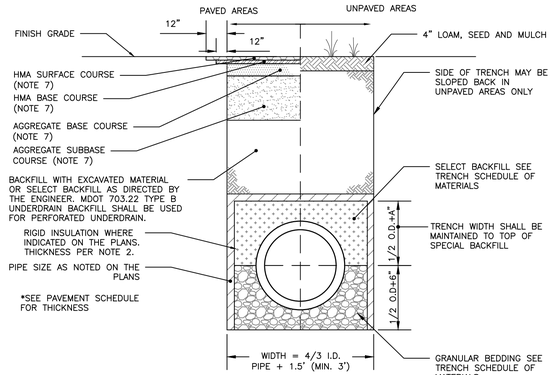
NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE II-2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF.SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL , SECTION 2 – SANITARY SEWER AND STORM DRAIN – PART 2.5.2
6. 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.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND ROW.STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.



TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	5
15	5
18	5
24	6
36	6
48	7

CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL
NOT TO SCALE



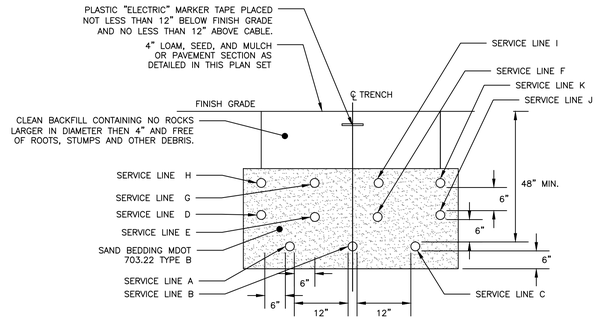
ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTES:

1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
   - 4.1. 2'-0" – STORM DRAIN
   - 4.2. 5'-0" – SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF BIDDEFORD ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS
8. ALL PROPOSED TREES PLANTED WITHIN 10' OF A STORM OR SEWER PIPE SHALL BE PLANTED AT A DEPTH NO GREATER THAN 3' DEEP. PERMEABLE LANDSCAPE FABRIC SHALL CREATE A ROOT BARRIER AROUND THE PIPES. CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE DRAWINGS.

STORM DRAIN AND SEWER TYPICAL TRENCH SECTION
NOT TO SCALE



CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
D	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
E	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
F	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
G	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
H	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
I	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
J	4"	SCHEDULE 40 PVC	SPARE	–
K	4"	SCHEDULE 40 PVC	SPARE	–

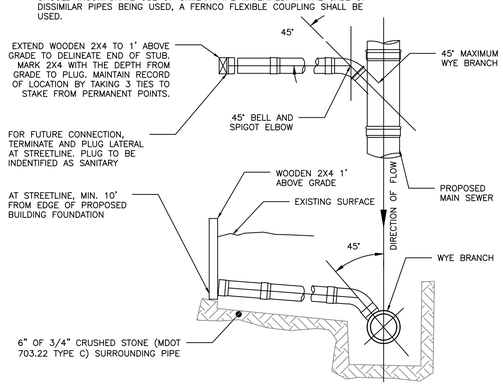
NOTES:

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.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

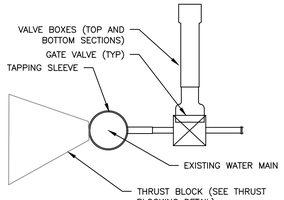
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:

1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

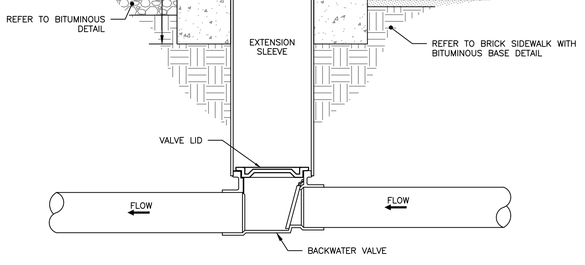


SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE



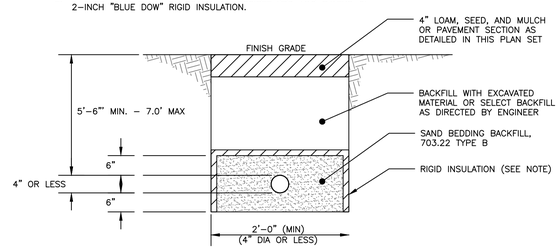
NOTES:

1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF BIDDEFORD TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

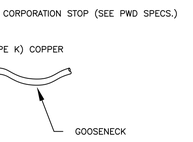
BACKFLOW VALVE ASSEMBLY
NOT TO SCALE

NOTES:

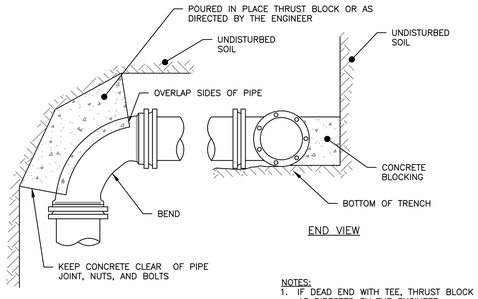
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2. IF LESS THAN 5'-6" OF COVER IS POSSIBLE ADD TWO LAYERS OF 2-INCH "BLUE DOW" RIGID INSULATION.



WATER SERVICE TRENCH SECTION DETAIL
NOT TO SCALE

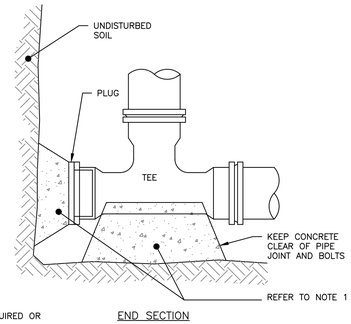


SERVICE SADDLE: 1-1/2" AND 2" C.C. THREAD
NOT TO SCALE



TOP VIEW

END VIEW



END SECTION

NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED OR AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS MADE TO THESE PLANS BY ANYONE OTHER THAN AUTHORIZED REPRESENTATIVES OF ACORN ENGINEERING, INC. WITHOUT LIKELY TO SOLE RISK AND

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

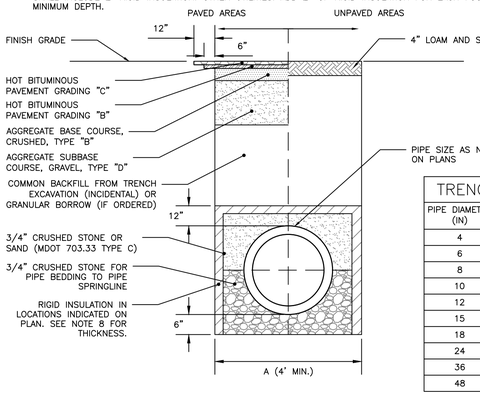
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SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-42

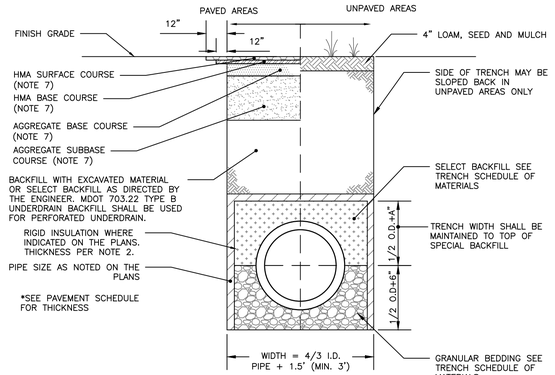
NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE II-2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF.SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL , SECTION 2 – SANITARY SEWER AND STORM DRAIN – PART 2.5.2
6. 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.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND ROW.STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.



TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	5
15	5
18	5
24	6
36	6
48	7

CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL
NOT TO SCALE



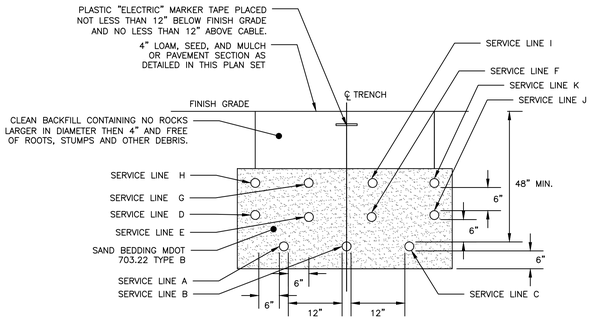
ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTES:

1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
   - 4.1. 2'-0" – STORM DRAIN
   - 4.2. 5'-0" – SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF BIDDEFORD ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS
8. ALL PROPOSED TREES PLANTED WITHIN 10' OF A STORM OR SEWER PIPE SHALL BE PLANTED AT A DEPTH NO GREATER THAN 3' DEEP. PERMEABLE LANDSCAPE FABRIC SHALL CREATE A ROOT BARRIER AROUND THE PIPES. CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE DRAWINGS.

STORM DRAIN AND SEWER TYPICAL TRENCH SECTION
NOT TO SCALE



CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
D	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
E	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
F	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
G	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
H	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
I	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
J	4"	SCHEDULE 40 PVC	SPARE	–
K	4"	SCHEDULE 40 PVC	SPARE	–

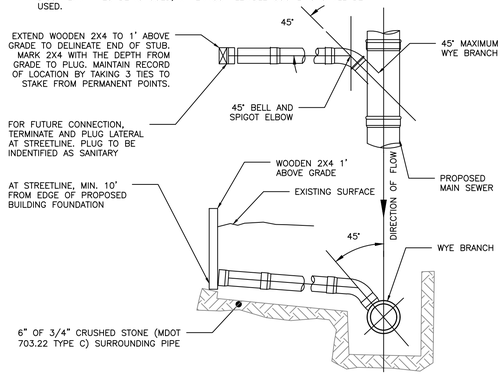
NOTES:

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.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

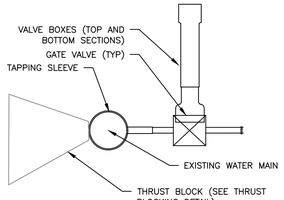
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:

1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

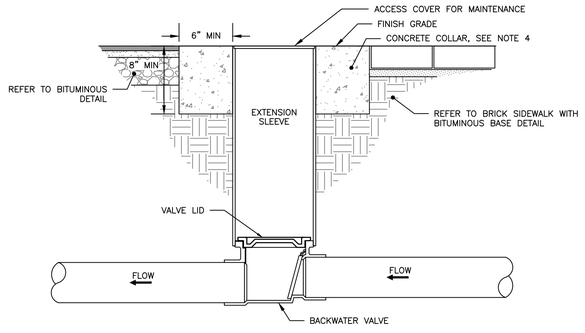


SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE



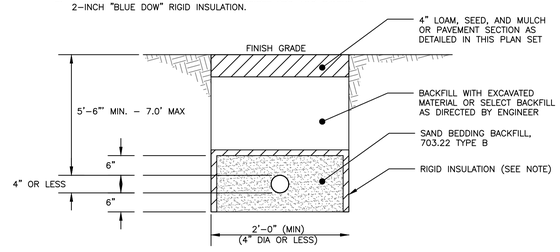
NOTES:

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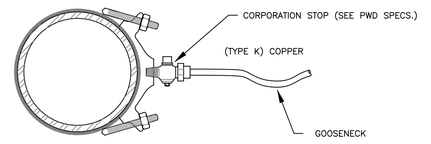
BACKFLOW VALVE ASSEMBLY
NOT TO SCALE

NOTES:

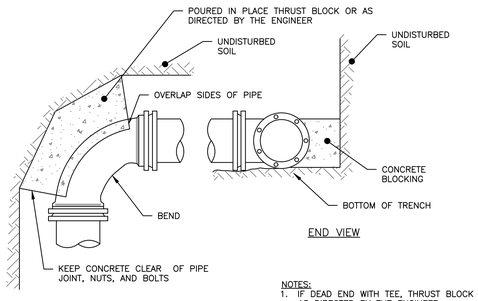
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WATER SERVICE TRENCH SECTION DETAIL
NOT TO SCALE

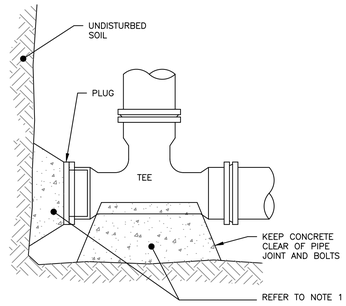


SERVICE SADDLE: 1-1/2" AND 2" C.C. THREAD
NOT TO SCALE



TOP VIEW

END VIEW



END SECTION

NOTES:
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THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 5/19/23

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
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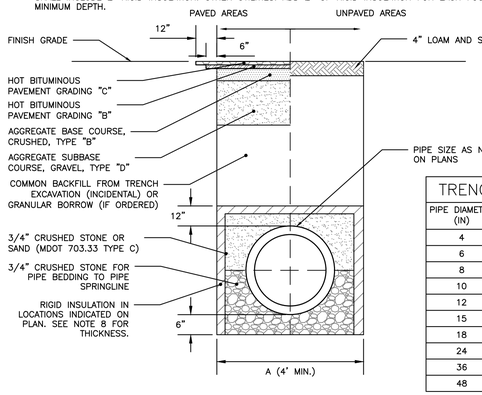
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DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.
C-42

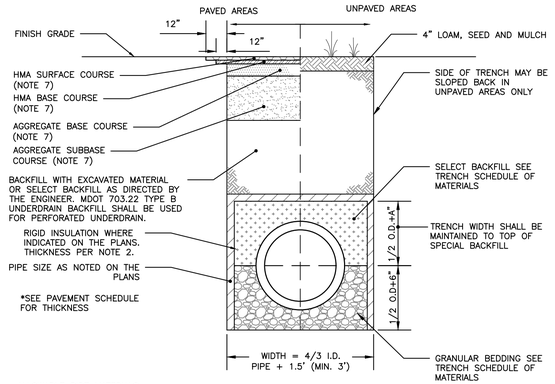
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TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	5
15	5
18	5
24	6
36	6
48	7

CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL
NOT TO SCALE



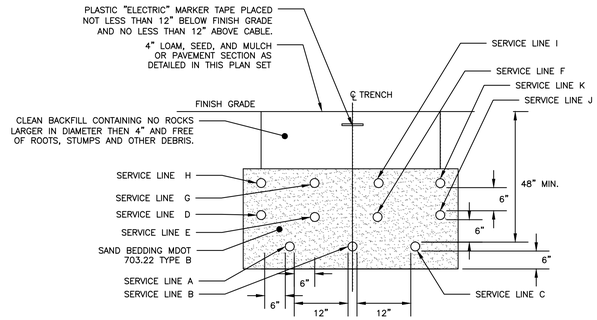
ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
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- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
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SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

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STORM DRAIN AND SEWER TYPICAL TRENCH SECTION
NOT TO SCALE



CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
D	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
E	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
F	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
G	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
H	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
I	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
J	4"	SCHEDULE 40 PVC	SPARE	–
K	4"	SCHEDULE 40 PVC	SPARE	–

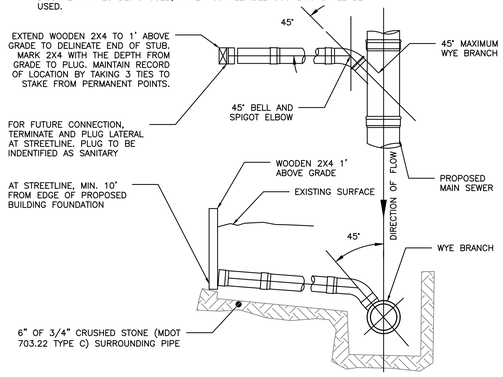
NOTES:

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.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

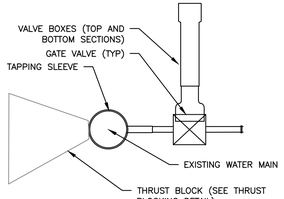
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:

1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

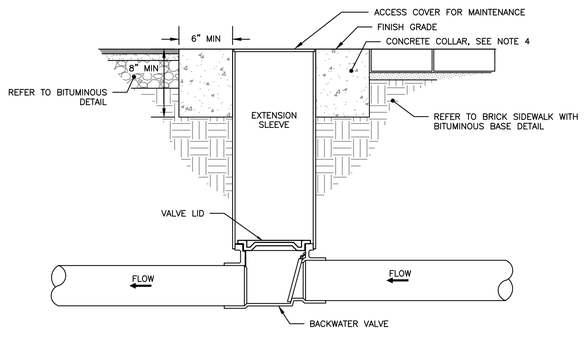


SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE



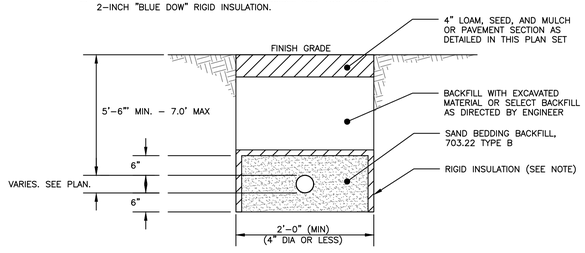
NOTES:

1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

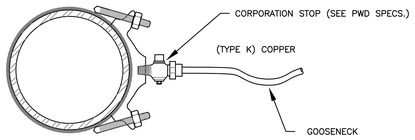
BACKFLOW VALVE ASSEMBLY
NOT TO SCALE

NOTES:

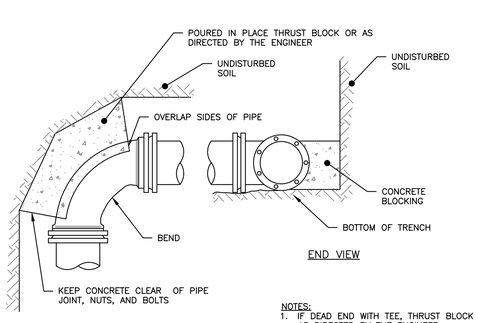
1. THE WATER TRENCH SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARD DETAILS & SPECIFICATIONS.
2. IF LESS THAN 5'-6" OF COVER IS POSSIBLE ADD TWO LAYERS OF 2-INCH "BLUE DOW" RIGID INSULATION.



WATER SERVICE TRENCH SECTION DETAIL
NOT TO SCALE

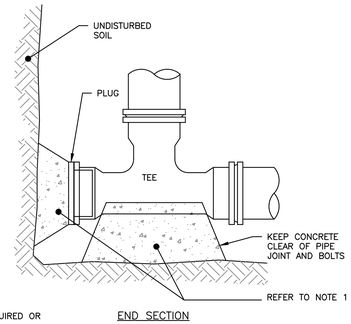


SERVICE SADDLE: 1-1/2" AND 2" C.C. THREAD
NOT TO SCALE



TOP VIEW

END VIEW



END SECTION

NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED OR AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, ADDITIONS, OR DELETIONS TO THIS PLAN SHALL BE MADE WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

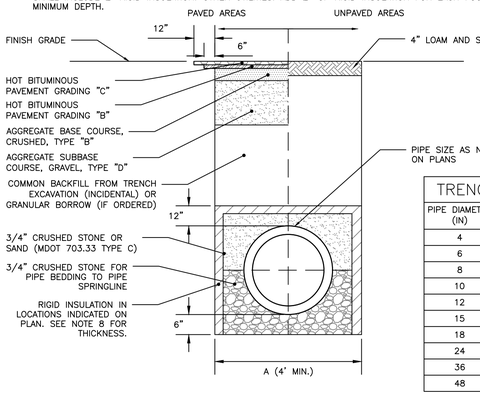
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
8/25/23

DRAWING NO.
C-42

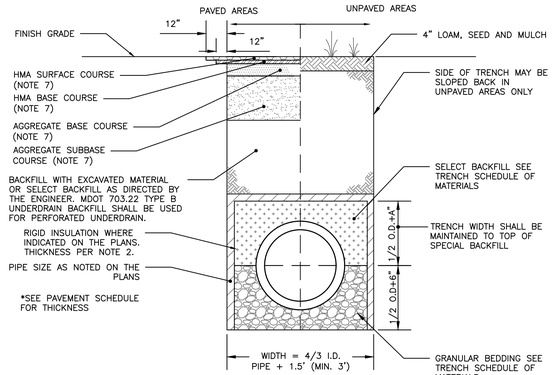
NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE II-2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF.SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL , SECTION 2 – SANITARY SEWER AND STORM DRAIN – PART 2.5.2
6. 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.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND ROW.STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.



TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	5
15	5
18	5
24	6
36	6
48	7

CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL
NOT TO SCALE



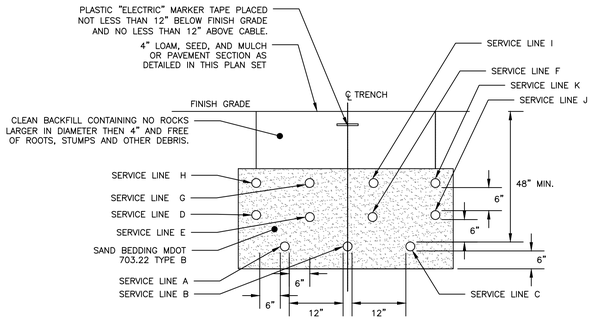
ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTES:

1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
   - 4.1. 2'-0" – STORM DRAIN
   - 4.2. 5'-0" – SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF BIDDEFORD ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS
8. ALL PROPOSED TREES PLANTED WITHIN 10' OF A STORM OR SEWER PIPE SHALL BE PLANTED AT A DEPTH NO GREATER THAN 3' DEEP. PERMEABLE LANDSCAPE FABRIC SHALL CREATE A ROOT BARRIER AROUND THE PIPES. CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE DRAWINGS.

STORM DRAIN AND SEWER TYPICAL TRENCH SECTION
NOT TO SCALE



CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
D	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
E	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
F	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
G	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
H	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
I	4"	SCHEDULE 40 PVC ELECTRICAL GRADE	CABLE	–
J	4"	SCHEDULE 40 PVC	SPARE	–
K	4"	SCHEDULE 40 PVC	SPARE	–

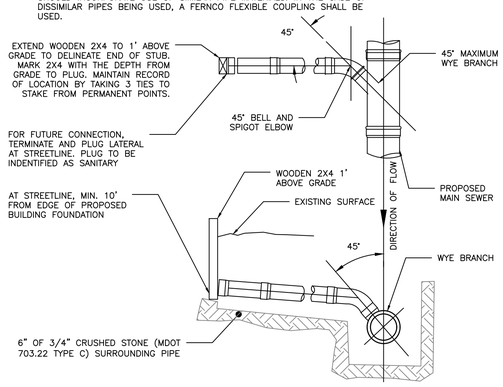
NOTES:

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.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

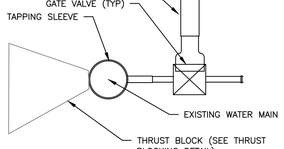
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:

1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

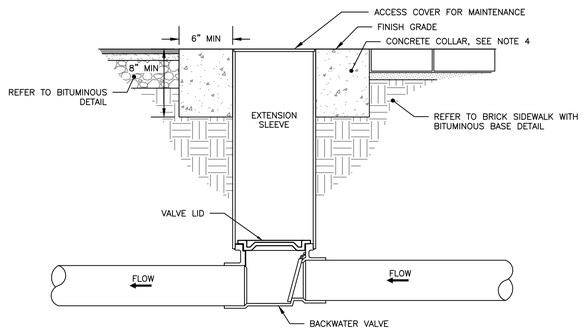


SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE



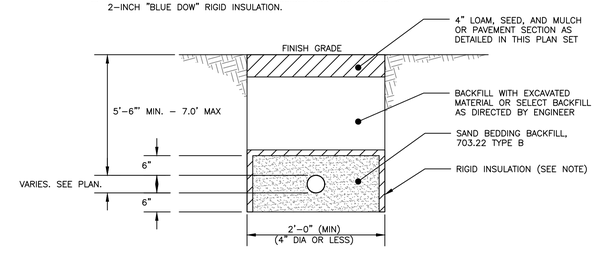
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4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

BACKFLOW VALVE ASSEMBLY
NOT TO SCALE

NOTES:

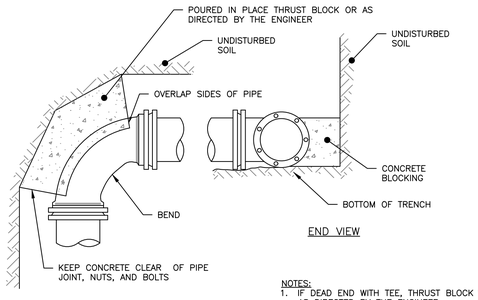
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WATER SERVICE TRENCH SECTION DETAIL
NOT TO SCALE

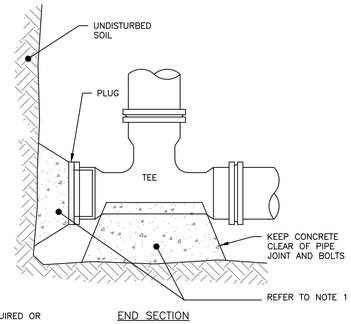


SERVICE SADDLE: 1-1/2" AND 2" C.C. THREAD
NOT TO SCALE



TOP VIEW

END VIEW



END SECTION

NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED OR AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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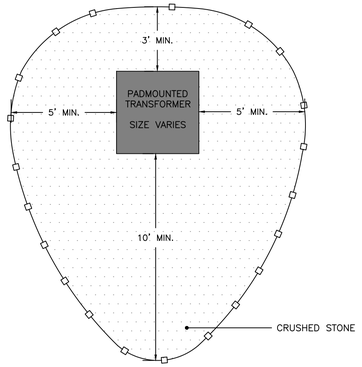
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

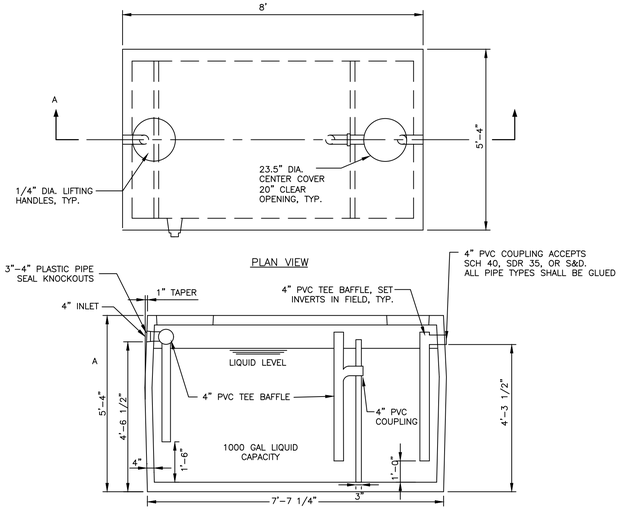
DRAWING NO.
C-42

NOTES:
1. WHERE DANGER OF PLOW OR TRAFFIC DAMAGE EXISTS, BARRIERS CONSISTING OF CONCRETE FILLED 6 INCH IPS STEEL POSTS SET 4 FEET DEEP SHALL BE PROVIDED FOR PROTECTION (PRESSURE TREATED 6X6 INCH MIN. TIMBER POSTS MAY BE SUBSTITUTED IN RESIDENTIAL AREAS). POSTS SHALL NOT INTERFERE WITH TRANSFORMER ACCESS. GENERALLY THE POSTS SHALL BE LOCATED NEAR THE CORNERS OF THE TRANSFORMERS.
2. THE SETBACKS DEPICT CLEARANCES FROM OBSTRUCTIONS INCLUDING TREES, SHRUBS, AND FENCES.
3. THERE SHALL BE NO OPENINGS IN THE BUILDING WALL IN BACK OF, BESIDE, OR OVER THE TRANSFORMER UNLESS THE TRANSFORMER IS A MIN. OF 10 FEET FROM THE BUILDING.
4. SIDE CLEARANCES FROM DOORS OR WINDOWS SHALL NOT BE LESS THAN 10 FEET.
5. THERE SHALL BE A MIN. OF 10 FEET BETWEEN THE TRANSFORMER AND ANY GAS METER/REGULATOR, GAS RELIEF VALVE, GAS VENT DISCHARGE, GAS FILLING CONNECTION, OR PROPANE TANK. SOME INSURANCE COMPANIES MAY REQUIRE INCREASED CLEARANCES.
6. TRANSFORMER SHALL BE LOCATED FAR ENOUGH AWAY FROM BUILDING OVERHANGS SO THAT THEY WILL NOT BE SUBJECT TO DAMAGE BY FALLING ICE AND SNOW.
7. IF TRANSFORMER IS NOT INSTALLED IMMEDIATELY UPON THE INSTALLATION OF THE CABLE IN THE PAD, THE DEVELOPER SHALL PROVIDE AND INSTALL A CMP APPROVED CONCRETE, STEEL, OR FIBERGLASS COVER OVER THE PAD OPENING TO ELIMINATE EXPOSURE OF THE CABLE.



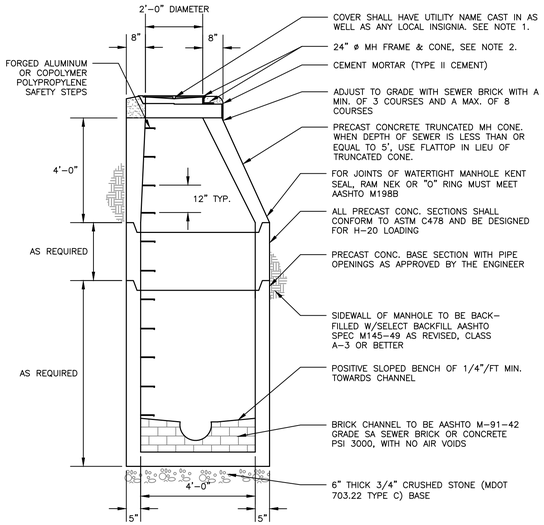
CMP TRANSFORMER SETBACKS
NOT TO SCALE

NOTES:
1. CONCRETE: 4000 PSI AFTER 28 DAYS WITH 4–6% ENTRAINED AIR.
2. ALL JOINTS WITH BUTYL RUBBER SEALANT.
3. EXCAVATION MUST BE AT LEAST 12" WIDER & LONGER THAN TANK SIZE
4. TOTAL STRUCTURE WEIGHT =9,200 LBS
5. INSTALL APPROPRIATE RISER SECTIONS OVER INSPECTION & CLEANOUT OPENINGS TO BRING COVERS TO GRADE.
6. SHALL MEET AMERICAN CONCRETE 1,000 GALLON GREASE TRAP, OR EQUIV.
7. TANK PENETRATIONS ARE INTEGRALLY CAST.
8. TANKS SHOULD BE PUMPED AS NEEDED.
9. ACCESS COVERS TO BRING COVER ACCESS TO GRADE.
10. TANKS CAN BE VACUUM TESTED BY MANUFACTURER AT ADDITIONAL COST.

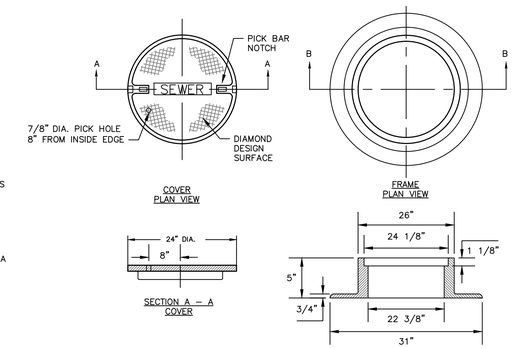


1,000 GALLON GREASE TRAP DETAIL
NOT TO SCALE

NOTES:
1. MANHOLE COVER FOR SEWER MANHOLE SHALL BE ENGRAVED "SEWER", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960002 AS MANUFACTURED BY NEENAH FOUNDRY. MANHOLE COVER FOR STORM SEWER SHALL BE ENGRAVED "DRAIN", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960003 AS MANUFACTURED BY NEENAH FOUNDRY.
2. MANHOLE FRAME SHALL BE EITHER ITEM # 14960001, AS MANUFACTURED BY NEENAH FOUNDRY, OR ITEM # 1960Z, AS MANUFACTURED BY EAST JORDAN CO.
3. WITHIN CITY OF PORTLAND ROW, STORM DRAIN MANHOLE SHALL CONFORM WITH "STANDARD PRECAST SEWER MANHOLE DETAIL", WITH THE EXCEPTION THAT THE COVER SHALL BE MARKED AS "DRAIN". REFER TO CITY OF PORTLAND TECHNICAL MANUAL, SECTION 2 – SANITARY SEWER AND STORM DRAIN, FIGURE II–1
4. SUBMITTAL REQUIRED FOR MANHOLES, MANHOLE FRAMES & MANHOLE COVERS

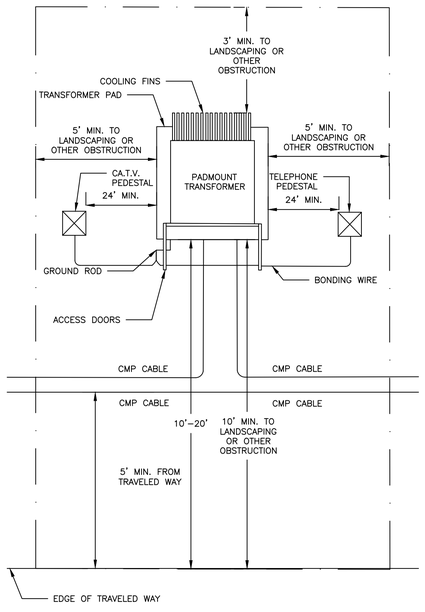


STANDARD PRECAST SEWER MANHOLE
NOT TO SCALE



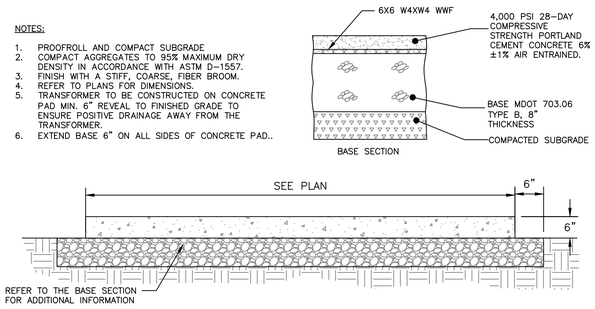
CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

NOTES:
1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
2. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
3. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. OIL WATER SEPARATOR SHALL HAVE "SEWER" CAST INTO THE COVER.
6. APPROVED MANHOLE FRAMES:
   6.1. EAST JORDAN = 1690Z
   6.2. NEENAH = R–1496
   6.3. OR APPROVED EQUAL
7. APPROVED MANHOLE COVERS
   7.1. EAST JORDAN = 2160A
   7.2. NEENAH = R–1496
   7.3. OR APPROVED EQUAL



9'X9' PAD MOUNTED TRANSFORMER
NOT TO SCALE

NOTES:
1. PROOFROLL AND COMPACT SUBGRADE
2. COMPACT AGGREGATES TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D–1557.
3. FINISH WITH A STIFF, COARSE, FIBER BROOM.
4. REFER TO PLANS FOR DIMENSIONS.
5. TRANSFORMER TO BE CONSTRUCTED ON CONCRETE PAD MIN. 6" REVEAL TO FINISHED GRADE TO ENSURE POSITIVE DRAINAGE AWAY FROM THE TRANSFORMER.
6. EXTEND BASE 6" ON ALL SIDES OF CONCRETE PAD..



CONCRETE PAD DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: UTILITY DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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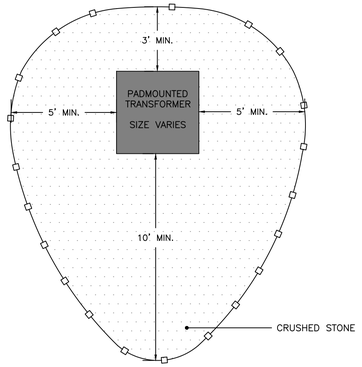
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
4/3/23

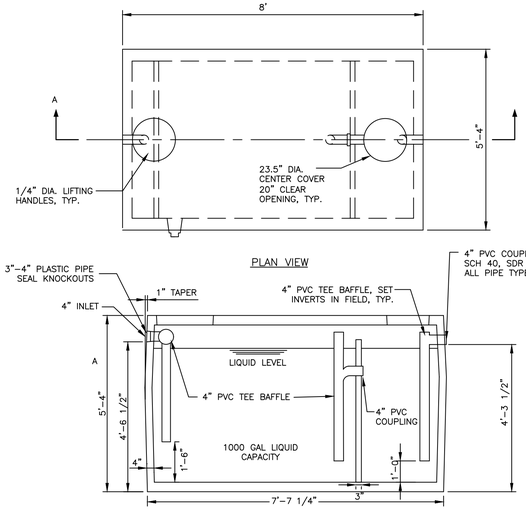
DRAWING NO.
C-43

NOTES:
1. WHERE DANGER OF PLOW OR TRAFFIC DAMAGE EXISTS, BARRIERS CONSISTING OF CONCRETE FILLED 6 INCH IPS STEEL POSTS SET 4 FEET DEEP SHALL BE PROVIDED FOR PROTECTION (PRESSURE TREATED 6X6 INCH MIN. TIMBER POSTS MAY BE SUBSTITUTED IN RESIDENTIAL AREAS). POSTS SHALL NOT INTERFERE WITH TRANSFORMER ACCESS. GENERALLY THE POSTS SHALL BE LOCATED NEAR THE CORNERS OF THE TRANSFORMERS.
2. THE SETBACKS DEPICT CLEARANCES FROM OBSTRUCTIONS INCLUDING TREES, SHRUBS, AND FENCES.
3. THERE SHALL BE NO OPENINGS IN THE BUILDING WALL IN BACK OF, BESIDE, OR OVER THE TRANSFORMER UNLESS THE TRANSFORMER IS A MIN. OF 10 FEET FROM THE BUILDING.
4. SIDE CLEARANCES FROM DOORS OR WINDOWS SHALL NOT BE LESS THAN 10 FEET.
5. THERE SHALL BE A MIN. OF 10 FEET BETWEEN THE TRANSFORMER AND ANY GAS METER/REGULATOR, GAS RELIEF VALVE, GAS VENT DISCHARGE, GAS FILLING CONNECTION, OR PROPANE TANK. SOME INSURANCE COMPANIES MAY REQUIRE INCREASED CLEARANCES.
6. TRANSFORMER SHALL BE LOCATED FAR ENOUGH AWAY FROM BUILDING OVERHANGS SO THAT THEY WILL NOT BE SUBJECT TO DAMAGE BY FALLING ICE AND SNOW.
7. IF TRANSFORMER IS NOT INSTALLED IMMEDIATELY UPON THE INSTALLATION OF THE CABLE IN THE PAD, THE DEVELOPER SHALL PROVIDE AND INSTALL A CMP APPROVED CONCRETE, STEEL, OR FIBERGLASS COVER OVER THE PAD OPENING TO ELIMINATE EXPOSURE OF THE CABLE.



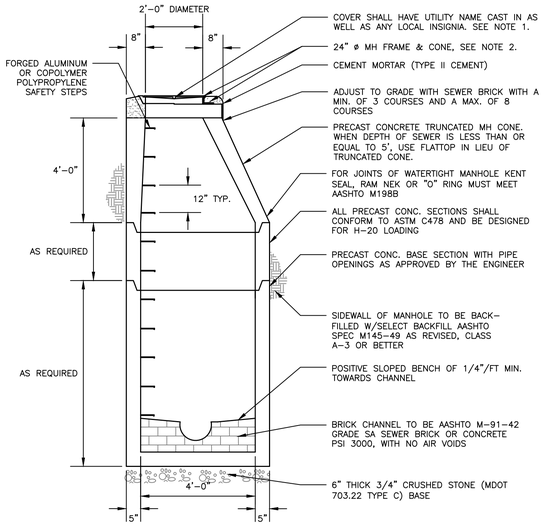
CMP TRANSFORMER SETBACKS
NOT TO SCALE

NOTES:
1. CONCRETE: 4000 PSI AFTER 28 DAYS WITH 4–6% ENTRAINED AIR.
2. ALL JOINTS WITH BUTYL RUBBER SEALANT.
3. EXCAVATION MUST BE AT LEAST 12" WIDER & LONGER THAN TANK SIZE
4. TOTAL STRUCTURE WEIGHT =9,200 LBS
5. INSTALL APPROPRIATE RISER SECTIONS OVER INSPECTION & CLEANOUT OPENINGS TO BRING COVERS TO GRADE.
6. SHALL MEET AMERICAN CONCRETE 1,000 GALLON GREASE TRAP, OR EQUIV.
7. TANK PENETRATIONS ARE INTEGRALLY CAST.
8. TANKS SHOULD BE PUMPED AS NEEDED.
9. ACCESS COVERS TO BRING COVER ACCESS TO GRADE.
10. TANKS CAN BE VACUUM TESTED BY MANUFACTURER AT ADDITIONAL COST.

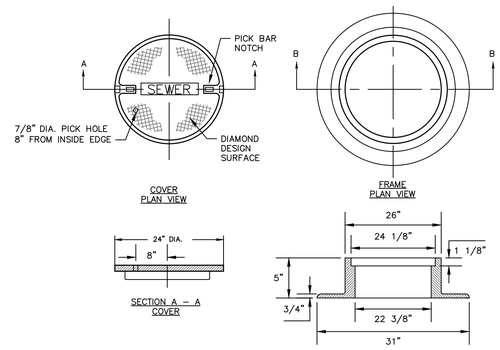


1,000 GALLON GREASE TRAP DETAIL
NOT TO SCALE

NOTES:
1. MANHOLE COVER FOR SEWER MANHOLE SHALL BE ENGRAVED "SEWER", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960002 AS MANUFACTURED BY NEENAH FOUNDRY. MANHOLE COVER FOR STORM SEWER SHALL BE ENGRAVED "DRAIN", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960003 AS MANUFACTURED BY NEENAH FOUNDRY.
2. MANHOLE FRAME SHALL BE EITHER ITEM # 14960001, AS MANUFACTURED BY NEENAH FOUNDRY, OR ITEM # 1960Z, AS MANUFACTURED BY EAST JORDAN CO.
3. WITHIN CITY OF PORTLAND ROW, STORM DRAIN MANHOLE SHALL CONFORM WITH "STANDARD PRECAST SEWER MANHOLE DETAIL", WITH THE EXCEPTION THAT THE COVER SHALL BE MARKED AS "DRAIN". REFER TO CITY OF PORTLAND TECHNICAL MANUAL, SECTION 2 – SANITARY SEWER AND STORM DRAIN, FIGURE II–1
4. SUBMITTAL REQUIRED FOR MANHOLES, MANHOLE FRAMES & MANHOLE COVERS

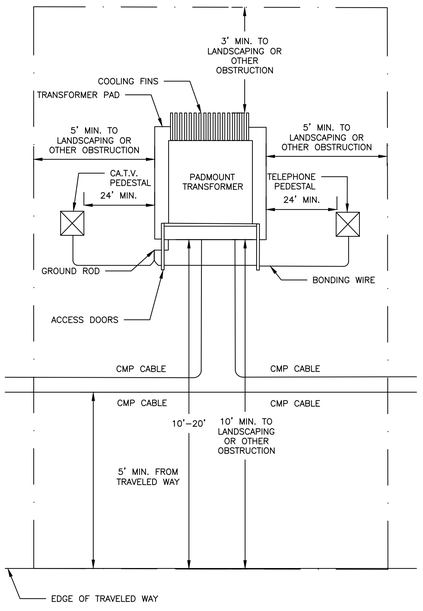


STANDARD PRECAST SEWER MANHOLE
NOT TO SCALE



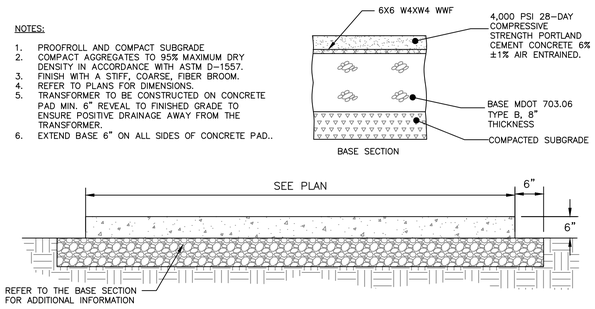
CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

NOTES:
1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
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4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. OIL WATER SEPARATOR SHALL HAVE "SEWER" CAST INTO THE COVER.
6. APPROVED MANHOLE FRAMES:
   6.1. EAST JORDAN = 1690Z
   6.2. NEENAH = R-1496
   6.3. OR APPROVED EQUAL
7. APPROVED MANHOLE COVERS
   7.1. EAST JORDAN = 2160A
   7.2. NEENAH = R-1496
   7.3. OR APPROVED EQUAL



9'X9' PAD MOUNTED TRANSFORMER
NOT TO SCALE

NOTES:
1. PROOFROLL AND COMPACT SUBGRADE
2. COMPACT AGGREGATES TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
3. FINISH WITH A STIFF, COARSE, FIBER BROOM.
4. REFER TO PLANS FOR DIMENSIONS.
5. TRANSFORMER TO BE CONSTRUCTED ON CONCRETE PAD MIN. 6" REVEAL TO FINISHED GRADE TO ENSURE POSITIVE DRAINAGE AWAY FROM THE TRANSFORMER.
6. EXTEND BASE 6" ON ALL SIDES OF CONCRETE PAD..



CONCRETE PAD DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 5/19/23

DRAWING NAME: UTILITY DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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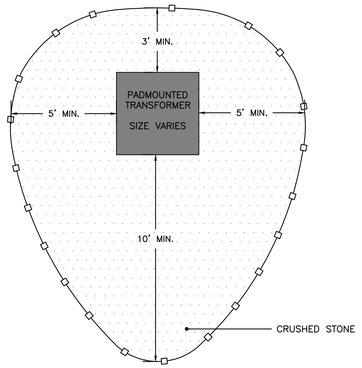
ACORN ENGINEERING, INC.
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STATE OF MAINE
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LICENSED
4/3/23

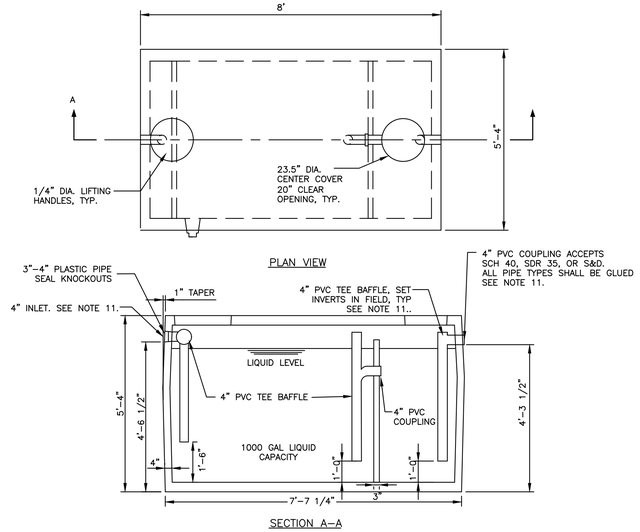
DRAWING NO.
C-43

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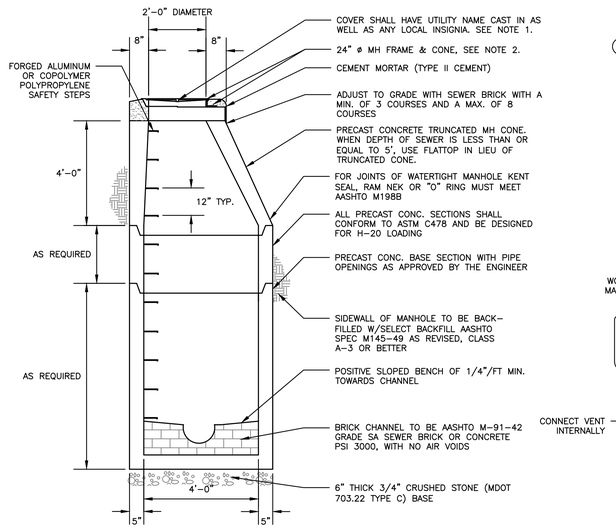
CMP TRANSFORMER SETBACKS
NOT TO SCALE

NOTES:
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10. TANKS CAN BE VACUUM TESTED BY MANUFACTURER AT ADDITIONAL COST.
11. CONTRACTOR TO VERIFY INLET/OUTLET PIPE SIZE WITH FINAL MEP PLANS.

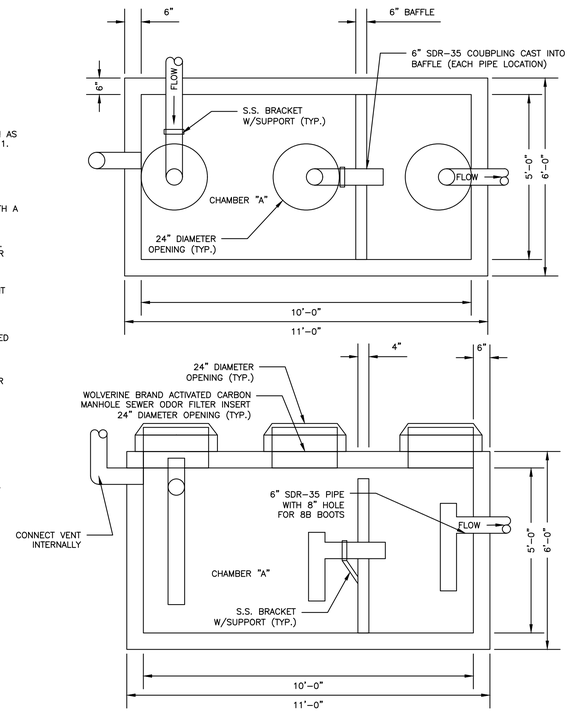


1,000 GALLON GREASE TRAP DETAIL
NOT TO SCALE

NOTES:
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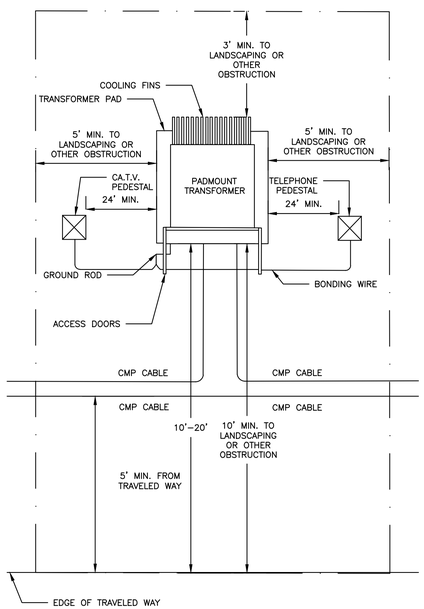


STANDARD PRECAST SEWER MANHOLE
NOT TO SCALE



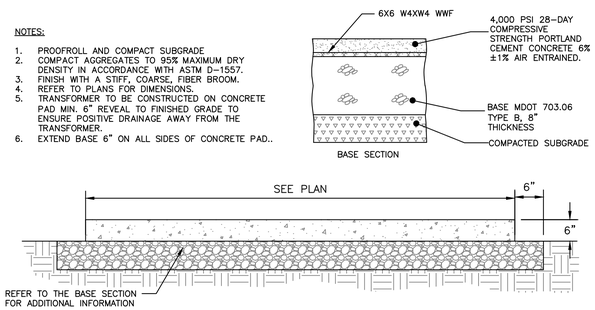
NOTES:
1. CONCRETE 5000 PSI AT 28 DAYS.
2. H–20 LOADING
3. JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT (ASSHTO M–19)
4. ALL TEES/BAFFLES PROVIDED BY PRECAST
5. THIS STRUCTURE MUST DISCHARGE TO A CITY OF PORTLAND STANDARD MANHOLE WITH CHANNEL (CONTROL/SAMPLING MANHOLE).
6. FORMULA FOR SIZING THE TRAP: CHAMBER "A" (2/3 OF TANK VOLUME) MUST BE EQUIVALENT TO THE CHARGE DAILY PROCESS FLOW FROM THE FACILITY WITH NO SANITARY OR OTHER EXTRANEOUS WASTES FLOWING THROUGH IT.

EXTERNAL GREASE TRAP DESIGN
NOT TO SCALE

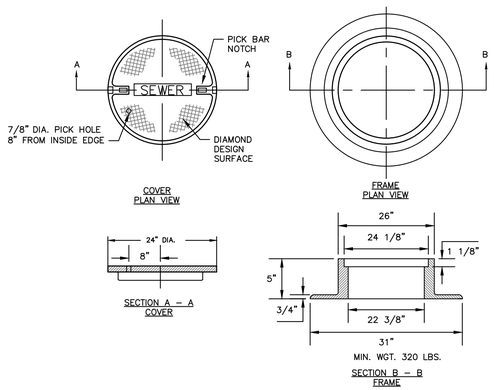


9'X9' PAD MOUNTED TRANSFORMER
NOT TO SCALE

NOTES:
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2. COMPACT AGGREGATES TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D–1557.
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CONCRETE PAD DETAIL
NOT TO SCALE



CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

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PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: UTILITY DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

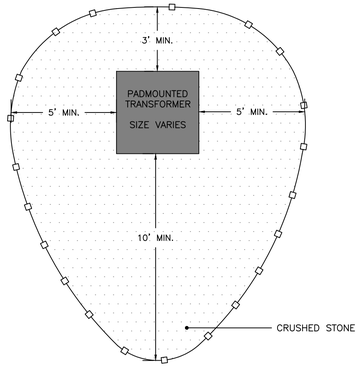
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STATE OF MAINE
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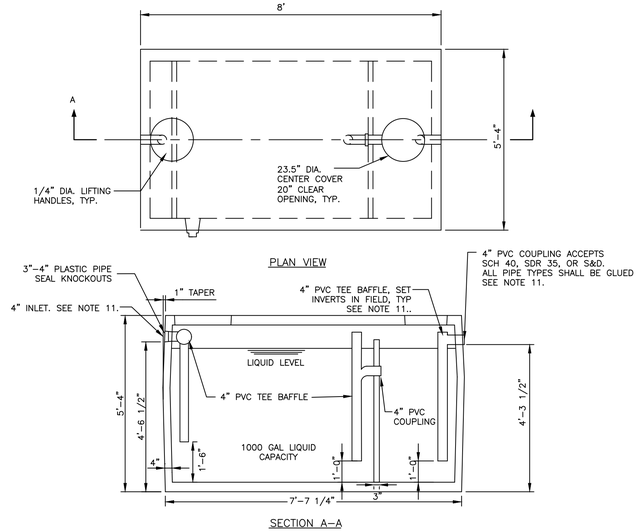
DRAWING NO.
C-43

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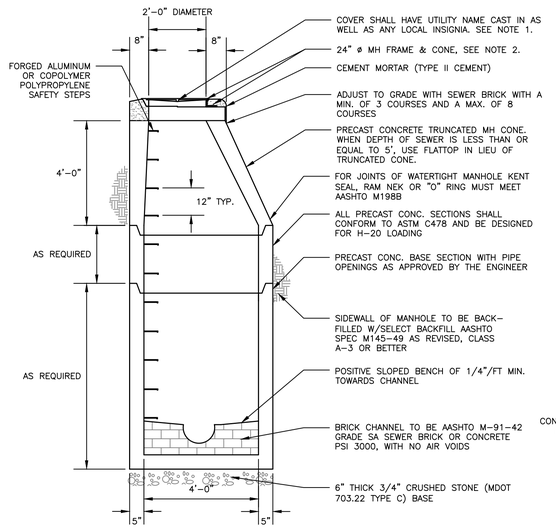
CMP TRANSFORMER SETBACKS
NOT TO SCALE

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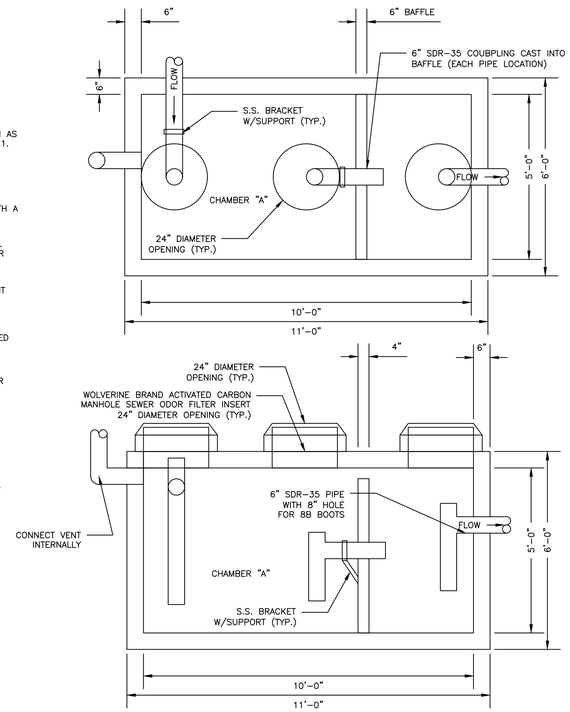


1,000 GALLON GREASE TRAP DETAIL
NOT TO SCALE

NOTES:
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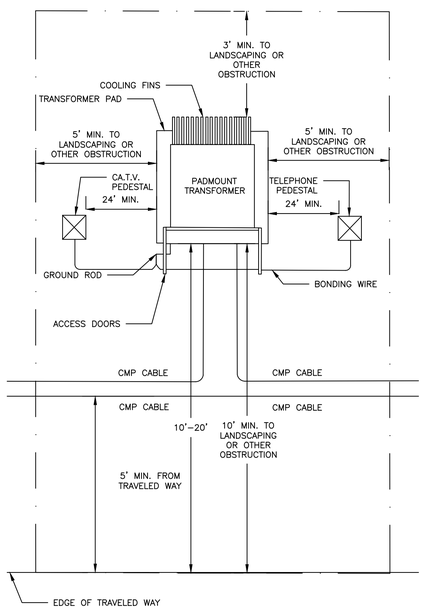


STANDARD PRECAST SEWER MANHOLE
NOT TO SCALE



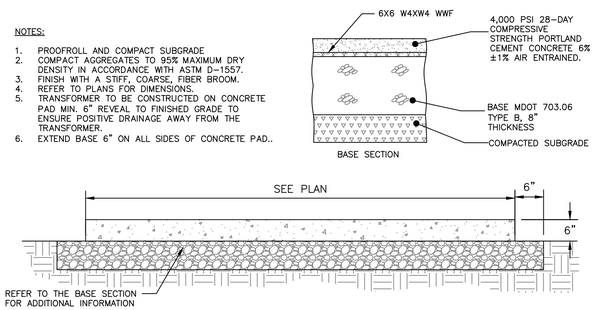
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EXTERNAL GREASE TRAP DESIGN
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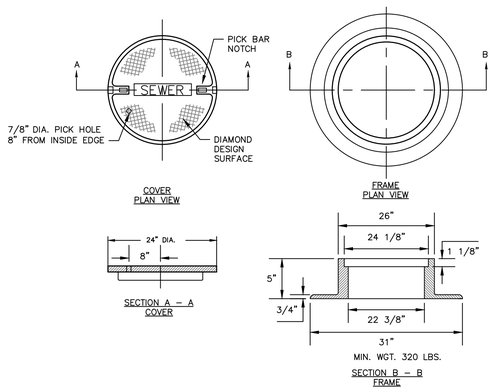


9'X9' PAD MOUNTED TRANSFORMER
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1. PROOFROLL AND COMPACT SUBGRADE
2. COMPACT AGGREGATES TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D–1557.
3. FINISH WITH A STIFF, COARSE, FIBER BROOM.
4. REFER TO PLANS FOR DIMENSIONS.
5. TRANSFORMER TO BE CONSTRUCTED ON CONCRETE PAD MIN. 6" REVEAL TO FINISHED GRADE TO ENSURE POSITIVE DRAINAGE AWAY FROM THE TRANSFORMER.
6. EXTEND BASE 6" ON ALL SIDES OF CONCRETE PAD..



CONCRETE PAD DETAIL
NOT TO SCALE



CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

NOTES:
1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
2. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
3. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. OIL WATER SEPARATOR SHALL HAVE "SEWER" CAST INTO THE COVER.
6. APPROVED MANHOLE FRAMES:
6.1. EAST JORDAN = 1690Z
6.2. NEENAH = R–1496
6.3. OR APPROVED EQUAL
7. APPROVED MANHOLE COVERS
7.1. EAST JORDAN = 2160A
7.2. NEENAH = R–1496
7.3. OR APPROVED EQUAL

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: UTILITY DETAILS – 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ISSUED AND PRINTED FOR PERMIT

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775–2655

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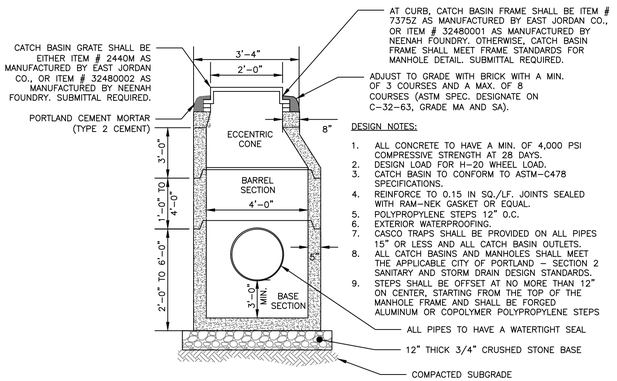
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SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/3/23

DRAWING NO.
C-43

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE ⅞" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROFFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.



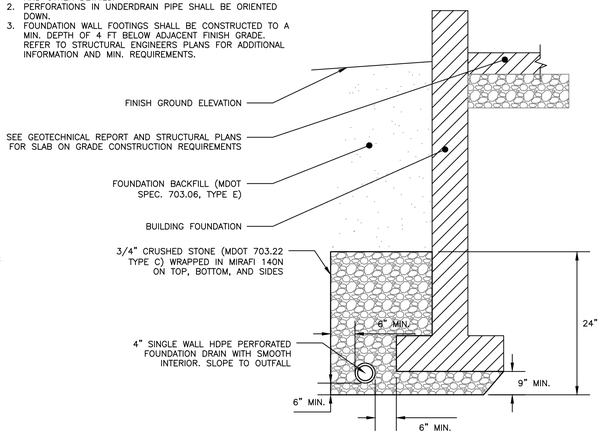
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 15" OR LESS AND ALL CATCH BASIN OUTLETS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND -- SECTION 2 SANITARY AND STORM DRAIN DESIGN STANDARDS.
9. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS

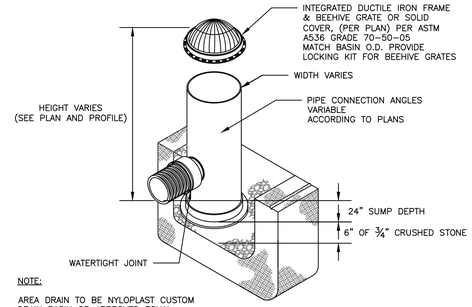
4'-0" DIAMETER PRECAST CATCH BASIN/MANHOLE DRAIN
NOT TO SCALE

NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



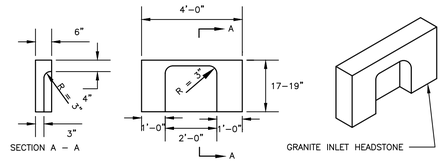
FOUNDATION DRAIN DETAIL
NOT TO SCALE



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

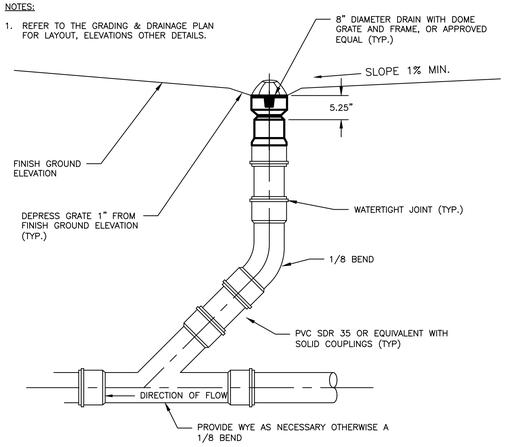
BEEHIVE DRAIN DETAIL
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE

NOTES:

1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



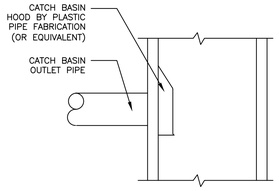
INLINE DRAIN DETAIL WITH BEEHIVE GRATE
NOT TO SCALE

1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL

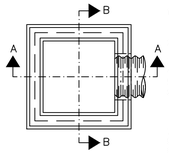
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL

NOTES:

1. INSTALL HOOD ON ALL OUTLETS 24" OR LESS.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS.



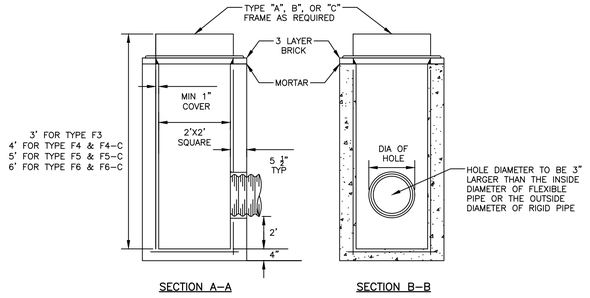
CATCH BASIN HOOD DETAIL
NOT TO SCALE



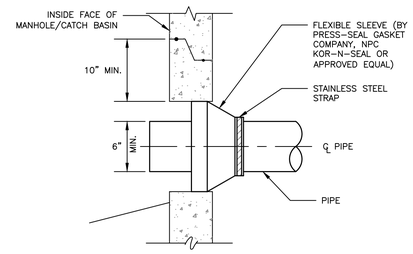
PLAN VIEW

NOTES:

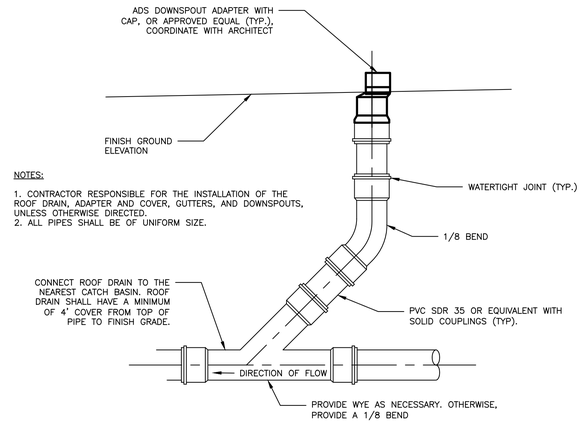
1. ENTIRE CATCH BASIN WITH EXCEPTION OF LEVELING BRICK FRAME AND GRATE TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, #4 REBAR MINIMUM 8" O.C. OR EQUIVALENT WITH ENGINEER OF RECORD'S APPROVAL.
2. FIBER-REINFORCED CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. DESIGN LOAD FOR H-20 WHEEL LOAD.
4. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
5. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
6. POLYPROPYLENE STEPS 12" O.C.
   6.1. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS.
7. EXTERIOR WATERPROOFING.
8. FLEXIBLE WATERTIGHT PIPE BOOTS TO CONFORM TO ASTM C-923.
9. SHALL MEET THE APPLICABLE TOWN OF SCARBOROUGH STANDARDS.
10. CATCH BASIN SHALL BE AS MANUFACTURED BY PRECAST OF MAINE OR APPROVED EQUAL.



24" SQUARE CATCH BASIN "TYPE F"
NOT TO SCALE



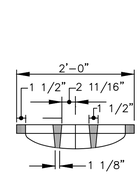
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE



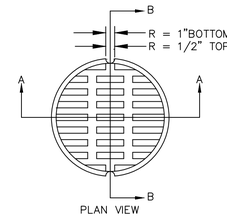
NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.

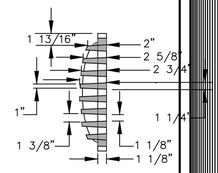
ROOF DRAIN DETAIL
NOT TO SCALE



SECTION A-A

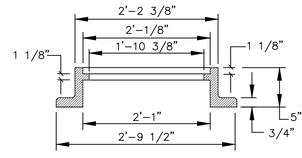


PLAN VIEW



SECTION B-B

GRATE DETAIL



SECTION B-B

FRAME DETAIL

CIRCULAR CATCH BASIN FRAME & GRATE W/O D-RING
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: DRAINAGE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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(207) 775-2655

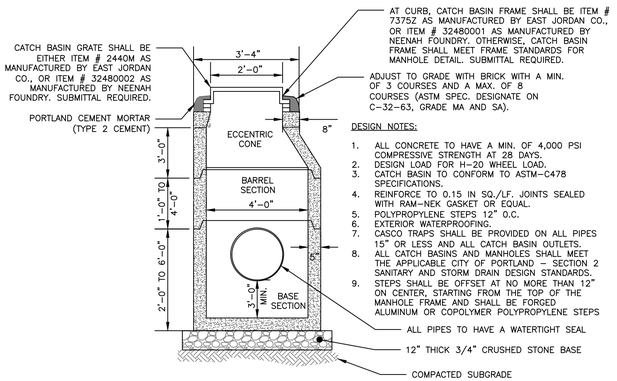
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-44

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE ⅞" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROFFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.



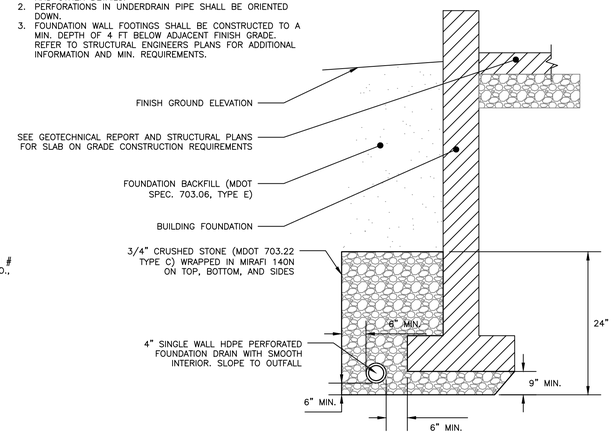
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 15" OR LESS AND ALL CATCH BASIN OUTLETS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND -- SECTION 2 SANITARY AND STORM DRAIN DESIGN STANDARDS.
9. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS

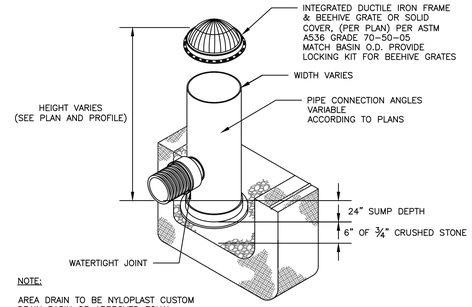
4'-0" DIAMETER PRECAST CATCH BASIN/MANHOLE DRAIN
NOT TO SCALE

NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



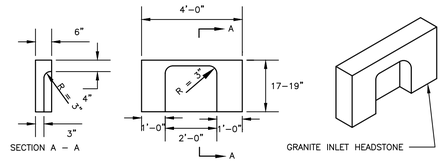
FOUNDATION DRAIN DETAIL
NOT TO SCALE



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

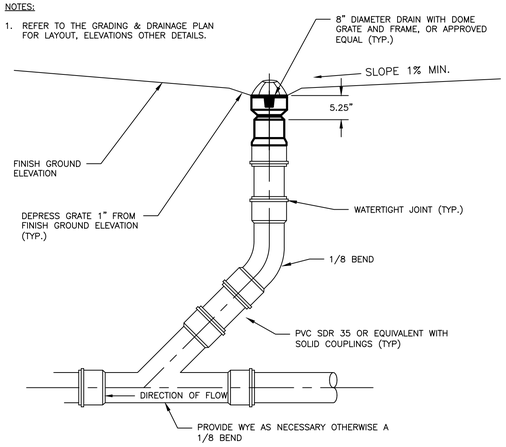
BEEHIVE DRAIN DETAIL
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE

NOTES:

1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



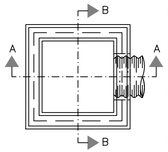
INLINE DRAIN DETAIL WITH BEEHIVE GRATE
NOT TO SCALE

1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL

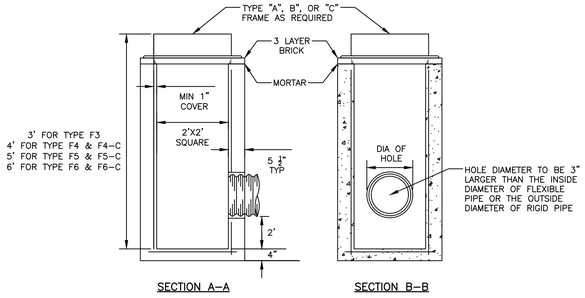
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL

NOTES:

1. ENTIRE CATCH BASIN WITH EXCEPTION OF LEVELING BRICK FRAME AND GRATE TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, #4 REBAR MINIMUM 8" O.C. OR EQUIVALENT WITH ENGINEER OF RECORD'S APPROVAL.
2. FIBER-REINFORCED CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. DESIGN LOAD FOR H-20 WHEEL LOAD.
4. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
5. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
6. POLYPROPYLENE STEPS 12" O.C.
   6.1. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS.
7. EXTERIOR WATERPROOFING.
8. FLEXIBLE WATERTIGHT PIPE BOOTS TO CONFORM TO ASTM C-923.
9. SHALL MEET THE APPLICABLE TOWN OF SCARBOROUGH STANDARDS.
10. CATCH BASIN SHALL BE AS MANUFACTURED BY PRECAST OF MAINE OR APPROVED EQUAL.



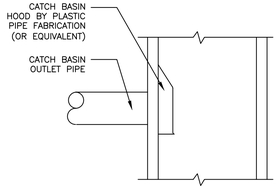
PLAN VIEW



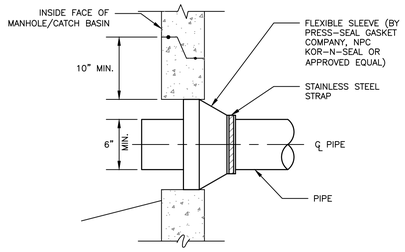
24" SQUARE CATCH BASIN "TYPE F"
NOT TO SCALE

NOTES:

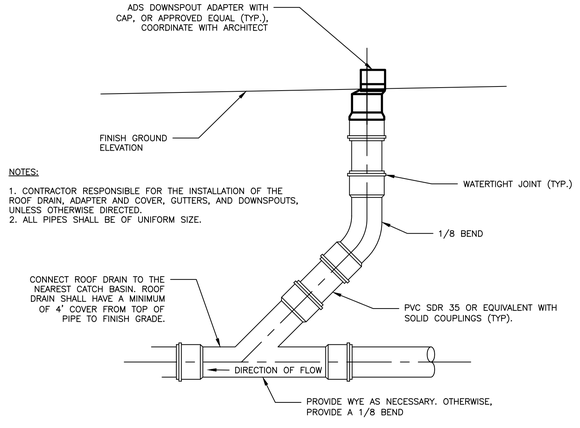
1. INSTALL HOOD ON ALL OUTLETS 24" OR LESS.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS.



CATCH BASIN HOOD DETAIL
NOT TO SCALE



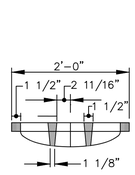
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE



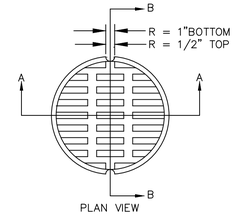
NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.

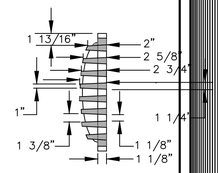
ROOF DRAIN DETAIL
NOT TO SCALE



SECTION A-A

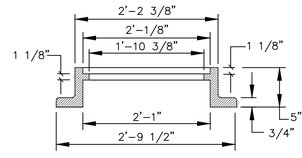


PLAN VIEW



SECTION B-B

GRATE DETAIL



SECTION B-B

FRAME DETAIL

CIRCULAR CATCH BASIN FRAME & GRATE W/O D-RING
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 5/19/23

DRAWING NAME: DRAINAGE DETAILS - 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. IF ANY ALTERATIONS, AUTHORIZED OR UNAUTHORIZED ARE MADE, THEY SHALL BE DONE AT USERS SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC

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(207) 775-2655

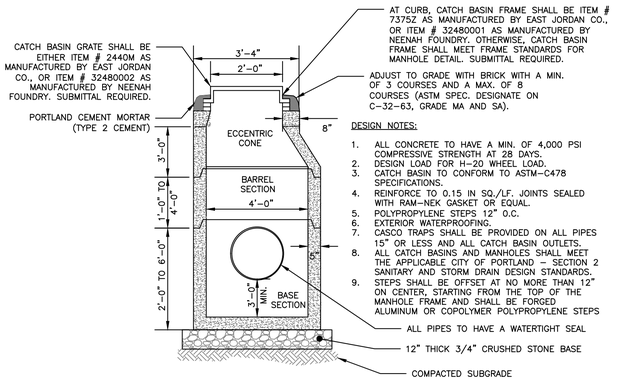
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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-44

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE ⅝" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.



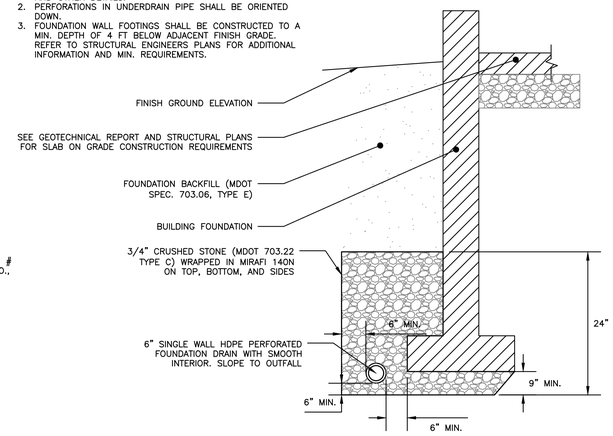
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 15" OR LESS AND ALL CATCH BASIN OUTLETS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND – SECTION 2 SANITARY AND STORM DRAIN DESIGN STANDARDS.
9. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS

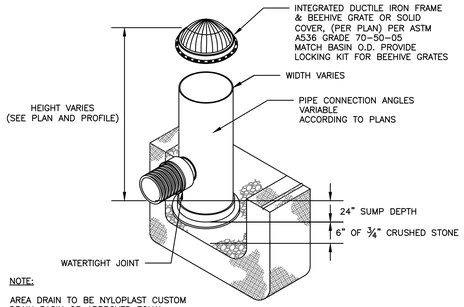
4'-0" DIAMETER PRECAST CATCH BASIN/MANHOLE DRAIN
NOT TO SCALE

NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



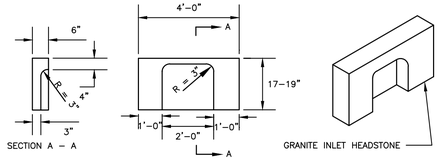
FOUNDATION DRAIN DETAIL
NOT TO SCALE



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

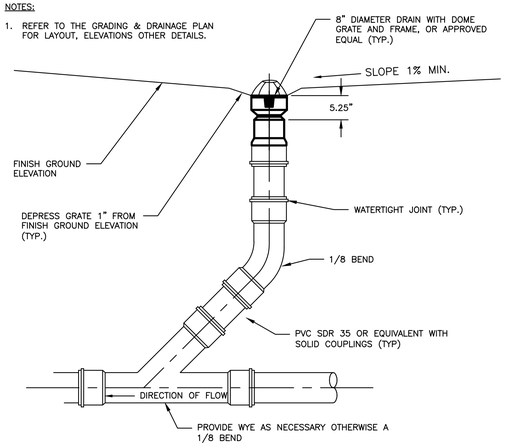
BEEHIVE DRAIN DETAIL
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE

NOTES:

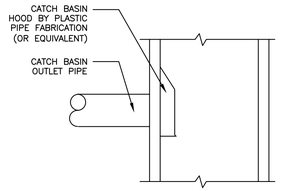
1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



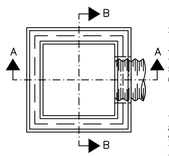
INLINE DRAIN DETAIL WITH BEEHIVE GRATE
NOT TO SCALE

NOTES:

1. INSTALL HOOD ON ALL OUTLETS 24" OR LESS.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS.



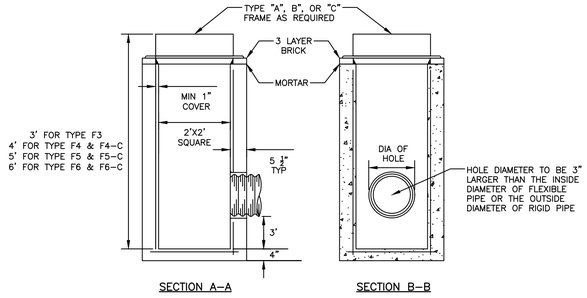
CATCH BASIN HOOD DETAIL
NOT TO SCALE



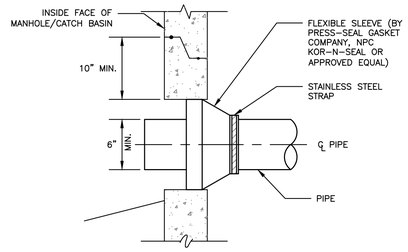
PLAN VIEW

NOTES:

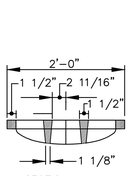
1. ENTIRE CATCH BASIN WITH EXCEPTION OF LEVELING BRICK FRAME AND GRATE TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, #4 REBAR MINIMUM 8" O.C. OR EQUIVALENT WITH ENGINEER OF RECORD'S APPROVAL.
2. FIBER-REINFORCED CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. DESIGN LOAD FOR H-20 WHEEL LOAD.
4. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
5. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
6. POLYPROPYLENE STEPS 12" O.C.
   6.1. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS.
7. EXTERIOR WATERPROOFING.
8. FLEXIBLE WATERTIGHT PIPE BOOTS TO CONFORM TO ASTM C-923.
9. SHALL MEET THE APPLICABLE CITY OF PORTLAND STANDARDS.
10. CATCH BASIN SHALL BE AS MANUFACTURED BY PRECAST OF MAINE OR APPROVED EQUAL.
11. CATCH BASIN SHALL HAVE HOOD PLACED OVER OUTLET. HOODS SHALL BE BY PLASTIC PIPE FABRICATION (OR EQUIVALENT)



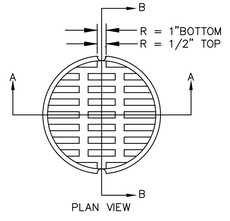
24" SQUARE CATCH BASIN "TYPE F"
NOT TO SCALE



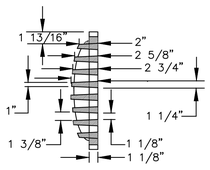
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE



SECTION A-A



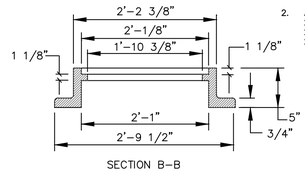
PLAN VIEW



SECTION B-B

GRATE DETAIL

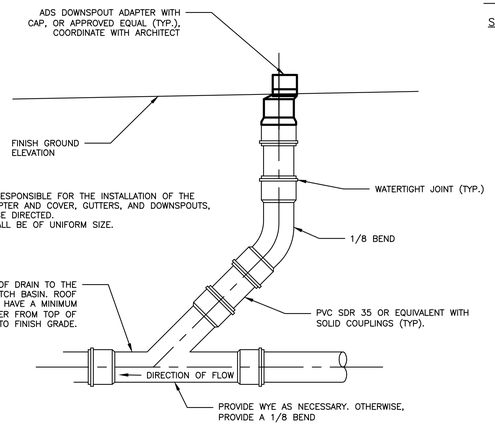
1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL



SECTION B-B

FRAME DETAIL

CIRCULAR CATCH BASIN FRAME & GRATE W/O D-RING
NOT TO SCALE



NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.

ROOF DRAIN DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: DRAINAGE DETAILS – 1

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

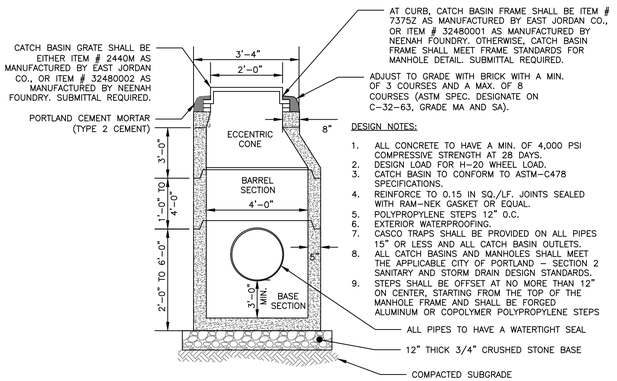
STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
8/25/23

DRAWING NO.

C-44

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE ⅞" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.



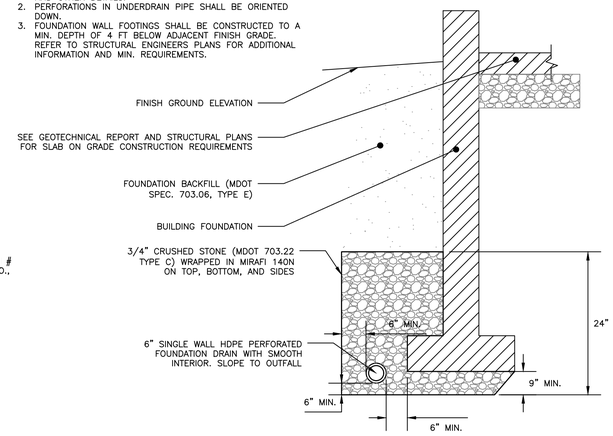
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 15" OR LESS AND ALL CATCH BASIN OUTLETS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND – SECTION 2 SANITARY AND STORM DRAIN DESIGN STANDARDS.
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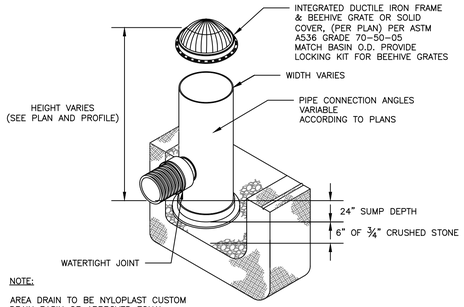
4'-0" DIAMETER PRECAST CATCH BASIN/MANHOLE DRAIN
NOT TO SCALE

NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



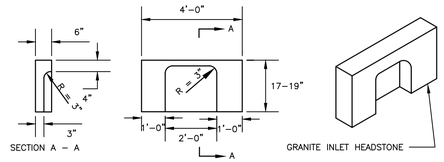
FOUNDATION DRAIN DETAIL
NOT TO SCALE



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

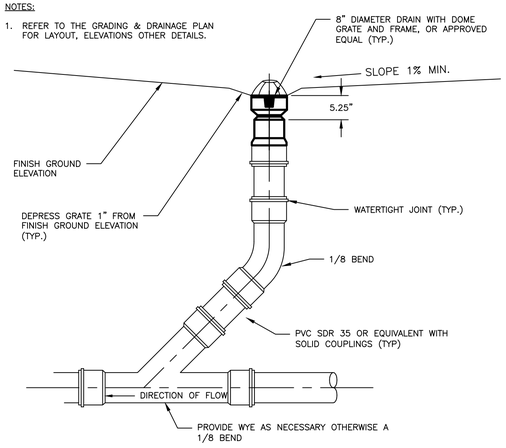
BEEHIVE DRAIN DETAIL
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE

NOTES:

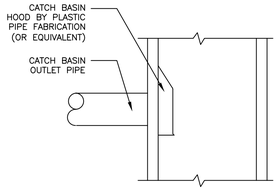
1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



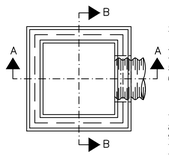
INLINE DRAIN DETAIL WITH BEEHIVE GRATE
NOT TO SCALE

NOTES:

1. INSTALL HOOD ON ALL OUTLETS 24" OR LESS.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS.



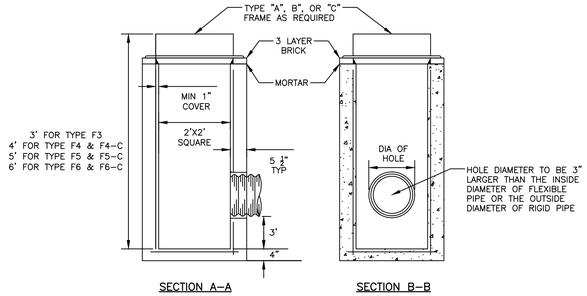
CATCH BASIN HOOD DETAIL
NOT TO SCALE



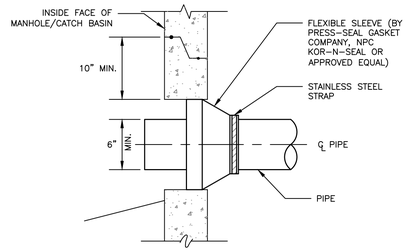
PLAN VIEW

NOTES:

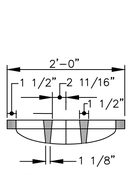
1. ENTIRE CATCH BASIN WITH EXCEPTION OF LEVELING BRICK FRAME AND GRATE TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, #4 REBAR MINIMUM 8" O.C. OR EQUIVALENT WITH ENGINEER OF RECORD'S APPROVAL.
2. FIBER-REINFORCED CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. DESIGN LOAD FOR H-20 WHEEL LOAD.
4. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
5. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
6. POLYPROPYLENE STEPS 12" O.C.
   6.1. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS.
7. EXTERIOR WATERPROOFING.
8. FLEXIBLE WATERTIGHT PIPE BOOTS TO CONFORM TO ASTM C-923.
9. SHALL MEET THE APPLICABLE CITY OF PORTLAND STANDARDS.
10. CATCH BASIN SHALL BE AS MANUFACTURED BY PRECAST OF MAINE OR APPROVED EQUAL.
11. CATCH BASIN SHALL HAVE HOOD PLACED OVER OUTLET. HOODS SHALL BE BY PLASTIC PIPE FABRICATION (OR EQUIVALENT)



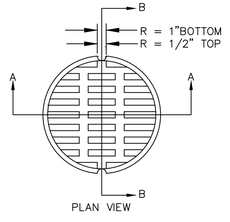
24" SQUARE CATCH BASIN "TYPE F"
NOT TO SCALE



NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE

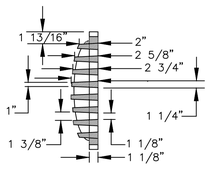


SECTION A-A



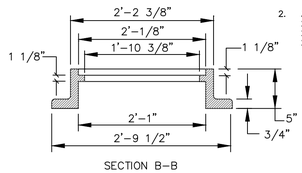
PLAN VIEW

GRATE DETAIL



SECTION B-B

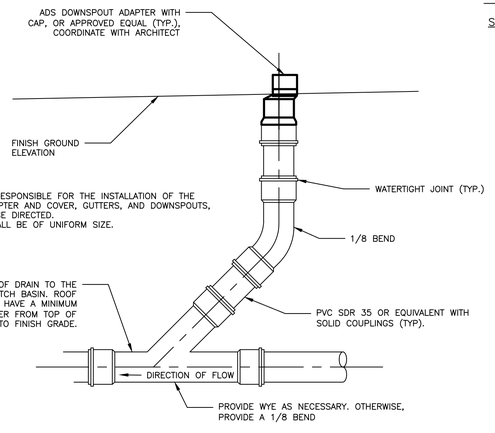
1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL



SECTION B-B

FRAME DETAIL

CIRCULAR CATCH BASIN FRAME & GRATE W/O D-RING
NOT TO SCALE



NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.

CONNECT ROOF DRAIN TO THE NEAREST CATCH BASIN. ROOF DRAIN SHALL HAVE A MINIMUM OF 4' COVER FROM TOP OF PIPE TO FINISH GRADE.

ROOF DRAIN DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 9/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: DRAINAGE DETAILS – 1
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR UNAUTHORIZED, MADE TO THESE DRAWINGS SHALL BE DONE WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

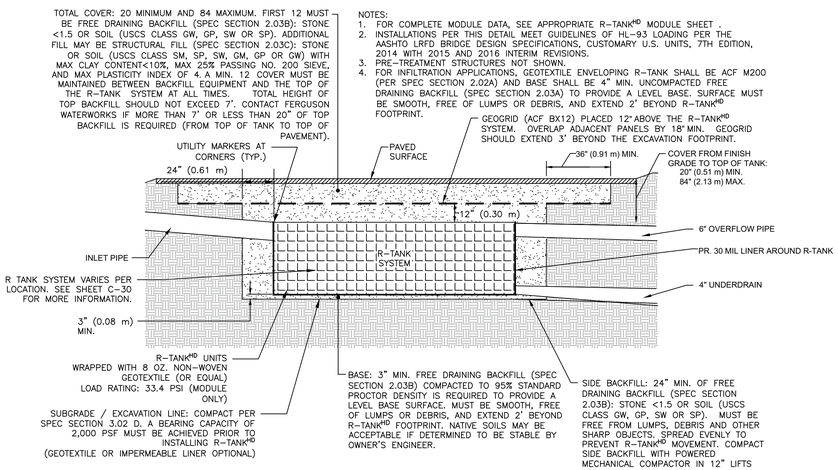
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

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JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

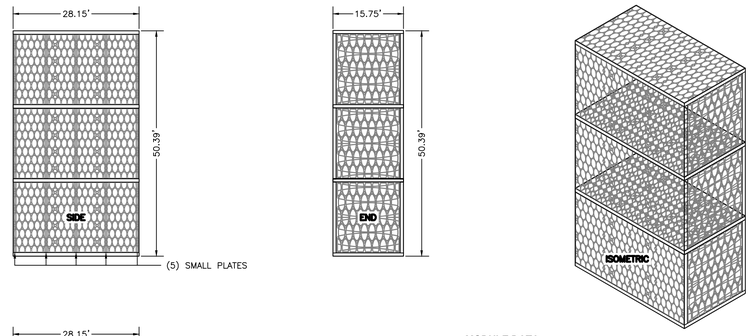
STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/3/23

DRAWING NO.

C-44



R-TANK SYSTEM DETAIL
NOT TO SCALE

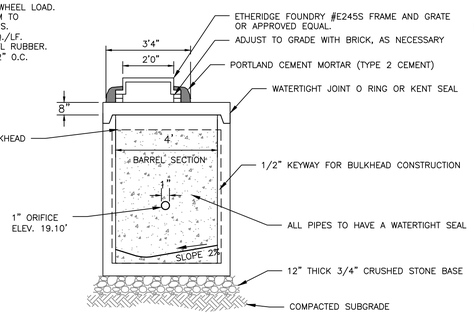


MODULE DATA

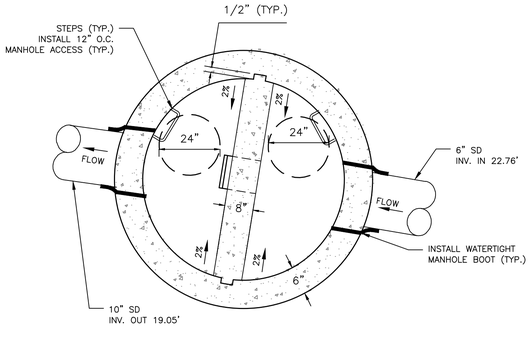
GEOMETRY: LENGTH = 28.15 IN. (715 MM)	**LOAD RATING**: 33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 50.39 IN. (1280 MM)	COVER REQUIREMENTS
TANK VOLUME = 12.93 CF	
STORAGE VOLUME = 12.28 CF	**MATERIAL**: 100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	
VOID SURFACE AREA: 90%	**SMALL PLATES REQUIRED**: 5/SEGMENT, 15/MODULE

R-TANK TRIPLE STACKED-HD MODULAR DETAIL
NOT TO SCALE

NOTES:
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.

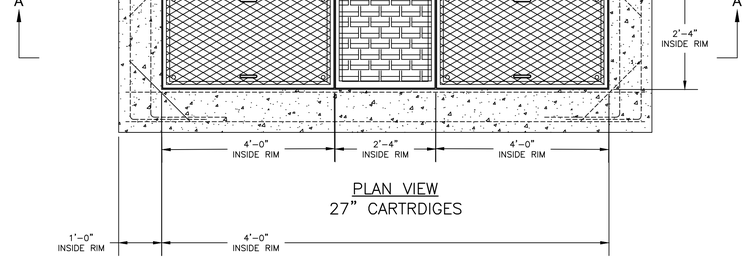


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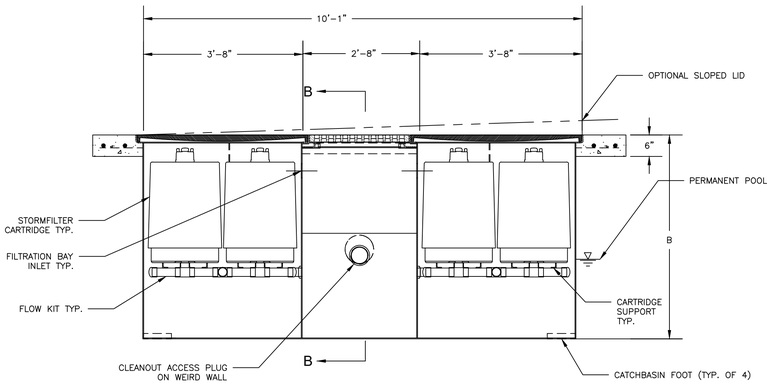
PLAN VIEW

OUTLET CONTROL STRUCTURE
NOT TO SCALE

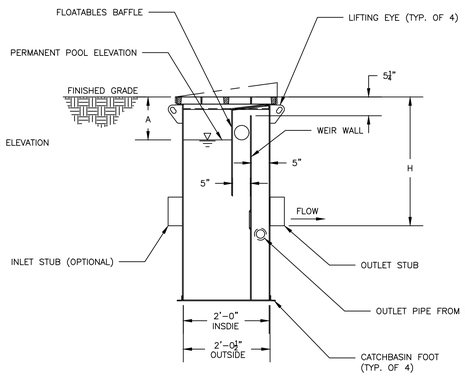


PLAN VIEW
27" CARTRDIGES

4-CARTRIDGE CATCHBASIN STORMFILTER DATA		
STRUCTURE ID		XXX
WATER QUALITY FLOW RATE (cfs)		X.XX
PEAK FLOW RATE (cl cfs)		X.XX
RETURN PERIOD OF PEAK FLOW (yrs)		XXX
CARTRIDGE FLOW RATE (gpm)		XX
MEDIA TYPE (PERLITE, ZPG, PSORB)		XXXXX
RIM ELEVATION		XXX.XX'
PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"
CONFIGURATION	OUTLET / INLET	
SLOPED LID		YES\NO
SOLID COVER		YES\NO
NOTES/SPECIAL REQUIREMENTS: *PER ENGINEER OF RECORD		



SECTION A-A



SECTION C-C

4 CARTRIDGE STORMFILTER
NOT TO SCALE

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. CARTRIDGE SELECTION

CATRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (GPM/SF)	2 GPM/SF	1.67* GPM/SF	1 GPM/SF	2 GPM/SF	1.67* GPM/SF	1 GPM/SF	2 GPM/SF	1.67* GPM/SF	1 GPM/SF
CARTRIDGE FLOW RATE (GPM)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 GPM/SF SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CATRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: DRAINAGE DETAILS - 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

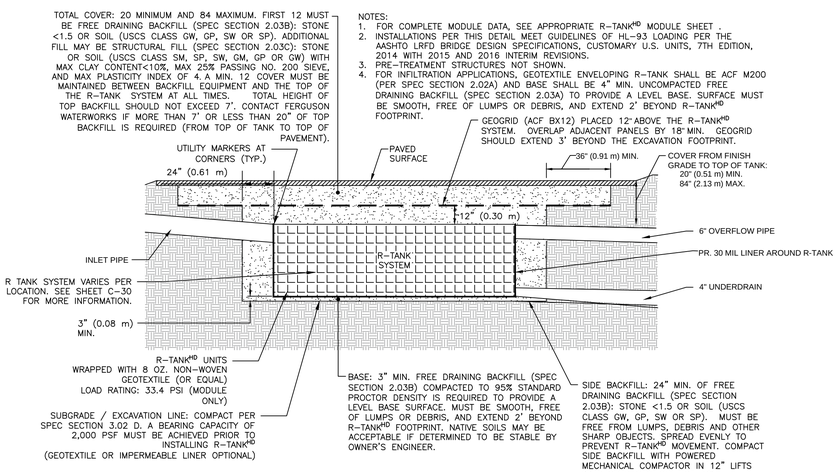
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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

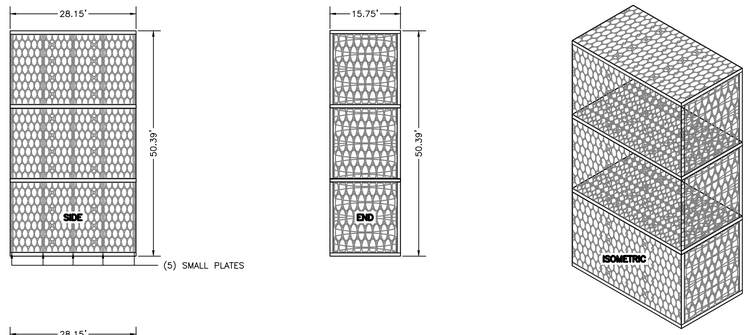
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JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — REGISTERED PROFESSIONAL ENGINEER — LICENSED — 4/3/23

DRAWING NO.
C-45



R-TANK SYSTEM DETAIL
NOT TO SCALE

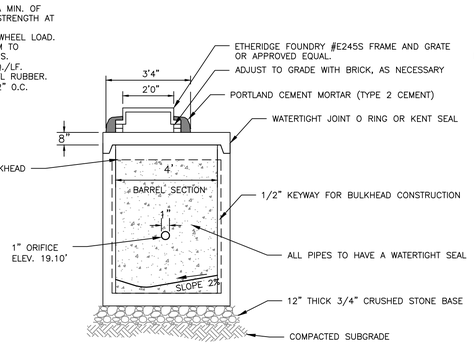


MODULE DATA

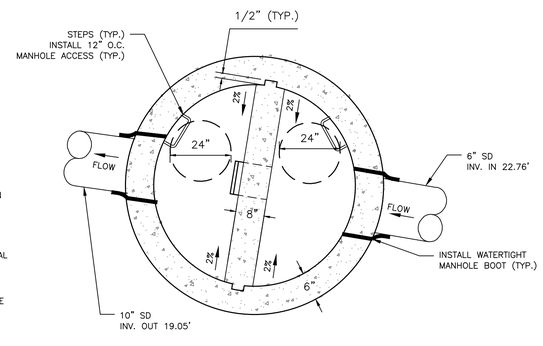
GEOMETRY: LENGTH = 28.15 IN. (715 MM)	**LOAD RATING**: 33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 50.39 IN. (1280 MM)	COVER REQUIREMENTS
TANK VOLUME = 12.93 CF	
STORAGE VOLUME = 12.28 CF	**MATERIAL**: 100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	
VOID SURFACE AREA: 90%	**SMALL PLATES REQUIRED**: 5/SEGMENT, 15/MODULE

R-TANK TRIPLE STACKED-HD MODULAR DETAIL
NOT TO SCALE

NOTES:
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.

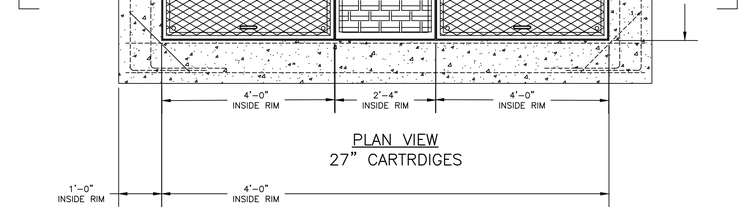


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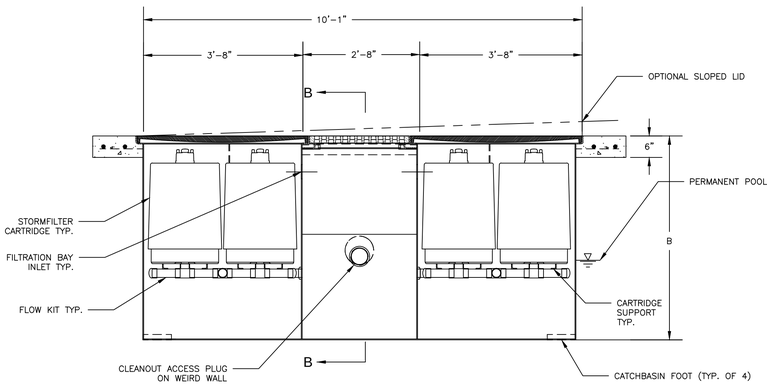
PLAN VIEW

OUTLET CONTROL STRUCTURE
NOT TO SCALE

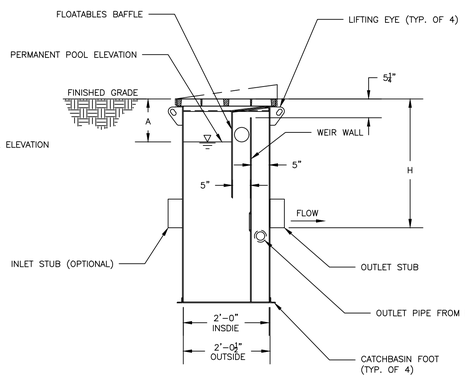


PLAN VIEW
27" CARTRDIGES

4-CARTRIDGE CATCHBASIN STORMFILTER DATA		
STRUCTURE ID		XXX
WATER QUALITY FLOW RATE (cfs)		X.XX
PEAK FLOW RATE (cfs)		X.XX
RETURN PERIOD OF PEAK FLOW (yrs)		XXX
CARTRIDGE FLOW RATE (gpm)		XX
MEDIA TYPE (PERLITE, ZPG, PSORB)		XXXXX
RIM ELEVATION		XXX.XX'
PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"
CONFIGURATION	OUTLET / INLET	
SLOPED LID		YES\NO
SOLID COVER		YES\NO
NOTES/SPECIAL REQUIREMENTS: *PER ENGINEER OF RECORD		



SECTION A-A



SECTION C-C

4 CARTRIDGE STORMFILTER
NOT TO SCALE

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
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CARTRIDGE FLOW RATE (GPM)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 GPM/SF SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB (PSORB) MEDIA ONLY

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8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
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PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23

DRAWING NAME: DRAINAGE DETAILS - 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

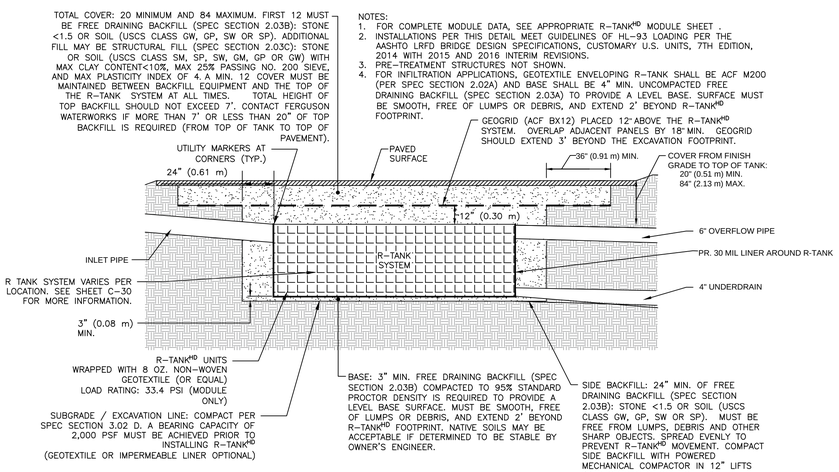
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P.O. BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

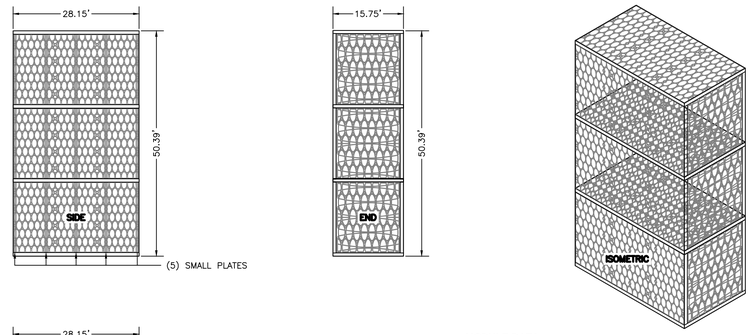
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DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-45



R-TANK SYSTEM DETAIL
NOT TO SCALE

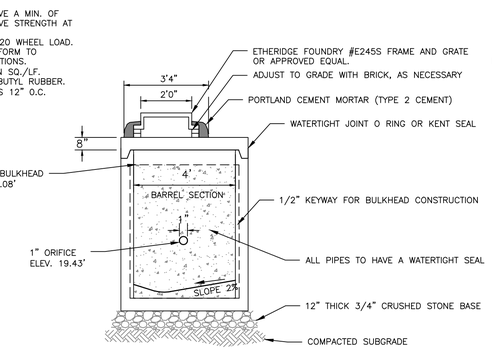


MODULE DATA

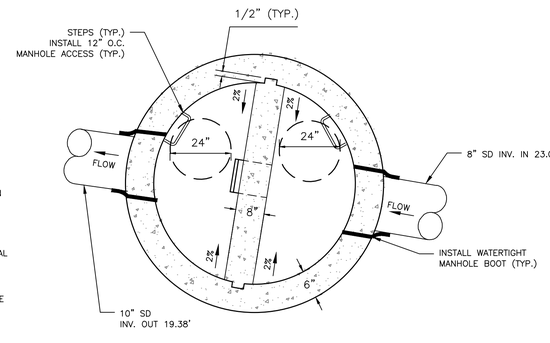
GEOMETRY: LENGTH = 28.15 IN. (715 MM)	**LOAD RATING**: 33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 50.39 IN. (1280 MM)	COVER REQUIREMENTS
TANK VOLUME = 12.93 CF	
STORAGE VOLUME = 12.28 CF	**MATERIAL**: 100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	
VOID SURFACE AREA: 90%	**SMALL PLATES REQUIRED: 5/SEGMENT, 15/MODULE**

R-TANK TRIPLE STACKED-HD MODULAR DETAIL
NOT TO SCALE

NOTES:
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.

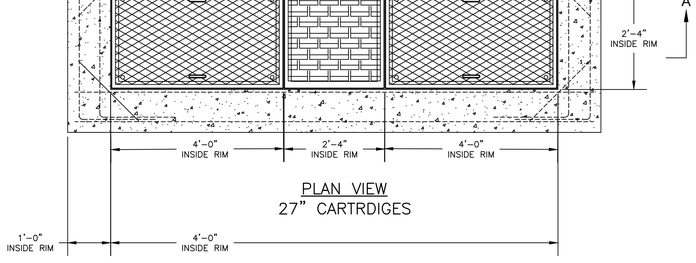


SIDE PROFILE

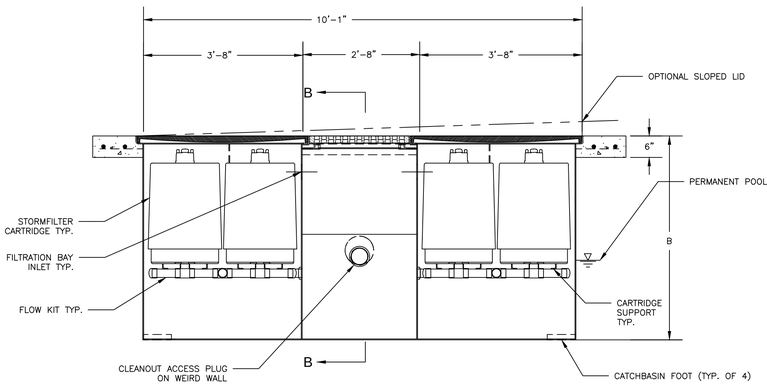


PLAN VIEW

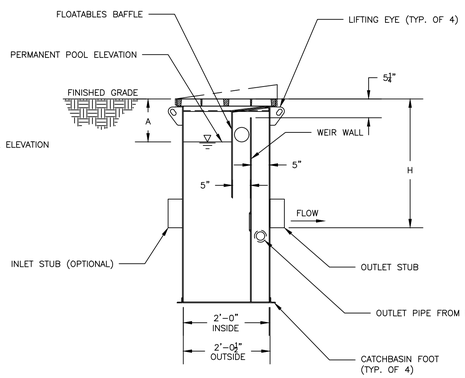
OUTLET CONTROL STRUCTURE
NOT TO SCALE



PLAN VIEW
27" CARTRDIGES



SECTION A-A



SECTION B-B

4 CARTRIDGE STORMFILTER
NOT TO SCALE

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. CARTRIDGE SELECTION

CATRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (GPM/SF)	2 GPM/SF	1.67* GPM/SF	1 GPM/SF	2 GPM/SF	1.67* GPM/SF	1 GPM/SF	2 GPM/SF	1.67* GPM/SF	1 GPM/SF
CARTRIDGE FLOW RATE (GPM)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 GPM/SF SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES
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B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: DRAINAGE DETAILS - 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

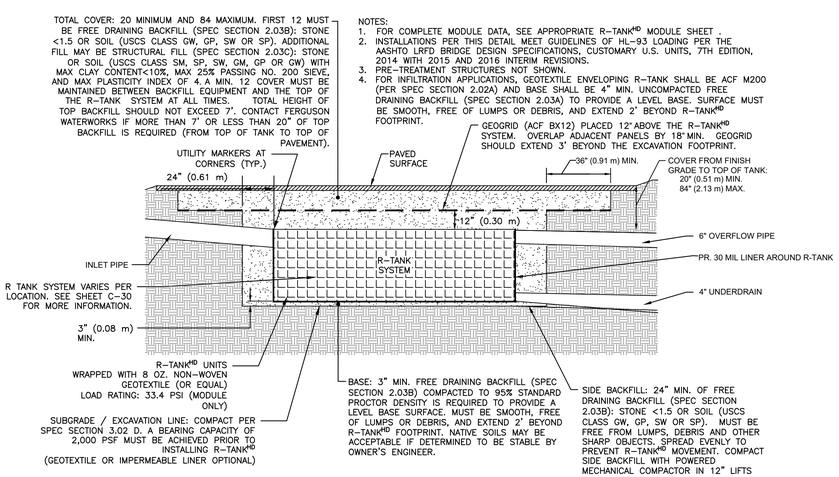
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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

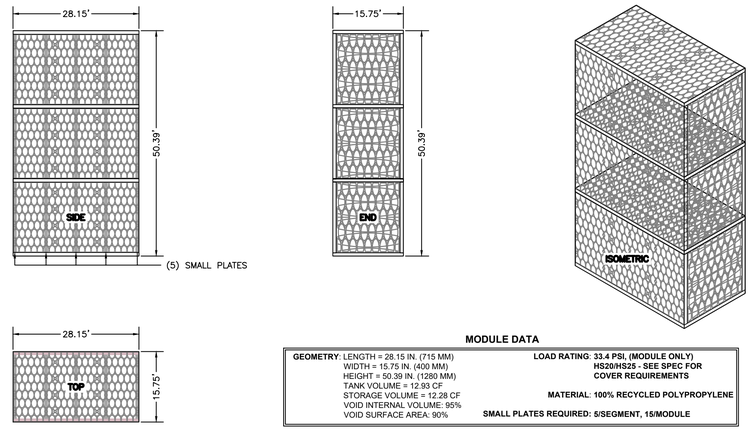
FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
8/25/23

DRAWING NO.
C-45



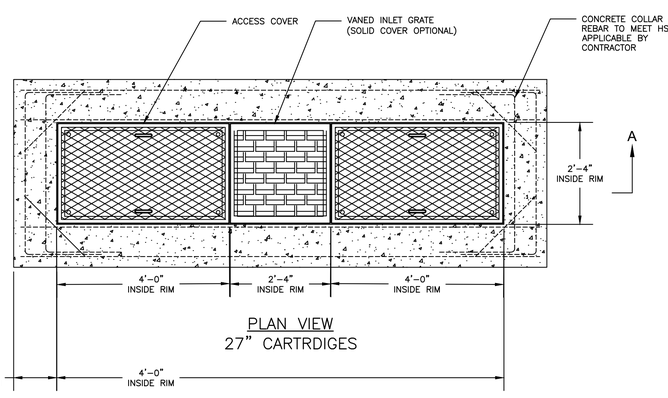
R-TANK SYSTEM DETAIL
NOT TO SCALE



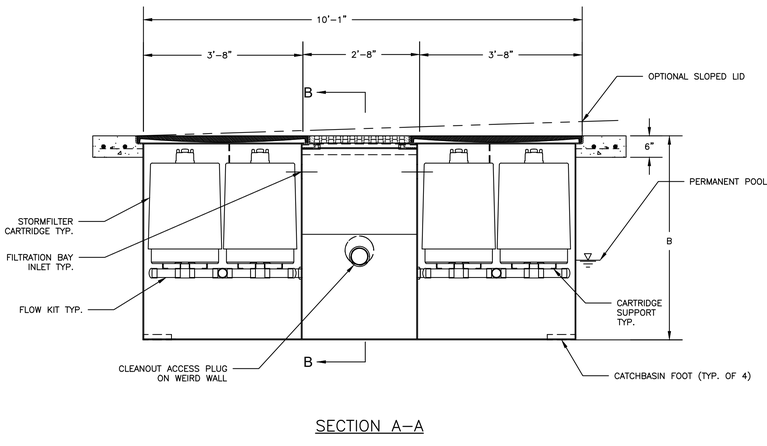
MODULE DATA

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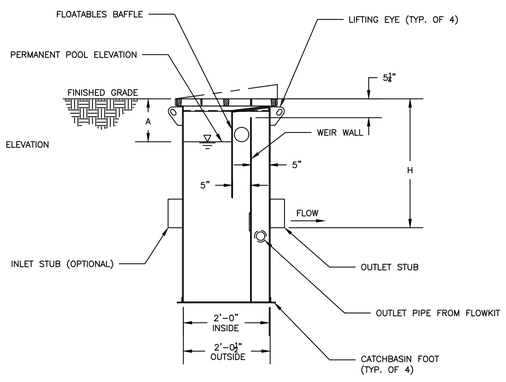
R-TANK TRIPLE STACKED-HD MODULAR DETAIL
NOT TO SCALE



PLAN VIEW
27" CARTRDIGES



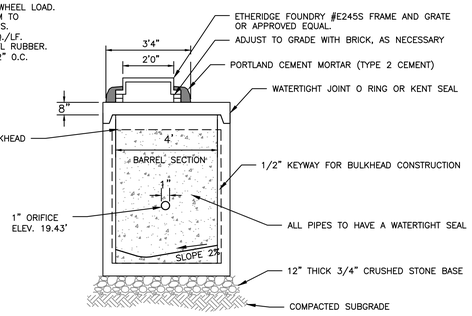
SECTION A-A



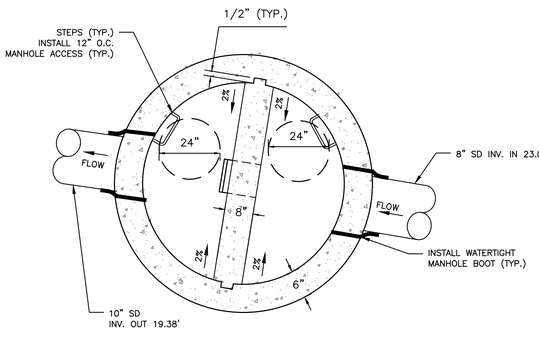
SECTION B-B

4 CARTRIDGE STORMFILTER
NOT TO SCALE

NOTES:
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4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.



SIDE PROFILE



PLAN VIEW

OUTLET CONTROL STRUCTURE
NOT TO SCALE

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PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/28/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: DRAINAGE DETAILS - 2
PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

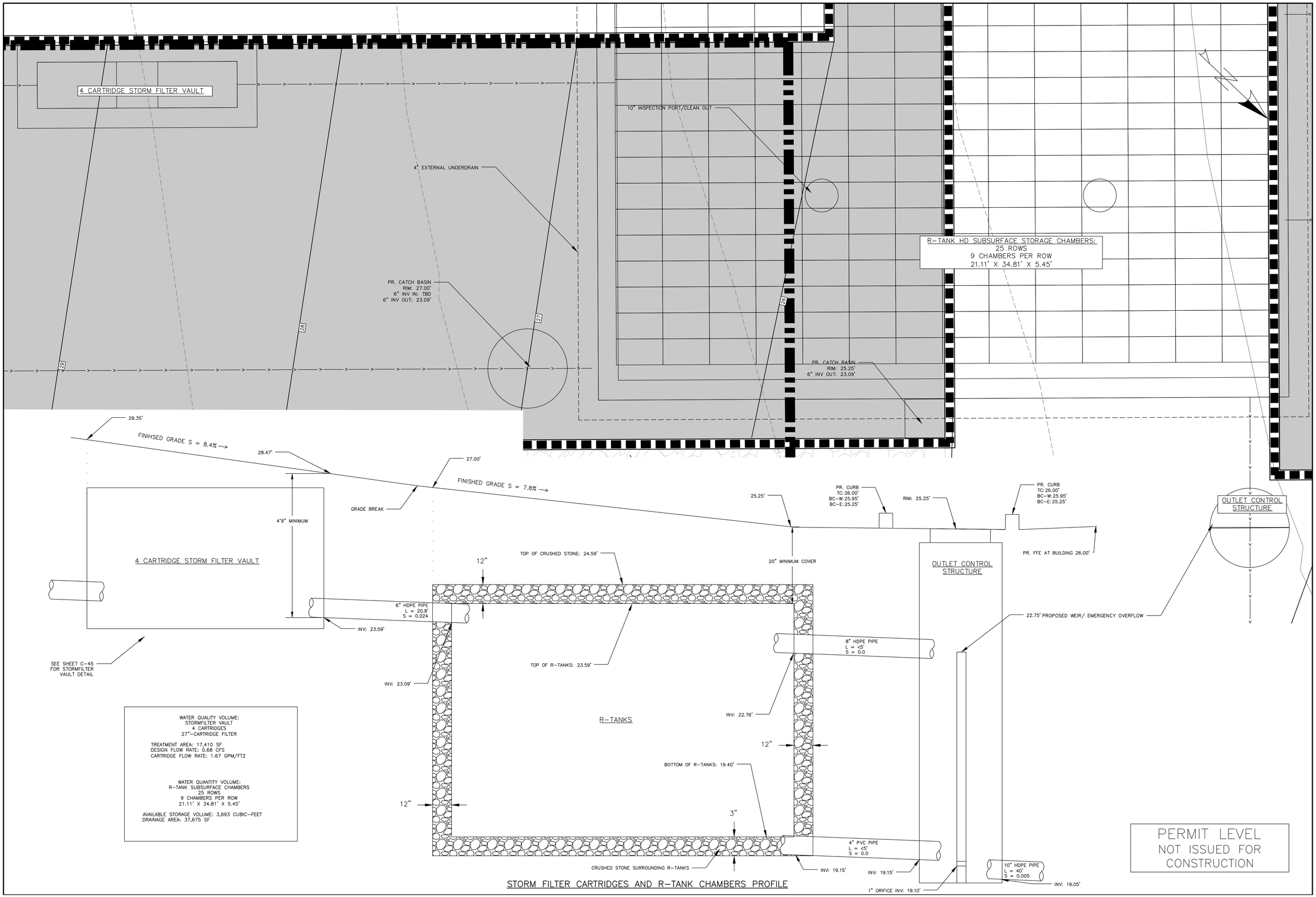
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PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE: 1192.2_CIVIL
JN: 1192.2
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: DNM
CHECKED BY: WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/3/23

DRAWING NO.
C-45



WATER QUALITY VOLUME:
STORMFILTER VAULT
4 CARTRIDGES
27"-CARTRIDGE FILTER

TREATMENT AREA: 17,410 SF
DESIGN FLOW RATE: 0.68 CFS
CARTRIDGE FLOW RATE: 1.67 GPM/FT2

WATER QUANTITY VOLUME:
R-TANK SUBSURFACE CHAMBERS
25 ROWS
9 CHAMBERS PER ROW
21.11' X 34.81' X 5.45'

AVAILABLE STORAGE VOLUME: 3,693 CUBIC-FEET
DRAINAGE AREA: 37,675 SF

STORM FILTER CARTRIDGES AND R-TANK CHAMBERS PROFILE

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23

DRAWING NAME: DRAINAGE DETAILS - 3

PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
4/3/23

DRAWING NO.
C-46

PR. 26.00'

PR. 26.00'

INV. IN: 23.09'
TYP. OF 4"

TC: 25.90'
BC: 25.40'

TC: 25.90'
BC .25.40'

4 CARTRIDGE STORM FILTER VAULT

A

B

10" INSPECTION PORT/CLEAN OUT

R-TANK HD SUBSURFACE STORAGE CHAMBERS:
25 ROWS
9 CHAMBERS PER ROW
21.11' X 34.81' X 5.45'

TREATED
STROMWATER
6" INV.
IN: 23.09'

UNTREATED STORMWATER 6" INV.IN : 23.05'

PROPOSED FIELD INLET
TO DROP INTO R-TANK.
RIM. 25.20'

PR. CATCH BASIN
RIM: 27.00'
6" INV IN: TBD
6" INV OUT: 23.09'

28

27

26

PR. CATCH BASIN
RIM: 25.25'
6" INV OUT: 23.09'

TC: 25.90'
BC: 25.40'

TC: 26.00'
BC-N: 25.40'

PR. 26.00'

B

C

29.35'

FINISHED GRADE S = 8.4% →

27.00'

28.47'

GRADE BREAK

FINISHED GRADE S = 7.8% →

25.25'

PR. CURB
TC: 26.00'
BC-W 25.35'
BC-E: 25.25'

RIM: 25.25'

PR. CURB
TC: 26.00'
BC-W 25.98'
BC-E: 25.25'

PR. FFE AT BUILDING 26.00'

D

SEE SHEET C-45
FOR STORMFILTER
VAULT DETAIL

4'9" MINIMUM

4 CARTRIDGE STORM FILTER VAULT

40.92" COVER

TOP OF CRUSHED STONE: 24.59'

12"

20" MINIMUM
COVER FOR
HS-20 LOADS

OUTLET CONTROL
STRUCTURE

OUTLET CONTROL
STRUCTURE

6" HDPE PIPE
L = 20.8'
S = 0.024

INV: 23.59'

A

B

8" HDPE PIPE
L = <5'
S = 0.0

22.75'

TOP OF R-TANKS: 23.59'

INV: 23.09'

C

INV: 22.76'

R-TANKS

PROPOSED OUTLET
CONTROL STRUCTURE
CATCH BASIN WITH BEEHIVE
RIM: 25.25'
8" INV.IN: 22.76'
4" INV.IN: 19.15'
C WITH 1" DIAM.ECCENTRIC
ORIFICE
10" INV.OUT: 19.05'

E

PROPOSED WEIR/ EMERGENCY OVERFLOW

SEE SHEET C-45
FOR R-TANK HD
CHAMBER DETAIL

12"

BOTTOM OF R-TANKS: 19.40'

12"

3"

C

D

CAP &
ORIFICE ON
UNDERDRAIN

E

PR. 30 MIL LINER
AROUND R-TANKS

4" PVC PIPE
L = <5'
S = 0.0

CRUSHED STONE SURROUNDING R-TANKS

INV: 19.15'

INV: 19.15'

10" HDPE PIPE
L = 40'
S = 0.005

INV: 19.05'

1" ORIFICE INV: 19.10'

WATER QUALITY VOLUME:
STORMFILTER VAULT
4 CARTRIDGES
27"-CARTRIDGE FILTER

TREATMENT AREA: 17,410 SF
DESIGN FLOW RATE: 0.68 CFS
CARTRIDGE FLOW RATE: 1.67 GPM/FT2

WATER QUANTITY VOLUME:
R-TANK SUBSURFACE CHAMBERS
25 ROWS
9 CHAMBERS PER ROW
21.11' X 34.81' X 5.45'

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DRAINAGE AREA: 37,675 SF

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NOT ISSUED FOR
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PRELIM SITE	SJL 2/13/23
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DRAWING NAME: DRAINAGE DETAILS – 3

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

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STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.

C-46

PR. 26.00'

PR. 26.00'

25.90'

26.00'

6" ROOF LEADER
INV. IN: 23.42'
TYP. OF 4

TIP DOWN CURB TO 25.75'

TREATED
STORMWATER
8" INV.
IN: 23.42'

4 CARTRIDGE STORM FILTER VAULT

A

B

10" INSPECTION PORT/CLEAN OUT

R-TANK HD SUBSURFACE STORAGE CHAMBERS

PR. GRADE BREAK

ROAD SLOPE = 8.4%

ROAD SLOPE = 7.7%

UNTREATED STORMWATER
8" INV. IN : 23.42'

25.65'

25.95'

PROPOSED FIELD INLET
TO DROP INTO R-TANK.
RIM. 25.70'

PR. CATCH BASIN
RIM: 28.00'
8" INV IN: TBD
8" INV OUT: 23.45'

28

UNTREATED STORMWATER 8" INV.IN : 23.42'

27

28

C

B

PR. 4" UNDERDRAIN
WITHIN R-TANK LINER

25.60'

D

OUTLET CONTROL
STRUCTURE

PR. CATCH BASIN WITH
3' SUMP AND HOOD.
RIM: 25.55'
6" INV OUT: 23.44'

PROPOSED OUTLET
CONTROL STRUCTURE
RIM: 25.90'
8" INV.IN: 23.08'
4" INV.IN: 19.48'
1" DIAM.ECCENTRIC
ORIFICE:19.43'
10" INV.OUT:19.38'

PR. 26.00'

28

E

29.35'

FINIHSED GRADE S = 8.4%

PR. FINISHED GRADE:27.55'

28.47'

FINISHED GRADE S = 7.7%

25.60'

RIM: 25.90'

PROPOSED WEIR/ EMERGENCY OVERFLOW

SEE SHEET C-45
FOR STORMFILTER
VAULT DETAIL

4'9" MINIMUM

MAX 2.62' COVER

4 CARTRIDGE STORM FILTER VAULT

TOP OF CRUSHED STONE: 24.93'

12"

20" MINIMUM
COVER FOR
HS-20 LOADS

OUTLET CONTROL
STRUCTURE

PR. FFE AT BUILDING 26.00'

PR. FOUNDATION DRAIN

6" HDPE PIPE
L = 8'
S = 0.02

A: INV: 23.59'
B: INV: 23.42'

TOP OF R-TANKS: 23.93'

WEIR ELEVATION: 23.08'

8" HDPE PIPE
L = <5'
S = 0.0

C: INV. OUT: 23.09'

R-TANKS

SEE SHEET C-45
FOR R-TANK HD
CHAMBER DETAIL

12"

BOTTOM OF R-TANKS: 19.73'

CAP &
ORIFICE ON
UNDERDRAIN

12"

3"

PR. 30 MIL LINER
AROUND R-TANKS

4" PVC PIPE
L = <5'
S = 0.0

10" HDPE PIPE
L = 40'
S = 0.005

CRUSHED STONE SURROUNDING R-TANKS

INV: 19.48'

INV: 19.48'

E: INV. OUT: 19.38'

1" ORIFICE
D: INV: 19.43'

WATER QUALITY VOLUME:
STORMFILTER VAULT
4 CARTRIDGES
27"-CARTRIDGE FILTER

TREATMENT AREA: 17,410 SF
DESIGN FLOW RATE: 0.68 CFS
CARTRIDGE FLOW RATE: 1.67 GPM/FT2

WATER QUANTITY VOLUME:
R-TANK SUBSURFACE CHAMBERS

AVAILABLE STORAGE VOLUME: 3,693 CUBIC-FEET
DRAINAGE AREA: 37,675 SF

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

STORM FILTER CARTRIDGES AND R-TANK CHAMBERS PROFILE
NTS

2 0 2 4
PLAN VIEW SCALE: 1" = 2'

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: **DRAINAGE DETAILS - 3**

PROJECT NAME: **89 ELM STREET REDEVELOPMENT - PORTLAND**

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
8/25/23

DRAWING NO.

C-46

PR. 26.00'

PR. 26.00'

6" ROOF LEADER
INV. IN: 23.42'
TYP. OF 4

25.90'

26.00'

TIP DOWN CURB TO 25.75'

TREATED
STORMWATER
8" INV.
IN: 23.42'

4 CARTRIDGE STORM FILTER VAULT

A

B

10" INSPECTION PORT/CLEAN OUT

R-TANK HD SUBSURFACE STORAGE CHAMBERS

PR. GRADE BREAK

ROAD SLOPE = 8.4%

ROAD SLOPE = 7.7%

UNTREATED STORMWATER
8" INV. IN : 23.42'

25.65'

25.95'

PROPOSED FIELD INLET
TO DROP INTO R-TANK.
RIM. 25.70'

PR. CATCH BASIN
RIM: 28.00'
8" INV IN: TBD
8" INV OUT: 23.45'

UNTREATED STORMWATER 8" INV.IN : 23.42'

C

PR. 4" UNDERDRAIN
WITHIN R-TANK LINER

25.60'

D

OUTLET CONTROL
STRUCTURE

PR. CATCH BASIN WITH
3' SUMP AND HOOD.
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PROPOSED OUTLET
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SEE SHEET C-45
FOR STORMFILTER
VAULT DETAIL

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MAX 2.62' COVER

4 CARTRIDGE STORM FILTER VAULT

TOP OF CRUSHED STONE: 24.93'

12"

20" MINIMUM
COVER FOR
HS-20 LOADS

OUTLET CONTROL
STRUCTURE

PR. FFE AT BUILDING 26.00'

6" HDPE PIPE
L = 8'
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L = <5'
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R-TANKS

SEE SHEET C-45
FOR R-TANK HD
CHAMBER DETAIL

12"

BOTTOM OF R-TANKS: 19.73'

CAP &
ORIFICE ON
UNDERDRAIN

12"

3"

4" PVC PIPE
L = <5'
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10" HDPE PIPE
L = 40'
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PR. 30 MIL LINER
AROUND R-TANKS

CRUSHED STONE SURROUNDING R-TANKS

INV: 19.48'

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PR. FOUNDATION DRAIN

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STORMFILTER VAULT
4 CARTRIDGES
27"-CARTRIDGE FILTER

TREATMENT AREA: 17,410 SF
DESIGN FLOW RATE: 0.68 CFS
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DRAINAGE AREA: 37,675 SF

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

STORM FILTER CARTRIDGES AND R-TANK CHAMBERS PROFILE
NTS

2 0 2 4
PLAN VIEW SCALE: 1" = 2'

ISSUED FOR	BY DATE
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COMMENT RESPONSE 2	SJL 8/29/23
COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: DRAINAGE DETAILS - 3

PROJECT NAME: 89 ELM STREET REDEVELOPMENT - PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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FILE:	1192.2_CIVIL
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SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
10/3/23

DRAWING NO.
C-46

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 **ELM, LANCASTER, CEDAR, AND OXFORD STREETS** SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.

EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES 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.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR 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 CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD 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.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

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 AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN SPRING STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

PERMANENT SEED APPLICATION RATES

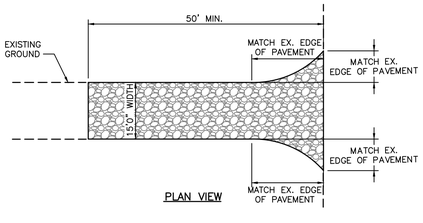
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

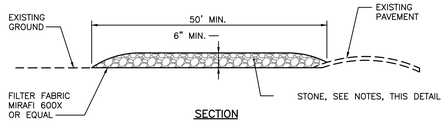
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.



PLAN VIEW



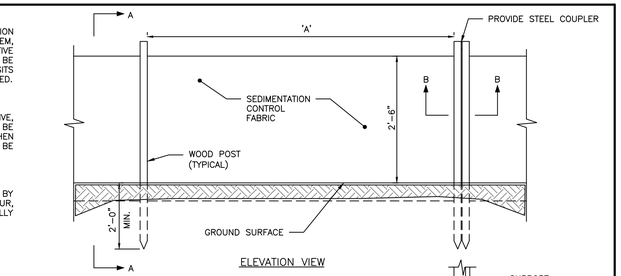
SECTION

NOTES:

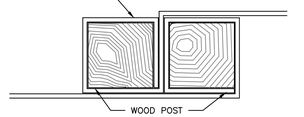
1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

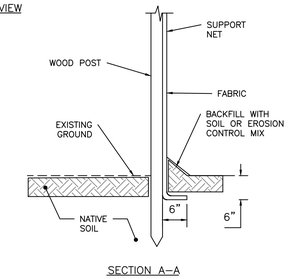


ELEVATION VIEW



SECTION B–B

SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'



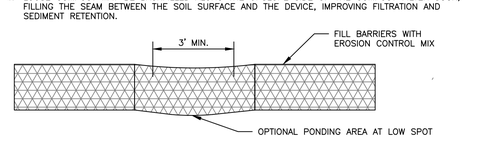
SECTION A–A

SILTATION FENCE DETAIL

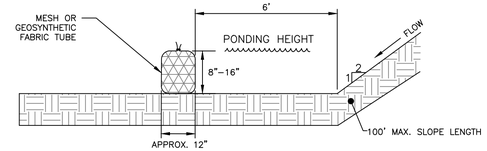
NOT TO SCALE

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



FRONT VIEW



SIDE VIEW

FILTER SOCK DETAIL

NOT TO SCALE

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 **ELM, LANCASTER, CEDAR, AND OXFORD STREETS** SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.

EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES 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.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR 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 CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD 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.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

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 AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN SPRING STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

PERMANENT SEED APPLICATION RATES

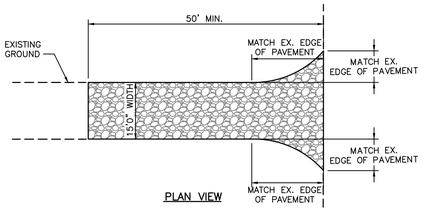
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

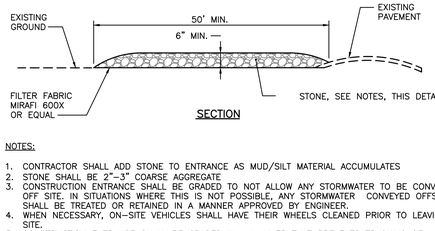
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.



PLAN VIEW



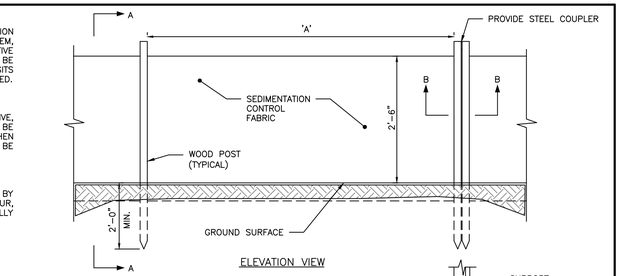
SECTION

NOTES:

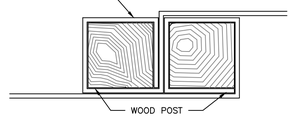
1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY

STABILIZED CONSTRUCTION ENTRANCE

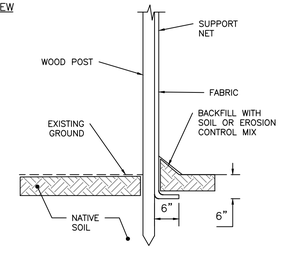
NOT TO SCALE



ELEVATION VIEW



SECTION B–B



SECTION A–A

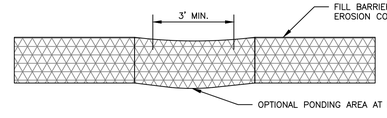
SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

SILTATION FENCE DETAIL

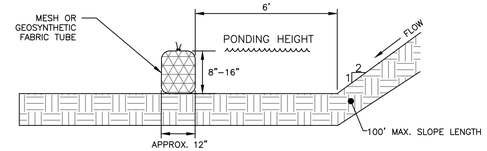
NOT TO SCALE

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



FRONT VIEW



SIDE VIEW

FILTER SOCK DETAIL

NOT TO SCALE

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS.
THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 **ELM, LANCASTER, CEDAR, AND OXFORD STREETS** SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.
EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.

- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES 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.

- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.

- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR 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 CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD 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.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

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 AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN SPRING STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

PERMANENT SEED APPLICATION RATES

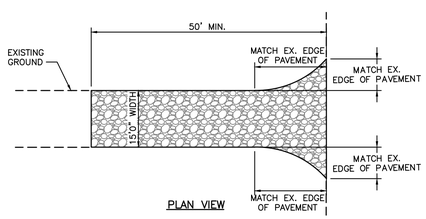
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

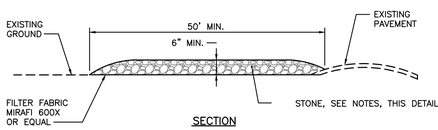
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.



PLAN VIEW

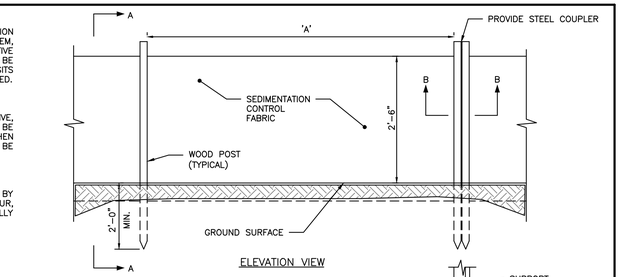


SECTION

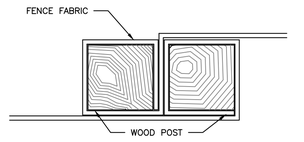
NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY

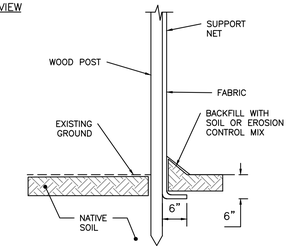
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



ELEVATION VIEW



SECTION B–B



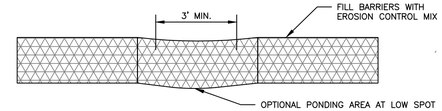
SECTION A–A

SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

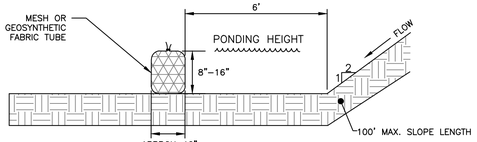
SILTATION FENCE DETAIL
NOT TO SCALE

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



FRONT VIEW



SIDE VIEW

FILTER SOCK DETAIL
NOT TO SCALE

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 **ELM, LANCASTER, CEDAR, AND OXFORD STREETS** SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.

EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES 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.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR 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 CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD 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.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

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 AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN ELM AND LANCASTER STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

PERMANENT SEED APPLICATION RATES

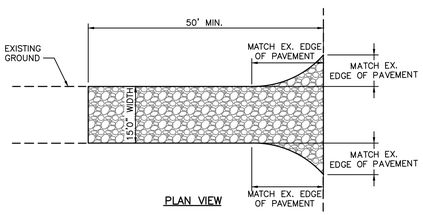
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

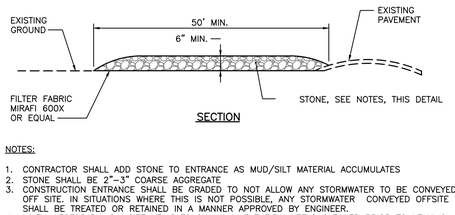
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.



PLAN VIEW



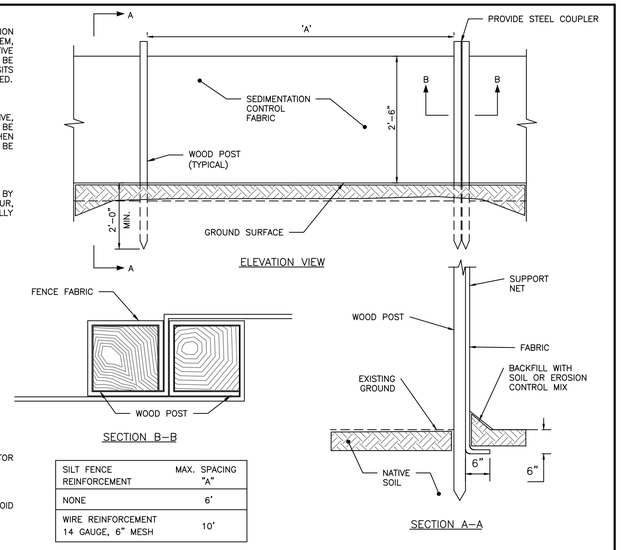
SECTION

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY



ELEVATION VIEW

SECTION B–B

SECTION A–A

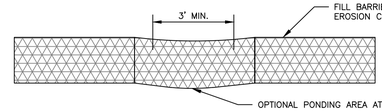
SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

SILTATION FENCE DETAIL

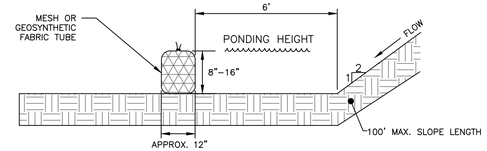
NOT TO SCALE

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



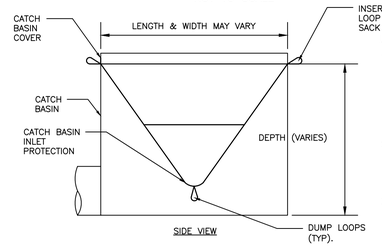
FRONT VIEW

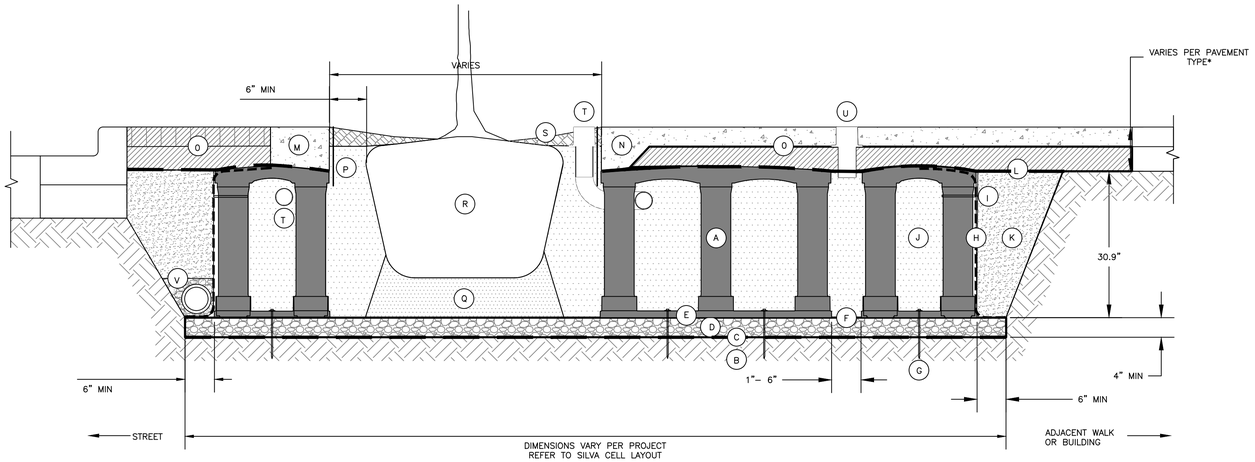


SIDE VIEW

FILTER SOCK DETAIL

NOT TO SCALE


CATCH BASIN COVER
LENGTH & WIDTH MAY VARY
INSERT 1" REBAR IN EACH LOOP TO HOLD UP SILT SACK
CATCH BASIN
CATCH BASI



KEY PLAN

- (A) SILVA CELL SYSTEM (DECK, BASE, AND POSTS)
- (B) SUBGRADE, COMPACTED
- (C) GEOTEXTILE FABRIC, PLACED ABOVE SUBGRADE
- (D) 4" MIN AGGREGATE SUB BASE, COMPACTED TO 95% PROCTOR
- (E) SILVA CELL BASE SLOPE, 10% MAX
- (F) 1" TO 6" SPACING BETWEEN SILVA CELLS AT BASE
- (G) ANCHORING SPIKES, CONTACT DEEPROOT FOR ALTERNATIVE
- (H) GEOGRID, WRAPPED AROUND PERIMETER OF SYSTEM, WITH 6" TOE (OUTWARD FROM BASE) AND 12" EXCESS (OVER TOP OF DECK)
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- (J) PLANTING SOIL, PER PROJECT SPECIFICATIONS, PLACED IN LIFTS AND WALK-IN COMPACTED TO 75–85% PROCTOR
- (K) COMPACTED BACKFILL, PER PROJECT SPECIFICATIONS
- (L) GEOTEXTILE FABRIC TO EDGE OF EXCAVATION
- (M) RIBBON CURB AT TREE OPENING (TO BE USED WITH PAVERS OR ASPHALT)
- (N) THICKENED EDGE AT TREE OPENING (TO BE USED WITH CONCRETE)
- (O) PAVEMENT AND AGGREGATE BASE PER PROJECT *
- (P) DEEPROOT ROOT BARRIER, 12" OR 18", DEPTH DETERMINED BY THICKNESS OF PAVEMENT SECTION, INSTALL DIRECTLY ADJACENT TO CONCRETE EDGE RESTRAINT
- (Q) PLANTING SOIL BELOW ROOT BALL, COMPACTED WELL TO PREVENT SETTLING
- (R) ROOT BALL
- (S) TREE OPENING TREATMENT, PER PROJECT SPECIFICATIONS
- (T) DEEPROOT WATER AND AIR VENT, ROOTBALL, WHEN REQUIRED
- (U) DEEPROOT WATER AND AIR VENT, WHEN REQUIRED
- (V) UNDERDRAIN SYSTEM, WHEN REQUIRED (LOCATION AND DETAILS BY OTHERS)

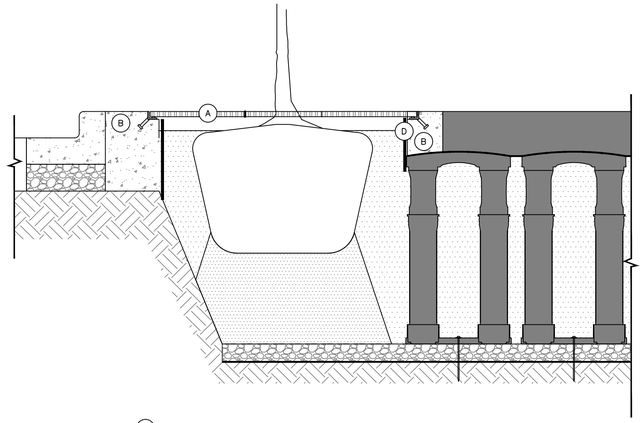
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3. PROVIDE SUPPLEMENTAL IRRIGATION
4. DO NOT SCALE DRAWINGS

*MINIMUM PAVEMENT PROFILE OPTIONS TO MEET H–20 LOADING

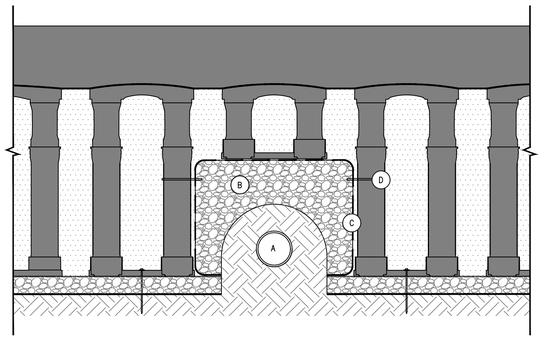
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SILVA CELL SYSTEM 2X
NOT TO SCALE



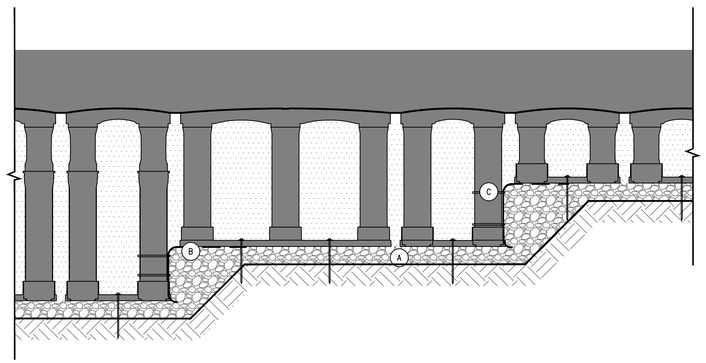
- (A) TREE GRATE ASSEMBLY WITH CONCRETE ANCHOR, PER PROJECT SPECIFICATIONS
- (B) CONCRETE CURB OR RIBBON, PER PROJECT SPECIFICATIONS
- (D) DEEPROOT ROOT BARRIER (DEPTH PER PROJECT SPECIFICATIONS)

TREE GATE AT SILVE CELLS
NOT TO SCALE



- (A) EXAMPLE OF EXISTING OR PROPOSED UTILITY
- (B) WASHED STONE WITHOUT FINES
- (C) GEOGRID TO LINE PERIMETER OF AGGREGATE WITH 6" TOE (INWARD) AND 6" EXCESS (BETWEEN AGGREGATE AND BRIDGING CELL)
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BRIDGING OVER UTILITIES
NOT TO SCALE



- (A) 4" (100mm) MIN AGGREGATE SUB BASE, COMPACTED TO 95% PROCTOR
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- (C) CABLE TIE, ATTACHING GEOGRID TO SILVA CELL

GRADE CHANGE (SUBSURFACE)
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/13/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 5/19/23

DRAWING NAME: SILVA CELL DETAILS
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

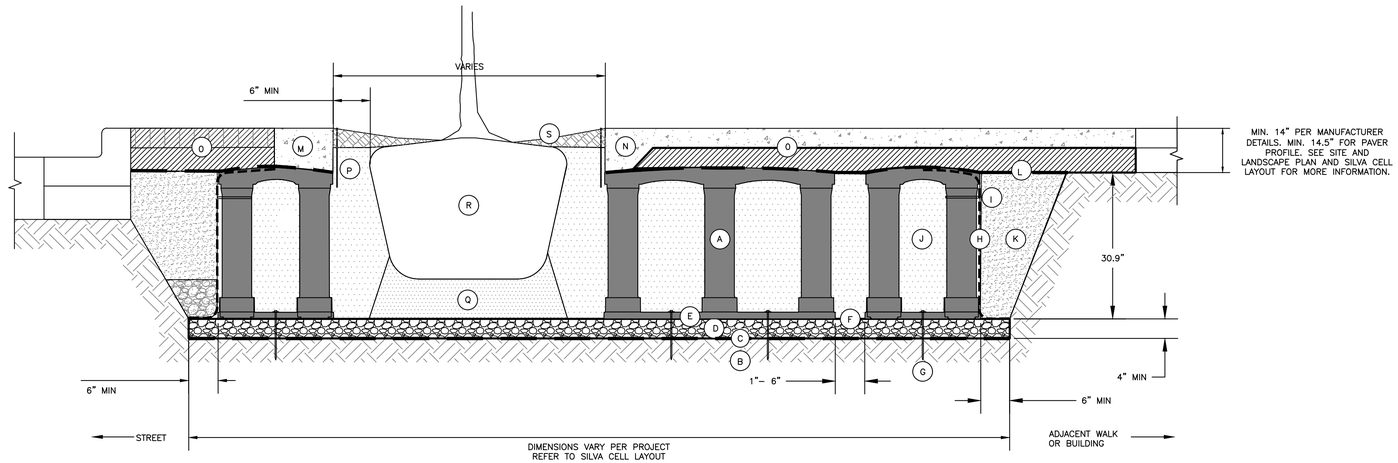
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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775–2655

FILE:	1192.2_CIVIL
JN:	1192.2
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
4/3/23

DRAWING NO.
C-48



KEY PLAN

- (A) SILVA CELL SYSTEM (DECK, BASE, AND POSTS)
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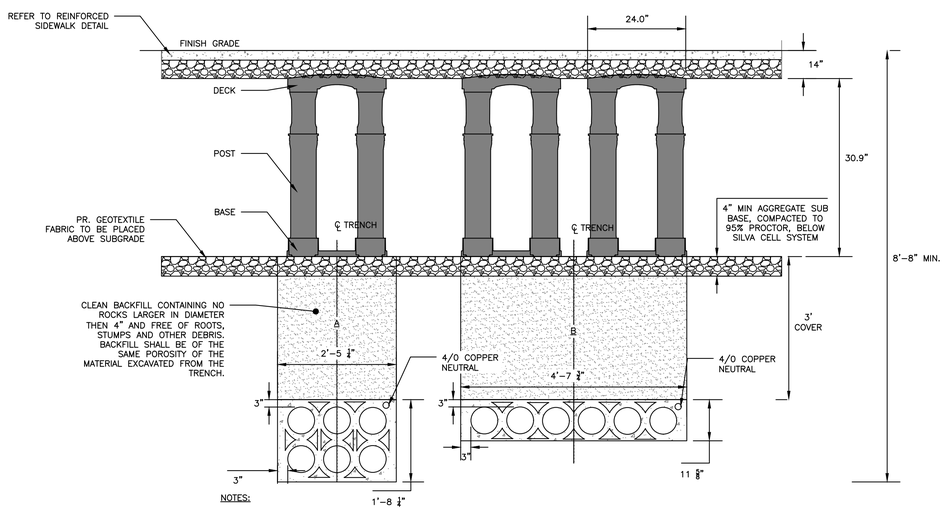
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PAVEMENT		+ AGGREGATE BASE COURSE
4" CONCRETE	+ 4"	AGGREGATE
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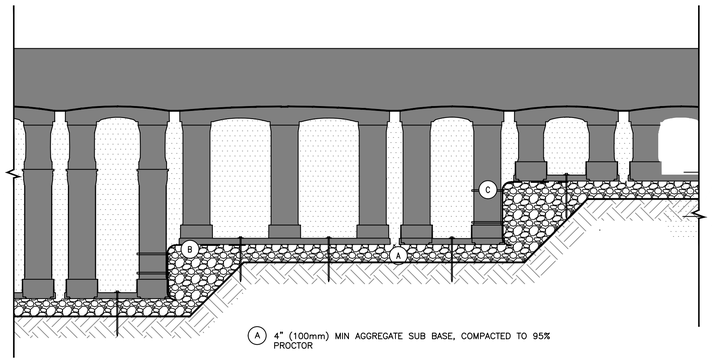
SILVA CELL SYSTEM 2X
NOT TO SCALE



NOTES:

1. "A" WILL BE USED FOR MAJORITY OF INSTALLATION. DUCT BANK WILL NEED TO BE DEEPER AND NARROWER NEAR MANHOLES.
2. "B" WILL BE USED AS NEEDED. DUCT BANK WILL NEED TO BE WIDER AND SHALLOWER.
3. CONDUITS WITHIN THE CITY RIGHT–OF–WAY SHALL BE ENCASED IN CONCRETE.
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8. INSTALL ¼" (OR MULE TAPE) PULLING LINE IN EACH CONDUIT.
9. INSTALL 4/0 CU NEUTRAL IN CONDUIT DUCT BANK.
10. INSTALL CONDUIT SPACERS

SILVA CELL SYSTEM WITH PRIMARY POWER CONDUIT DUCT BANK CROSS SECTION
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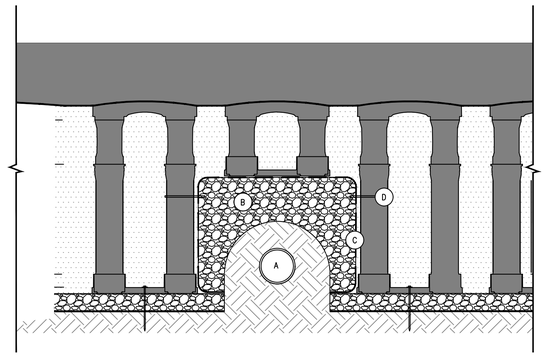


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GRADE CHANGE (SUBSURFACE)
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BRIDGING OVER UTILITIES
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
CONCEPT	WHS 8/4/22
PRELIM SITE	SJL 2/15/23
SITE PLAN	SJL 4/3/23
COMMENT RESPONSE	SJL 6/19/23
COMMENT RESPONSE 2	SJL 8/29/23

DRAWING NAME: SILVA CELL DETAILS
PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND
CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

ACORN ENGINEERING, INC.

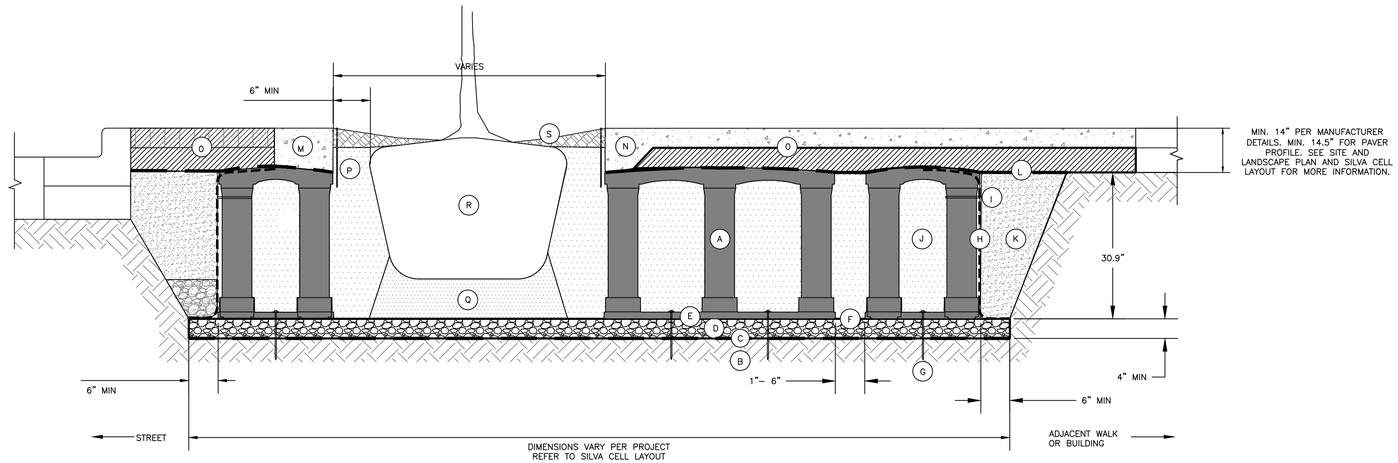
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FILE:	1192.2_CIVIL
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DRAWN BY:	DNM
CHECKED BY:	WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
8/25/23

DRAWING NO.
C-48



KEY PLAN

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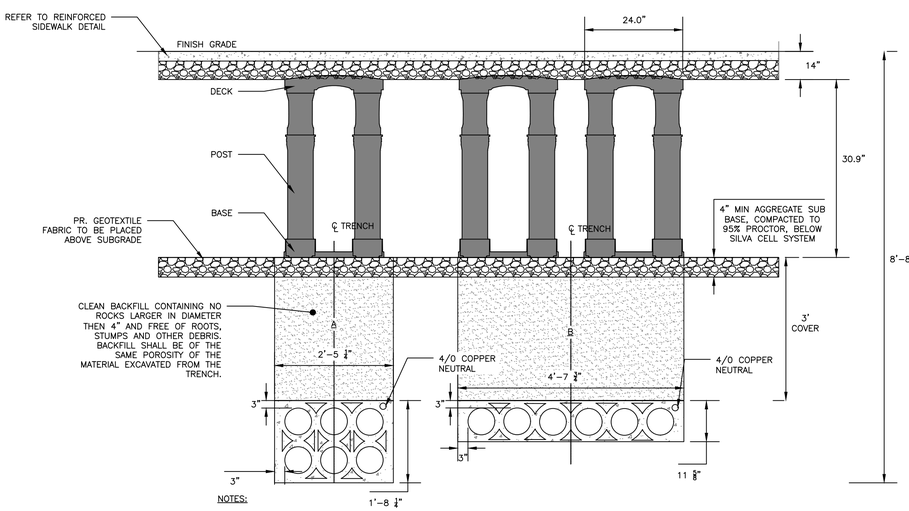
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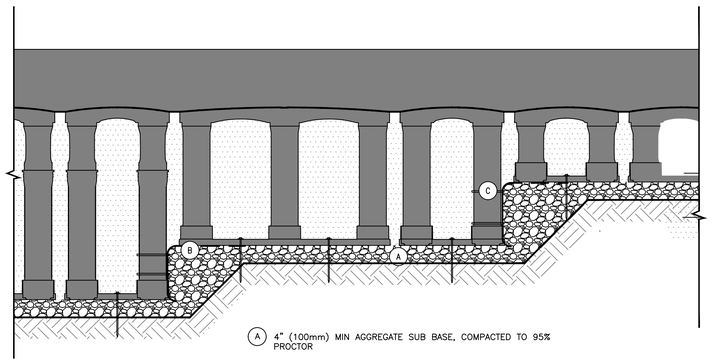
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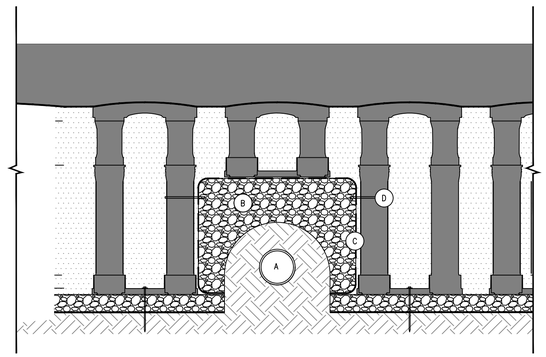


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COMMENT RESPONSE 3	SJL 10/3/23

DRAWING NAME: SILVA CELL DETAILS

PROJECT NAME: 89 ELM STREET REDEVELOPMENT – PORTLAND

CLIENT: 89 ELM, LLC
188 STATE STREET, 3RD FLOOR, PORTLAND, ME 04101

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STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
LICENSED
10/3/23

DRAWING NO.
C-48

1ST FLOOR

0 UNITS 9,365 SF



1 FIRST FLOOR
1/16" = 1'-0"

© 2023 RYAN SENATORE ARCHITECTURE

APARTMENTS
89 ELM STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
500 CONGRESS STREET, SUITE 2
PORTLAND, MAINE 04101
O: 207-747-5159
C: 207-650-6414
senatorearchitecture.com

CONSULTANTS:

REVISIONS:

PROGRESS PRINT ONLY
Not for Construction
MARCH 31, 2023

DATE:

PROJECT No: 2241

DRAWN BY: RRT

CHECKED BY: RJS

SCALE: AS NOTED

SHEET TITLE:
FIRST FLOOR PLAN

A1-1

1ST FLOOR

0 UNITS 9,365 SF



1 FIRST FLOOR
1/16" = 1'-0"

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CONSULTANTS:

REVISIONS:

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Not for Construction
MAY 16, 2023

DATE:

PROJECT No: 2241

DRAWN BY: RRT

CHECKED BY: RJS

SCALE: AS NOTED

SHEET TITLE:
FIRST FLOOR PLAN

A1-1

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

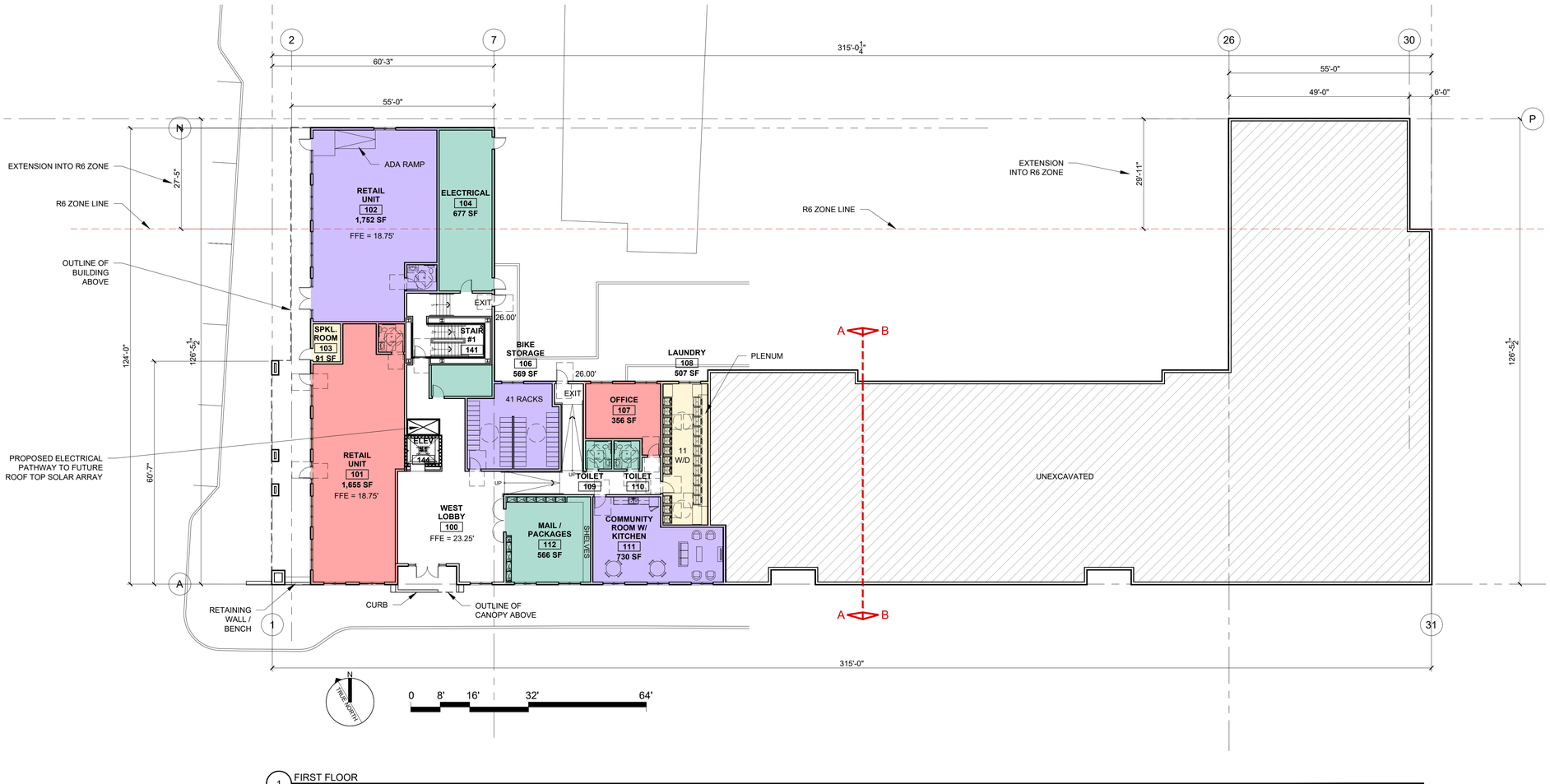
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 FIRST FLOOR
1/16" = 1'-0"

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REVISIONS:

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CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
FIRST FLOOR PLAN

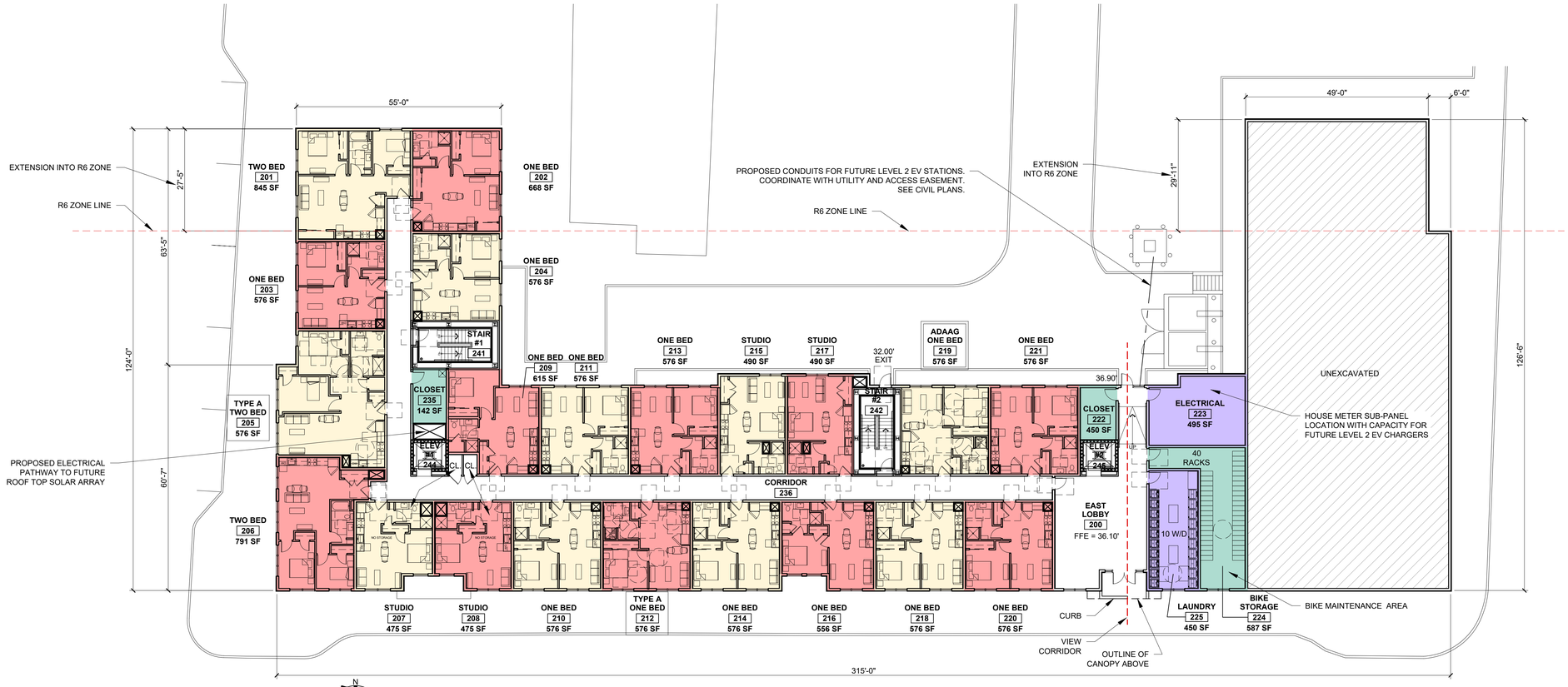
A1-1

2ND FLOOR

21 UNITS 18,156 SF

4 STUDIO UNITS
14 ONE BEDROOM UNITS
3 TWO BEDROOM UNITS

(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 SECOND FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SECOND FLOOR PLAN

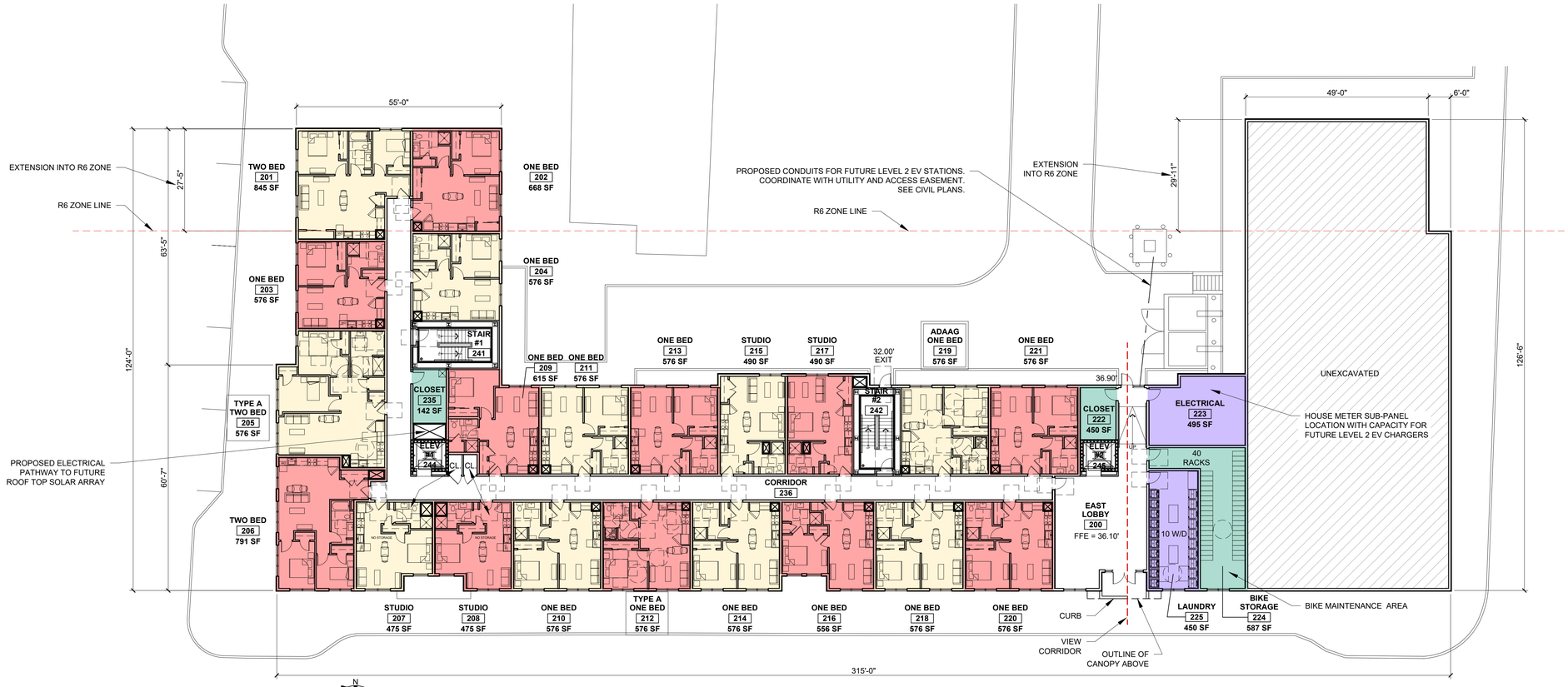
A1-2

2ND FLOOR

21 UNITS 18,156 SF

4 STUDIO UNITS
14 ONE BEDROOM UNITS
3 TWO BEDROOM UNITS

(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 SECOND FLOOR
1/16" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
SECOND FLOOR PLAN

A1-2

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

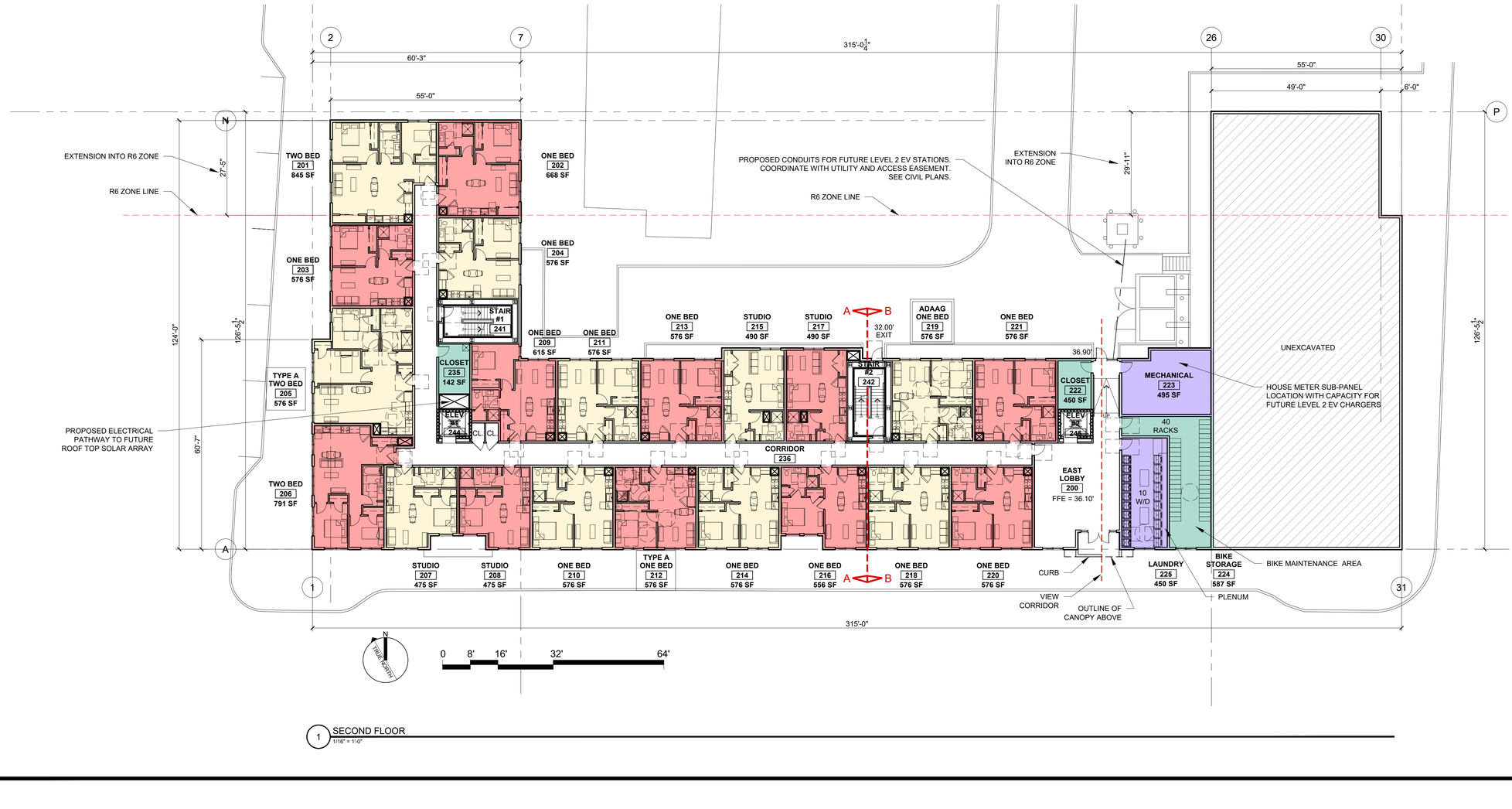
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 SECOND FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SECOND FLOOR PLAN

A1-2

THIRD FLOOR

29 UNITS 24,882 SF

4 STUDIO UNITS
20 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) H/V - ONE BED
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 THIRD FLOOR
1/16" = 1'-0"

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SCALE: AS NOTED

SHEET TITLE:
THIRD FLOOR PLAN

A1-3

THIRD FLOOR

29 UNITS 24,882 SF

4 STUDIO UNITS
20 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) H/V - ONE BED
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 THIRD FLOOR
1/16" = 1'-0"

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SCALE: AS NOTED

SHEET TITLE:
THIRD FLOOR PLAN

A1-3

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

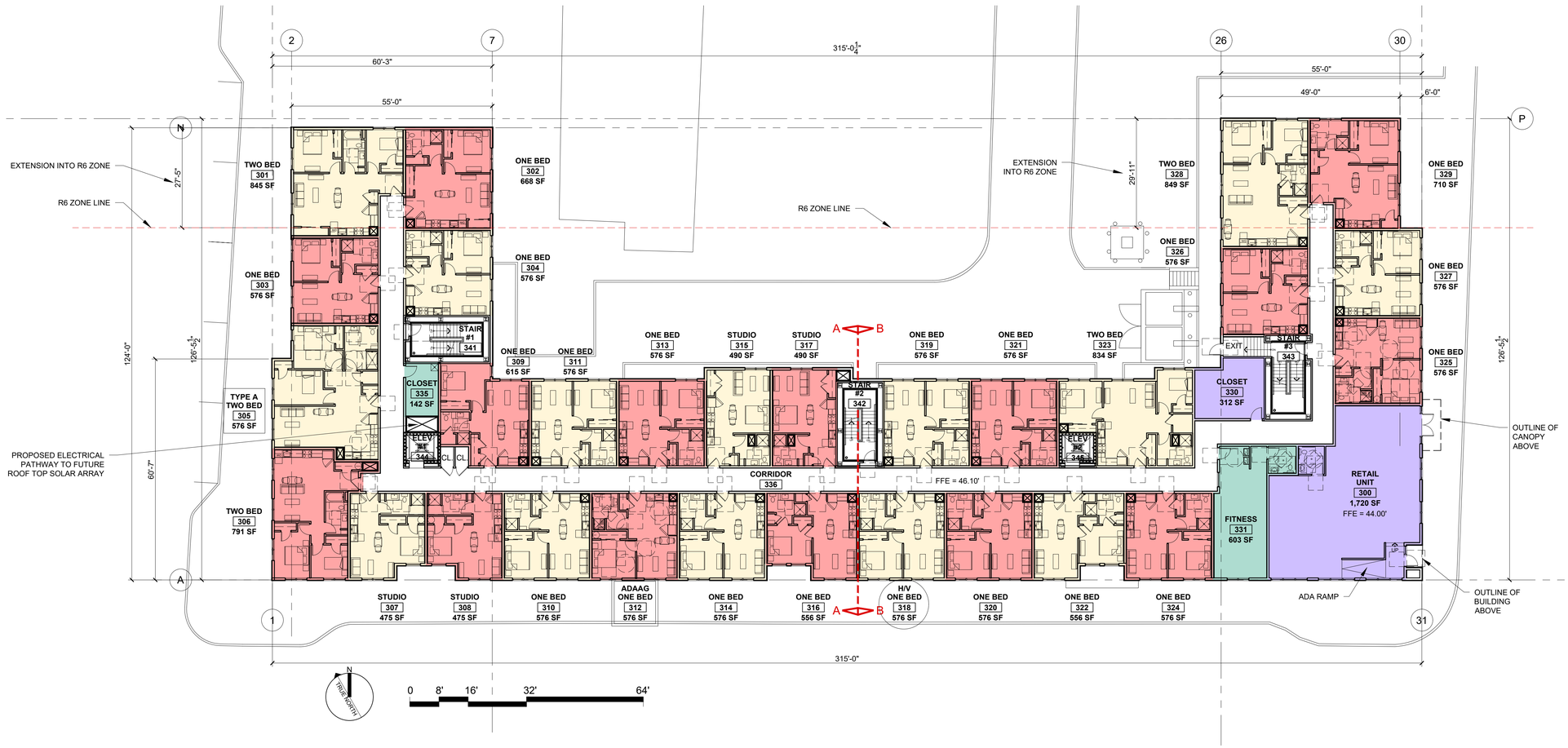
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 THIRD FLOOR
1/16" = 1'-0"

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SHEET TITLE:
THIRD FLOOR PLAN

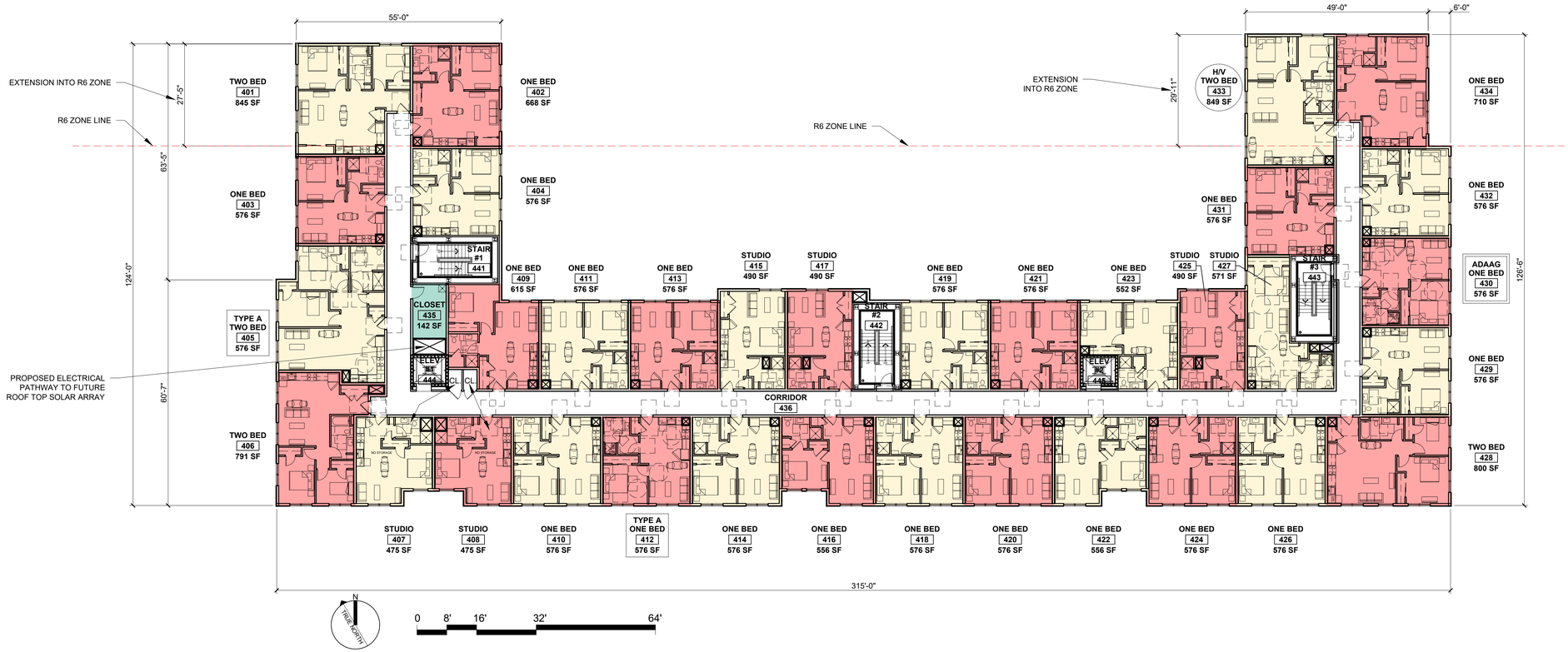
A1-3

FOURTH FLOOR

34 UNITS 24,882 SF

6 STUDIO UNITS
23 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) ADAAG - ONE BED
(1) TYPE A - ONE BED
(1) TYPE A - TWO BED
(1) H/V - TWO BED



1 FOURTH FLOOR
1/16" = 1'-0"

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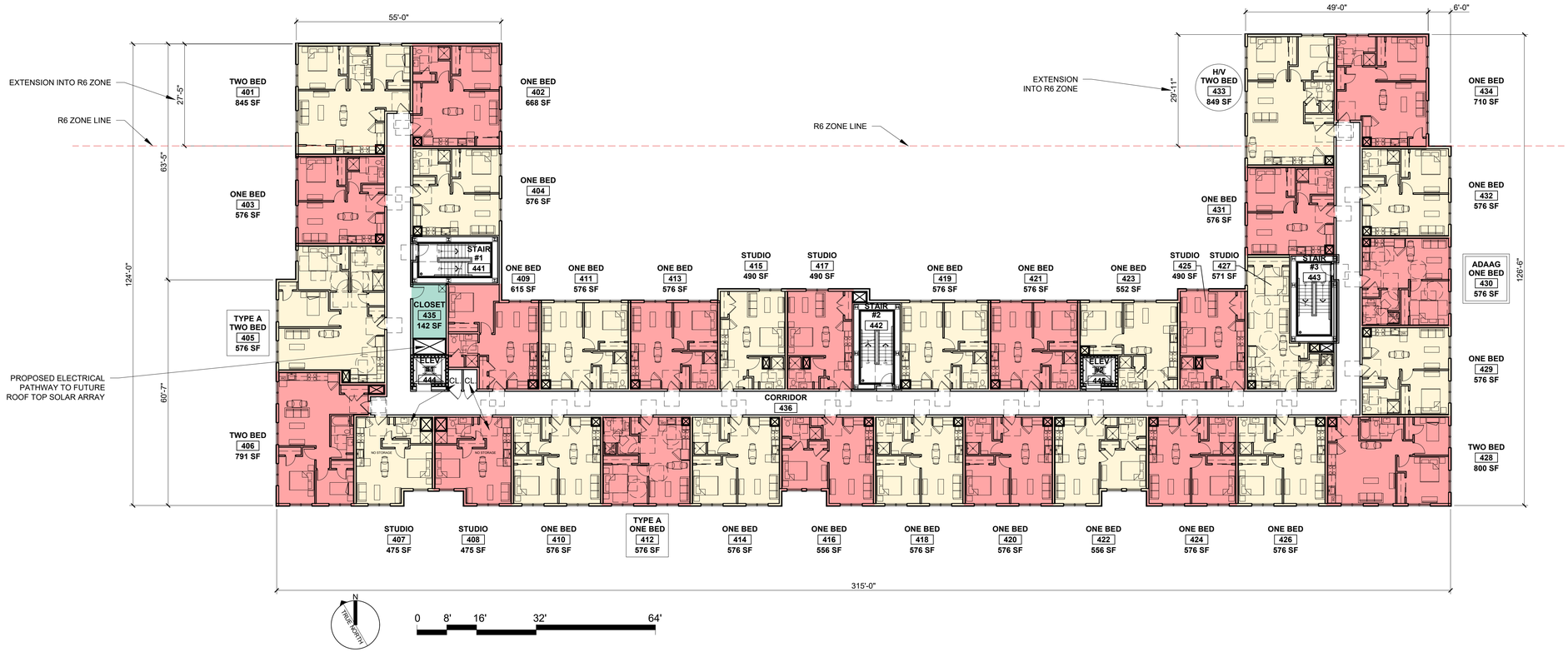
A1-4

FOURTH FLOOR

34 UNITS 24,882 SF

6 STUDIO UNITS
23 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) ADAAG - ONE BED
(1) TYPE A - ONE BED
(1) TYPE A - TWO BED
(1) H/V - TWO BED



1 FOURTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
FOURTH FLOOR PLAN

A1-4

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
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TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

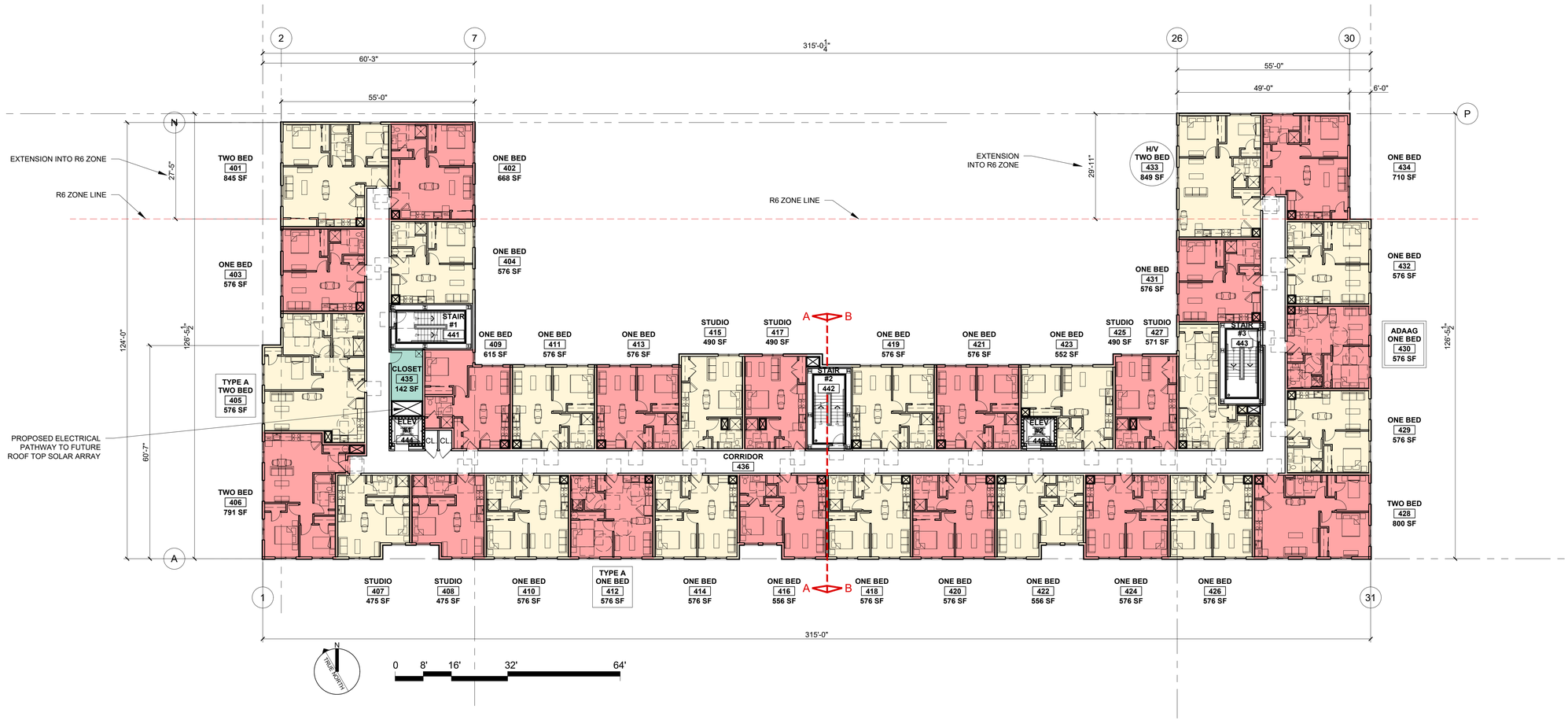
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 FOURTH FLOOR
1/16" = 1'-0"

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REVISIONS:

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SCALE: AS NOTED

SHEET TITLE:
FOURTH FLOOR PLAN

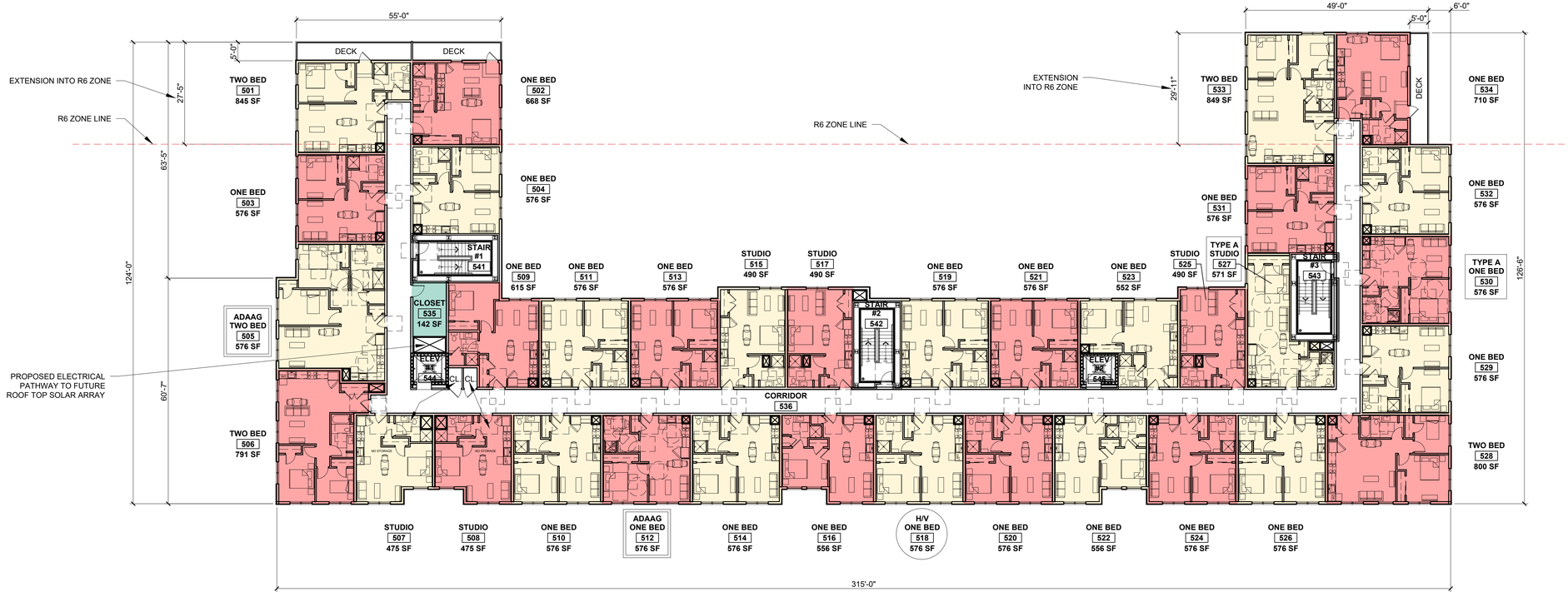
A1-4

FIFTH FLOOR

34 UNITS 24,489 SF

7 STUDIO UNITS
22 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) TYPE A - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) H/V - ONE BED
(1) ADAAG - TWO BED



1 FIFTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
FIFTH FLOOR PLAN

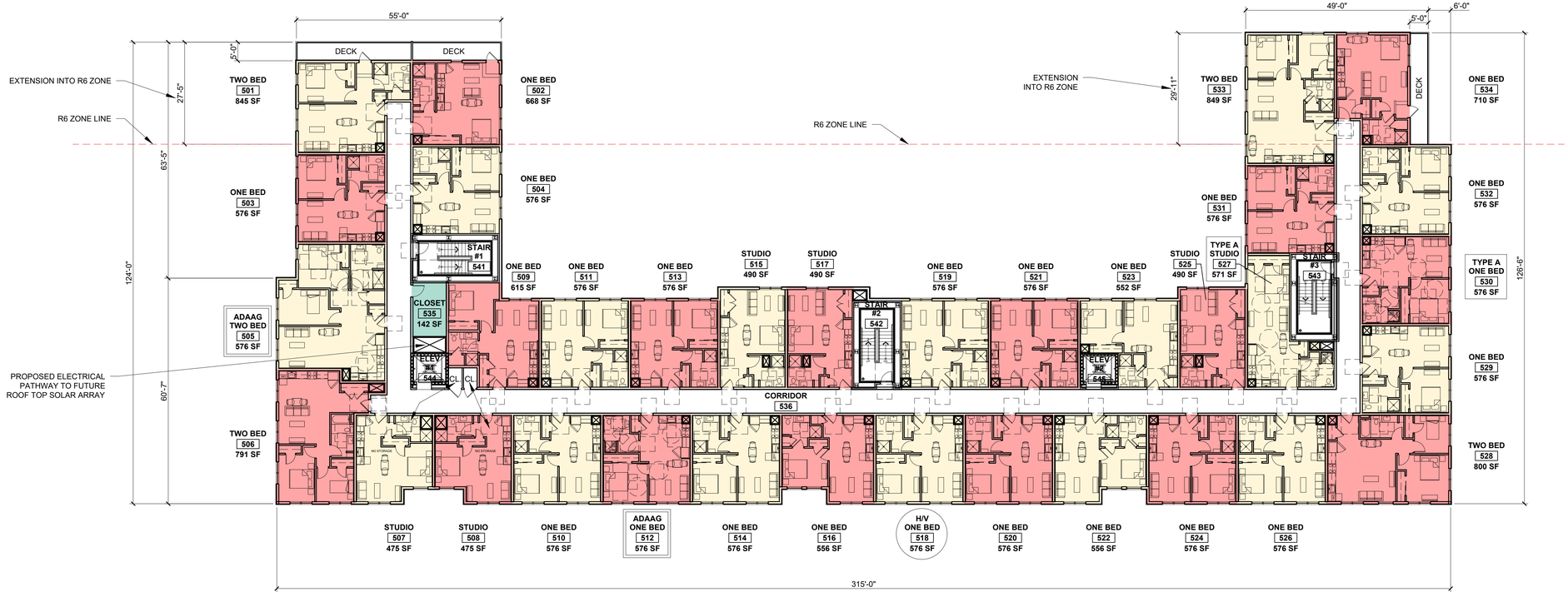
A1-5

FIFTH FLOOR

34 UNITS 24,489 SF

7 STUDIO UNITS
22 ONE BEDROOM UNITS
5 TWO BEDROOM UNITS

(1) TYPE A - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) H/V - ONE BED
(1) ADAAG - TWO BED



1 FIFTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
FIFTH FLOOR PLAN

A1-5

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

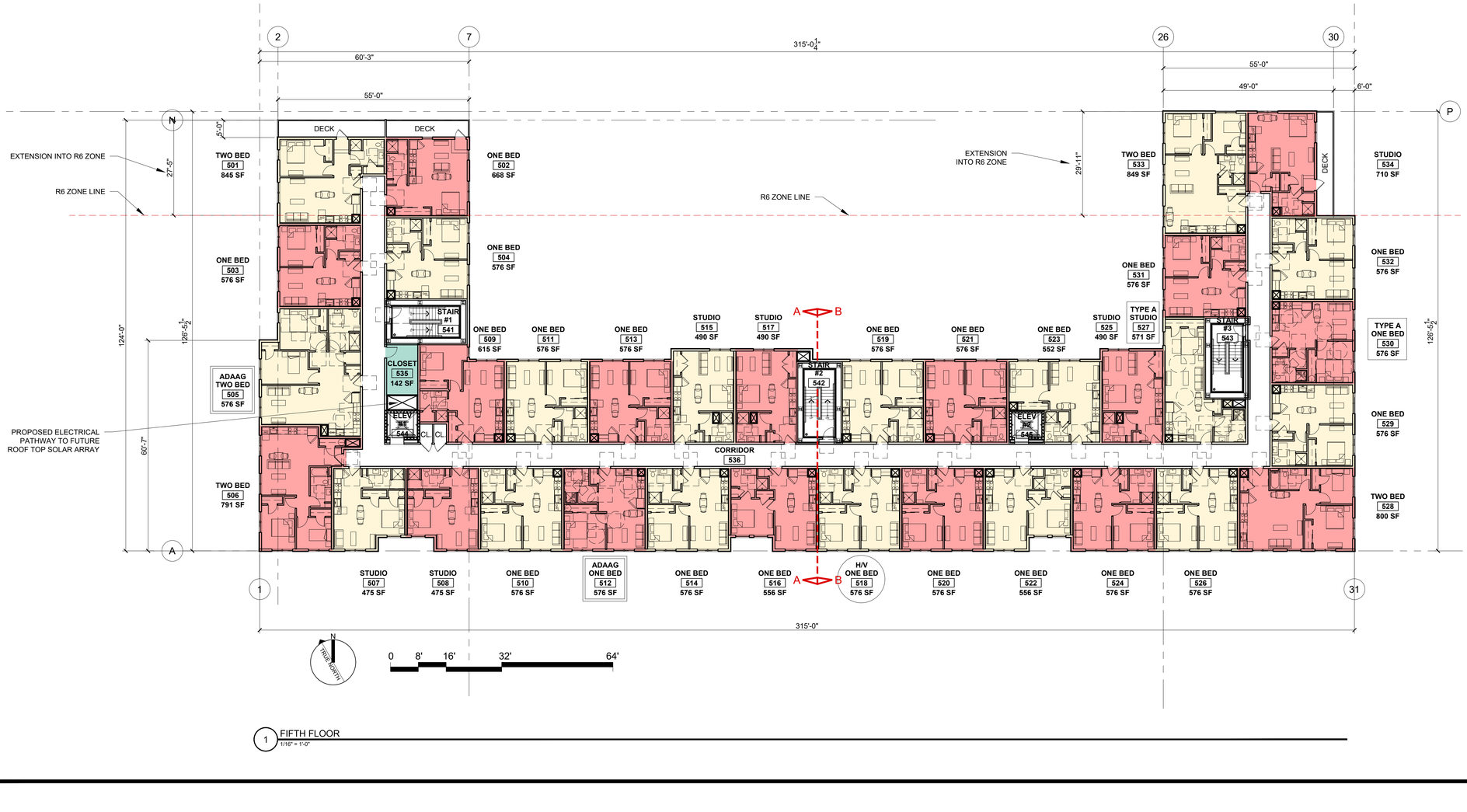
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 FIFTH FLOOR
1/16" = 1'-0"

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FIFTH FLOOR PLAN

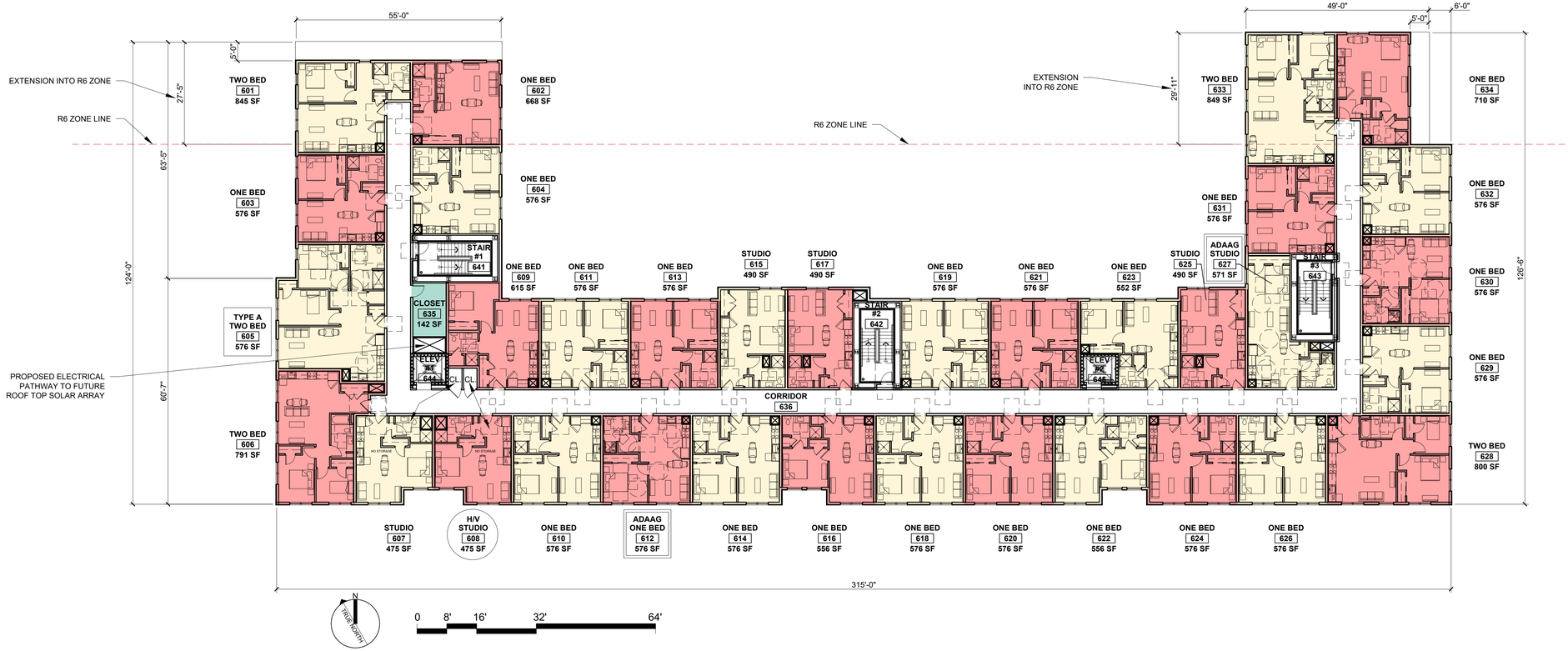
A1-5

6TH FLOOR

34 UNITS 24,489 SF

8 STUDIO UNITS
22 ONE BEDROOM UNITS
1 TWO BEDROOM UNITS

(1) ADAAG - STUDIO
(1) H/V - STUDIO
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 SIXTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SIXTH FLOOR PLAN

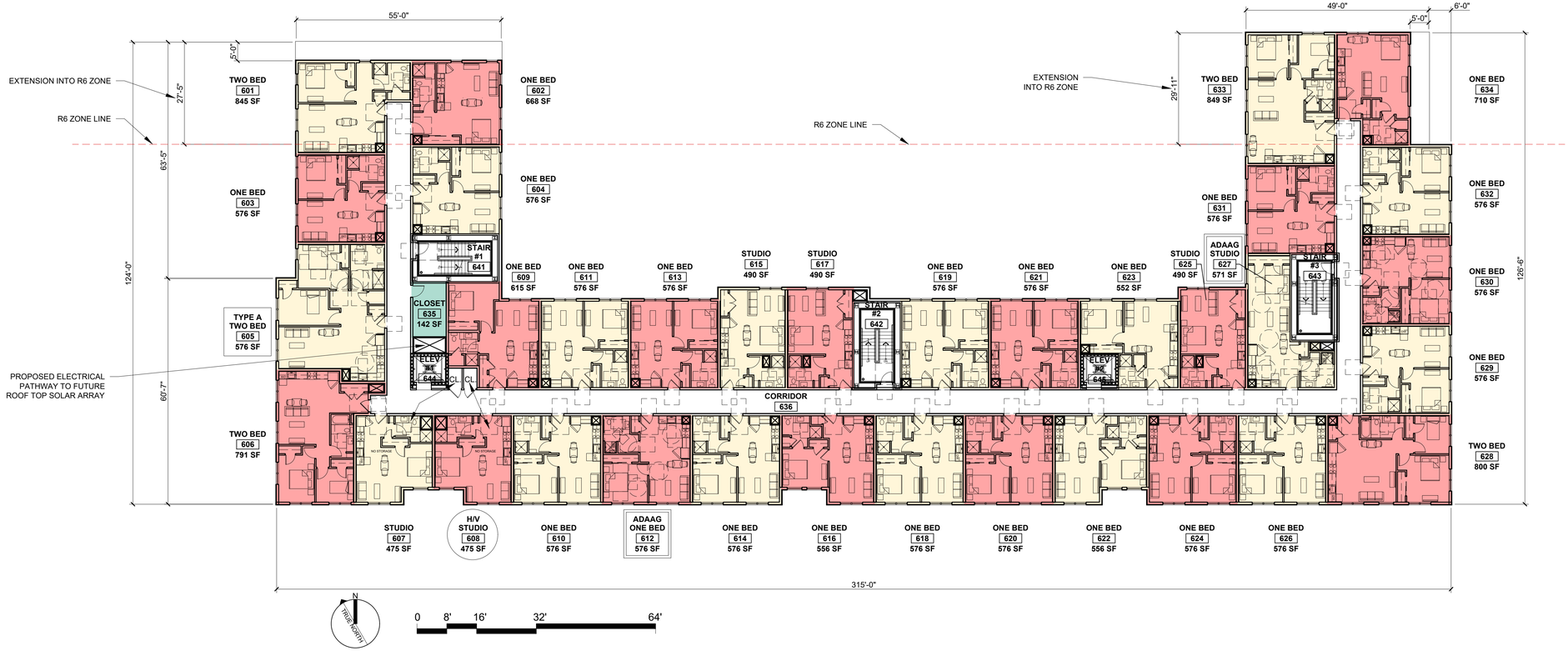
A1-6

6TH FLOOR

34 UNITS 24,489 SF

8 STUDIO UNITS
22 ONE BEDROOM UNITS
1 TWO BEDROOM UNITS

(1) ADAAG - STUDIO
(1) H/V - STUDIO
(1) ADAAG - ONE BED
(1) TYPE A - TWO BED



1 SIXTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SIXTH FLOOR PLAN

A1-6

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

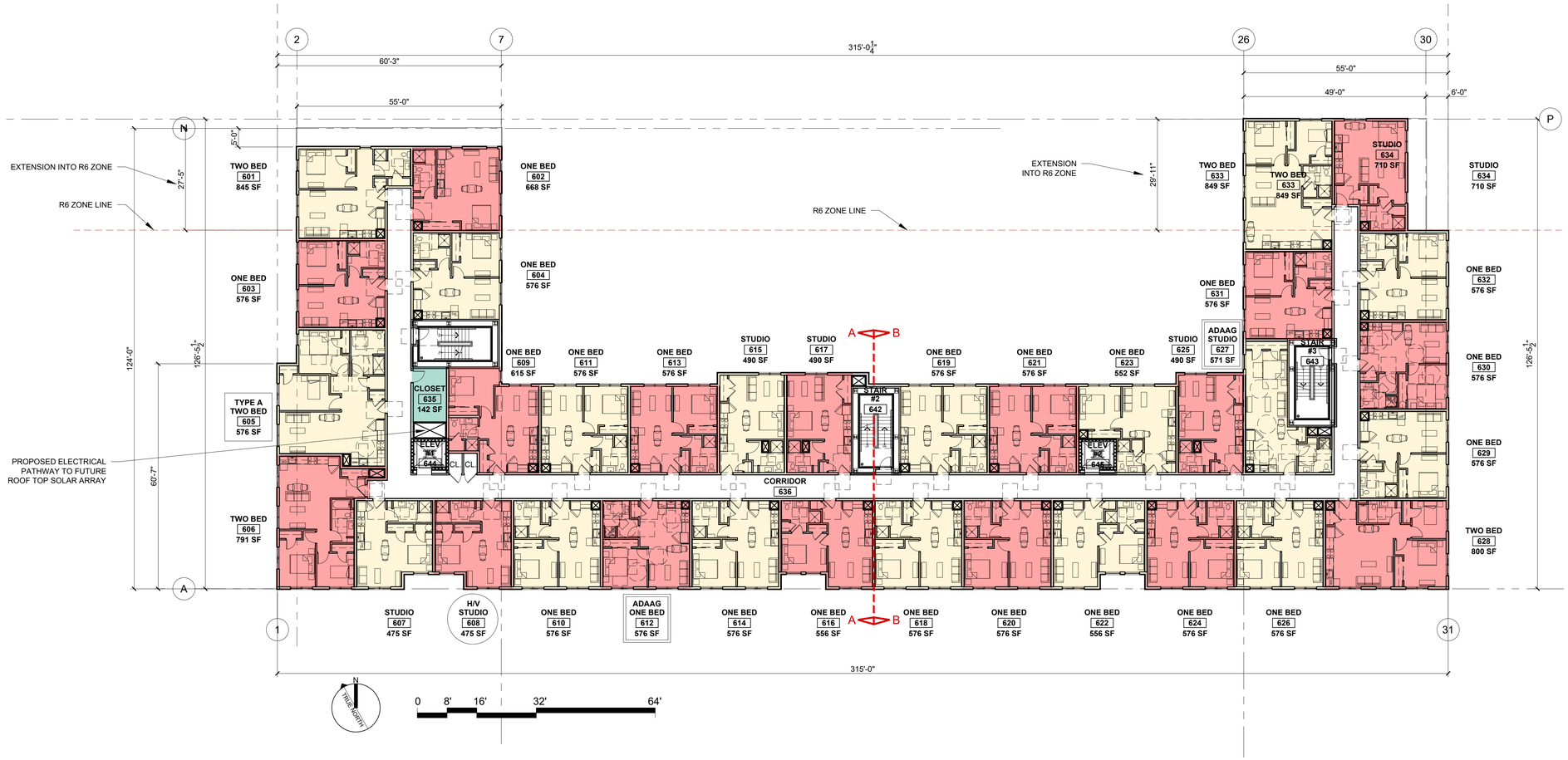
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 SIXTH FLOOR
1/16" = 1'-0"

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SIXTH FLOOR PLAN

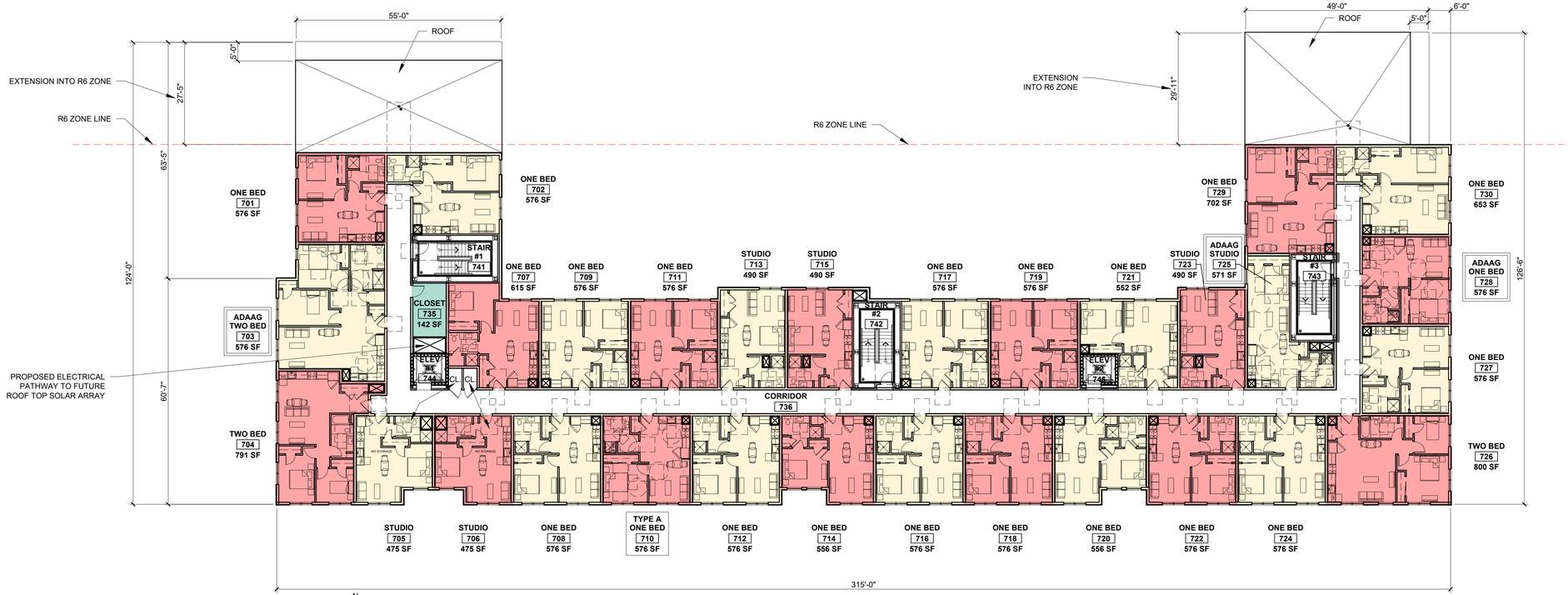
A1-6

7TH FLOOR

30 UNITS 21,801 SF

6 STUDIO UNITS
21 ONE BEDROOM UNITS
3 TWO BEDROOM UNITS

(1) ADAAG - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) ADAAG - TWO BED



1 SEVENTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SEVENTH FLOOR PLAN

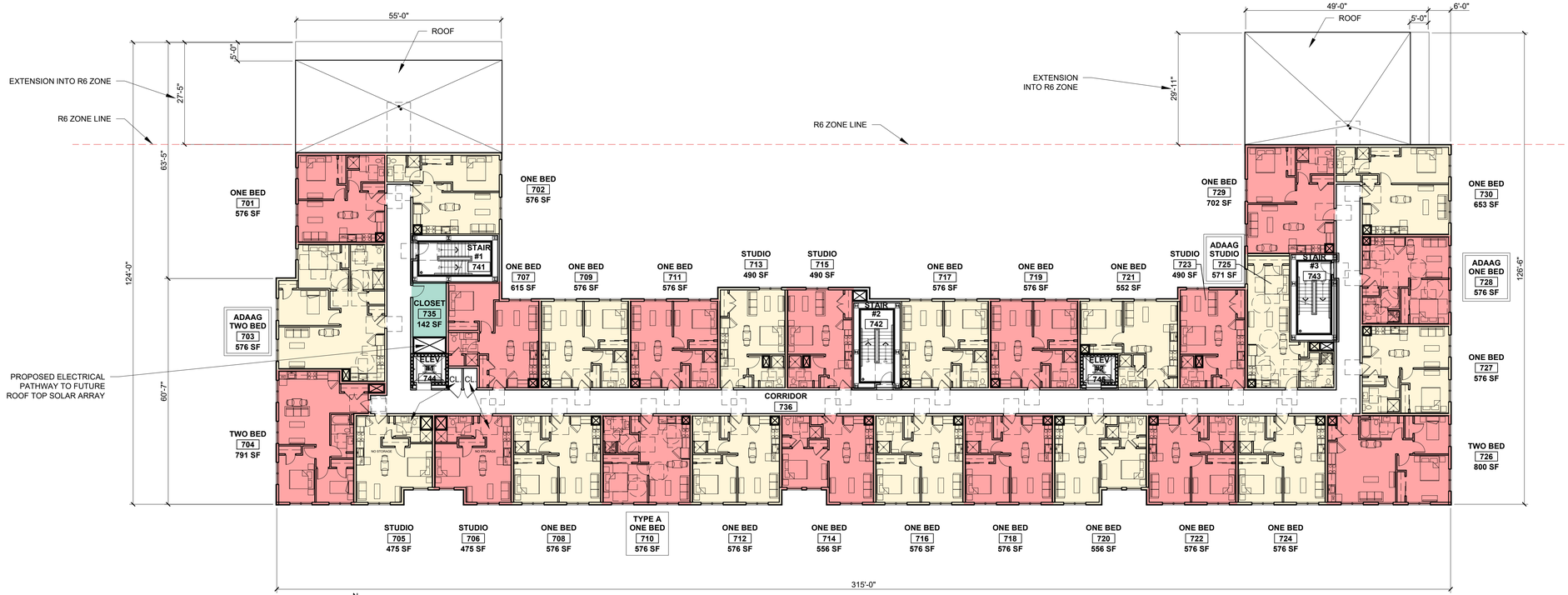
A1-7

7TH FLOOR

30 UNITS 21,801 SF

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21 ONE BEDROOM UNITS
3 TWO BEDROOM UNITS

(1) ADAAG - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED
(1) ADAAG - TWO BED



1 SEVENTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
SEVENTH FLOOR PLAN

A1-7

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

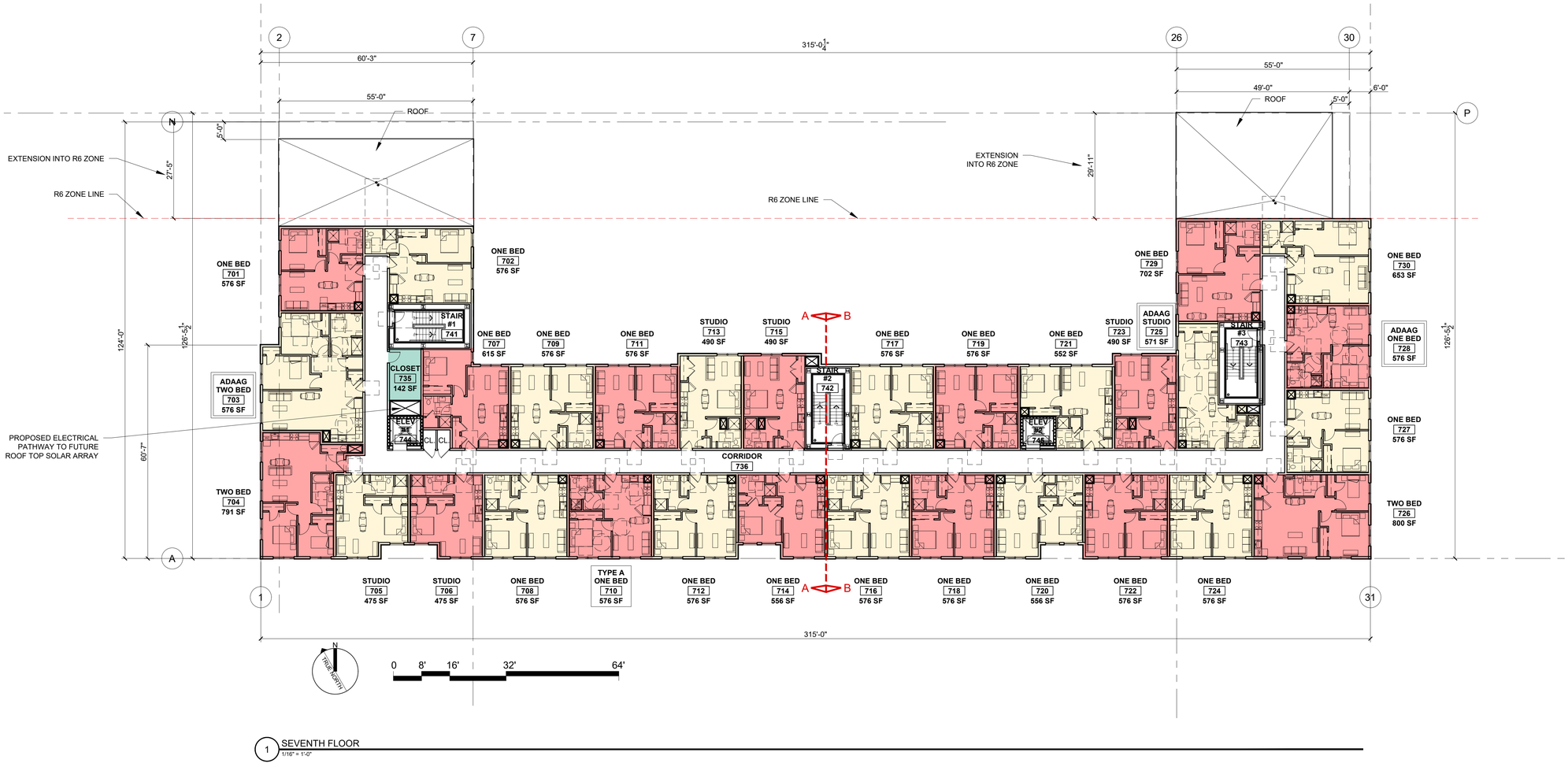
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
Studio B	0	4	4	6	6	6	5	2	**33**
Studio A	0	0	0	0	1	0	0	0	**1**
Studio ADAAG	0	0	0	0	0	1	1	0	**2**
One Bed B	0	12	19	21	20	21	19	14	**126**
One Bed A	0	1	0	1	1	0	1	1	**5**
One Bed ADAAG	0	1	1	1	1	1	1	1	**7**
Two Bed B	0	2	4	4	4	4	2	1	**21**
Two Bed A	0	1	1	1	0	1	0	0	**4**
Two Bed ADAAG	0	0	0	0	1	0	1	0	**2**
TOTALS	0	21	29	34	34	34	30	19	**201**

TOTAL B	180
TOTAL A	10
TOTAL ADAAG	11
TOTAL UNITS	**201**

H/V	**B UNITS**
STUDIO	2
ONE BED	2
TWO BED	1



1 SEVENTH FLOOR
1/16" = 1'-0"

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APARTMENTS
89 ELM STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
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PORTLAND, MAINE 04101
O: 207-747-5159
C: 207-650-6414
senatorearchitecture.com

CONSULTANTS:

REVISIONS:

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DRAWN BY:	RRT
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SCALE:	AS NOTED

SHEET TITLE:
SEVENTH FLOOR PLAN

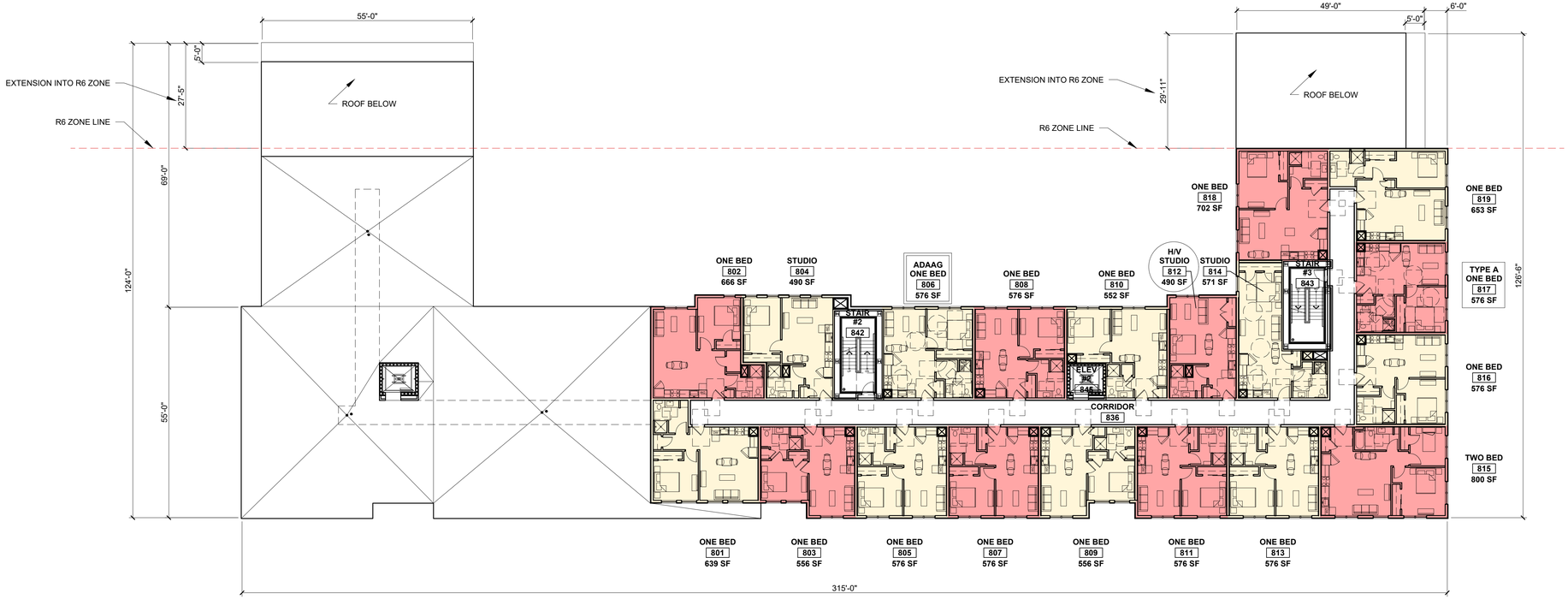
A1-7

8TH FLOOR

19 UNITS 13,685 SF

2 STUDIO UNITS
16 ONE BEDROOM UNITS
1 TWO BEDROOM UNITS

(1) H/V - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED



1 EIGHTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
EIGHTH FLOOR PLAN

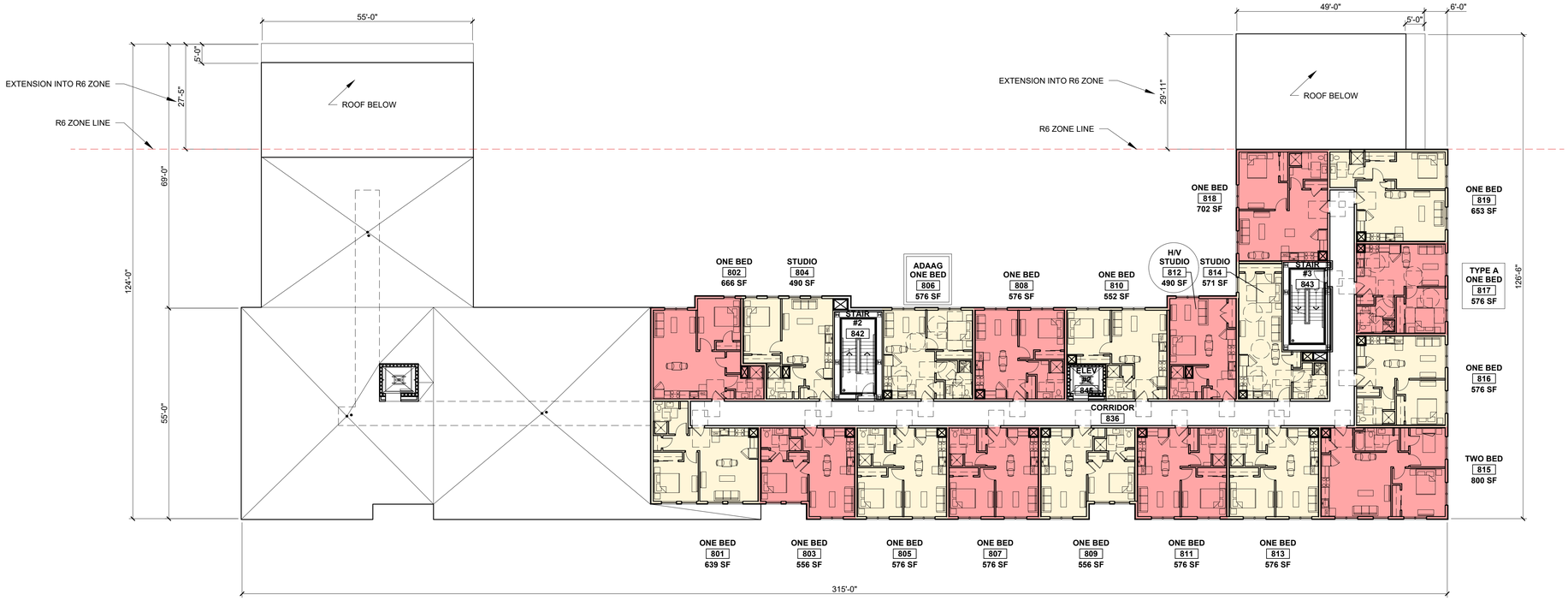
A1-8

8TH FLOOR

19 UNITS 13,685 SF

2 STUDIO UNITS
16 ONE BEDROOM UNITS
1 TWO BEDROOM UNITS

(1) H/V - STUDIO
(1) TYPE A - ONE BED
(1) ADAAG - ONE BED



1 EIGHTH FLOOR
1/16" = 1'-0"

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SHEET TITLE:
EIGHTH FLOOR PLAN

A1-8

UNIT ACCESSIBILITY SUMMARY

REGULATION: HUD 504 AND ADA, STANDARD: ADAAG 2010	PROVIDED IN PROJECT	EXCESS UNITS
SCOPING REQUIREMENT: 5% units accessible and additional 2% of units to be hearing and vision impaired		
201 units within building X 5% = 11 units to meet ADAAG	11 ADAAG units	0 Excess
201 units within building X 2% = 4.02 or 5 unit to be hearing and vision impaired	5 Hearing and Vision Impaired Units	0 Excess
REGULATION: MAINE HUMAN RIGHTS ACT (MHRA), STANDARD: ANSI A117.1-2009		
SCOPING REQUIREMENT: 10% of Ground Floor units to be Type A		
21 Ground Floor (Second Floor total) Units X 10% = 3 units	3 Type-A units (includes 1 ADAAG)	0 Excess
SCOPING REQUIREMENT: 10% of Upper Floor units to be Type A		
180 Upper Floor (3,4,5,6,7,8 Floors) Units X 10% = 18 units	18 Type-A units (includes 10 ADAAG)	0 Excess
	21 Type-A units total (INCUDES ADAAG)	**0 Excess Type-A units total**
All the rest to be Type B	180 Type-B units (includes 5 H/V)	
MHRA requires ALL units to either be Type A or B units		
All units to meet Federal Fair Housing Act		

UNIT TYPES - 201 TOTAL UNITS

SECOND FLOOR	4 STUDIO UNITS	14 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
THIRD FLOOR	4 STUDIO UNITS	20 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FOURTH FLOOR	6 STUDIO UNITS	23 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
FIFTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SIXTH FLOOR	7 STUDIO UNITS	22 ONE BEDROOM UNITS	5 TWO BEDROOM UNITS	
SEVENTH FLOOR	6 STUDIO UNITS	21 ONE BEDROOM UNITS	3 TWO BEDROOM UNITS	
EIGHTH	2 STUDIO UNITS	16 ONE BEDROOM UNITS	1 TWO BEDROOM UNITS	
TOTALS	**36 STUDIO UNITS**	**138 ONE BEDROOM UNITS**	**27 TWO BEDROOM UNITS**	

ACCESSIBLE UNIT TYPES

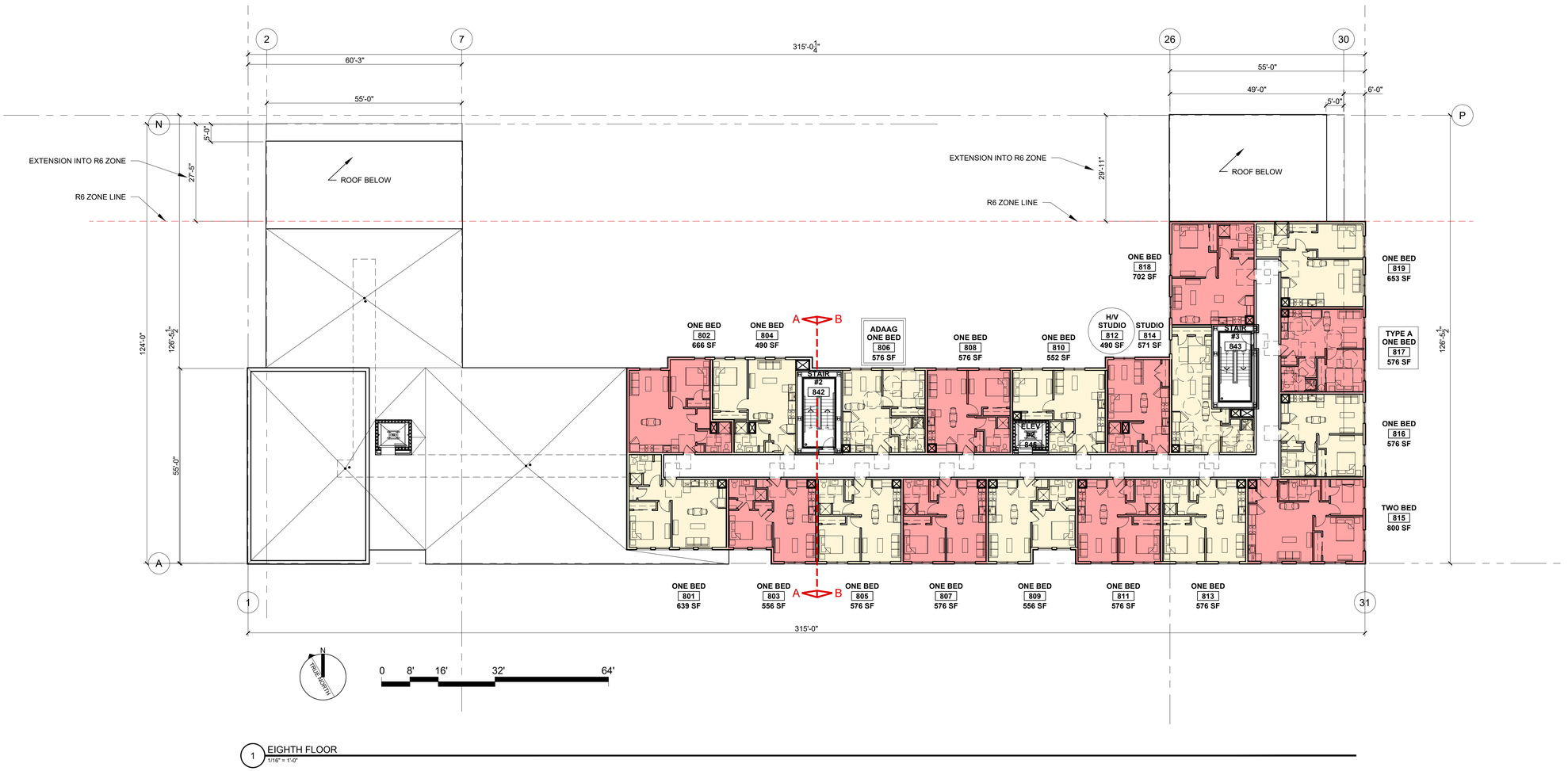
FLOOR	TYPE - A STUDIO	TYPE - ADDAG STUDIO	H/V IMPAIRED STUDIO	TYPE - A ONE BED	TYPE - ADDAG ONE BED	H/V IMPAIRED ONE BED	TYPE - A TWO BED	TYPE - ADDAG TWO BED	H/V IMPAIRED TWO BED
SECOND FLOOR	0	0	0	1	1	0	1	0	0
THIRD FLOOR	0	0	0	0	1	1	1	0	0
FORTH FLOOR	0	0	0	1	1	0	1	0	1
FIFTH FLOOR	1	0	0	1	1	1	0	1	0
SIXTH FLOOR	0	1	1	0	1	0	1	0	0
SEVENTH FL.	0	1	0	1	1	0	0	1	0
EIGHTH FL.	0	0	1	1	1	0	0	0	0
TOTALS	**1**	**2**	**2**	**5**	**7**	**2**	**4**	**2**	**1**

89 ELM UNIT MAXTRIX

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	TOTALS
FLOOR PLATE SF:	**9,365 SF**	**18,156 SF**	**24,882 SF**	**24,882 SF**	**24,489 SF**	**24,489 SF**	**21,801 SF**	**13,685 SF**	**161,750 SF**
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TOTAL A	10
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H/V	**B UNITS**
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ONE BED	2
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1 EIGHTH FLOOR
1/16" = 1'-0"

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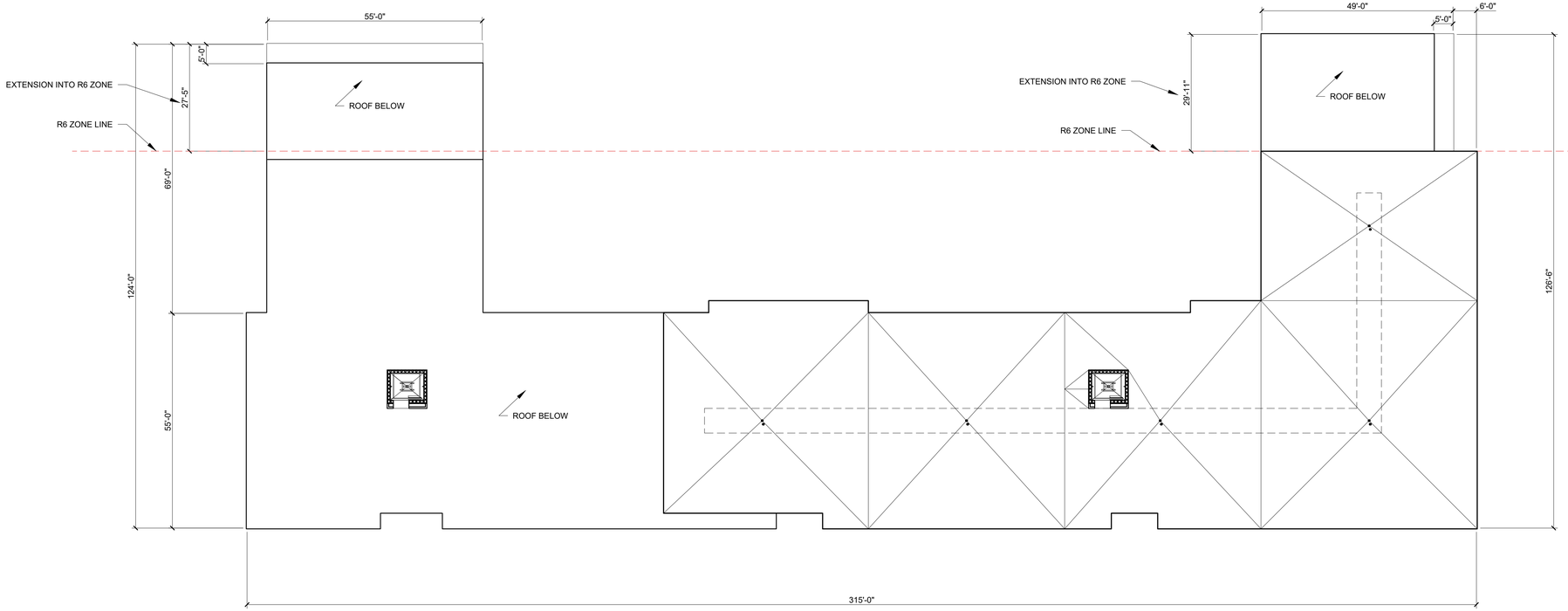
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SCALE:	AS NOTED

SHEET TITLE:
EIGHTH FLOOR PLAN

A1-8



1 ROOF PLAN
1/16" = 1'-0"

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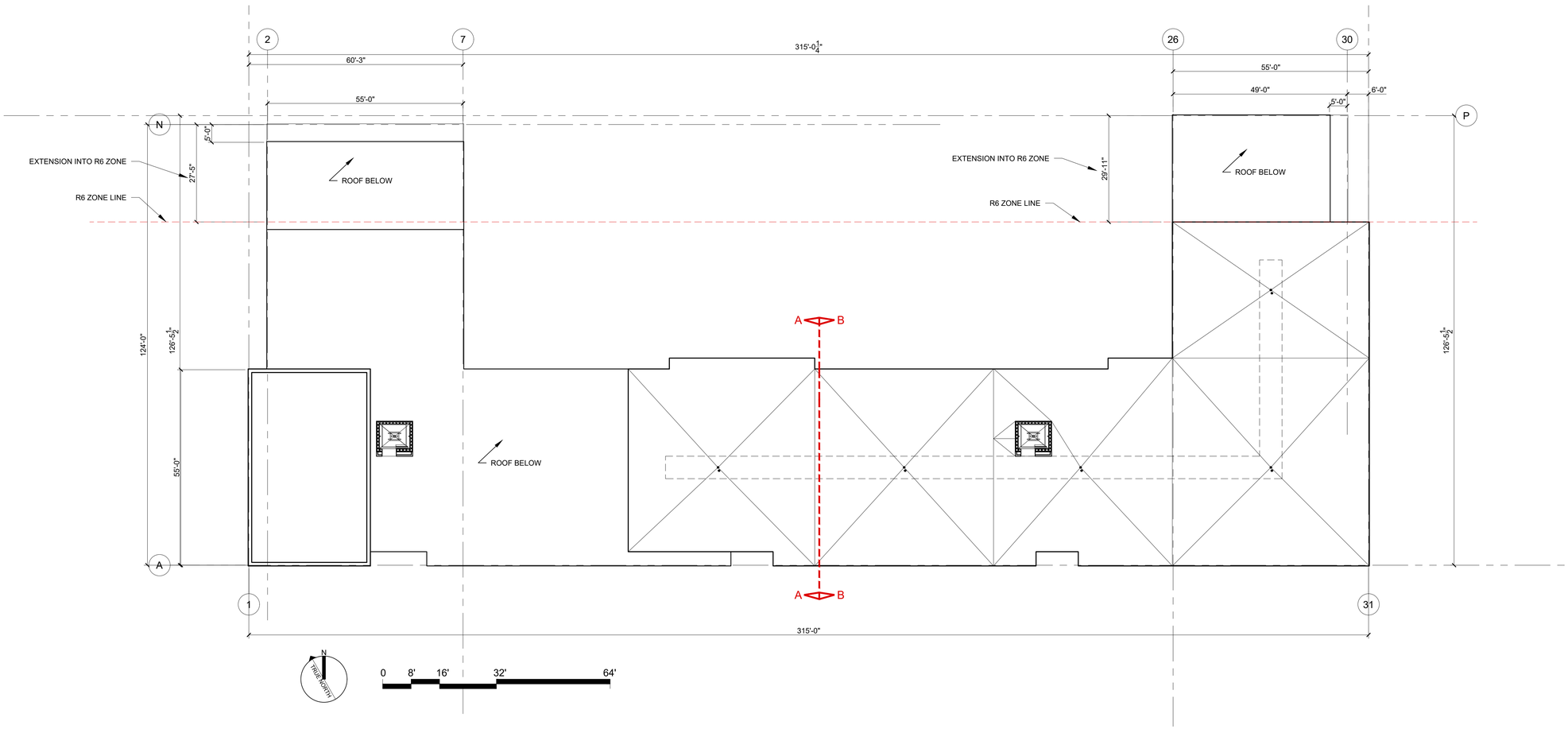
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DATE:

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SHEET TITLE:
ROOF PLAN

A1-9



1 ROOF PLAN
1/16" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ROOF PLAN

A1-9



1 SOUTH ELEVATION (ELM STREET)
1/16" = 1'-0"



2 WEST ELEVATION (LANCASTER STREET)
1/16" = 1'-0"



3 EAST ELEVATION (OXFORD STREET)
1/16" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-0



1 SOUTH ELEVATION (ELM STREET)
1/16" = 1'-0"



2 WEST ELEVATION (LANCASTER STREET)
1/16" = 1'-0"



3 EAST ELEVATION (OXFORD STREET)
1/16" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-0



1 SOUTH ELEVATION (ELM STREET)
1/16" = 1'-0"



2 WEST ELEVATION (LANCASTER STREET)
1/16" = 1'-0"



3 EAST ELEVATION (OXFORD STREET)
1/16" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-0

MATERIALS KEY

ITEM	INFORMATION	COLOR
SIDING / TRIM - COLOR #1	FIBERCEMENT - SMOOTH	WHITE
SIDING / TRIM - COLOR #2	FIBERCEMENT - SMOOTH	MOSS GREEN
SIDING / TRIM - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #4	FIBERCEMENT - SMOOTH	LIGHT GRAY
PANEL SIDING - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
TRIM - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
BRICK - COLOR #6	SMOOTH	LIGHT TAN
BRICK - COLOR #7	SMOOTH	DARK GRAY
PRE-CAST - COLOR #7	TEXTURED	LIGHT GRAY
PRE-CAST - COLOR #8	TEXTURED	DARK GRAY
DOORS / WINDOWS - COLOR #9		BLACK

MATERIALS NOTE:

1.) ALL DIS-SIMILAR METALS TO BE ISOLATED FROM ONE ANOTHER WITH ADHERED STRIPS OR SEALANTS TO PREVENT GALVANIC ACTION

ELEVATION NOTES

1.) ALL SIDING AND TRIM TO BE INSTALLED PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND APPROVED SHOP DRAWINGS

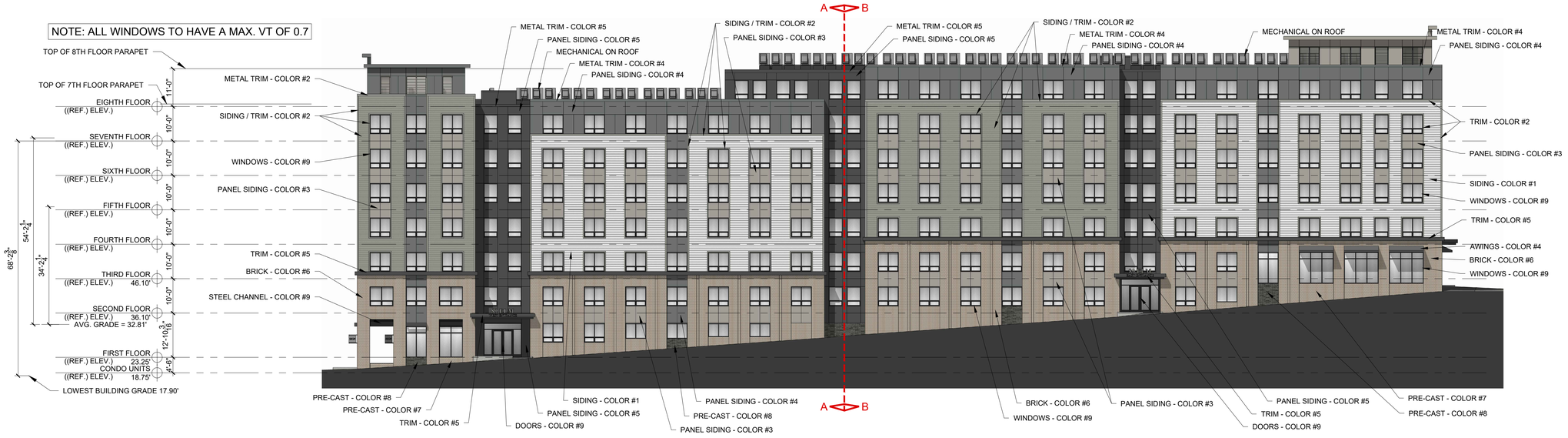
2.) SEE ELECTRICAL DRAWINGS FOR EXTERIOR LIGHTING SPECS

3.) FOR EXTERIOR VENT LOCATIONS SEE MECHANICAL PLANS. ALL VENTS AND PENETRATIONS TO BE FLASHED INTO FACADE AND PAINTED TO MATCH THE SIDING THEY ARE MOUNTED WITHIN

4.) G.C. TO PROVIDE A PARTIAL FULL SCALE MOCKUP FOR OWNER APPROVAL OF FINISH PRIOR TO CONSTRUCTION

5.) EXTERIOR THIN BRICK MUST HAVE CONTROL (MOVEMENT) JOINTS AT SPACED NO MORE THAN 16'-0" O.C. (INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS).

NOTE: ALL WINDOWS TO HAVE A MAX. VT OF 0.7



1 SOUTH ELEVATION (ELM STREET)
1/16" = 1'-0"



2 WEST ELEVATION (LANCASTER STREET)
1/16" = 1'-0"



3 EAST ELEVATION (OXFORD STREET)
1/16" = 1'-0"

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SHEET TITLE:
ELEVATIONS

A2-0



1 SOUTH ELEVATION (A)
1/8" = 1'-0"

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SHEET TITLE:
ENLARGED SOUTH ELEVATION - A

A2-3A



1 SOUTH ELEVATION (B)
1/8" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ENLARGED SOUTH ELEVATION - B

A2-3B

MATERIALS KEY

ITEM	INFORMATION	COLOR
SIDING / TRIM - COLOR #1	FIBERCEMENT - SMOOTH	WHITE
SIDING / TRIM - COLOR #2	FIBERCEMENT - SMOOTH	MOSS GREEN
SIDING / TRIM - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #4	FIBERCEMENT - SMOOTH	LIGHT GRAY
PANEL SIDING - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
TRIM - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
BRICK - COLOR #6	SMOOTH	LIGHT TAN
BRICK - COLOR #7	SMOOTH	DARK GRAY
DOORS / WINDOWS - COLOR #9		BLACK

MATERIALS NOTE:

1.) ALL DIS-SIMILAR METALS TO BE ISOLATED FROM ONE ANOTHER WITH ADHERED STRIPS OR SEALANTS TO PREVENT GALVANIC ACTION

ELEVATION NOTES

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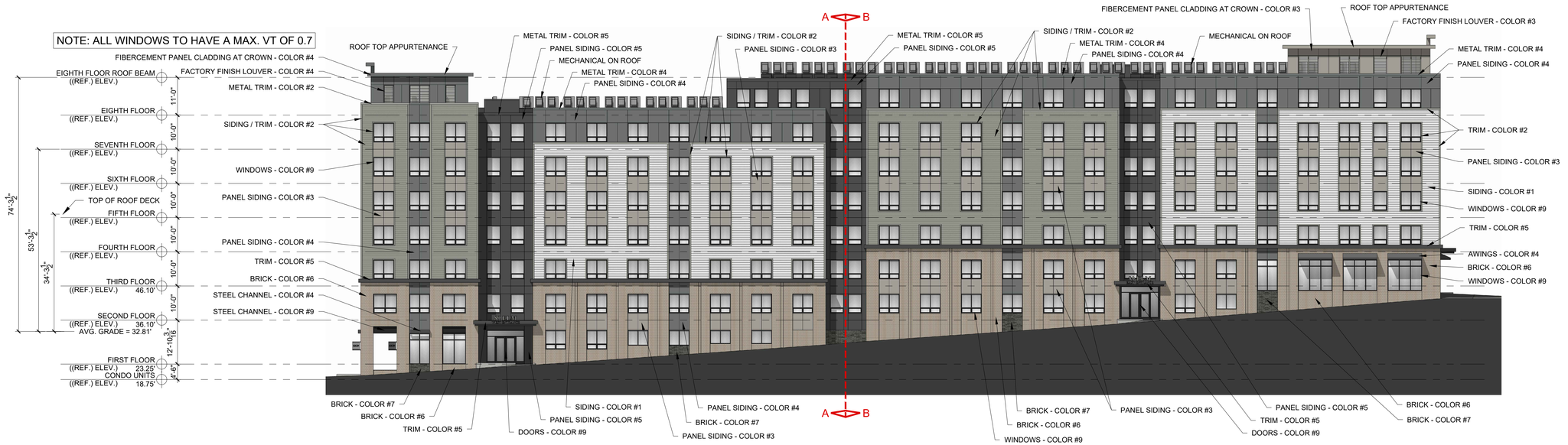
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NOTE: ALL WINDOWS TO HAVE A MAX. VT OF 0.7



1 SOUTH ELEVATION (ELM STREET)
1/16" = 1'-0"



2 WEST ELEVATION (LANCASTER STREET)
1/16" = 1'-0"



3 EAST ELEVATION (OXFORD STREET)
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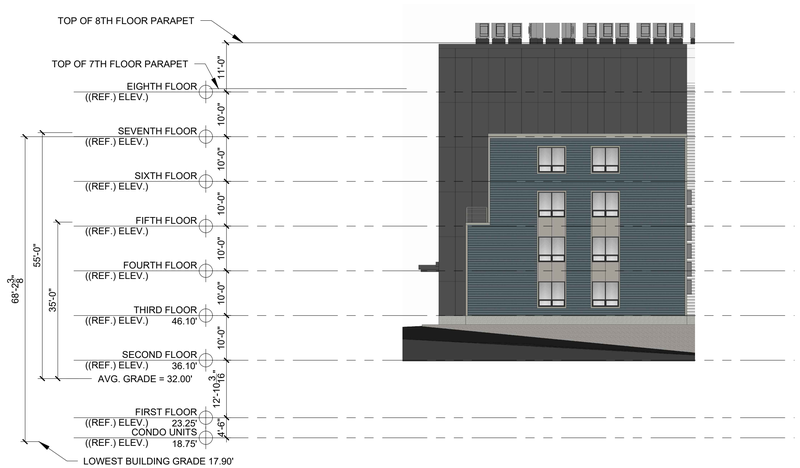
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SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

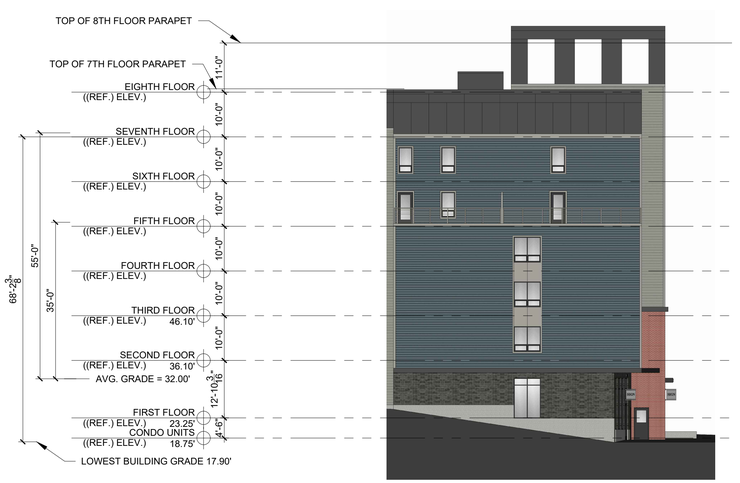
A2-0



1 NORTH ELEVATION
1/16" = 1'-0"



2 NORTH ELEVATION
1/16" = 1'-0"



3 NORTH ELEVATION
1/16" = 1'-0"

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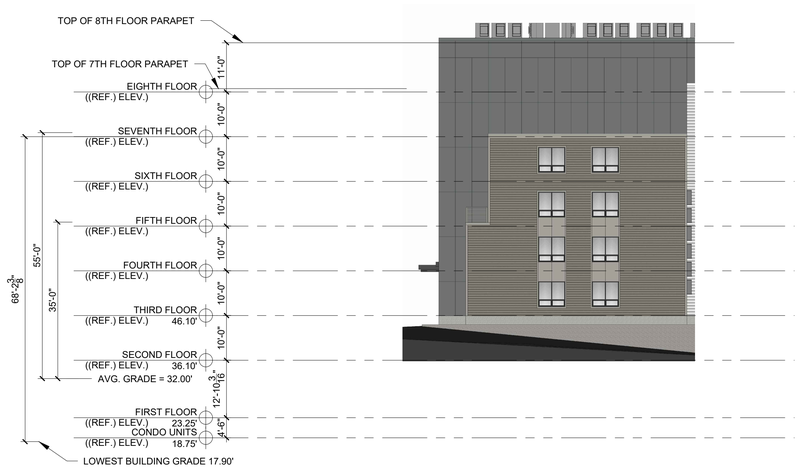
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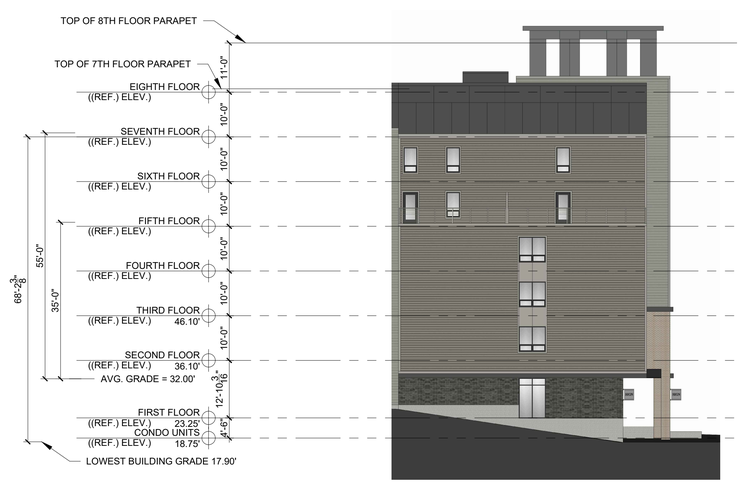
A2-1



1 NORTH ELEVATION
1/16" = 1'-0"



2 NORTH ELEVATION
1/16" = 1'-0"



3 NORTH ELEVATION
1/16" = 1'-0"

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APARTMENTS
89 ELM STREET
PORTLAND, MAINE

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500 CONGRESS STREET, SUITE 2
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O: 207-747-5159
C: 207-650-6414
senatorearchitecture.com

CONSULTANTS:

REVISIONS:

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JUNE 09, 2023

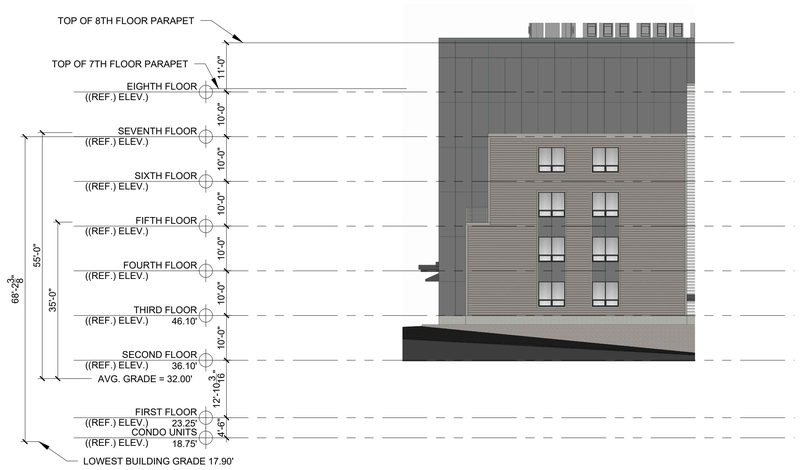
DATE:	
PROJECT No:	2241
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CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

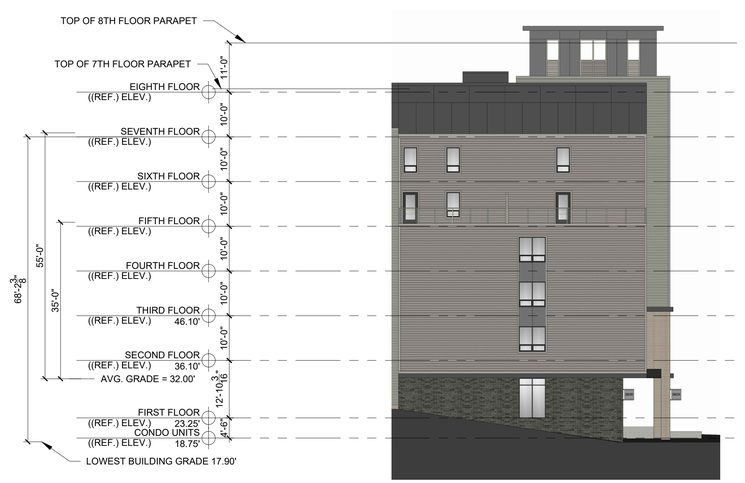
A2-1



1 NORTH ELEVATION
1/16" = 1'-0"



2 NORTH ELEVATION
1/16" = 1'-0"



3 NORTH ELEVATION
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AUGUST 29, 2023

DATE:	
PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-1

MATERIALS KEY

ITEM	INFORMATION	COLOR
SIDING / TRIM - COLOR #1	FIBERCEMENT - SMOOTH	WHITE
SIDING / TRIM - COLOR #2	FIBERCEMENT - SMOOTH	MOSS GREEN
SIDING / TRIM - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #4	FIBERCEMENT - SMOOTH	LIGHT GRAY
PANEL SIDING - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
TRIM - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
BRICK - COLOR #6	SMOOTH	LIGHT TAN
BRICK - COLOR #7	SMOOTH	DARK GRAY
PRE-CAST - COLOR #7	TEXTURED	LIGHT GRAY
PRE-CAST - COLOR #8	TEXTURED	DARK GRAY
DOORS / WINDOWS - COLOR #9		BLACK

MATERIALS NOTE:

1.) ALL DIS-SIMILAR METALS TO BE ISOLATED FROM ONE ANOTHER WITH ADHERED STRIPS OR SEALANTS TO PREVENT GALVANIC ACTION

ELEVATION NOTES

1.) ALL SIDING AND TRIM TO BE INSTALLED PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND APPROVED SHOP DRAWINGS

2.) SEE ELECTRICAL DRAWINGS FOR EXTERIOR LIGHTING SPECS

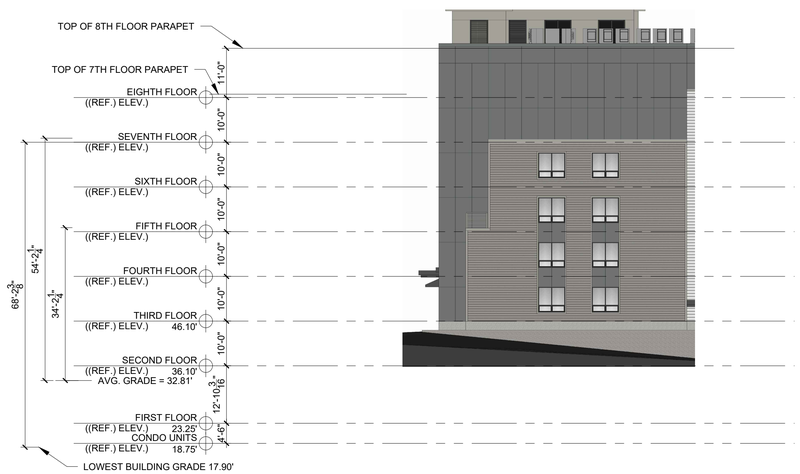
3.) FOR EXTERIOR VENT LOCATIONS SEE MECHANICAL PLANS. ALL VENTS AND PENETRATIONS TO BE FLASHED INTO FACADE AND PAINTED TO MATCH THE SIDING THEY ARE MOUNTED WITHIN

4.) G.C. TO PROVIDE A PARTIAL FULL SCALE MOCKUP FOR OWNER APPROVAL OF FINISH PRIOR TO CONSTRUCTION

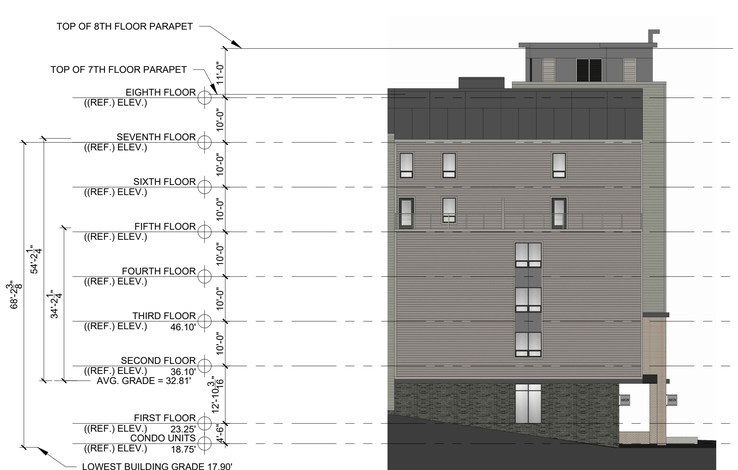
5.) EXTERIOR THIN BRICK MUST HAVE CONTROL (MOVEMENT) JOINTS AT SPACED NO MORE THAN 16'-0" O.C. (INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS).



1 NORTH ELEVATION
1/16" = 1'-0"



2 NORTH ELEVATION
1/16" = 1'-0"



3 NORTH ELEVATION
1/16" = 1'-0"

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OCTOBER 02, 2023

DATE:

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SHEET TITLE:
ELEVATIONS

A2-1



1 NORTH ELEVATION (A)
1/8" = 1'-0"

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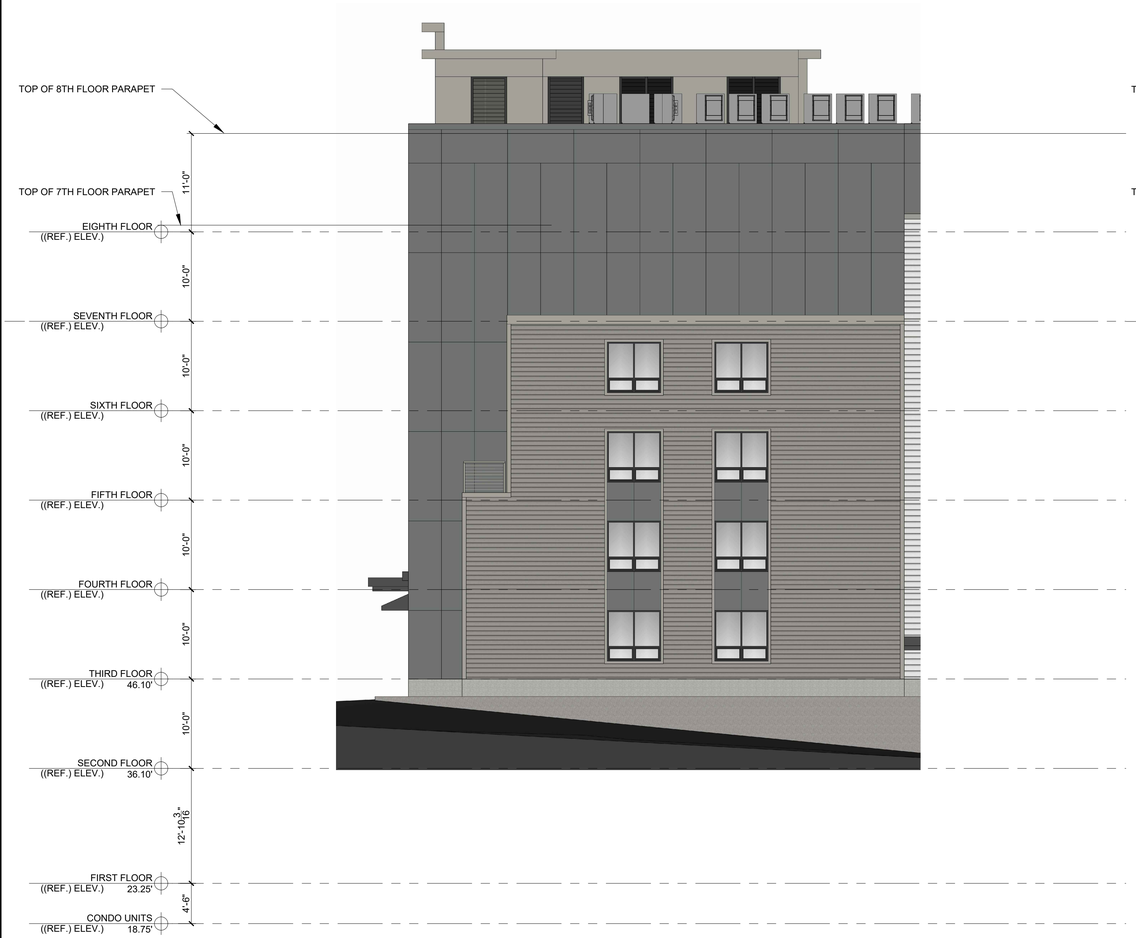
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SHEET TITLE:
ENLARGED NORTH ELEVATION - A

A2-6A





1 NORTH ELEVATION (B)
1/8" = 1'-0"

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SCALE:	AS NOTED

SHEET TITLE:
ENLARGED NORTH ELEVATION - B

A2-6B

MATERIALS KEY

ITEM	INFORMATION	COLOR
SIDING / TRIM - COLOR #1	FIBERCEMENT - SMOOTH	WHITE
SIDING / TRIM - COLOR #2	FIBERCEMENT - SMOOTH	MOSS GREEN
SIDING / TRIM - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #3	FIBERCEMENT - SMOOTH	LIGHT BROWN
PANEL SIDING - COLOR #4	FIBERCEMENT - SMOOTH	LIGHT GRAY
PANEL SIDING - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
TRIM - COLOR #5	FIBERCEMENT - SMOOTH	DARK GRAY
BRICK - COLOR #6	SMOOTH	LIGHT TAN
BRICK - COLOR #7	SMOOTH	DARK GRAY
DOORS / WINDOWS - COLOR #9		BLACK

MATERIALS NOTE:

1.) ALL DIS-SIMILAR METALS TO BE ISOLATED FROM ONE ANOTHER WITH ADHERED STRIPS OR SEALANTS TO PREVENT GALVANIC ACTION

ELEVATION NOTES

1.) ALL SIDING AND TRIM TO BE INSTALLED PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND APPROVED SHOP DRAWINGS

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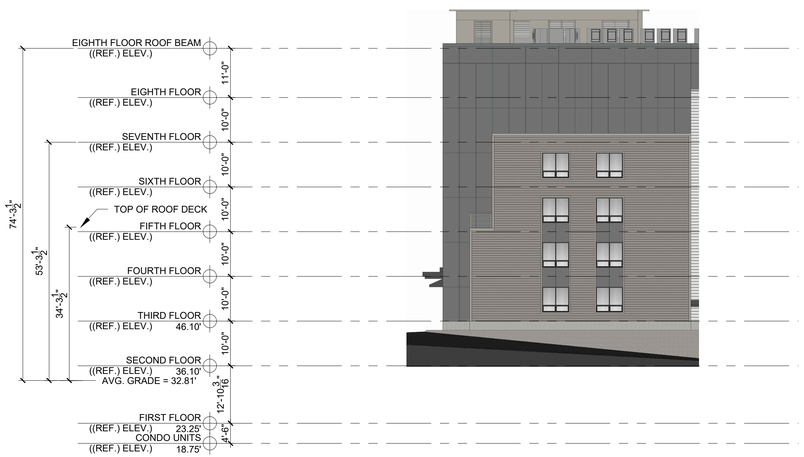
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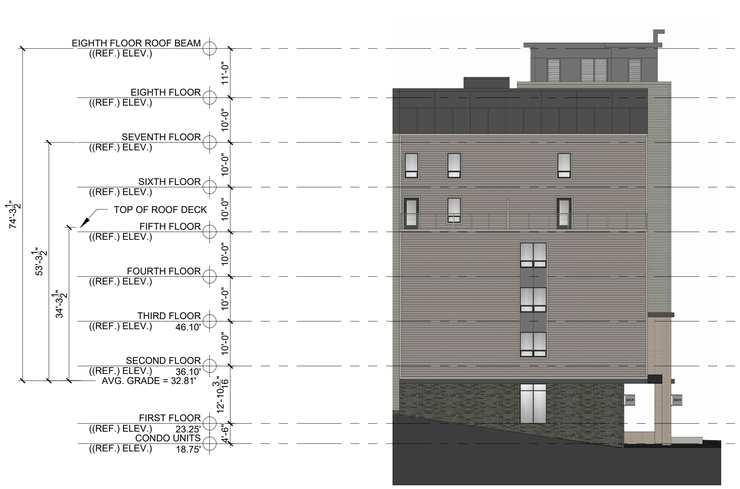
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1 NORTH ELEVATION
1/16" = 1'-0"



2 NORTH ELEVATION
1/16" = 1'-0"



3 NORTH ELEVATION
1/16" = 1'-0"

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REVISIONS:

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OCTOBER 05, 2023

DATE:

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DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-1



1 WEST ELEVATION 2 (PARKING AREA)
1/16" = 1'-0"



2 EAST ELEVATION 2 (PARKING AREA)
1/16" = 1'-0"

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CONSULTANTS:

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FEBRUARY 17, 2023

DATE:

PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-2



1 WEST ELEVATION 2 (PARKING AREA)
1/16" = 1'-0"



2 EAST ELEVATION 2 (PARKING AREA)
1/16" = 1'-0"

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JUNE 09, 2023

DATE:

PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-2



1 WEST ELEVATION 2 (PARKING AREA)
1/16" = 1'-0"



2 EAST ELEVATION 2 (PARKING AREA)
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AUGUST 29, 2023

DATE:

PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-2

MATERIALS KEY

ITEM	INFORMATION	COLOR
SIDING / TRIM - COLOR #1	FIBERCEMENT - SMOOTH	WHITE
SIDING / TRIM - COLOR #2	FIBERCEMENT - SMOOTH	MOSS GREEN
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MATERIALS NOTE:

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1 WEST ELEVATION 2 (PARKING AREA)
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2 EAST ELEVATION 2 (PARKING AREA)
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OCTOBER 02, 2023

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CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

A2-2



1 EAST ELEVATION (A)
1/8" = 1'-0"

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DATE:

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SCALE:	AS NOTED

SHEET TITLE:
ENLARGED
EAST
ELEVATION - A

A2-4A



1 EAST ELEVATION (B)
1/8" = 1'-0"

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SHEET TITLE:
ENLARGED
EAST
ELEVATION - B

A2-4B



1 WEST ELEVATION (A)
1/8" = 1'-0"

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ENLARGED
WEST
ELEVATION - A

A2-5A



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ENLARGED
WEST
ELEVATION - B

A2-5B

MATERIALS KEY

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2 EAST ELEVATION 2 (PARKING AREA)
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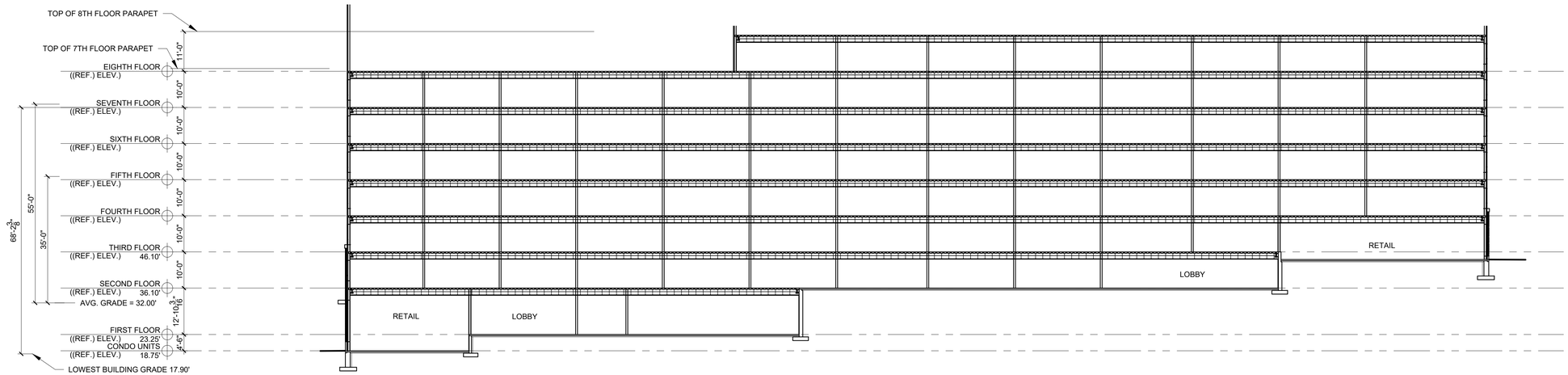
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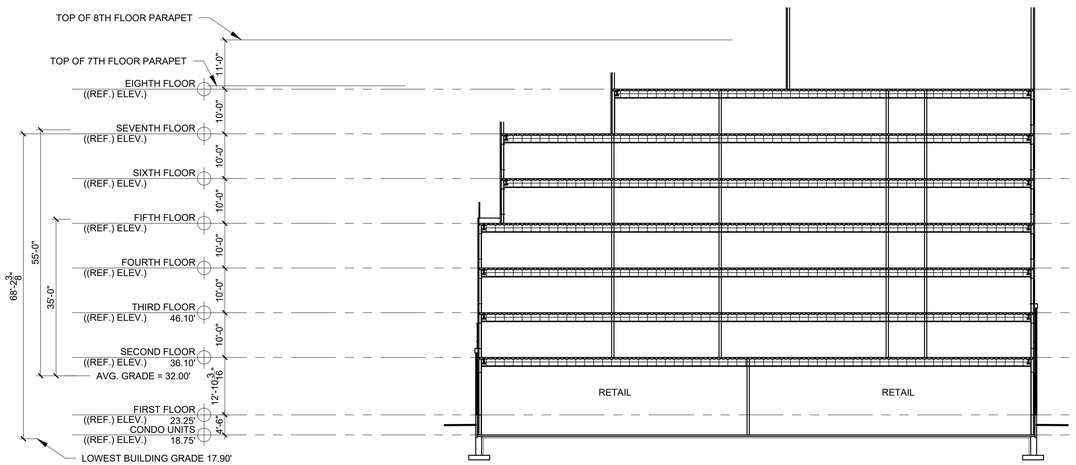
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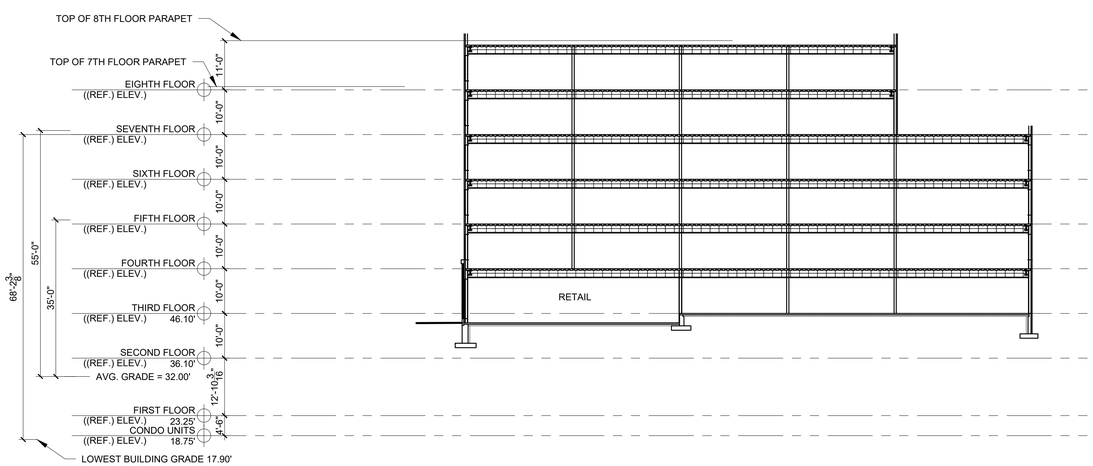
A2-2



1 ELM STREET SECTION
1/16" = 1'-0"



2 LANCASTER STREET SECTION
1/16" = 1'-0"



3 OXFORD STREET SECTION
1/16" = 1'-0"

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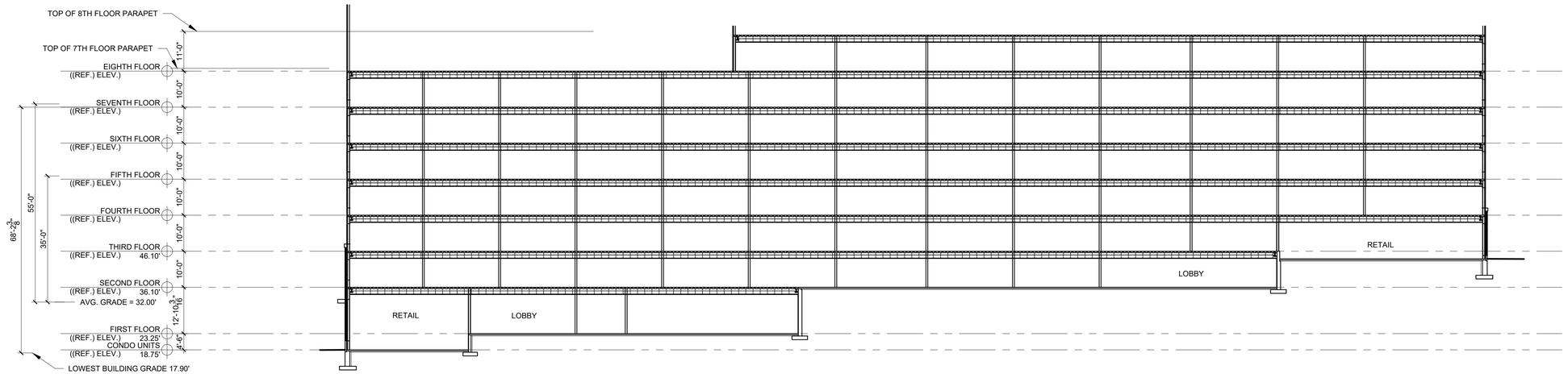
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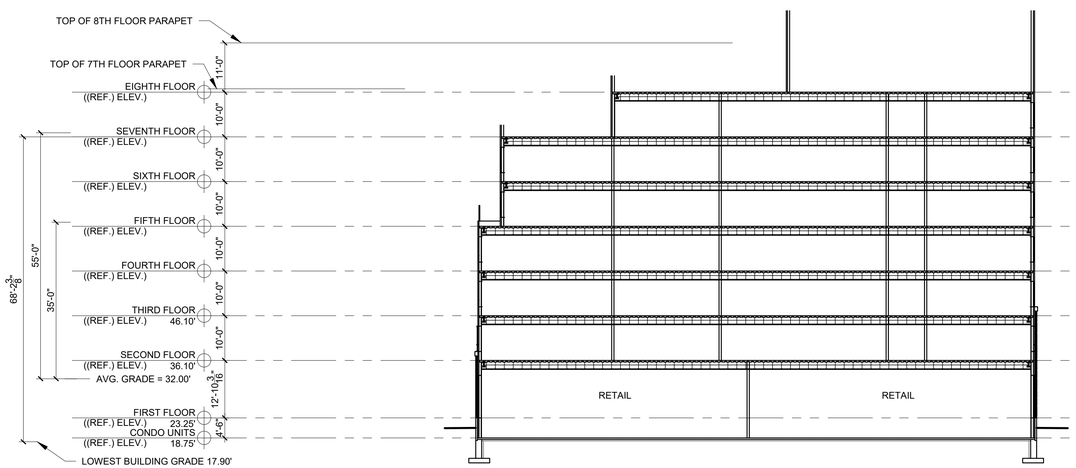
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SHEET TITLE:
SECTIONS

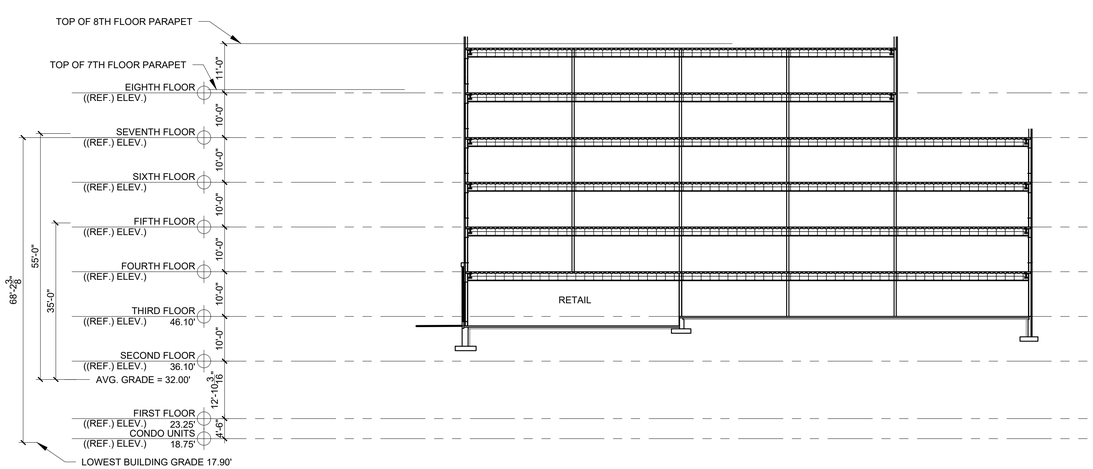
A3-0



1 ELM STREET SECTION
1/16" = 1'-0"



2 LANCASTER STREET SECTION
1/16" = 1'-0"



3 OXFORD STREET SECTION
1/16" = 1'-0"

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CONSULTANTS:

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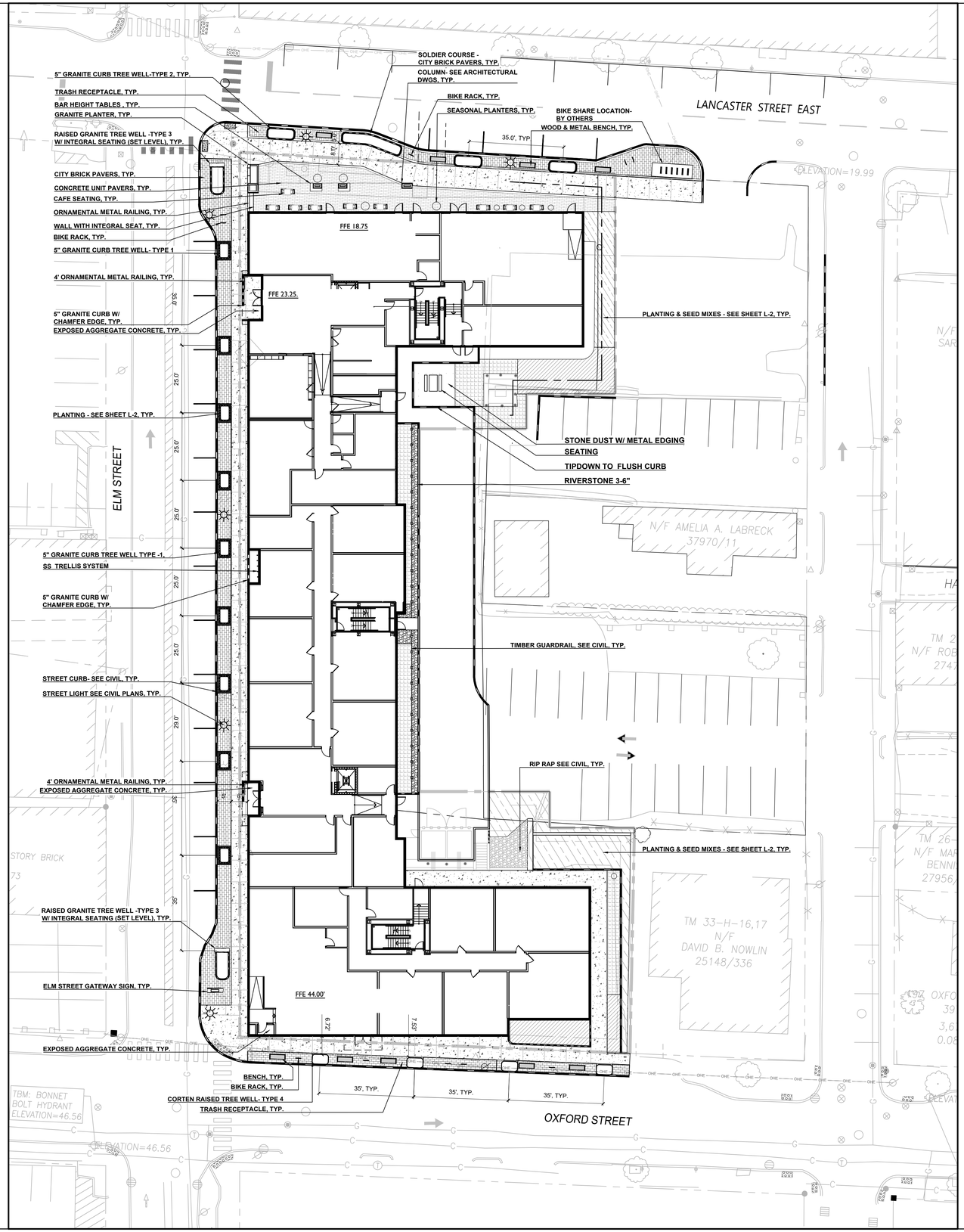
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GENERAL NOTES

1. THE PLANTING DESIGN IS BASED ON CIVIL ENGINEERING DRAWINGS PRODUCED BY ACORN ENGINEERING. EXISTING BUILDINGS, GRADING, EASEMENTS AND UTILITIES ARE BASED ON SURVEY INFORMATION PROVIDED BY THE OWNER.
2. VERIFY ALL CONDITIONS AT PROJECT SITE AND NOTIFY LANDSCAPE ARCHITECT OF DIMENSIONAL ERRORS, OMISSIONS OR DISCREPANCIES BEFORE BEGINNING WORK.
3. THE LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING OVER OR NEAR EXISTING GAS MAINS AND ELECTRICAL LINES. CONTRACTOR IS TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES, ABOVE AND BELOW GRADE, PRIOR TO EXCAVATION OR TRENCHING. CALL DIG SAFE AT 1-(800) 452-4699. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS. DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. ARCHITECTURAL ELEMENTS ARE SHOWN ON LANDSCAPE PLANS FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL ARCHITECTURAL INFORMATION. NOTIFY OWNER OR OWNER'S REPRESENTATIVE & LANDSCAPE ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
5. THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR FOR SAFETY PRECAUTIONS OR PROBLEMS UTILIZED IN CONNECTION WITH THE WORK, AND HE WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

LAYOUT NOTES

1. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT FOR DIRECTION AND RESOLUTION PRIOR TO ANY FURTHER WORK.
3. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES PRIOR TO EXCAVATION OF OR INSTALLATION OF ANY PART OF THIS WORK. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
4. CONTRACTOR SHALL NOTIFY DIG SAFE (1-888-344-7233) PRIOR TO EXCAVATION.
5. CONTRACTOR SHALL AVOID ALL AREAS NOT REQUIRING GRADING. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND SHALL PRESERVE EXISTING VEGETATION.
6. CONTRACTOR SHALL LOAM AND SEED ALL GRADED AND DISTURBED AREAS NOT OTHERWISE IMPROVED.
7. ALL WORK ASSOCIATED WITH THE PROPOSED WATER SERVICE MUST ADHERE TO CITY OF PORTALND WATER DISTRICT STANDARDS. ALL WORK ASSOCIATED WITH THE PROPOSED SANITARY SEWER LINE MUST ADHERE TO THE CITY OF PORTLAND DEPARTMENT OF WASTEWATER CONTROL STANDARDS.
8. THE CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR UNDERTAKING THE WORK IN A SAFE AND EFFICIENT MANNER, IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY REGULATIONS. ALL WORK AREAS SHALL BE DELINEATED CLEARLY AND FENCED AS APPROPRIATE TO PREVENT UNAUTHORIZED ACCESS. THE SITE SHALL BE LEFT IN A SAFE, ORDERLY AND TIDY MANNER AT THE END OF EACH WORK DAY.
9. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND PERFORM ALL WORK NECESSARY TO REGULATE TRAFFIC IN THE AREA OF THE SITE, AND SHALL BE RESPONSIBLE FOR MAINTAINING ACCESS TO AND FROM PUBLIC AND PRIVATE PROPERTIES AND RIGHTS OF WAY DURING CONSTRUCTION.
10. PROVIDE EXPANSION JOINTS
11. REQUEST INSPECTION OF FIELD STAKING BY LANDSCAPE ARCHITECT A MINIMUM OF 24 HOURS IN ADVANCE OF PERFORMING ANY WORK UNLESS INDICATED OTHERWISE.



Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: MATERIAL & LAYOUT PLAN

89 Elm Street

Portland ME 04103

Revisions:

REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

North:

Sheet No.: L1

Scale: 1" = 20'-0"

0 10 20 40

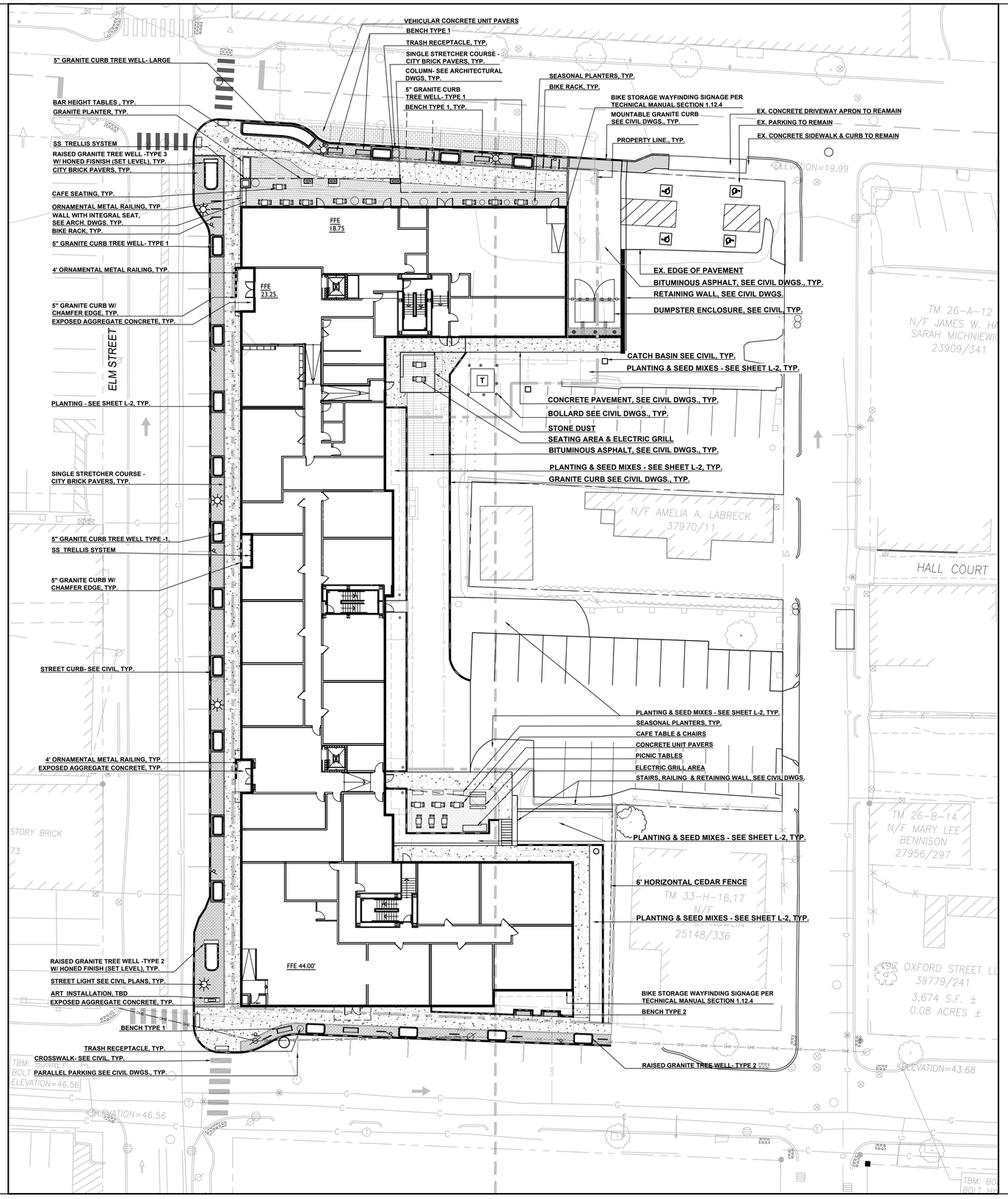
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GENERAL NOTES

1. THE PLANTING DESIGN IS BASED ON CIVIL ENGINEERING DRAWINGS PRODUCED BY ACORN ENGINEERING. EXISTING BUILDINGS, GRADING, EASEMENTS AND UTILITIES ARE BASED ON SURVEY INFORMATION PROVIDED BY THE OWNER.
2. VERIFY ALL CONDITIONS AT PROJECT SITE AND NOTIFY LANDSCAPE ARCHITECT OF DIMENSIONAL ERRORS, OMISSIONS OR DISCREPANCIES BEFORE BEGINNING WORK.
3. THE LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING OVER OR NEAR EXISTING GAS MAINS AND ELECTRICAL LINES. CONTRACTOR IS TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES, ABOVE AND BELOW GRADE, PRIOR TO EXCAVATION OR TRENCHING. CALL DIG SAFE AT 1-(800) 452-4699. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS. DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. ARCHITECTURAL ELEMENTS ARE SHOWN ON LANDSCAPE PLANS FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL ARCHITECTURAL INFORMATION. NOTIFY OWNER OR OWNER'S REPRESENTATIVE & LANDSCAPE ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
5. THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR FOR SAFETY PRECAUTIONS OR PROBLEMS UTILIZED IN CONNECTION WITH THE WORK, AND HE WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

LAYOUT NOTES

1. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT FOR DIRECTION AND RESOLUTION PRIOR TO ANY FURTHER WORK.
3. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES PRIOR TO EXCAVATION OF OR INSTALLATION OF ANY PART OF THIS WORK. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
4. CONTRACTOR SHALL NOTIFY DIG SAFE (1-888-344-7233) PRIOR TO EXCAVATION.
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10. PROVIDE EXPANSION JOINTS
11. REQUEST INSPECTION OF FIELD STAKING BY LANDSCAPE ARCHITECT A MINIMUM OF 24 HOURS IN ADVANCE OF PERFORMING ANY WORK UNLESS INDICATED OTHERWISE.



Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

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CITY STAFF COMMENTS REV. 2 - 23.08.24

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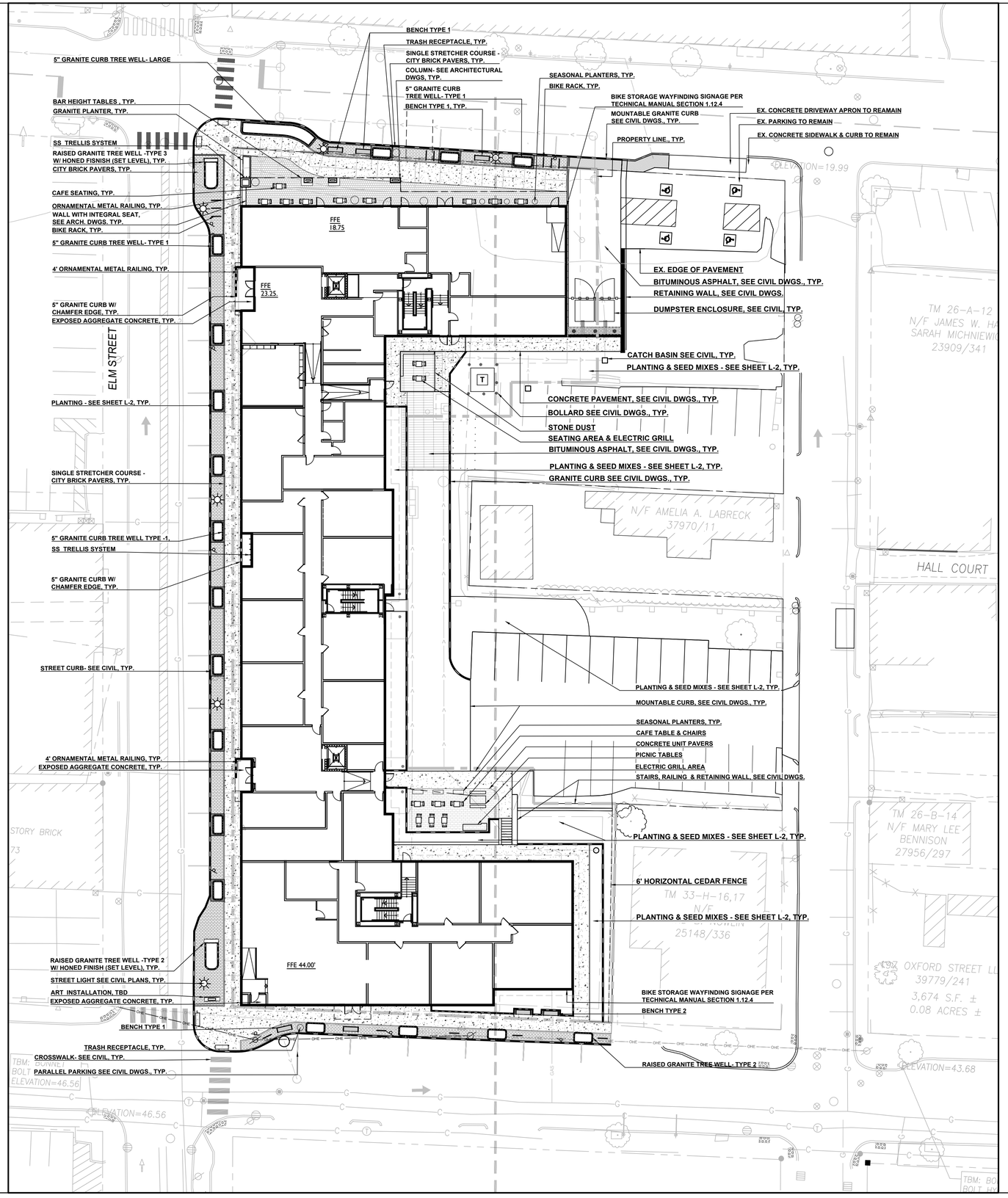
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PLANTING NOTES

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2. PLANT MATERIAL PROVIDED BY THE CONTRACTOR IS TO CONFORM TO THE HIGHEST STANDARD AS ADOPTED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (ANSI). PLANT MATERIAL IS TO BE HEALTHY SPECIMENS, FREE FROM DISEASE OR DAMAGE.
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5. LOCATE AND VERIFY EXISTING & PROPOSED UTILITY LINE LOCATIONS PRIOR TO STAKING AND REPORT CONFLICTS TO LANDSCAPE ARCHITECT.
6. PLANTING DEMOLITION DEBRIS, GARBAGE, LUMPS OF CONCRETE, STEEL AND OTHER MATERIALS DELETERIOUS TO PLANT'S HEALTH AS DETERMINED BY LANDSCAPE ARCHITECT SHALL BE REMOVED FROM PLANTING AREAS.
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12. REPAIR DAMAGE DUE TO LANDSCAPE INSTALLATION OPERATIONS INSIDE AND OUTSIDE OF LIMIT OF WORK.
13. SOAK ALL PERENNIALS FOR 24 HOURS PRIOR TO INSTALLATION.
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15. IRRIGATION: A TEMPORARY UNDERGROUND DRIP AND SPRINKLER IRRIGATION SYSTEM IS TO BE PROVIDED FOR ALL PLANT MATERIAL AND SOD OR SEEDED AREAS.
16. DISTURBED SITE AREAS ARE TO BE DRESSED WITH 6" MIN. OF AMENDED TOPSOIL FOR LAWNS AND 12" MIN. FOR PLANT BEDS. TOPSOIL FOR SEEDED AND/OR SEEDED AREAS IS TO BE TWO PARTS SHARP SAND, ONE PART LOAM AND ONE PART ORGANIC COMPOST.
17. PLANT BEDS ARE TO BE MULCHED TO A DEPTH OF 2" MIN. WITH NATURAL BARK MULCH WITH BARK SIZES NO LARGER THAN 3". PERENNIAL PLANT BEDS ARE TO BE MULCHED WITH BARK SIZES NO MORE THAN 1". TREES IN LAWN AREAS ARE TO HAVE MULCH RINGS OF 5' DIA.
18. TREES ADJACENT TO PEDESTRIAN ROUTES AND WITHIN PARKING ISLANDS ARE TO BE LIMBED TO 6' ABOVE GRADE.

SEED MIX LEGEND

SEE PLANTING ENLARGEMENT AS NOTED FOR SPECIFIC PLANTING TREATMENT

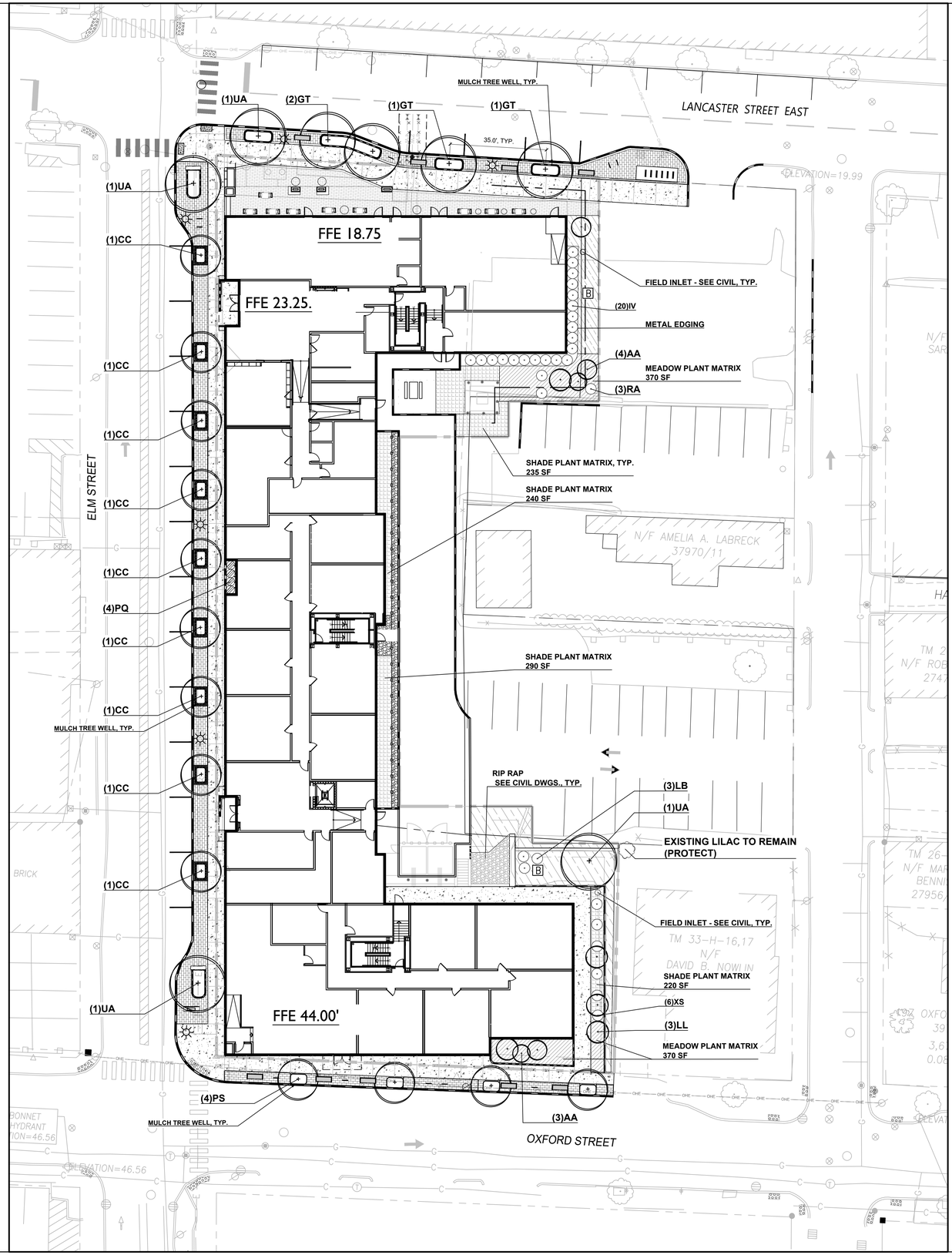
A	SEED MIX#1, AREA W/ TEMPORARY IRRIGATION; INSTALL 6" TOPSOIL FOR SEED MIXES AREAS, TYP.
NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX : mfg. NEW ENGLAND WETLAND PLANTS newp.com/catalog/seed-mixes/#wildlife	
B	NO MOW SEED MIX#2, AREA W/ TEMPORARY IRRIGATION; INSTALL 6" TOPSOIL FOR SEED MIXES AREAS, TYP.
ALISKE CLOVER SEED MIX : mfg. AMERICAN MEADOW HTTPS://WWW.AMERICANMEADOWS.COM	

PLANTING SCHEDULE

CODE	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
	DECIDUOUS TREES					
AA	*Amelancier alnifolia 'Obelisk'*	Standing Ovation Serviceberry	7			
CC	*Carpinus caroliniana 'Uxbridge'*	"Rising Fire' American Hornbeam	9	2.5-3" cal	as shown	
GT	*Gleditsia triancanthos inermis 'Street Keeper"*	Street Keeper 'Thornless Honeylocust	4	2.5-3" cal	as shown	
LSS	*Liquidambar styraciflua 'Slender Silhouette'*	Liquidambar styraciflua 'Slender Silhouette'	5	3" cal		Single Stem, B&B
SR	*Prunus sargentii*	Pink Flar Cherry	4	2.5-3" cal	as shown	
UA	*Ulmus x. 'morton'*	Accolade Elm	4	2.5-3" cal	as shown	
	Shrubs					
	BOTANICAL NAME	**COMMON NAME**	**QTY.**	**SIZE**	**SPACING**	**NOTES**
IV	*Itea virginica*	Virginia Sweetspire	20	# 2 CONT.	48" OC	
LB	*Lindera benzoin*	Spicebush	3	#3 CONT.	8' OC	" "
RM	*Rhus "Lo-Gro"*	Lo-gro' Sumac	3	# 2 CONT.	48" OC	
XS	*Xanthorizza simplissima*	Yellowroot	6	#3 CONT	42" OC	
	Plant Matrix: Meadow					
	BOTANICAL NAME	**COMMON NAME**	**QTY.**	**SIZE**	**SPACING**	**NOTES**
CA	*Ceonanthus americanus*	New Jersey Tea	tbd	#1 CONT.	24" OC	straight native species preferred
CAA	*Clethra alnifolia*	Sweet-pepperbush	tbd	#3 CONT.	36" OC	" "
RH	*Rudbeckia hirta*	Black-eyed Susan	tbd	#1 CONT.	15" OC	" "
SS	*Schizachryum scoparium*	Little Bluestem	tbd	#1 CONT.	15" OC	" "
SA	*Symphotrichum oblongifolium*	Aromatic Aster	tbd	#1 CONT.	15" OC	" "
	Plant Matrix: Shade					
	BOTANICAL NAME	**COMMON NAME**	**QTY.**	**SIZE**	**SPACING**	**NOTES**
AC	*Asarum canadense*	Wild ginger	tbd	plug	18" OC	
AFF	*Athyrium filix-femina*	Lady Fern	tbd	#1 CONT.	18" OC	" "
CT	*Campanula Americana*	Tall bellflower	tbd	plug	18" OC	
DP	*Dennstaedtia punctilobula*	Eastern hay-scented fern	tbd	#1 CONT.	18"OC	
PA	*Packera aurea*	Golden groundsel	tbd	PLUG	18" OC	
PAC	*Polystichum acrostichoides*	Christmas fern	tbd	PLUG	18" OC	straight native species preferred
	Vines					
	BOTANICAL NAME	**COMMON NAME**	**QTY.**	**SIZE**	**SPACING**	**NOTES**
PQ	*Parthenocissus quinquefolia*	Virgina Creeper	4			

SITE SOIL NOTES

1. CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE FOR LOCATION OF STOCKPILE AREAS FOR STRIPPED TOPSOIL AND PLANTING SOIL PRODUCTS. CONTRACTOR SHALL ENSURE AREA IS PROTECTED AND CONTAMINATION OR DISTURBANCE OF STORED PRODUCTS IS NOT ALLOWED.
2. CONTRACTOR SHALL ENSURE SUBGRADE IS SCARIFIED PRIOR TO INSTALLING PLANTING SOIL AND BLEND WITH INITIAL LIFT OR PLACEMENT OF PROPOSED PLANTING SOIL.
3. COORDINATE PLACEMENT OF PLANTING SOIL WITH OTHER WORK, ESPECIALLY UTILITIES. PLACEMENT SHOULD OCCUR AFTER INSTALLATION OF ALL HARDSCAPE IMPROVEMENTS, IRRIGATION SYSTEM, UTILITIES, ETC. AND BEFORE INSTALLATION OF PLANTS.



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17. PLANT BEDS ARE TO BE MULCHED TO A DEPTH OF 2" MIN. WITH NATURAL BARK MULCH WITH BARK SIZES NO LARGER THAN 3". PERENNIAL PLANT BEDS ARE TO BE MULCHED WITH BARK SIZES NO MORE THAN 1". TREES IN LAWN AREAS ARE TO HAVE MULCH RINGS OF 5' DIA.
18. TREES ADJACENT TO PEDESTRIAN ROUTES AND WITHIN PARKING ISLANDS ARE TO BE LIMBED TO 6' ABOVE GRADE.
19. ALL TREE SPECIES SHALL BE WATERED AT LEAST 2-4 TIMES EACH WEEK WITH 10-15 GALLONS ADMINISTERED TO EACH TREE DEPENDING ON THE WEATHER AND CURRENT MOISTURE LEVEL. WATERING WILL CONSIST OF 10-15 GALLONS ADMINISTERED TO EACH TREE EVERY TIME THEY ARE WATERED.

PLANTING SCHEDULE

DECIDUOUS TREES

CODE	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
AA	*Amelanchier alnifolia 'Obelisk'*	Standing Ovation Serviceberry	4	8-10'	as shown	
CB	*Carpinus betulus 'Frans Fontaine'*	Frans Fontaine' Hornbeam	5	12' ht.	as shown	B&B
CC	*Cercis canadensis*	Eastern Redbud	4	2.5-3" cal	as shown	
CA	*Cronus alternifolia*	Pagoda Dogwood	1	6-8' ht	as shown	B&B
GT	*Gleditsia triacanthos inermis 'Street Keeper'*	Street Keeper Thornless Honeylocust	3	2.5-3" cal	as shown	
OV	*Ostrya virginiana*	American Hophorn	8	2.5-3" cal	as shown	
PA	*Prunus 'accolade'*	Accolade Cherry	4	2.5-3" cal	as shown	
QP	*Quercus paulustris*	Pin Oak	2	2.5-3" cal	as shown	
QPR	*Quercus x warei*	Regal Prince' Oak	5	2.5-3" cal	as shown	

EVERGREEN TREES

CODE	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
AC	*Abies concolor*	White Fir	3	varies	as shown	Size varies -6-8', 10-12', 12"-14'
TD	*Thuja occidentalis 'Degroot's Spire'*	Degroot Spire Arborvitae	12	6-8'	as shown	

Shrubs

	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
AP	*Aesculus parviflora*	Bottlebrush Buckeye	1	=3 CONT.	72" OC	
AM	*Aronia melanocarpa 'Low Scape Hedger'*	Black Chokeberry 'Low Scape Hedger'	18	2.5-3 H	36" OC	
LB	*Lindera benzoin*	Spicebush	6	=3 CONT.	8' OC	" "
XS	*Xanthorizza simplissima*	Yellowroot	15	=3 CONT	42" OC	

Plant Matrix: Meadow

	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
CA	*Ceonanthus americanus*	New Jersey Tea	tbd	=1 CONT.	24" OC	straight native species preferred
CAA	*Clethra alnifolia*	Sweet-pepperbush	tbd	=3 CONT.	36" OC	" "
RH	*Rudbeckia hirta*	Black-eyed Susan	tbd	=1 CONT.	15" OC	" "
SS	*Schizachryum scoparium*	Little Bluestem	tbd	=1 CONT.	15" OC	" "
SA	*Symphotrichum oblongifolium*	Aromatic Aster	tbd	=1 CONT.	15" OC	" "

Plant Matrix: Shade

	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
AC	*Asarum canadense*	Wild ginger	tbd	plug	18" OC	
AFF	*Athyrium filix-femina*	Lady Fern	tbd	=1 CONT.	18" OC	" "
CT	*Campanula Americana*	Tall bellflower	tbd	plug	18" OC	
DP	*Dennstaedtia punctilobula*	Eastern hay-scented fern	tbd	=1 CONT.	18"OC	
IV	*Itea virginica*	Virginia Sweetspire	tbd	= 2 CONT.	48" OC	
PA	*Packera aurea*	Golden groundsel	tbd	PLUG	18" OC	
PAC	*Polystichum acrostichoides*	Christmas fern	tbd	PLUG	18" OC	straight native species preferred

Vines

	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING	NOTES
CJ	*Clematis jackmanii*	Jackmanii Clematis	5		as shown	

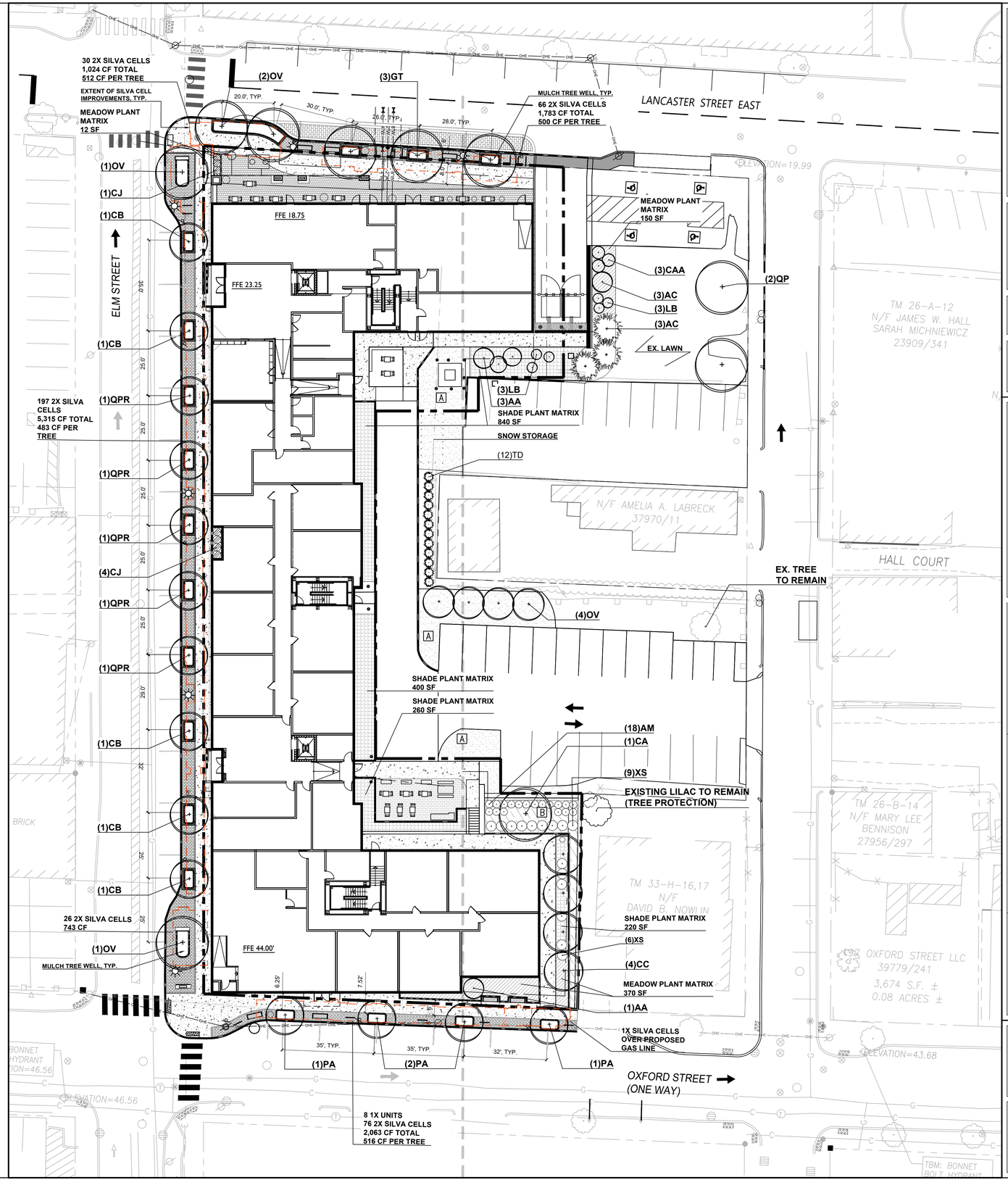
SEED MIX LEGEND

SEE PLANTING ENLARGEMENT AS NOTED FOR SPECIFIC PLANTING TREATMENT

A	SEED MIX#1, AREA W/ TEMPORARY IRRIGATION; INSTALL 6" TOPSOIL FOR SEED MIXES AREAS, TYP.
	NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX : mfg. NEW ENGLAND WETLAND PLANTS newp.com/catalog/seed-mixes/#wildlife
B	NO MOW SEED MIX#2, AREA W/ TEMPORARY IRRIGATION; INSTALL 6" TOPSOIL FOR SEED MIXES AREAS, TYP.
	ALISKE CLOVER SEED MIX : mfg. AMERICAN MEADOW HTTPS://WWW.AMERICANMEADOWS.COM

SITE SOIL NOTES

1. CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE FOR LOCATION OF STOCKPILE AREAS FOR STRIPPED TOPSOIL AND PLANTING SOIL PRODUCTS. CONTRACTOR SHALL ENSURE AREA IS PROTECTED AND CONTAMINATION OR DISTURBANCE OF STORED PRODUCTS IS NOT ALLOWED.
2. CONTRACTOR SHALL ENSURE SUBGRADE IS SCARIFIED PRIOR TO INSTALLING PLANTING SOIL AND BLEND WITH INITIAL LIFT OR PLACEMENT OF PROPOSED PLANTING SOIL.
3. COORDINATE PLACEMENT OF PLANTING SOIL WITH OTHER WORK, ESPECIALLY UTILITIES. PLACEMENT SHOULD OCCUR AFTER INSTALLATION OF ALL HARDSCAPE IMPROVEMENTS, IRRIGATION SYSTEM, UTILITIES, ETC. AND BEFORE INSTALLATION OF PLANTS.
4. SILVA CELL SOIL FOR STREET TREE PLANTING SHALL BE HIGH QUALITY LOAM-BASED PLANTING SOIL FOR FILLING THE SILVA CELLS.



Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: PLANTING PLAN

89 Elm Street
Portland ME 04103

Revisions:
CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24

REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

North:

Sheet No.: L2

Scale: 1" = 20'-0"
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PLANTING NOTES

1. LANDSCAPE ARCHITECT TO APPROVE PLANT MATERIAL PRIOR TO DELIVERY TO SITE.
2. PLANT MATERIAL PROVIDED BY THE CONTRACTOR IS TO CONFORM TO THE HIGHEST STANDARD AS ADOPTED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (ANSI). PLANT MATERIAL IS TO BE HEALTHY SPECIMENS, FREE FROM DISEASE OR DAMAGE.
3. THE CONTRACTOR IS TO FURNISH PLANTS AND SOD SHOWN ON THE DRAWINGS. PLANTS ARE TO CONFORM WITH THE BOTANICAL IDENTIFICATIONS. PLANTS ARE TO BE SOURCED FROM A NURSERY WITHIN THE SAME CLIMATIC ZONE AS THE SITE LOCATION. NO SUBSTITUTIONS OF PLANT SPECIES ARE PERMITTED WITHOUT PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE & THE LANDSCAPE ARCHITECT.
4. SUBSTITUTIONS OF PLANT SPECIES SHALL BE A PLANT OF EQUIVALENT OVERALL FORM, HEIGHT AND BRANCHING HABIT, FLOWER, LEAF, FRUIT, COLOR, TIME OF BLOOM & CLIMATIC LOCATION AS APPROVED BY LANDSCAPE ARCHITECT.
5. LOCATE AND VERIFY EXISTING & PROPOSED UTILITY LINE LOCATIONS PRIOR TO STAKING AND REPORT CONFLICTS TO LANDSCAPE ARCHITECT.
6. PLANTING DEMOLITION DEBRIS, GARBAGE, LUMPS OF CONCRETE, STEEL AND OTHER MATERIALS DELETERIOUS TO PLANT'S HEALTH AS DETERMINED BY LANDSCAPE ARCHITECT SHALL BE REMOVED FROM PLANTING AREAS.
7. THE CONTRACTOR IS TO VERIFY SITE LAYOUT & GRADES & INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CHANGES IN LAYOUT AND/OR GRADING PRIOR TO CONSTRUCTION. NO PLANTING IS TO BE INSTALLED BEFORE ACCEPTANCE OF ROUGH GRADING.
8. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. FINAL LOCATIONS OF PLANTS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.
9. INSTALL PLANTS WITH ROOT FLARES FLUSH WITH FINISHED GRADE. IMMEDIATELY REPLANT PLANTS THAT SETTLE OUT OF PLUMB OR BELOW FINISHED GRADE. PLANT AND STAKES ARE TO BE SET PLUMB UNLESS OTHERWISE NOTED. PLANT UNDER FULL TIME SUPERVISION OF CERTIFIED ARBORIST, NURSERYMAN, OR LICENSED LANDSCAPE ARCHITECT. PROVIDE WRITTEN VERIFICATION OF CERTIFICATION AND/OR LICENSE FOR LANDSCAPE ARCHITECT'S APPROVAL.
10. WATER PLANTS THOROUGHLY AFTER INSTALLATION, A MINIMUM OF TWICE WITHIN THE FIRST 24 HOURS.
11. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN PLANT MATERIALS INCLUDING SOD/SEED AREAS IN A HEALTHY STATE DURING CONSTRUCTION AND DURING REQUIRED WARRANTY PERIODS. ANY DAMAGE TO PLANT MATERIAL DUE TO NEGLECT BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
12. REPAIR DAMAGE DUE TO LANDSCAPE INSTALLATION OPERATIONS INSIDE AND OUTSIDE OF LIMIT OF WORK.
13. SOAK ALL PERENNIALS FOR 24 HOURS PRIOR TO INSTALLATION.
14. A LIST OF PLANTS INCLUDING BOTANICAL NAMES, SIZES, AND SPACING ARE SHOWN ON THE DRAWINGS. QUANTITIES ARE PROVIDED FOR CONTRACTOR'S CONVENIENCE AND ARE TO BE VERIFIED. IN THE EVENT THAT QUANTITIES OR OMISSIONS OCCUR THE PLAN DRAWINGS ARE TO BE FOLLOWED.
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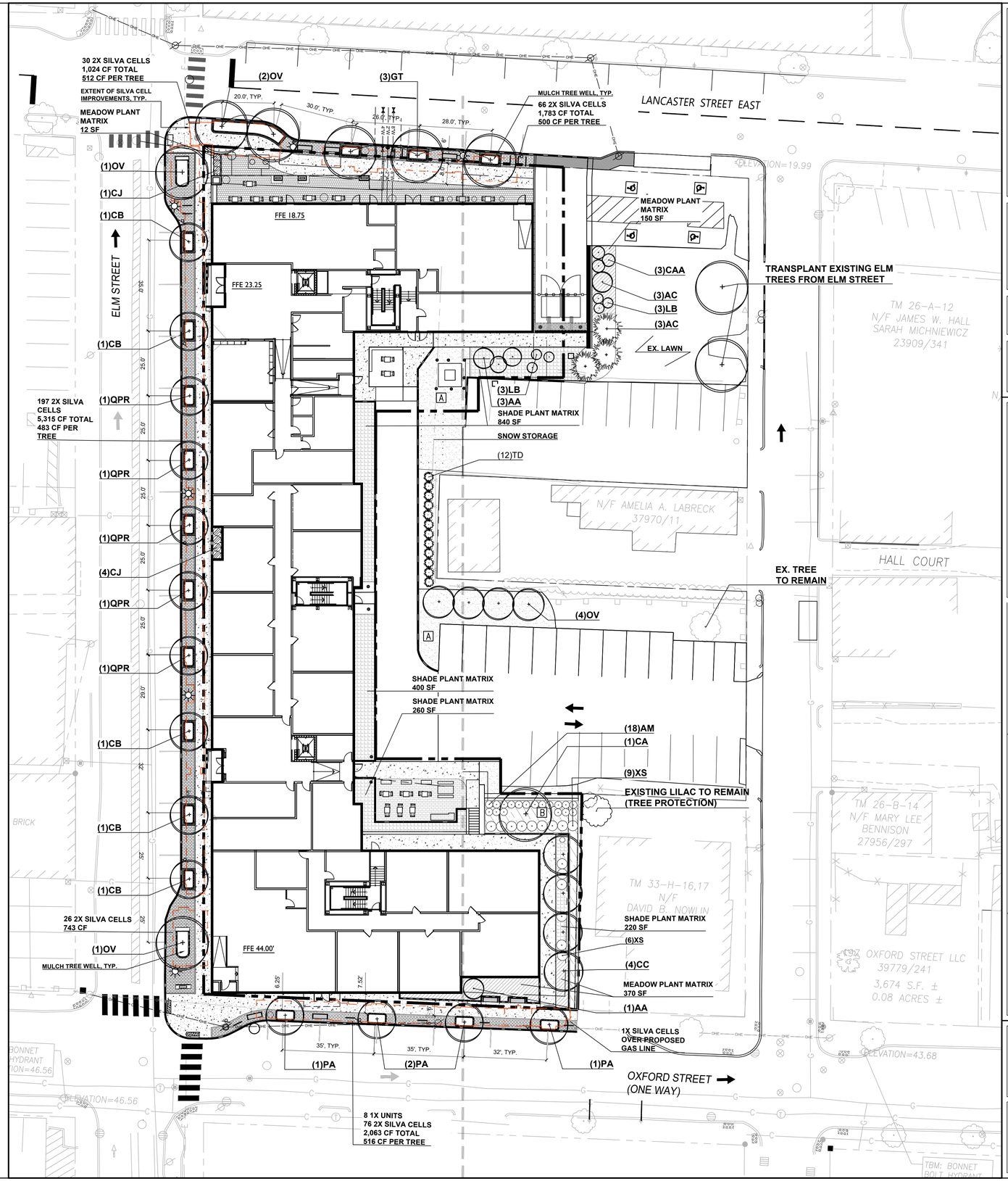
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31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: PLANTING PLAN

89 Elm Street
Portland ME 04103

Revisions:
CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24
CITY STAFF COMMENTS REV. 3 - 23.10.03

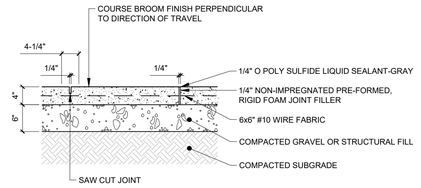
REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

North:

Sheet No.: L2

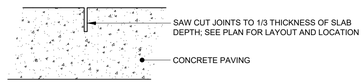
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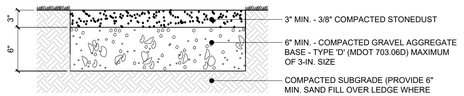
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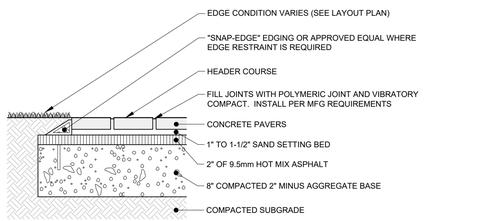
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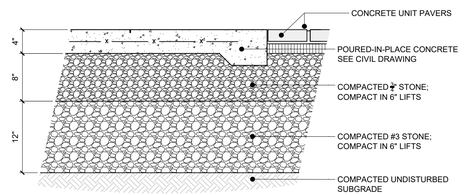
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04 CONCRETE PAVERS

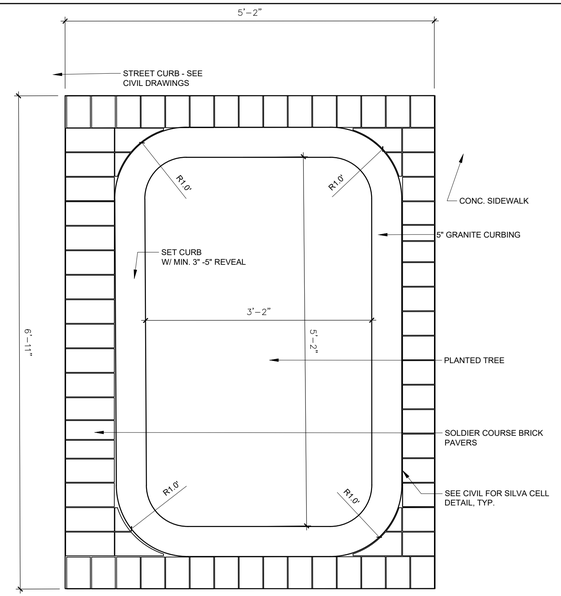
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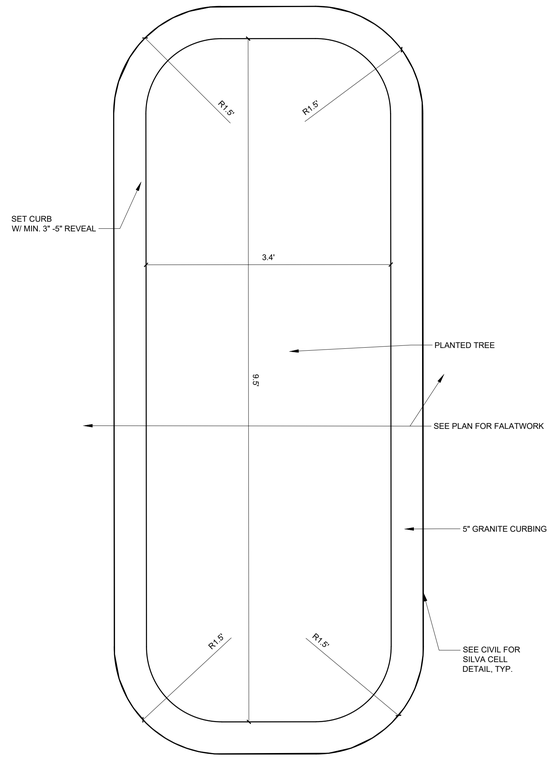
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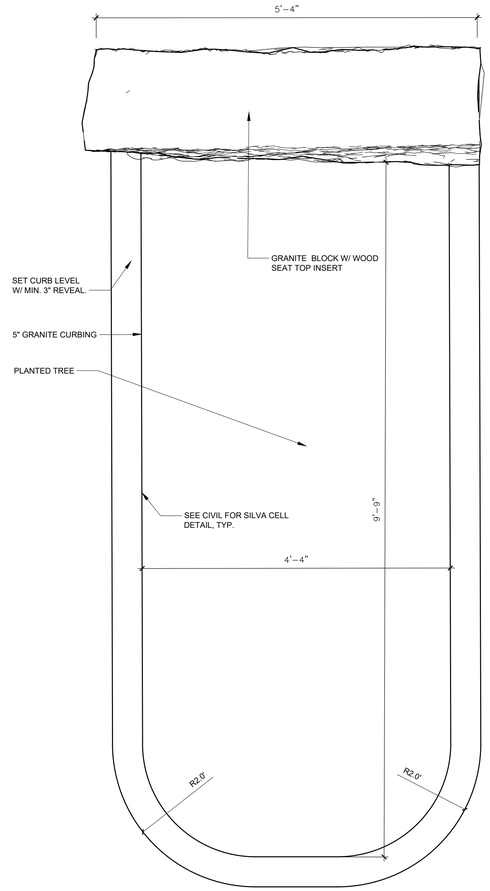
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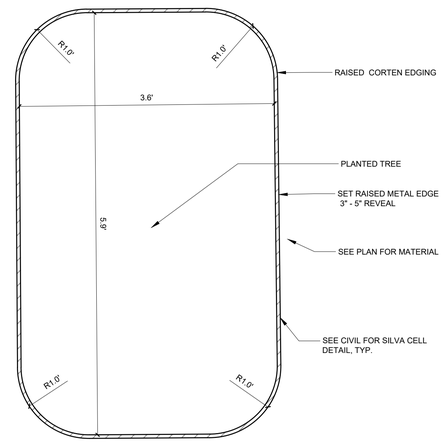
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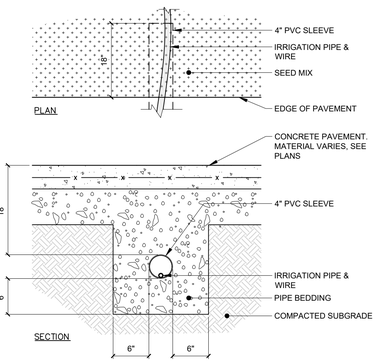
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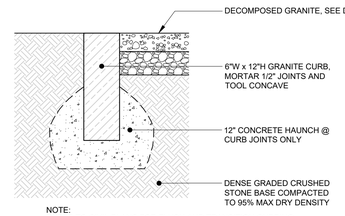
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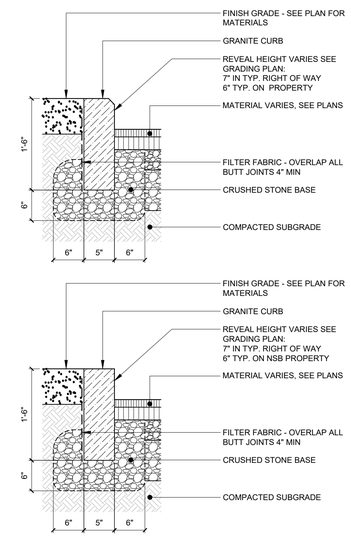
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NOTE:
REFER TO CIVIL PLANS FOR FLUSH AND TRANSITION CURBING ACROSS SITE.

11 GRANITE CURB - FLUSH

SCALE: N.T.S.



12 VERTICAL GRANITE CURB & CHAMFER

SCALE: N.T.S.

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89 Elm Street
Portland ME 04103

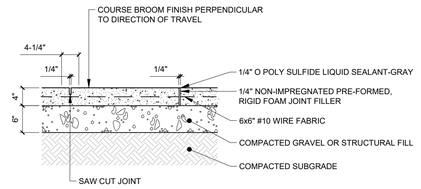
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REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

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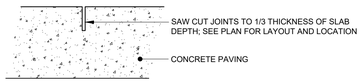
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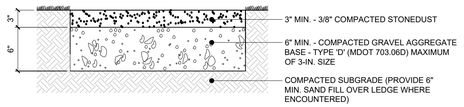
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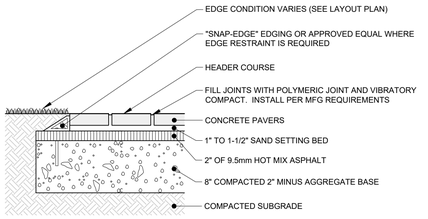
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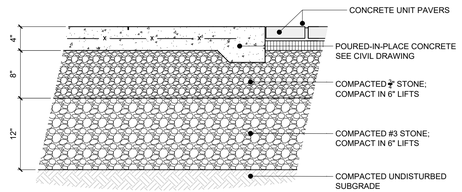
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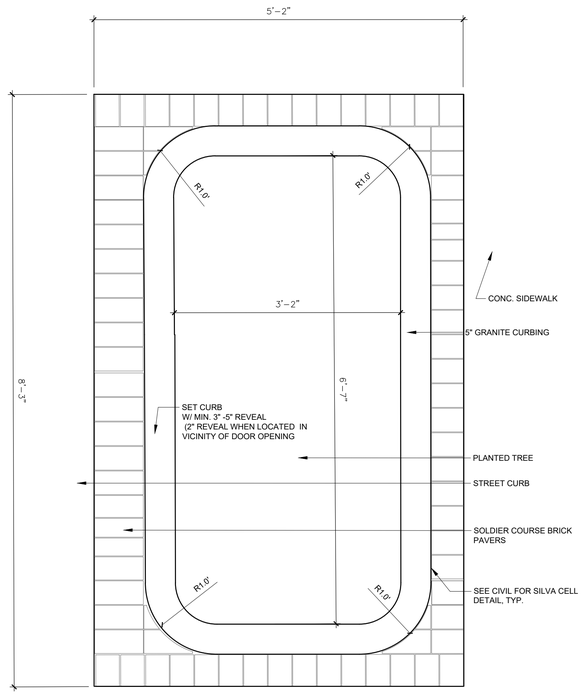
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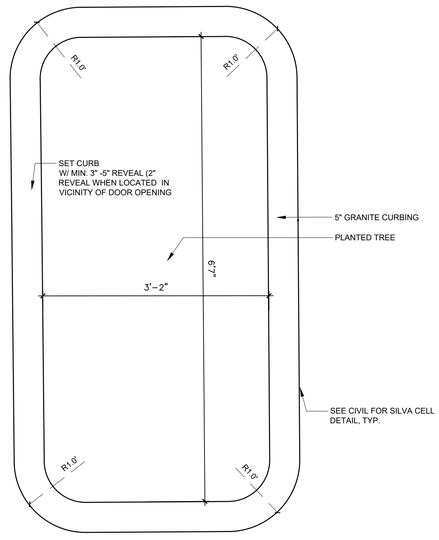
BRICK & CONCRETE PAVING - ADJACENT 05 CONCRETE UNIT PAVERS

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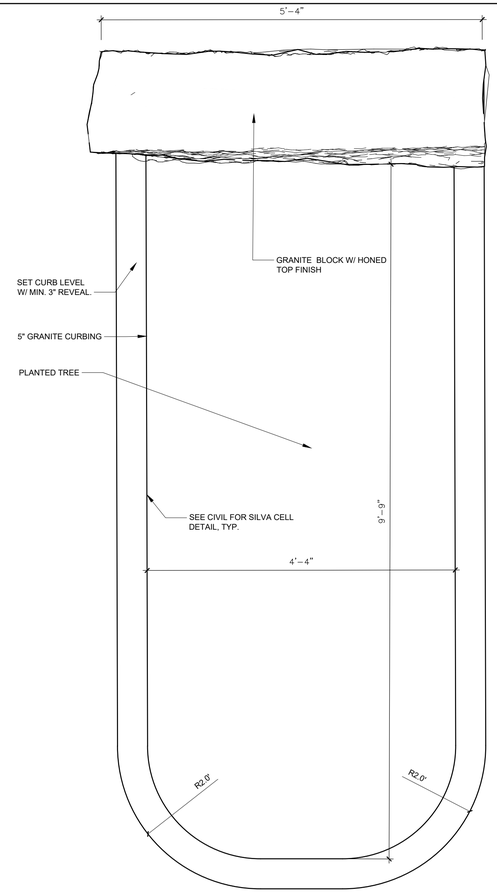
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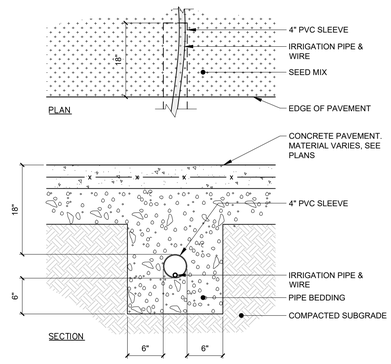
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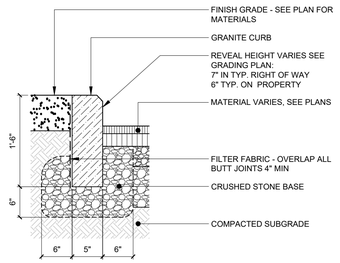
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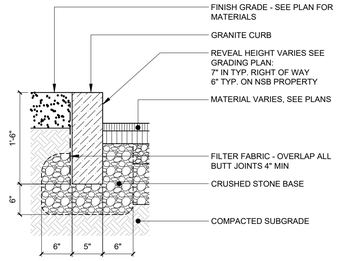
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9 IRRIGATION SLEEVE DETAIL

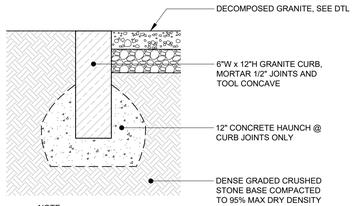
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10 VERTICAL GRANITE CURB & CHAMFER

SCALE: N.T.S.



NOTE:
REFER TO CIVIL PLANS FOR FLUSH AND TRANSITION CURBING ACROSS SITE.

11 GRANITE CURB - FLUSH

SCALE: N.T.S.

Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: DETAILS

89 Elm Street

Portland ME 04103

Revisions:
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CITY STAFF COMMENTS REV. 2 - 23.08.24

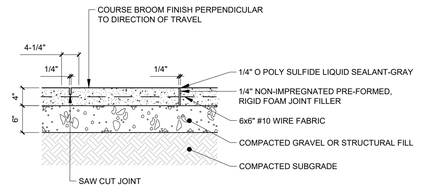
REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

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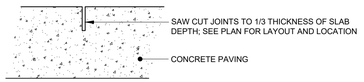
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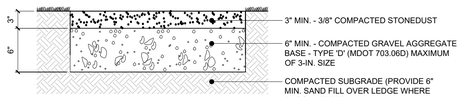
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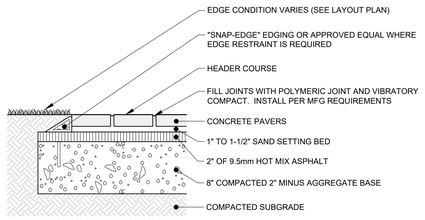
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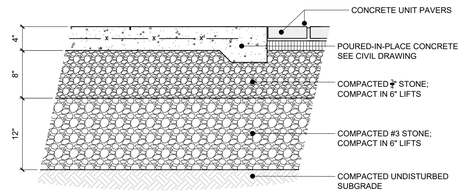
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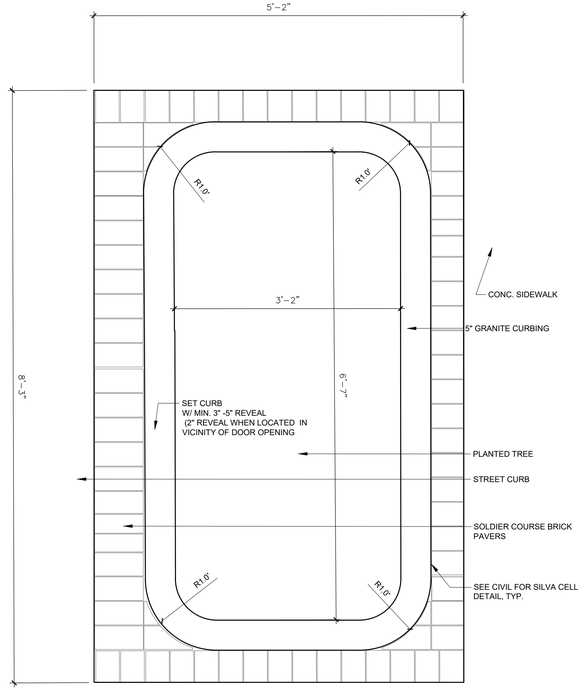
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BRICK & CONCRETE PAVING - ADJACENT

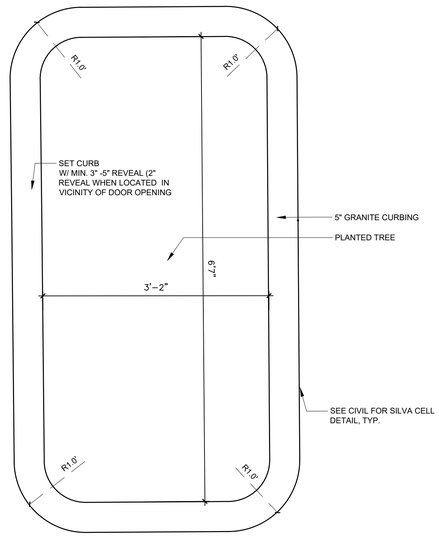
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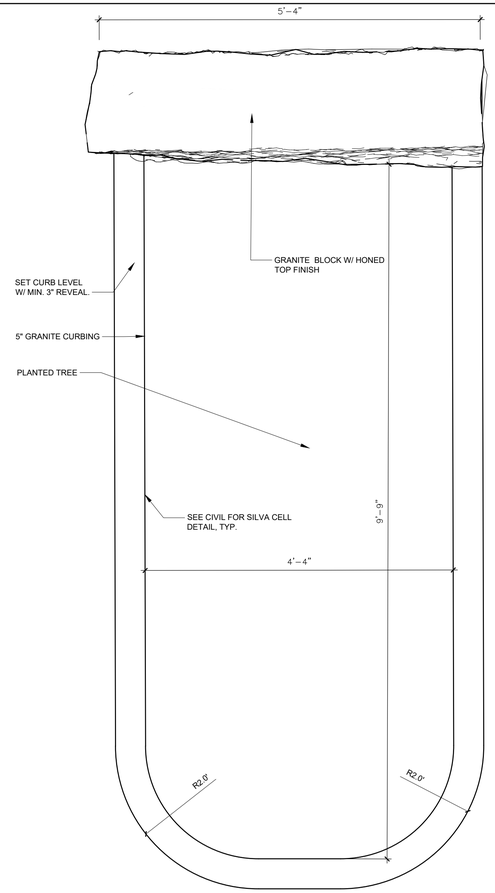
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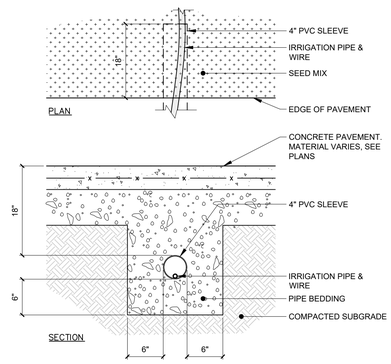
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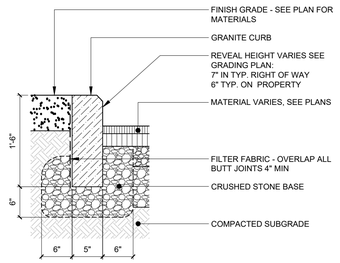
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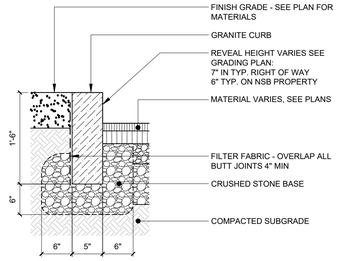
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9 IRRIGATION SLEEVE DETAIL

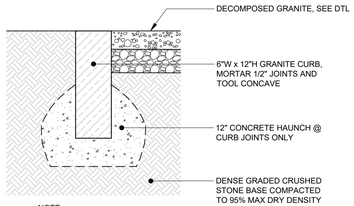
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10 VERTICAL GRANITE CURB & CHAMFER

SCALE: N.T.S.



NOTE:
REFER TO CIVIL PLANS FOR FLUSH AND TRANSITION CURBING ACROSS SITE.

11 GRANITE CURB - FLUSH

SCALE: N.T.S.

Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

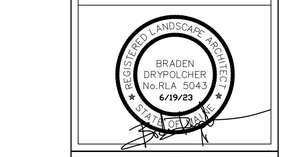
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Title: DETAILS

89 Elm Street

Portland ME 04103

Revisions:
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CITY STAFF COMMENTS REV. 2 - 23.08.24
CITY STAFF COMMENTS REV. 3 - 23.10.03

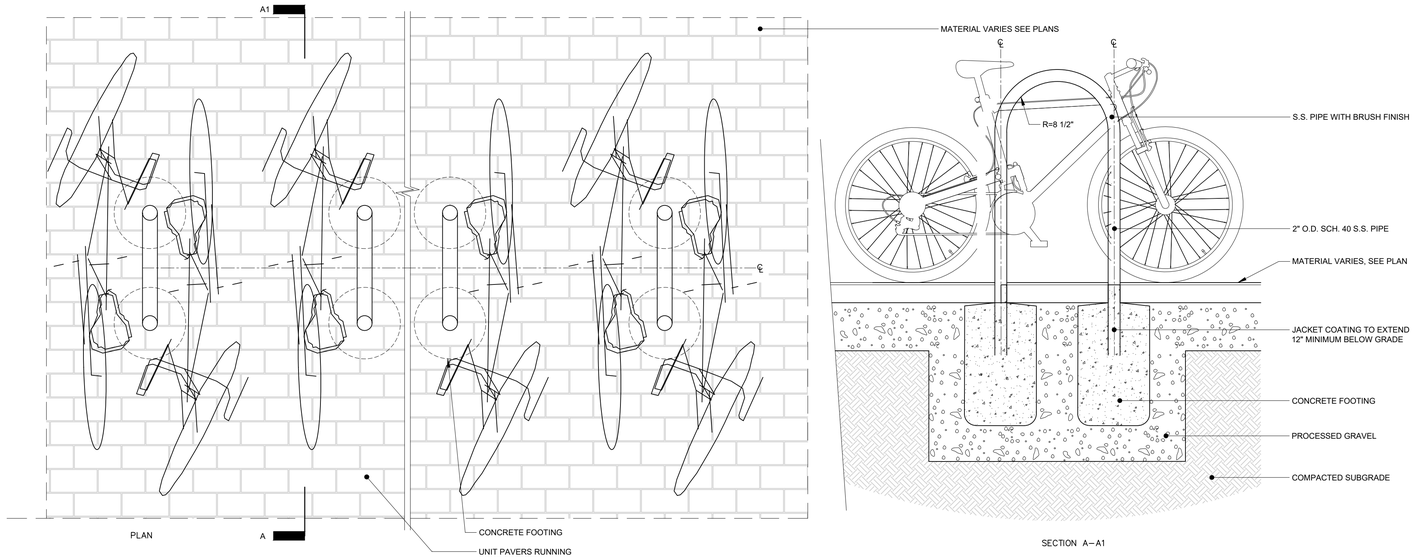


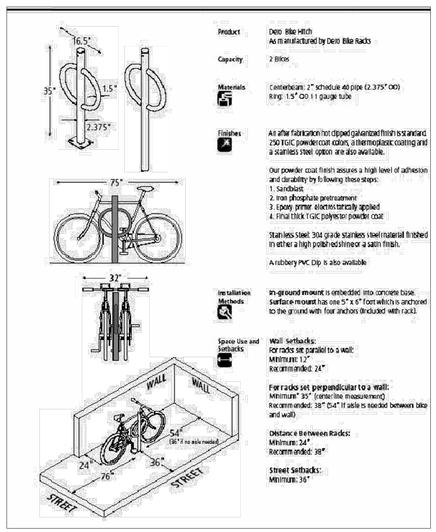
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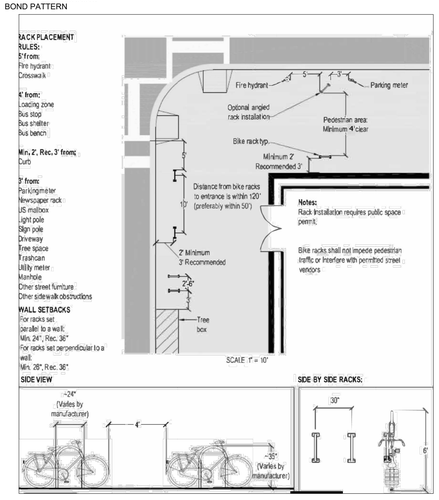
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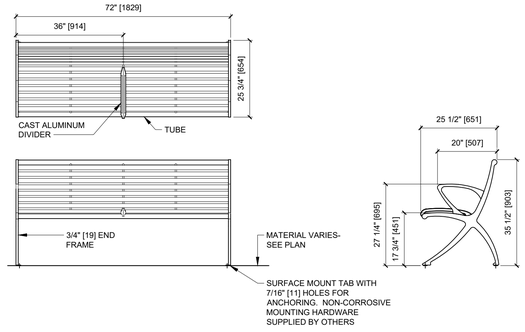






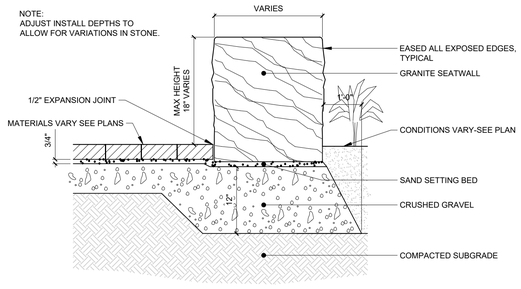
01 BIKE RACK & BIKE PARKING PLACEMENT GUIDE

SCALE: N.T.S.



02 BENCH

SCALE: N.T.S.



03 MONOLITHIC GRANITE BENCH

SCALE: N.T.S.

Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

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COMMENT RESPONSE

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Revisions:

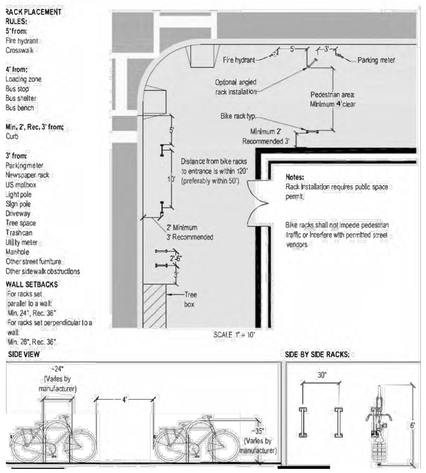
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BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

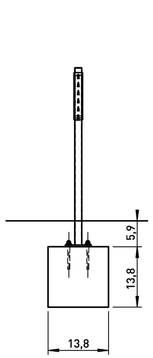
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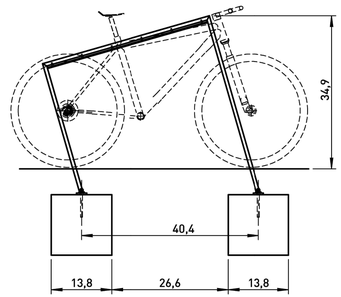
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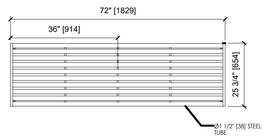


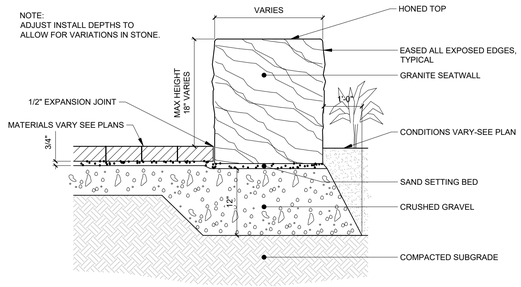
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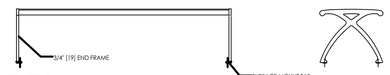


01 BIKE RACK & BIKE PARKING PLACEMENT GUIDE

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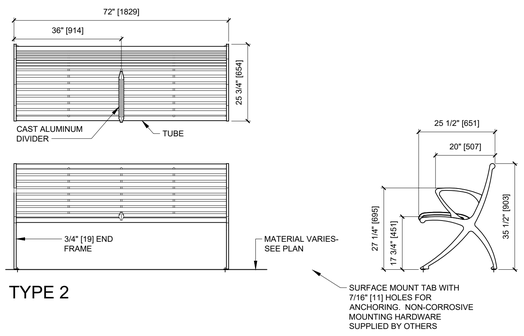




TYPE 1

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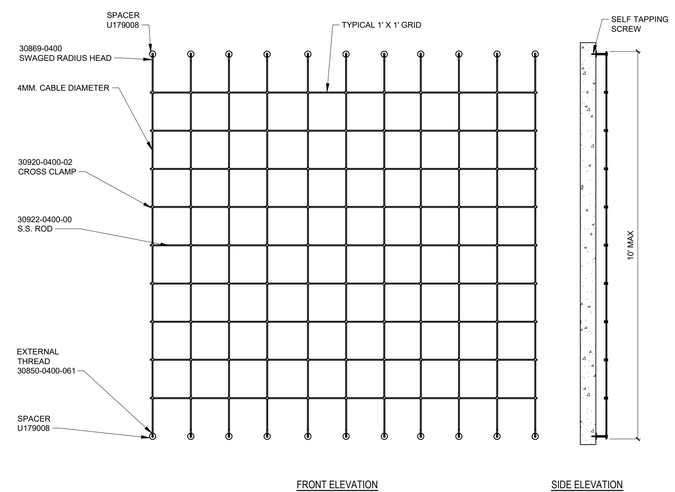
SCALE: N.T.S.



TYPE 2

02 BENCH

SCALE: N.T.S.



04 SS ROPE TRELLIS

SCALE: N.T.S.

Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title:

89 Elm Street

Portland ME 04103

Revisions:
CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24

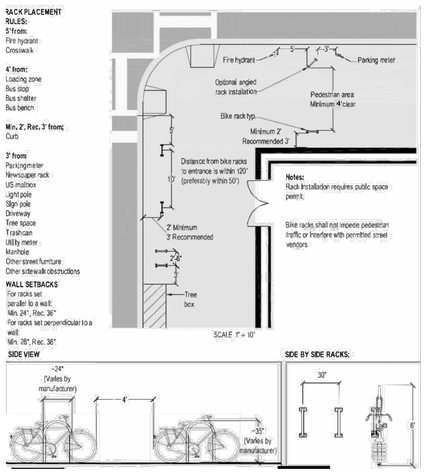
REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

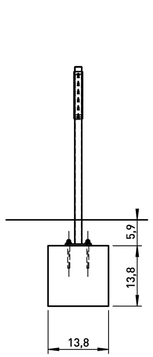
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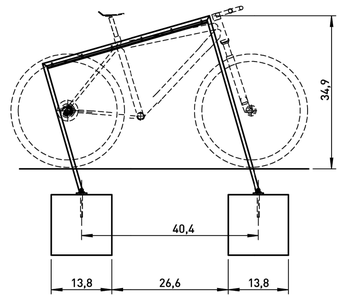
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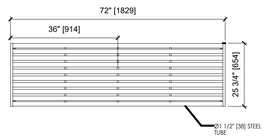


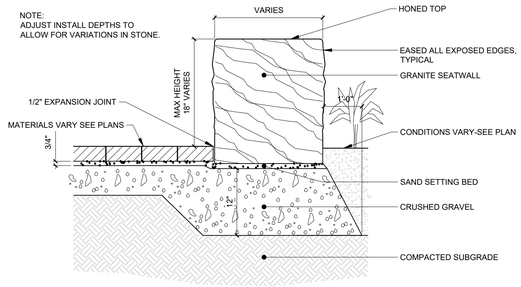
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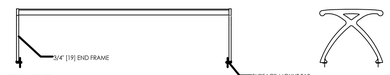


01 BIKE RACK & BIKE PARKING PLACEMENT GUIDE

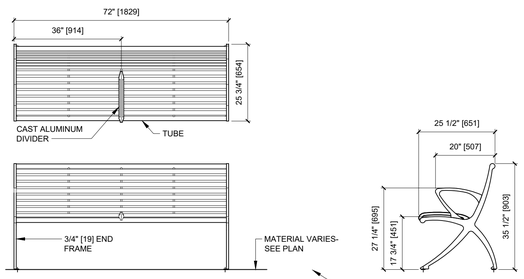
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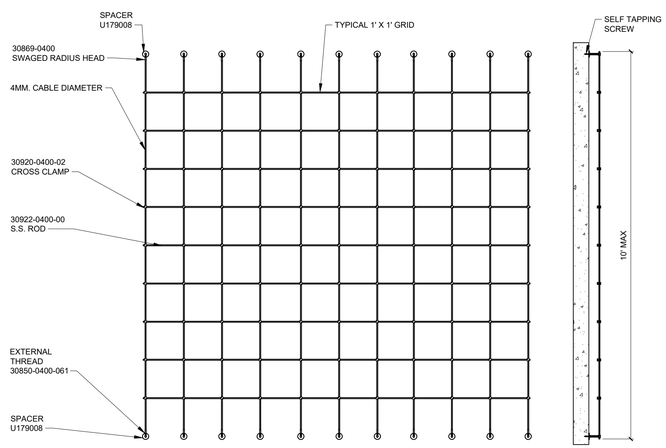
TYPE 2

02 BENCH

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03 MONOLITHIC GRANITE BENCH

SCALE: N.T.S.



04 SS ROPE TRELLIS

SCALE: N.T.S.

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Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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89 Elm Street

Portland ME 04103

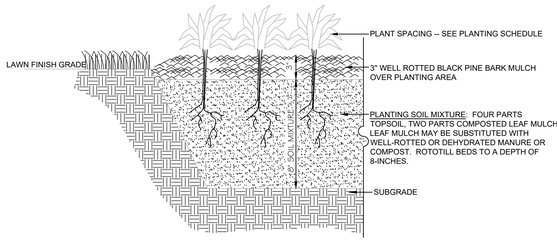
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CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24
CITY STAFF COMMENTS REV. 3 - 23.10.03

REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

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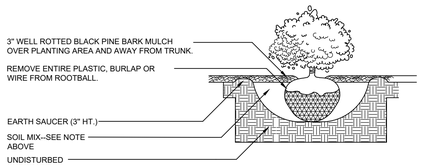
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01 PLANTING BED AND MULCH DETAIL

SCALE: N.T.S.



PLANT INSTALLATION NOTES:
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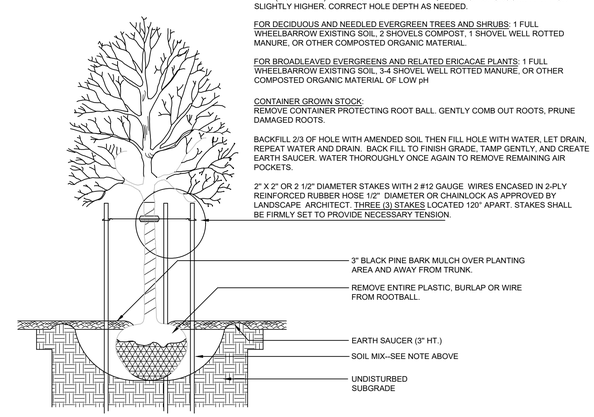
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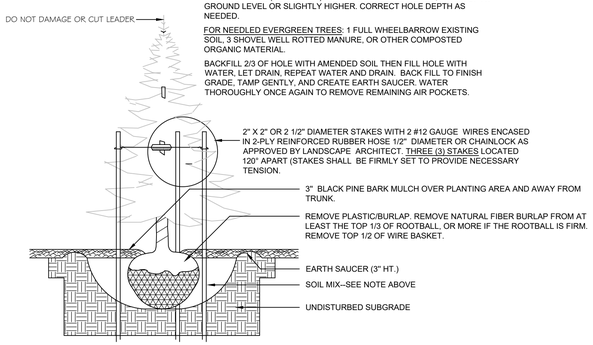
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03 DECIDUOUS TREE DETAIL

SCALE: N.T.S.



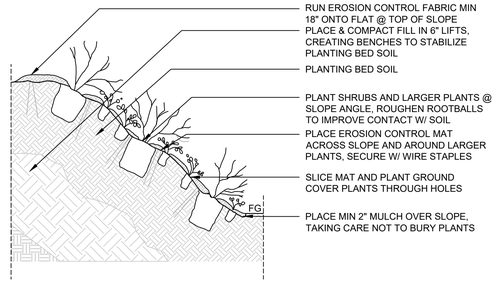
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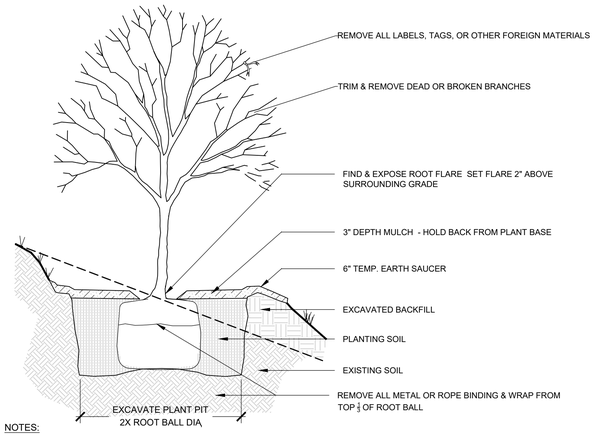
04 CONIFEROUS TREE DETAIL

SCALE: N.T.S.



05 SLOPE PLANTING DEATIL

SCALE: N.T.S.

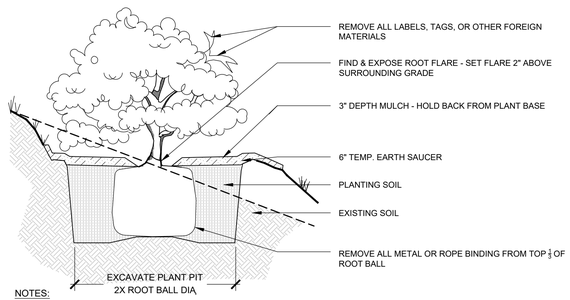


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06 TREE PLANTING ON SLOPE

SCALE: N.T.S.

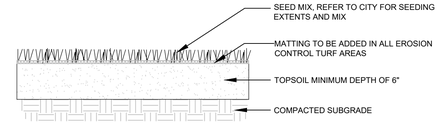


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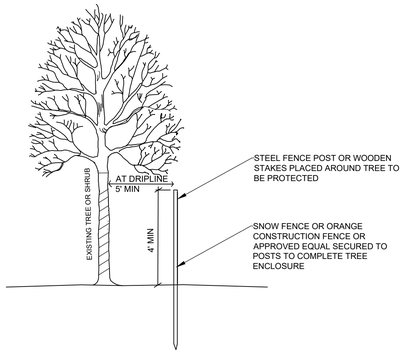
07 SHRUB PLANTING ON SLOPE

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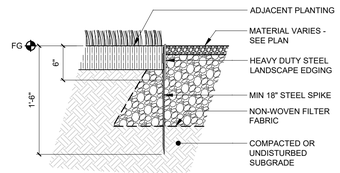
08 LAWN SEED MIX

SCALE: N.T.S.



09 TREE PROTECTION

SCALE: N.T.S.



12 METAL EDGING

SCALE: N.T.S.

Prepared For:

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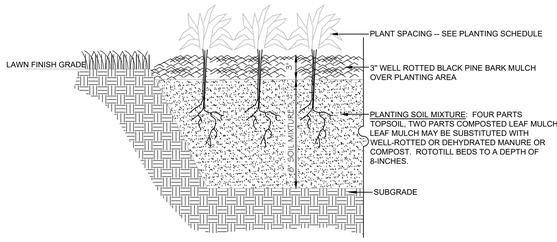
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6/19/23
STATE OF MAINE

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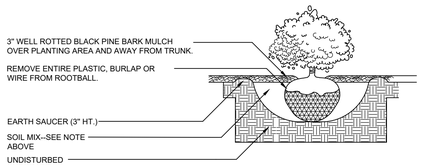
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SCALE: N.T.S.



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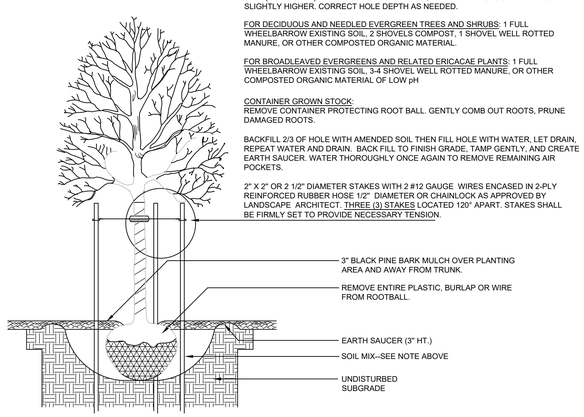
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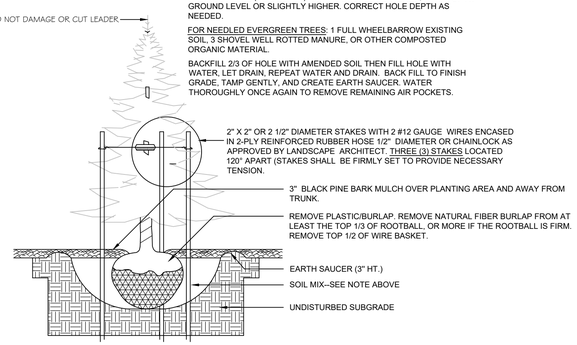
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SCALE: N.T.S.



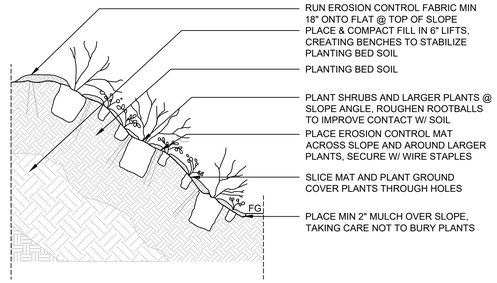
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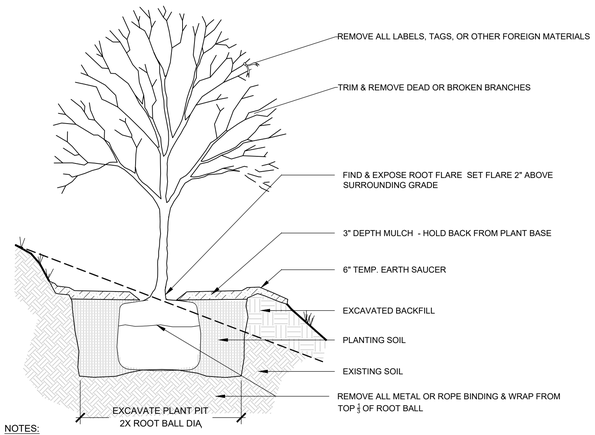
04 CONIFEROUS TREE DETAIL

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05 SLOPE PLANTING DEATIL

SCALE: N.T.S.

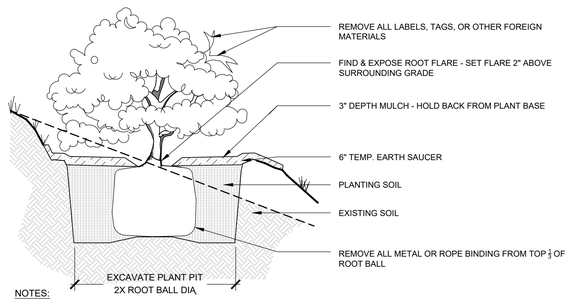


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SCALE: N.T.S.

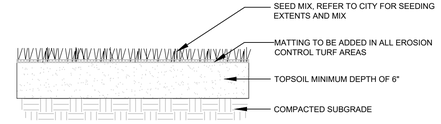


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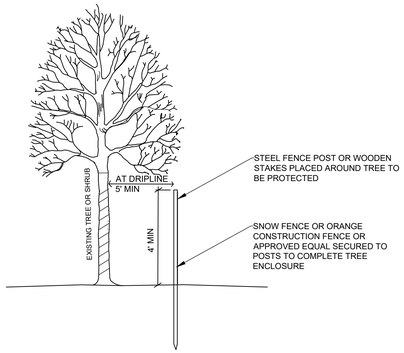
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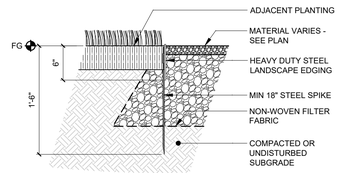
08 LAWN SEED MIX

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SCALE: N.T.S.



12 METAL EDGING

SCALE: N.T.S.

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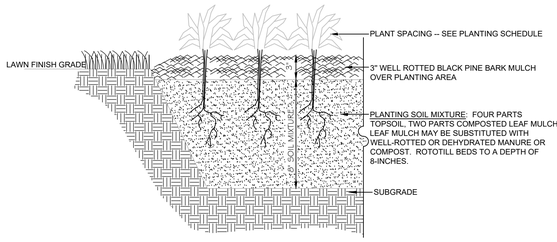
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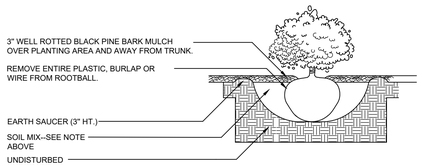
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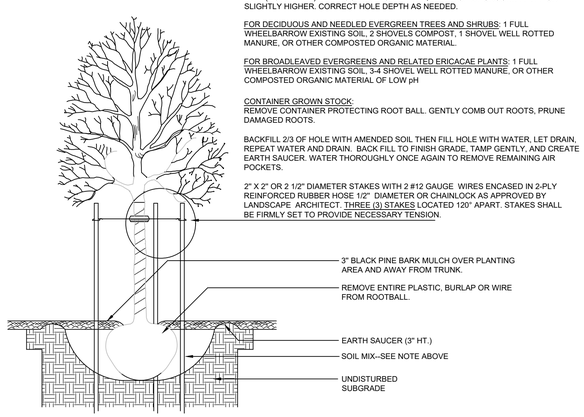
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FOR BROADLEAVED EVERGREENS AND RELATED ERICACAE PLANTS: 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH

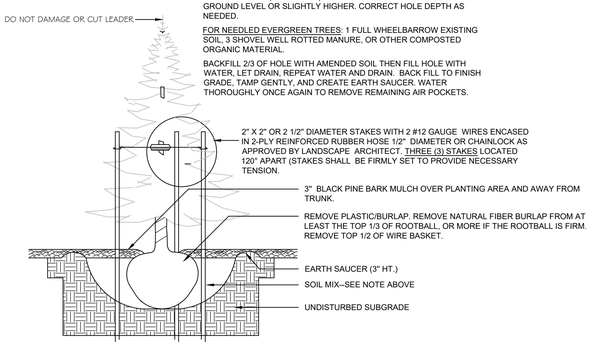
CONTAINER GROWN STOCK:
REMOVE CONTAINER PROTECTING ROOT BALL. GENTLY COMB OUT ROOTS, PRUNE DAMAGED ROOTS.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

2" X 2" OR 2 1/2" DIAMETER STAKES WITH 2 #12 GAUGE WIRES ENCASED IN 2-PLY REINFORCED RUBBER HOSE 1/2" DIAMETER OR CHAINLOCK AS APPROVED BY LANDSCAPE ARCHITECT. THREE (3) STAKES LOCATED 120° APART. STAKES SHALL BE FIRMLY SET TO PROVIDE NECESSARY TENSION.

03 DECIDUOUS TREE DETAIL

SCALE: N.T.S.



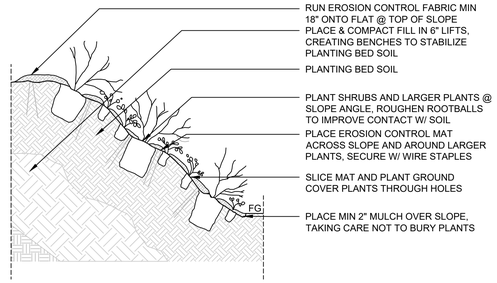
PLANT INSTALLATION NOTES:
DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH TOP AT GROUND LEVEL OR SLIGHTLY HIGHER. CORRECT HOLE DEPTH AS NEEDED.

FOR NEEDLED EVERGREEN TREES: 1 FULL WHEELBARROW EXISTING SOIL, 3 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

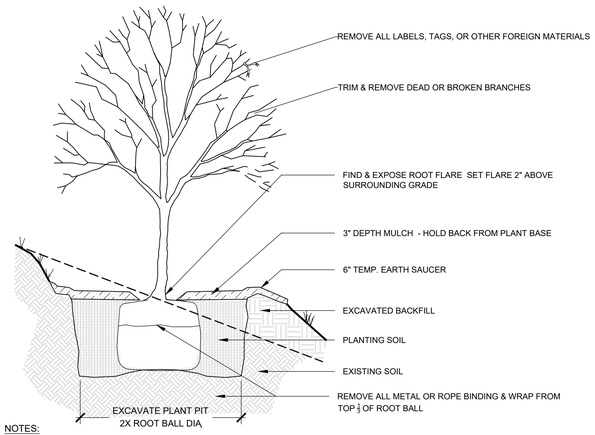
04 CONIFEROUS TREE DETAIL

SCALE: N.T.S.



05 SLOPE PLANTING DEATIL

SCALE: N.T.S.

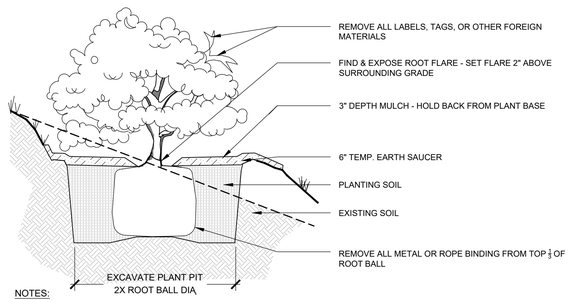


NOTES:

1. TREE TO BE SET PLUMB.
2. SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

06 TREE PLANTING ON SLOPE

SCALE: N.T.S.

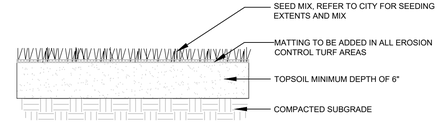


NOTES:

1. SHRUB TO BE SET PLUMB.
2. SECURE SHRUB AS MAY BE REQUIRED ACCORDING TO SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

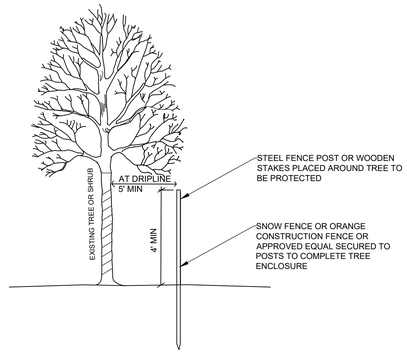
07 SHRUB PLANTING ON SLOPE

SCALE: N.T.S.



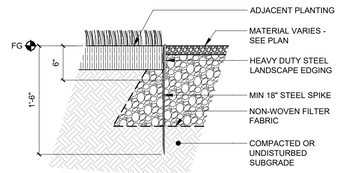
08 LAWN SEED MIX

SCALE: N.T.S.



09 TREE PROTECTION

SCALE: N.T.S.



12 METAL EDGING

SCALE: N.T.S.

Prepared For:

89 Elm Street, LLC
188 STATE STREET, 3RD FLOOR
PORTLAND, ME 04101

Prepared By:

dry landscape architecture, l.l.c
31 miller ave.
biddeford, me 04005

Date:
JUNE 19, 2023

Issued For:
COMMENT RESPONSE

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Title: DETAILS

89 Elm Street
Portland ME 04103

Revisions:
CITY STAFF COMMENTS REV. 1 - 23.07.24
CITY STAFF COMMENTS REV. 2 - 23.08.24
CITY STAFF COMMENTS REV. 3 - 23.10.03

REGISTERED LANDSCAPE ARCHITECT
BRADEN DRYPOLCHER
No.RLA 5043
6/19/23
STATE OF MAINE

North:

Sheet No.: L5

Scale: AS NOTED

C:\Users\DRY-1\OneDrive\Documents\Onedrive\DRY-1\A\Projects\89 Elm\CAD\DD\89 Elm Details 23.09.25 Comment Responses Submission Rev 3.dwg dry-1 10/3/2023



** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 06.19.2023
Portland, ME

dry landscape architecture l.l.c.



*** Note: see architectural sheets for building treatments , material color, and selections***



** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 06.19.2023
Portland, ME



Corner of Oxford Street & Elm Street

** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 08.25.2023
Portland, ME

Potential Art Installation TBD

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*** Note: see architectural sheets for building treatments , material color, and selections***

89 Elm Street
Comment Response - 06.19.2023
Portland, ME



*** Note: see architectural sheets for building treatments , material color, and selections***

89 Elm Street
Comment Response - 06.19.2023
Portland, ME



** Note: see architectural sheets for building treatments , material color, and selections*

Lancaster Street - Looking up Elm Street

* ***Note: see architectural sheets for building treatments , material color, and selections***

89 Elm Street
Comment Response - 08.25.2023
Portland, ME



Lancaster Street - Looking west

** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 08.25.2023
Portland, ME



Lancaster Street - Looking south

** Note: see architectural sheets for building treatments , material color, and selections*



Cedar Street - Gulls view

** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 08.25.2023
Portland, ME



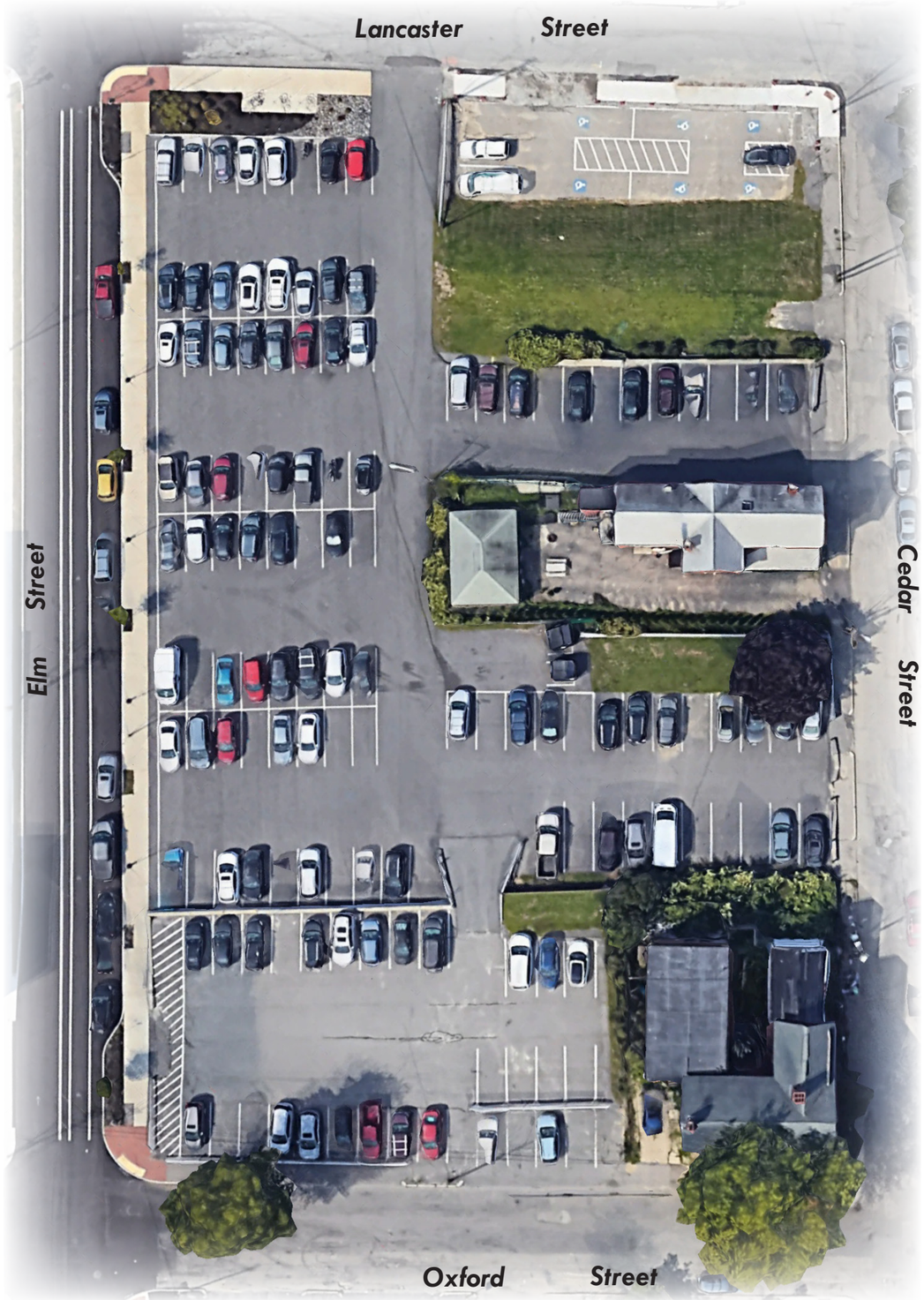
East corner of 89 Elm - Oxford Street

** Note: see architectural sheets for building treatments , material color, and selections*

89 Elm Street
Comment Response - 08.25.2023
Portland, ME



** Note: see architectural sheets for building treatments , material color, and selections*





89 Elm Street
Comment Response - 08.25.2023
Portland, ME

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VIEW LOOKING NORTH-WEST ON ELM STREET

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89 ELM STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
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O: 207-747-5159
C: 207-650-6414
senatorearchitecture.com

CONSULTANTS:

REVISIONS:

PROGRESS PRINT ONLY
Not for Construction
OCTOBER 13, 2023

DATE:	
PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
SITE IMAGE 1

S1



VIEW LOOKING NORTH FROM PARKING LOT

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CONSULTANTS:

REVISIONS:

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DATE:	
PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
SITE IMAGE 2

S2



VIEW LOOKING NORTH-EAST ON LANCASTER STREET

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REVISIONS:

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SCALE:	AS NOTED

SHEET TITLE:
SITE IMAGE 3

S3



VIEW LOOKING SOUTH ON ELM STREET

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CONSULTANTS:

REVISIONS:

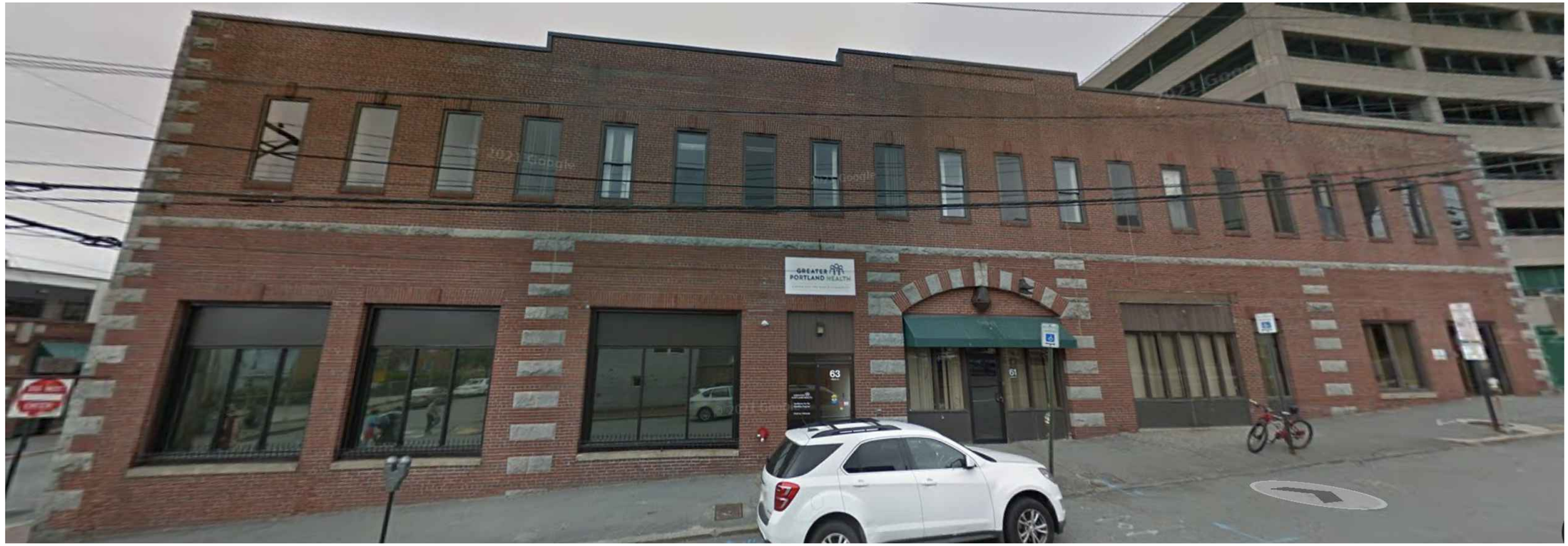
PROGRESS PRINT ONLY
Not for Construction
OCTOBER 13, 2023

DATE:

PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

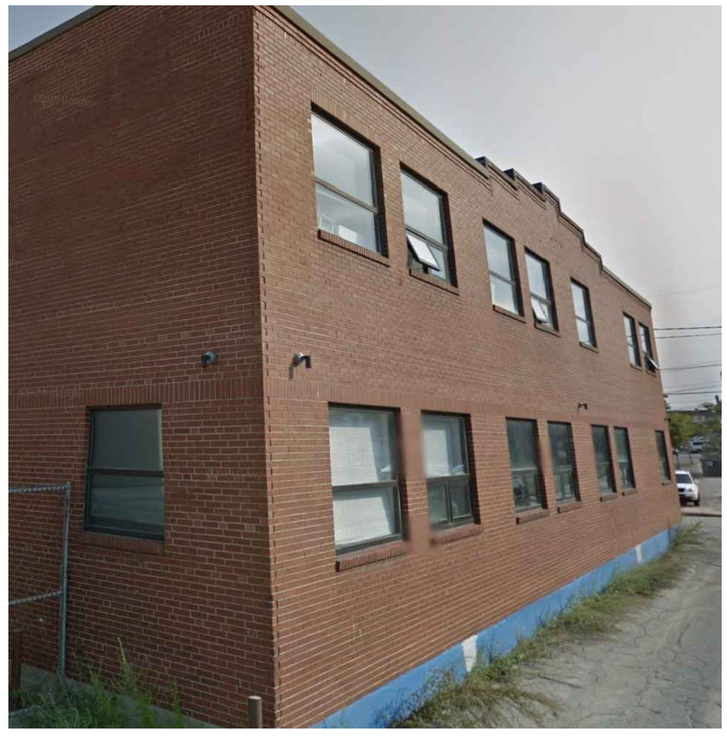
SHEET TITLE:
SITE IMAGE 4

S4









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APARTMENTS

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CONSULTANTS:

REVISIONS:

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Not for Construction
OCTOBER 05, 2023

DATE:	
PROJECT No:	2241
DRAWN BY:	RRT
CHECKED BY:	RJS
SCALE:	AS NOTED

SHEET TITLE:
PRECIDENT IMAGES

P1

PLANNING BOARD REPORT
PORTLAND, MAINE

533 Summit Street
Subdivision
PL-002453-2022
John Kelly, Applicant

Submitted to:	Portland Planning Board	**Prepared By:**	Charles Tetelman
Public Hearing Date:	October 24, 2023	**Date:**	October 20, 2023

I. INTRODUCTION

John Kelly has submitted a Subdivision application to subdivide four existing parcels at 533 Summit Street into seven new parcels. This subdivision will help to facilitate the future construction of five single-family residential homes. The proposed lots will all be accessed from Summit Street, though two of the lots would also have frontage on Lambert Street. This application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Subdivision Standards, section 15.4.



Figure 1: Surrounding Context

The Planning and Urban Development Department mailed 67 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the October 14, 2023 and October 17, 2023 editions of the *Portland Press Herald*.

Applicant:	John Kelly
Applicant Representatives:	Sebago Technics, Inc.

II. REQUIRED REVIEWS + PROJECT DATA

Review	*Applicable Standards*
Subdivision Review Standards	Section 15. 4

Waiver Requests	*Applicable Standards*
The applicant is requesting a waiver to reduce the 100' stream buffer strip to 25' to allow for site grading, erosion and sedimentation control work, driveways, and future residential development.	*City of Portland Technical Manual* Section 8.2.1: "For developments located adjacent to perennial streams, a minimum one hundred (100) foot buffer strip on either side of the stream should be maintained. For intermittent streams, the buffer strip may be reduced to twenty-five (25) feet."

Project Data	
Existing Zoning	R-2 Residential
Property Size	123,604 sq. ft.
Existing Use	Single-Family Homes / Undeveloped Lots
Proposed Use	Single-Family Residential

III. EXISTING CONDITIONS AND SURROUNDING AREA



Figure 2: Existing Homes

The proposed subdivision is located in the North Deering neighborhood and within the R-2 Residential zone near the Portland-Falmouth municipal boundary. The neighborhood is predominantly low-density single-family homes. The proposed subdivision consists of four parcels, totaling 123,604 sq. ft., that currently feature two single-family homes along Summit Street. These parcels are bounded by Summit Street to the south, Washington Avenue to the west, and Lambert Street to the north. The site generally slopes north towards an unnamed stream that flows along the northern boundary of the proposed subdivision, from Lambert Street to Washington Avenue. Wetlands surround the stream across the site. The stream discharges to a culvert underneath Washington Avenue.

IV. PROPOSED SUBDIVISION PLAT + SITE WORK

The applicant is proposing to subdivide the existing four parcels into seven new parcels. Figure 3 shows the proposed lot lines for the subdivision. This subdivision will facilitate the development of five new single-family homes along the site.

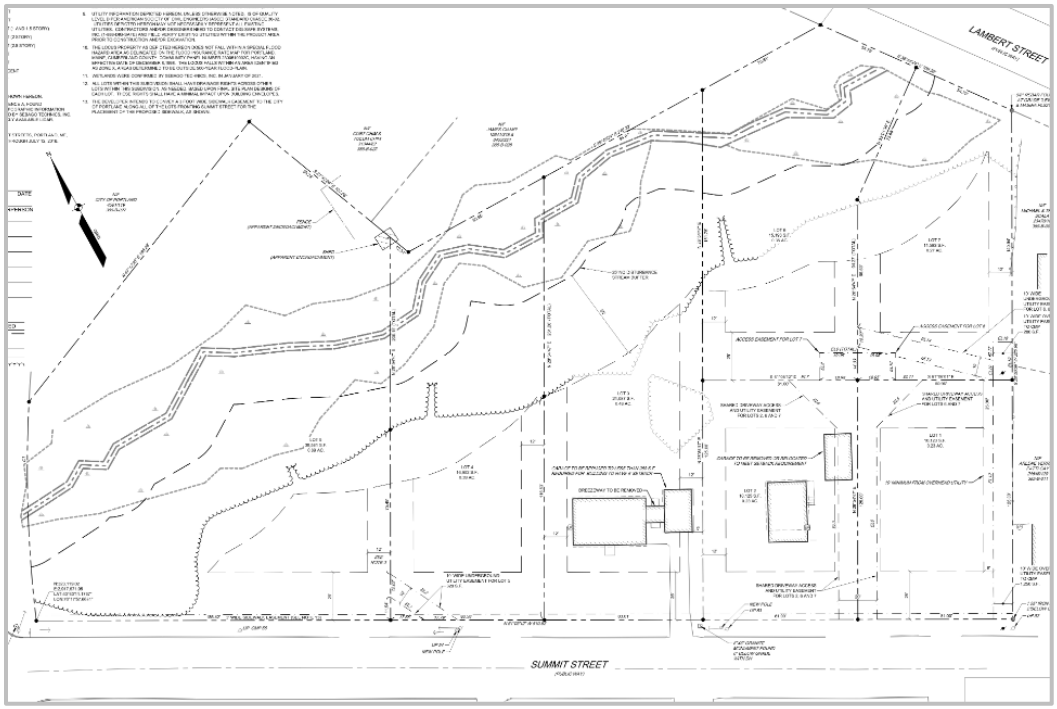


Figure 3: Proposed Subdivision

The applicant is also proposing site work and utility installations alongside the subdivision application shown on Figure 4 below. The applicant proposes relocating the detached garage of the eastern-most single-family home to behind the building. The applicant proposes widening that existing curb cut and constructing a new private shared driveway to provide access to the four easternmost proposed lots within

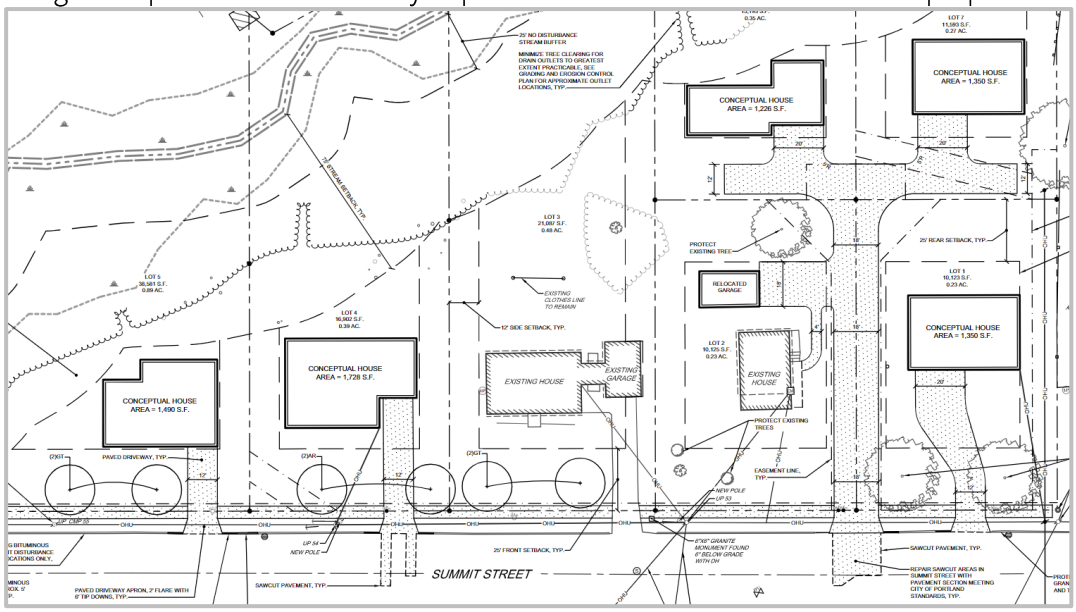


Figure 4: Proposed Site Work

the subdivision. Two of the proposed lots have frontage on Lambert Street, however the unnamed stream and wetlands restrict access to these lots from the Lambert Street. Additionally, the applicant will be utilizing an existing curb cut for the eastern-most lot along Summit Street for a driveway. The applicant is proposing two new curb cuts for driveways along Summit Street for the lots located on the western side of the property. The applicant will be connecting into existing utility features along Summit Street to serve the entire subdivision.

V. RIGHT, TITLE, & INTEREST

The applicant has submitted a short form quitclaim deed with covenant dated July 18, 2016 (Attachment 3) for the parcels associated with the proposed subdivision at 533 Summit Street as demonstration of Right, Title, and Interest.

The applicant will need to provide drainage easements for all the new parcels associated with the project. Additionally, the applicant will need to provide an access easement as well as a driveway maintenance agreement between lots 1, 2, 6, and 7.

VI. FINANCIAL & TECHNICAL CAPACITY

The applicant has submitted a letter from Bangor Wealth Management dated March 31, 2023 which confirms that the applicant has the ability to demonstrate sufficient financial capacity to complete the proposed subdivision and all proposed site work (Attachment 9)

The applicant has provided evidence demonstrating technical capacity (Attachment 10) which highlights key members of the Sebago Technics, Inc. team assisting with this application.

VII. ZONING ANALYSIS



Figure 5: Zoning Context

The proposed subdivision is located entirely within the R-2 Residential zone, which provides for low-density residential development characterized by single-family homes on individual lots in outlying areas of the city and along traffic corridors with limited additional traffic capacity. Aside from residential uses, the R-2 zone also permits governmental uses, agriculture, parks and open spaces, and minor solar energy systems. The applicant is proposing site work to facilitate the future development of five new single-family homes on the five new lots. The parcels will be subject to *Table 7-A: Residential Zone Dimensional Standards* in Chapter 14 Article 7 Dimensional Requirements. The table below provides information on these dimensional requirements in the R-2 zone:

R-2 Residential Zoning Analysis			
Dimensional Requirement	Required	Proposed	Status
Minimum Lot Area	10, 000 sq. ft.	10,123-37,672 sq. ft.	Met
Minimum Street Frontage	50 ft.	70-189 ft.	Met
Minimum Lot Width	80 ft.	80 ft.	Met
Minimum Front Setback	25 ft.	26-70 ft.	Met
Minimum Rear Setback	25 ft. (5 ft. for detached accessory < 250 sq. ft. footprint)	38-174 ft.	Met
Minimum Side Setback	14 ft.	12-15 ft.	Met

VIII. SUBDIVISION REVIEW STANDARDS (Section 15.4)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below:

1. Will Not Result in Undue Water and Air Pollution (Section 15.4.1.A), and will not result in undue soil erosion (Section 15.4.1.D)

   Staff Finding: The stormwater for the site flows into an unnamed stream which is surrounded by wetlands. The applicant is constructing over 1,000 sq. ft. of impervious surface and is subject to the Maine DEP Chapter 500 Stormwater standards. The applicant has submitted a Stormwater Management Plan (Attachment 17). A condition of approval has been included to submit a final Stormwater Management Plan approved by DPW and the third-party Stormwater Engineer reviewer. The applicant is seeking to treat stormwater without installing BMPs that would require a Homeowner's Association agreement. As noted above, City Staff have requested drainage easements between properties to allow for more effective stormwater management.

   The applicant has submitted a waiver request for *COP Technical Manual Standard* 8.2.1 to facilitate site work within the 100 ft. perennial stream buffer. The applicant notes in the waiver request that

the residential nature of the project matches existing development in the surrounding area and the low-impact single-family homes will not impact the unnamed stream within the property. City Staff have reviewed this waiver request and support allowing the applicant to work within the 100 ft. perennial stream buffer.

2. Has sufficient water available and will not cause unreasonable burden on existing water supply (Section 15.4.1.B and C)
   Staff Finding: The applicant will be utilizing existing water supply along Summit Street. The applicant has submitted an Ability to Serve request to the Portland Water District. Although City Staff do not anticipate any unreasonable burden on the existing water supply, the applicant will need to submit final approval and confirmation from Portland Water district. This has been included as a condition of approval.

3. Will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highway or public roads existing or proposed (Section 15.4.1.E)
   Staff Finding: The applicant proposes two new curb cuts for the new western lots and will be utilizing existing curb cuts for the remaining two driveways. Single-family homes will not have a significant impact on the surrounding traffic network and City Staff do not anticipate any unsafe conditions or unreasonable public road conditions.

4. Will provide for adequate sanitary sewer and stormwater disposal (Section 15.4.1.F) and will not cause an unreasonable burden on municipal solid waste and sewage (Section 15.4.1.G)
   Staff Finding: The proposed subdivision will utilize existing public sewer along Summit Street. Although City Staff do not expect any impact or unreasonable burden to municipal solid waste and sewage, the applicant will need to submit a wastewater capacity approval as a condition of approval.

5. Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat (Section 15.4.1.H)
   Staff Finding: The site is mostly undeveloped with existing vegetation and tree cover. The site work associated with the subdivision will not result in extensive vegetation or tree removal. The single-family homes will be subject to landscape and vegetation preservation requirements and will be reviewed at the time of approval. City Staff do not see any undue adverse effect on the scenic or natural beauty of the area. The applicant is proposing street trees as part of this application to account for the future development across the subdivision, with a total requirement of 10 street trees, based upon there being five newly proposed single-family dwellings. The applicant is proposing six new street trees and preserving two existing street trees on Lot 1. City Staff have included a contribution to the street tree fund ($400 per tree) for the remaining two trees as a condition of approval.

6. Is in conformance with the Comprehensive Plan (Section 15.4.1.I)
   Staff Finding: The applicant notes that the proposed development will be generating five new single-family homes in North Deering that is zoned R-2 Residential. This application conforms with the Comprehensive Plan and contributes to the 'Livable City (Policy Guide: Housing)' portion of the plan. Local goals include:

   "Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences, and financial capabilities of all Portland Residents."

"Encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods."

"Pursue policies to enable people who work in Portland to have the option to live in Portland."

7. Adequate financial and technical capacity (Section 15.4.1.J)
   Staff Finding: As discussed in Section VI of this report, the applicant has demonstrated adequate financial and technical capacity.

8. Whenever situated, in whole or in part, within the watershed of any pond or lake or within 250 feet of any wetland, great pond, or river, will not adversely affect the quality of such body of water or unreasonably affect the shoreline of such body of water (Section 15.4.1.K)
   Staff Finding: City Staff find the proposed subdivision and anticipated single-family residential development to not adversely affect the quality of the existing wetlands on site. The low-intensity nature of single-family homes and the proposed driveways will not impact the wetlands. The applicant will need to submit a finalized stormwater management plan.

9. Will not, adversely affect the quality and quantity of groundwater (Section 15.4.1.L)
   Staff Finding: City Staff do not anticipate any impact to the quality or quantity of groundwater on site.

10. Is or is not in a flood-prone area (Section 15.4.1.M)
    The site is not located within any designated flood-prone areas.

11. Will provide for adequate stormwater management (Section 15.4.1.N)
    Staff Finding: As noted above, the applicant is required to submit a Stormwater Management Plan as the proposed site work will create over 1,000 sq. ft. of impervious surface. A condition of approval has been included to submit a final Stormwater Management Plan approved by City Staff and the Third-Party Stormwater Engineer reviewer.

12. Will not have lots with a lot depth-to-shore frontage ratio greater than 5 to 1 if any lots in the proposed subdivision have shore frontage on a river, stream brook, great pond, or coastal wetland (Section 15.4.1.O)
    The site does not have shore frontage on any lots.

13. For any proposed subdivision that crosses municipal boundaries, will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the subdivision is located (Section 15.4.1.P)
    The proposed subdivision does not cross municipal boundaries.

IX. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant was not required to hold a neighborhood meeting.

No public comment has been submitted to the Planning & Urban Development Department.

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff recommends to the Planning Board that the proposed project meets the applicable standards of Portland's Land Use Code.

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 October 24, 2023 for application #PL-002453-2022 at 70 533 Summit Street relevant to the subdivision standards of the Land Use Code and Portland's Technical and Design Standards, and other regulations, and the testimony presented at the Planning Board public hearing:

1. The Planning Board **[finds/does not find]**, based upon City Staff and the Third-Party Stormwater Engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the City of Portland's *Technical Manual* Section 8.2.1 which requires a 100 ft. buffer adjacent to perennial streams.

B. SUBDIVISION 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 October 24, 2023 for application #PL-002453-2022 relevant to the subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board **[finds/does not find]** that the plan is in conformance with the subdivision standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO THE SUBMISSION OF THE PLAT FOR PLANNING BOARD SIGNATURE

2. The applicant will need to submit finalized drainage and access easements as well as a driveway maintenance agreement to the satisfaction of the Planning Authority, the Department of Public Works, and Corporation Counsel.
3. The subdivision plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel and Department of Public Works and include clear descriptions of the number, location, type, size of all subdivided units, along with relevant notes and conditions, and any easements or and agreements associated with the site.

PRIOR TO PRECONSTRUCTION MEETING

4. The applicant will need to submit ability to serve documentation for all utilities including electric, gas, wastewater, and water for review and approval by the Planning Authority and Department of Public Works.
5. The applicant will need to submit a final Stormwater Management Plan for review and approval by the Planning Authority, Department of Public Works, and the Third-Party Stormwater Engineer.

PRIOR TO RELEASE OF PERFORMANCE GUARANTEES

6. The applicant shall contribute to the City's tree fund in the amount of $400 per tree for the two remaining trees for a total of $800.
7. The applicant shall not commence any tree clearing or vegetation removal activity outside of the areas where site work associated with this application have been approved until minor residential site plans are approved.

XII. ATTACHMENTS

APPLICANT SUBMITTAL

1. Project Description
2. Subdivision Checklist
3. RTI
4. Evidence of Approvals
5. Zoning Analysis Table
6. Standards of Review
7. Standards of Review
8. Waiver Table
9. Financial Capability
10. Technical Capability
11. Price Range
12. Solid Waste
13. Wetlands
14. Construction Plan
15. Erosion Control
16. HydroCAD Reports
17. Stormwater Management
18. Tree Preservation Exhibit
19. Comment Response 10.12.23
20. Comment Response 8.9.23

PLANS

Plan 1. Cover sheet
Plan 2. Notes + Legend
Plan 3. Subdivision Plan
Plan 4. Site Plan.
Plan 5. Grading + Erosion Control
Plan 6. Utility Plan
Plan 7. Erosion Control Notes
Plan 8. Details
Plan 9. Details
Plan 10. Details
Plan 11. Existing Conditions

SEBAGO TECHNICS

April 6, 2023
20439

Matthew Grooms
Development Review Services Manager
389 Congress Street
4th floor
Portland, ME 04101

RE: Summit Street Property Lot Development, Portland, ME
Subdivision Submission

Dear Matt:

Attached you will find our submittal materials for Subdivision review through the City of Portland (City). The proposed project area is comprised of four existing lots located on Summit Street: 533, 539, 547, and 555 Summit Street. The applicant is proposing to create three additional lots and combine these new lots with the existing lots into one subdivision to be reviewed and approved by the City. No new municipal roadways will be constructed as part of this subdivision. The project area is located in the Residential Zone R-2, per the City Zoning Map. The property is bordered by Lambert Street to the north, Summit Street to the south, and residential properties to the east and west. There is also a wetland and a stream on the north side of the property.

Property Summary
The overall land has been split into four lots over a period of years without City Planning Board approval of a subdivision being required. Two of the lots shown on our Site Plan, Lot 2 (539 Summit Street) and Lot 3 (547 Summit Street), are currently developed with single-family homes with a garage and driveway and are currently utilized as rental properties. The other two lots, Lot 1 and Lot 4, have been created, but do not contain any improvements at this time. We understand that these lots have been created over five-year increments so that the property division has not been considered a subdivision to date. Included in this submission package is a September 1, 2015 letter from Attorney Thomas Leahy of Managhan Leahy describing the creation of Lots 1 and 4 from Lots 2 and 3 and the manner in which this was achieved so as to not require subdivision approval to this point.

The applicant proposes to create three additional lots from two of the existing lots within the project area:

- Lot 2 (539 Summit Street Parcel #385 B002001) is to be divided to create two additional Lots 6 and 7;
- Lots 4 (555 Summit Street Parcel #385 B001001) is to be divided to create one additional Lot 5.

It should be noted that Lots 1 through 5 will achieve their frontage from Summit Street. Lots 6 and 7 will have access from Summit Street but will have frontage along Lambert Street. We have shown conceptual house footprints for planning purposes as there is no proposed house design for the unimproved lots currently. Lots 2, 6, and 7 are to be accessed by a shared, 18-ft wide access drive off Summit Street. There is an existing garage on Lot 2 that will be removed or relocated to allow adequate

room for the access road and set back area. Lots 1, 4, and 5 will each be accessed by a 12-ft wide driveway directly off Summit Street.

The applicant is also proposing incremental adjustments to the property lines of existing Lot 1 (533 Summit Street Parcel #385 B032001) to allow for this lot to meet the minimum width of 80-feet at the new building locations.

Modifications to Lot 3 (547 Summit Street Parcel#385 B026001) will also be required to meet a lesser setback standard for the garage structure of 5-feet. In order to be able to use the 5-foot setback, the breezeway connection between the garage and main portion of the house will be removed so that the garage will become a detached structure and the footprint of the garage will be reduced to less than 250-square feet.

Municipal water, sanitary sewer, communications, and electrical services will be provided from utilities in Summit Street. Existing overhead electrical services will be utilized for Lots 2 and 3. New overhead electrical services are proposed for Lots 1 and 4, and new underground electrical services are proposed for Lot 5. To serve Lots 6 and 7, CMP will be making pole improvements along Summit Street and a new pole will be set on Lot 7 for extending overhead service within an easement to be created on the southeast sideline of Lot 1. Electrical services to Lots 6 and 7 will be accomplished via underground extensions from the new pole being sited on Lot 7.

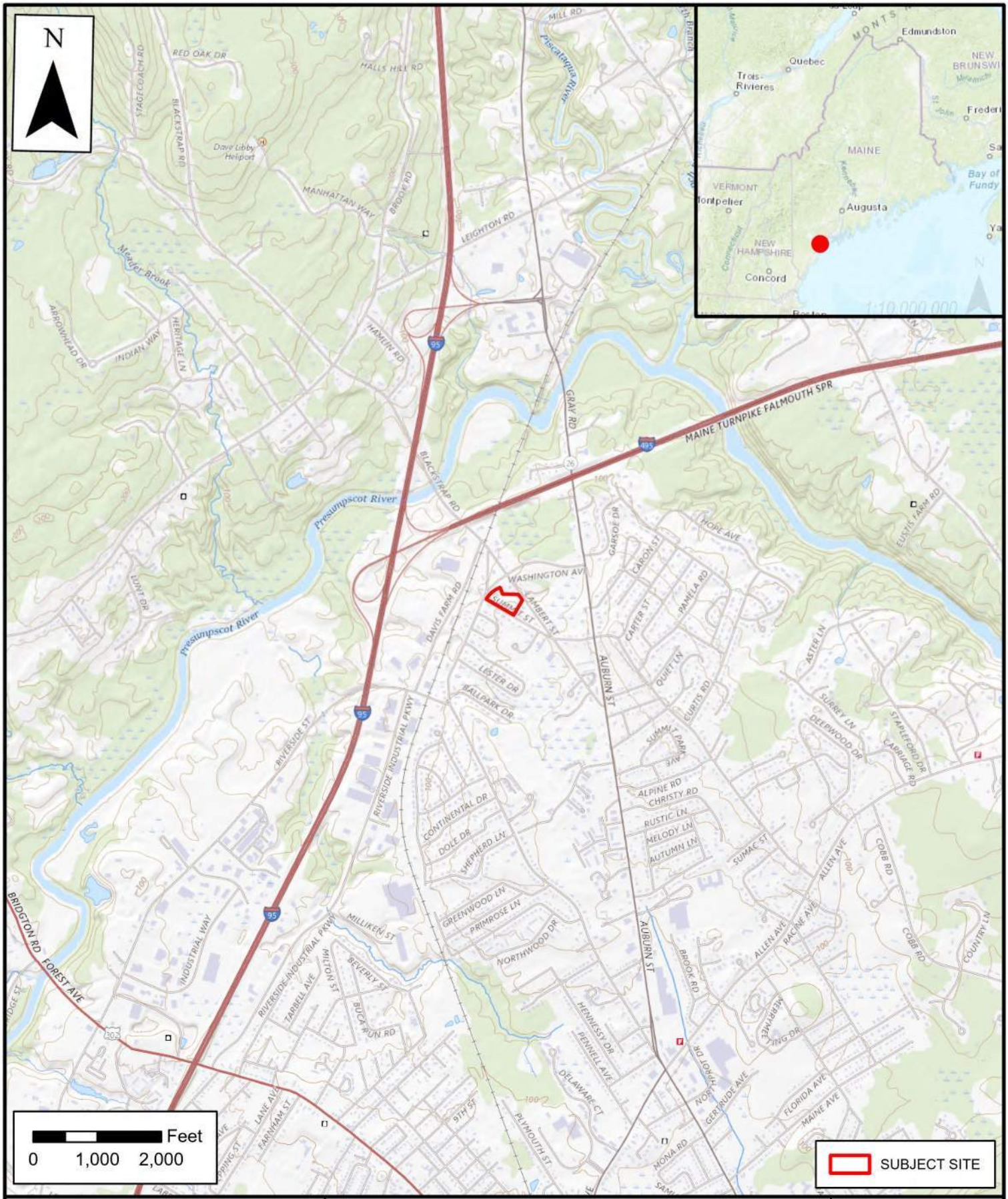
Working with the City Staff, the applicant is also proposing to construct a 5-wide Hot Asphalt Mix surfaced sidewalk along the entire Summit Street frontage of the subdivision along with a 3-foot easement to the City to maintain the sidewalk.

We look forward to discussing this project in greater detail with the City Staff and Planning Board. Please do not hesitate to contact us should you have any questions or comments regarding this submission package.

Sincerely,

SEBAGO TECHNICS, INC.

Stephen D. Harding, P.E.
Sr. Project Manager
SDH/rlg
Enc.



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LOCATION MAP

SUMMIT STREET SUBDIVISION

SCALE:	1:24,000
DATE:	1/6/2023

LOCATION:	INFORMATION:
SUMMIT STREET PORTLAND, ME	CITY OF PORTLAND, ME USGS QUAD

MONAGHAN LEAHY, LLP

ATTORNEYS AT LAW

THOMAS G. LEAHY
KEVIN G. LIBBY
CHRISTOPHER C. DINAN
JOHN J. WALL, III
KENNETH D. PIERCE
CORNELIA S. FUCHS
NICHOLAS R. LOUKES
MATTHEW K. LIBBY

95 EXCHANGE STREET
P.O. BOX 7046
PORTLAND, MAINE
04112-7046

THOMAS F. MONAGHAN
RETIRED

TEL 207-774-3906
FAX 207-774-3833
tleahy@monaghanleahy.com

September 1, 2015

John P. Kelly
C/O SEABREEZE PROPERTY
MAINTENANCE & MANAGEMENT, INC.
P.O. Box 617
Portland, Maine 04104

RE: Summit Street, Portland

Dear John:

Upon review of the title ownership of 539 Summit Street and 547 Summit Street, the City of Portland's Zoning Ordinance and the Maine Revised Statutes, we would like to share the following background information and opinion:

Background:

J P Real Estate, LLC ("LLC") purchased two abutting house lots in Portland, each with a year round house on it that was built prior to 1971. ("Lot A" and "Lot B") The two lots were created prior to 1971, they have been in separate ownership for decades and they have been taxed separately. They both conform to minimum lot size under City of Portland Zoning Ordinance for R-2 Residential Zone.

The LLC plans to separate the two lots back into separate ownership. It then plans to convey a 10' strip of road frontage from the larger lot to the smaller lot in order to increase the road frontage of the smaller lot.

The LLC plans to divide each of the two 'exempt' lots once, to create four lots. (Lot A into Lot A-1 and Lot A-2, and Lot B into Lot B-1 and Lot B-2) Each of the four lots will fully conform to the city's requirements of road frontage, setbacks, and acreage.

In our opinion, this does not require approval from the City of Portland under the Maine Subdivision Statute and City of Portland's Code of Ordinances.

Reasoning:

In spite of the title of the two lots currently being held in the same LLC name, the two lots can be separated again into two separate lots (Lot A and Lot B) without being considered a lot division for subdivision purposes. The two lots were created prior to 1971 and they each have buildings on them that were built prior to 1971. See MRS Title 30-A §4401-4(e). "The division of a tract or parcel of land into 3 or more lots and upon each of which lots permanent dwelling structures existed before September 23, 1971 is not a subdivision." Furthermore, they have been under separate ownership until the LLC purchased them.

The conveyance of a strip of land from the larger lot (Lot A) to the smaller lot (Lot B) does not trigger any subdivision issue. See MRS Title 30-A §4401-4(d.6). "A division accomplished by the transfer of any interest in land to owners of land abutting that land does not create a lot or lots for the purposes of this definition unless the intent of the transferor is to avoid the objectives of this subchapter."

We feel that Lot A and Lot B can now each be divided once to create two additional lots (Lot A divided into Lot A-1 and Lot A-2 and Lot B divided into Lot B-1 and Lot B-2) without the need for subdivision approval (assuming full compliance with the City of Portland's zoning ordinance, R-2 Residential Zone). See MRS Title 30-A§4401-4 "Subdivision means the division of a tract or parcel of land into 3 or more lots within any 5 year period that beings on or after September 23, 1971...." And MRS Title 30-A §4401-4(a) "In determining whether a tract or parcel of land is divided into 3 or more lots, the first dividing of the tract or parcel is considered to create the first 2 lots...."

Further, we note that "Lot" as defined in the City's Zoning Ordinance includes "(a) a lot of record, recorded in the Cumberland County Registry of Deeds...". Our Lots A & B were of record as separate lots since 1967, before the date we understand the City adopted its Zoning Ordinance (1968).

Regards,

Monaghan Leahy, LLP

By Thomas G. Leahy, Esq.

TGL/ehk

CITY OF PORTLAND
Planning & Urban Development Department

SUBDIVISION
GENERAL DOCUMENT AND DRAWINGS CHECKLIST

Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes in the left-hand column.

**** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW ****

At the time of application submission, please contact the Department of Public Works regarding E-911 addressing of your project.

GENERAL APPLICATION DOCUMENTS	
Yes **NA**	**Project Description** • Cover letter with detailed project description
Yes **NA**	**Completed Checklist** (this document)
Yes **NA**	**Evidence of Right, Title, and Interest** • Deeds, leases, or purchase and sales agreements
Yes **NA**	**Evidence of State or Federal Approvals** • Permits or letters of non-jurisdiction, if applicable
Yes **NA**	**Zoning Assessment** (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
Yes **NA**	**Subdivision Standards Assessment** (see Article 15.4 of the land use code) • Summary of compliance with subdivision review standards of the land use code
Yes **NA**	**Existing and/or Proposed Easements or Covenants, applicable.** • Evidence of existing easements and any proposed easements
Yes **NA**	**Waiver Requests** (see Waiver Table) • Written request for waiver describing request and compliance with applicable waiver standards
Yes **NA**	**Financial Capability** • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes **NA**	**Technical Capability** • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

SUBDIVISION
SUPPLEMENTAL SUBMISSIONS CHECKLIST

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

Yes	NA	• When private sewage systems are used, the results and supporting data of a soil test of each lot in the subdivision conducted by a soil evaluator licensed in the state.
Yes	NA	• When the adequacy of the subdivision's load bearing capacity is in question, a geotechnical report with supporting data that includes the result of test borings shall be prepared by a professional engineer registered in the state and submitted.
Yes	NA	• Price range of houses that will be built in the subdivision.
Yes	NA	• Traffic impact analysis.
Yes	NA	• High intensity soil survey, if required by the Planning Authority.
Yes	NA	• Types and estimated quantities of solid waste to be generated by the development.
Yes	NA	• A narrative describing all proposed buffer strips, their dimensions, and maintenance plans and responsibilities.
Yes	NA	• A description of any wetlands, wildlife and fisheries habitats, archaeological sites or unusual natural areas located on or near the project site and a description of the methods that will be used to protect such area.
Yes	NA	• Construction plan outlining the anticipated sequence of construction of the major features of the project including without limitation roads, retention basins, sewer lines, seeding and other erosion and sedimentation control measures, and pollution abatement measures and also setting forth the approximate dates for commencement and completion of the project.
Yes	NA	• When conditions warrant, a program to control dust, erosion and sedimentation and/or vehicular traffic during construction.
Yes	NA	• At the option of the subdivider, any other information that may be necessary for the full and proper consideration of the subdivision shall be submitted in writing.

SUBDIVISION
DRAWINGS CHECKLIST

Please submit each document as a separate PDF file.
All drawings must be submitted in a 24 x 36 sheet size.

SUBDIVISION PLAT (at a scale not more than 1"=60', unless lots are more than one acre in size)

1. Date, north point, title and graphic scale.

2. Names, addresses and stamp or certification, if applicable, of registered professional engineer, subdivider, and owner

3. Vicinity sketch (may be shown on separate plan);

4. Names of adjacent property owners with parcels over 25,000 square feet or names of adjacent subdivision;

5. Location and designation of any zoning district boundaries affecting the subdivision;

6. Total site data, including total area of the subdivision, total area in streets, total area in recreation or open space and number of house lots;

7. Based on a recent survey by the subdivider, existing contours at two foot intervals or as otherwise required by the Public Works Authority. Existing structures which are to remain will shall be delineated;

8. Tract boundary lines and property lines of lots, with accurate dimensions and either bearings or deflection angles. All lots shall be numbered;

9. Names of proposed streets, width of rights of way, typical cross section reservation, and depth of construction materials;

10. Locations, widths and purposes of other rights of way or easements to be recorded;

11. All appropriate street geometry information, including point of curvature, point of tangency, tangent distance, radii and interior angle, in standard engineering format;

12. Location of those utilities existing on or adjacent to the tract to be subdivided, including size and elevation of buried or underground utilities (may be shown on separate plan);

13. Designation of flood hazard areas, as defined by the National Flood Insurance Program and shown on the city flood hazard boundary map, as well as any other areas in the subdivision subject to inundation by stormwater or storm sewer overflow;

14. All potential wetlands within the proposed subdivision, regardless of the size of those wetlands;

15. Any river, stream or brook within or abutting the proposed subdivision. For purposes of

this section, "river, stream or brook" has the same meaning as in 38 M.R.S. § 480 B, Subsection 9.

16. Existing historic sites and structures which either appear on the National Register or are nominated to the National Register by the state historic preservation officer;

17. Proposed private and public utility system including water, gas, telephone, fire hydrants, and any other services which shall supply the area (may be shown on separate plan);

18. Sanitary sewer and storm drain plans and profiles showing size, kind and slope of pipe, proposed manhole rim and invert elevations and catch basin locations and drains (may be shown on separate plan);

19. Lighting plan showing the location, design, height and spacing from each other of the support poles, in accordance with standards and specifications established by the Public Works Authority (may be shown on separate plan);

20. Tree plan showing groups of existing, sizeable trees which the subdivider intends to preserve (may be shown on separate plan);

21. A detailed plan of the entire subdivision and the immediate vicinity showing all existing and proposed drainage both on- and off-site including drainage swales, ditches, etc., with directional flow arrows and approximate slope grades, and showing proposed finished "spot elevations" around the perimeter of the subdivision. Proposed drainage shall be shown as it may affect or restrict development on individual lots and with reference to improvements for which a performance guarantee is required under this article. Where deemed feasible by the Public Works Authority, proposed finished contours at intervals of two feet shall be provided on the drainage plan upon request (may be shown on separate plan);

22. All future phases and sections of the subdivision proposed by the subdivider (may be shown on separate plan);

23. Proposed parks and school sites, or other public open space that the developer proposes to convey to the city;

24. Streets and right of way monuments and property line markers;

25. Profiles of each street or way in the subdivision shall be shown on the subdivision plat. They shall be drawn to a longitudinal scale of 40 feet to one foot and a vertical scale of four feet to one inch. Such profiles shall include separate profiles of each side line and center line of the street or way. Any buildings abutting on the street shall be shown in standard engineering format as requested by the Public Works Authority.

26. Where submission drawings are available in electronic form, the applicant shall submit any available electronic CAD files with final plans.

Doc#: 35490 Bk:33287 Pg: 184

SHORT FORM QUITCLAIM DEED
WITH COVENANT

J P REAL ESTATE, LLC, a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, for consideration paid, grants to **J P REAL ESTATE, LLC,** a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, whose mailing address is P.O. Box 617, Portland, Maine, 04104, with Quitclaim Covenant, the premises located in the City of Portland, County of Cumberland and State of Maine, as described on **Schedule A** attached hereto and made a part hereof.

Executed this 18th day of July, 2016, by John P. Kelly, Manager of J P Real Estate, LLC, thereunto duly authorized.

Witness

J P REAL ESTATE, LLC

By: John P. Kelly
Its: Manager

STATE OF MAINE
CUMBERLAND, SS.

July 18, 2016

Then personally appeared the above-named John P. Kelly in his capacity as Manager of J P Real Estate, LLC and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of J P Real Estate, LLC.

Before me,

~~Notary Public~~/Attorney at Law Bar # 047

Thomas G. Leahy
Printed Name

SCHEDULE A
Lot One (533 Summit Street)

A certain lot or parcel of land, situated on the northerly side of Summit Street in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at an iron pipe on the northerly sideline of Summit Street, said iron pipe also being the southwesterly corner formerly owned by Hamilton (now Gay–Verre) as shown on a plan titled "Boundary Survey for Ray Peppers" recorded in Plan Book 206 Page 207 in the Cumberland County Registry of Deeds;

Thence, N61°05'13"W along the northerly sideline of said Summit Street 80.00 feet to a capped iron rod (#2348) and also being the southeasterly corner of Lot 2 as shown on a plan titled "Proposed Lot Division on Lambert & Summit Streets, Portland, Maine for John Kelly" and JP Real Estate, LLC by Statewide Surveys, Inc.;

Thence, N28°54'47"E, 130.00 feet along the easterly sideline of said Lot 2 to a capped iron rod (#2348);

Thence, S61°05'13"E, 79.97 feet along the southerly sideline of said Lot 2 to a capped iron rod (#2348) and land of said Gay-Verre;

Thence, S28°53'59"W along land of said Gay-Verre 130.00 feet to an iron pipe and the northerly sideline of Summit Street and the point of beginning containing 10,398 Square Feet more or less.

Bearing Basis for this description is Maine State Plane Coordinate System, West Zone, N.A.D. 1983 (HARN) Datum.

Received
Recorded Register of Deeds
Jul 19,2016 10:05:41A
Cumberland County
Nancy A. Lane

SHORT FORM QUITCLAIM DEED
WITH COVENANT

J P REAL ESTATE, LLC, a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, for consideration paid, grants to **J P REAL ESTATE, LLC,** a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, whose mailing address is P.O. Box 617, Portland, Maine, 04104, with Quitclaim Covenant, the premises located in the City of Portland, County of Cumberland and State of Maine, as described on **Schedule A** attached hereto and made a part hereof.

Executed this 18th day of July, 2016, by John P. Kelly, Manager of J P Real Estate, LLC, thereunto duly authorized.

J P REAL ESTATE, LLC

Witness

By: John P. Kelly
Its: Manager

STATE OF MAINE
CUMBERLAND, SS.

July 18, 2016

Then personally appeared the above-named John P. Kelly in his capacity as Manager of J P Real Estate, LLC and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of J P Real Estate, LLC.

Before me,

~~Notary Public~~/Attorney at Law Bar # 047

Thomas G. Leahy
Printed Name

SCHEDULE A
Lot 2 (539 Summit Street)

A certain lot or parcel of land, situated on the northerly side of Summit Street and the southerly side of Lambert Streets in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a capped iron rod (#2348) on the northerly sideline of Summit Street, said point being 80 feet on a course of N61°05'13"W from the southwesterly corner of land formerly owned by Hamilton (now Gay–Verre) as shown on a plan titled "Boundary Survey for Ray Peppers" recorded in Plan Book 206 Page 207 in the Cumberland County Registry of Deeds;

Thence, N61°05'13"W along the northerly sideline of Summit Street 80.00 feet to a capped iron rod (#2348) and the southeasterly corner of Lot 3 as shown on a plan titled "Proposed Lot Division on Lambert & Summit Streets, Portland, Maine for John Kelly" and JP Real Estate, LLC by Statewide Surveys, Inc.;

Thence, N28°54'47"E, 277.87 feet along the easterly sideline of said Lot 3 to a point and land now or formerly of James Ciampi;

Thence, S89°49'24"E along said Ciampi 68.34 feet to a point on the southerly sideline of Lambert Street;

Thence, S36°58'24"E along the southerly sideline of said Lambert Street 109.58 feet to a capped iron rod (#2114) and land of Christensen-Olsen as shown on said recorded plan for Ray Peppers;

Thence, S28°53'59"W along lands of said Christensen-Olsen and Gay-Verre 135.96 feet to a capped iron rod (#2348) and the northeasterly corner of Lot 1;

Thence, N61°05'13"W, 79.97 feet along the northerly line of said Lot 1 to a capped iron rod (#2348) and the northwesterly corner of said Lot 1;

Thence, S28°54'47"W, 130.00 feet along the westerly line of Lot 1 to a capped iron rod (#2348) and the northerly sideline of Summit Street and the point of beginning containing 36,084 Square Feet more or less.

Bearing Basis for this description is Maine State Plane Coordinate System, West Zone, N.A.D. 1983 (HARN) Datum.

Received
Recorded Register of Deeds
Jul 19,2016 10:06:32A
Cumberland County
Nancy A. Lane

SHORT FORM QUITCLAIM DEED
WITH COVENANT

J P REAL ESTATE, LLC, a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, for consideration paid, grants to **J P REAL ESTATE, LLC,** a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, whose mailing address is P.O. Box 617, Portland, Maine, 04104, with Quitclaim Covenant, the premises located in the City of Portland, County of Cumberland and State of Maine, as described on **Schedule A** attached hereto and made a part hereof.

Executed this 18th day of July, 2016, by John P. Kelly, Manager of J P Real Estate, LLC, thereunto duly authorized.

J P REAL ESTATE, LLC

Witness

By: John P. Kelly
Its: Manager

STATE OF MAINE
CUMBERLAND, SS.

July 15, 2016

Then personally appeared the above-named John P. Kelly in his capacity as Manager of J P Real Estate, LLC and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of J P Real Estate, LLC.

Before me,

~~Notary Public~~/Attorney at Law Bar # 047

Thomas G. Leahy
Printed Name

SCHEDULE A
Lot 3 (547 Summit Street)

A certain lot or parcel of land, situated on the northerly side of Summit Street in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a capped iron rod (#2348) on the northerly sideline of Summit Street, said point being 160 feet on a course of N61°05'13"W from the southwesterly corner of land formerly owned by Hamilton (now Gay–Verre) as shown on a plan titled "Boundary Survey for Ray Peppers" recorded in Plan Book 206 Page 207 in the Cumberland County Registry of Deeds;

Thence, N61°05'13"W along the northerly sideline of Summit Street 85.00 feet to a capped iron rod (#2348) and the southeasterly corner of Lot 4 as shown on a plan titled "Proposed Lot Division on Lambert & Summit Streets, Portland, Maine for John Kelly" and JP Real Estate, LLC by Statewide Surveys, Inc.;

Thence, N28°54'47"E, 231.26 feet along the easterly sideline of said Lot 4 to a point and land now or formerly of James Ciampi;

Thence, S89°49'24"E along land of said Ciampi 96.94 feet to a point and the northwesterly corner of Lot 2 as shown on said Kelly Plan;

Thence, S28°54'47"W, 277.87 feet along the westerly sideline of said Lot 2 to a capped iron rod (#2348) and the northerly sideline of Summit Street also being the southwesterly corner of Lot 2 on said Kelly Plan and the point of beginning containing 21,638 Square Feet more or less.

Bearing Basis for this description is Maine State Plane Coordinate System, West Zone, N.A.D. 1983 (HARN) Datum.

Received
Recorded Register of Deeds
Jul 19,2016 10:07:23A
Cumberland County
Nancy A. Lane

SHORT FORM QUITCLAIM DEED
WITH COVENANT

J P REAL ESTATE, LLC, a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, for consideration paid, grants to **J P REAL ESTATE, LLC,** a Maine limited liability company with a principal place of business in Portland, County of Cumberland and State of Maine, whose mailing address is P.O. Box 617, Portland, Maine, 04104, with Quitclaim Covenant, the premises located in the City of Portland, County of Cumberland and State of Maine, as described on **Schedule A** attached hereto and made a part hereof.

Executed this 18th day of July, 2016, by John P. Kelly, Manager of J P Real Estate, LLC, thereunto duly authorized.

J P REAL ESTATE, LLC

Witness

By: John P. Kelly
Its: Manager

STATE OF MAINE
CUMBERLAND, SS.

July 6, 2016

Then personally appeared the above-named John P. Kelly in his capacity as Manager of J P Real Estate, LLC and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of J P Real Estate, LLC.

Before me,

~~Notary Public~~/Attorney at Law Bar #047

Thomas G. Leahy
Printed Name

SCHEDULE A
Lot 4 (555 Summit Street)

A certain lot or parcel of land situated on the northerly side of Summit Street and the easterly side of Washington Avenue Extension in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a capped iron rod (#2348) on the northerly sideline of Summit Street, said point being 245 feet on a course of N61°05'13"W from the southwesterly corner of land formerly owned by Hamilton (now Gay–Verre) as shown on a plan titled "Boundary Survey for Ray Peppers" recorded in Plan Book 206 Page 207 in the Cumberland County Registry of Deeds;

Thence, N61°05'13"W along the northerly sideline of said Summit Street 265.92 feet to the easterly sideline of Washington Avenue Extension;

Thence, northeasterly along the southerly sideline of Washington Avenue Extension along a curve to the right having a radius of 676.20 feet an arc length of 114.59 feet to a City of Portland capped iron rod and land now or formerly of the City of Portland, said point being 114.45 feet on a course of N27°05'17"E from the last named point;

Thence, N67°12'35"E along land of the City of Portland 186.26 feet to a capped iron rod (#2124) and land now or formerly of Toeum Chim;

Thence, S21°42'24"E along land of said Chim and land of James Ciampi 107.56 feet to a capped iron rod (#1328);

Thence, S89°49'24"E along said Ciampi 80.95 feet to a point and the northwesterly corner of Lot 3 as shown on a plan titled "Proposed Lot Division on Lambert & Summit Streets, Portland, Maine for John Kelly" and JP Real Estate, LLC by Statewide Surveys, Inc;

Thence, S28°54'47"W, 231.26 feet along the westerly line of Lot 3 to the northerly sideline of Summit Street and the point of beginning containing 55,483 Square Feet more or less.

Bearing Basis for this description is Maine State Plane Coordinate System, West Zone, N.A.D. 1983 (HARN) Datum.

Received
Recorded Register of Deeds
Jul 19,2016 10:08:08A
Cumberland County
Nancy A. Lane

Evidence of State or Federal Approvals

No State or Federal permitting was required for the proposed project.

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) Residential Zone R-2

All Projects:

	Required	Proposed
Lot Size	10,000 SF	10,123 - 37,672 SF
Area Per Dwelling Unit	10,000 SF	10,123 - 37,672 SF
Minimum Street Frontage	50 Feet	70 - 189 Feet
Front Yard Minimum	25 Feet	26 - 57 Feet
Front Yard Maximum	x	26 - 57 Feet
Rear Yard	25 Feet	38.5 - 174 Feet
Yard Right	12 Feet (1 story), 14 Feet (2 story), 16 Feet (2.5 story)	12 - 13 Feet
Yard Left	12 Feet (1 story), 14 Feet (2 story), 16 Feet (2.5 story)	15 - 146 Feet
Side Street Setback	20 Feet	N/A
Step Back		
Maximum Lot Coverage	20 %	4 - 13%
Minimum Lot Coverage	x	4 - 13%
Maximum Height	35 Feet	
Open Space	N/A	
Maximum Impervious Area	N/A	
Pavement Setback	N/A	
Floor Area Ratio	N/A	
Off Street Parking Spaces	N/A	
Loading Bays	N/A	
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	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)

	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):			

15.4.1 Standards of Review

A. Will not result in undue water or air pollution […].

The proposed project will not result in undue water or air pollution. The proposed project involves the creation of a small number of residential lots. Please see the stormwater report and the plan set.

B. Has sufficient water available for the reasonably foreseeable needs of the subdivision.

The proposed project involves the development of a small residential subdivision that will be serviced by public water. The water needs of the subdivision have been forwarded to the Portland Water District. It is anticipated that the capacity requirements of the lots will be able to be met by the District. Please see the attached correspondence with the Portland Water District.

C. Will not cause unreasonable burden on an existing water supply.

The proposed project will require water service to five single family homes. The proposed project will not result in an undue burden on the existing water supply. Portland Water District has been contacted regarding capacity. Please see the attached correspondence with the Portland Water District.

D. Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.

The proposed project has been designed utilizing the Best Management Practices. Please see the Stormwater Report and the plan set.

E. Will not cause unreasonable highway or unsafe conditions with respect to use of the highway or public roads existing or proposed.

The proposed project involves the creation of three additional lots and the development of five single family homes. It will not result in the creation of unsafe conditions on the surrounding public roads or highways. Please see the plan set.

F. Will provide for adequate sanitary waste and storm water disposal and will not cause an unreasonable burden on municipal services if they are utilized.

The proposed project involves the creation of three additional lots and the development of five single family house lots that will be serviced by public sewer. The development will not result in an unreasonable burden to municipal services.

G. Will not cause an unreasonable burden on the ability of the City to dispose of solid waste and sewage if municipal services are to be utilized.

The proposed project involves the creation of three lots and the development of five single family house lots. The proposed development will not cause an unreasonable burden on the ability of the City to dispose of solid waste and sewage.

H. Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or by the City, rare and irreplaceable natural areas, or any public rights for physical or visual access to the shoreline […].

The proposed project will not result in an undue adverse effect on the scenic or natural beauty of the area. The project will not adversely affect any historic sites or significant wildlife habitat. All build windows are outside the established stream setback. Please see the plan set.

I. Is in conformance with the Comprehensive Plan or its successor.

The proposed project is in conformance with the Comprehensive Plan. The project will provide more housing which is discussed in the Livable City (Policy Guide: Housing) of the Portland Comprehensive Plan under local goals:

> "We will: Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents. (p50, Portland's Plan)"

The proposed project will create more and better utilized lots within a developed, desirable neighborhood.

J. The subdivider has adequate financial and technical capacity to meet the standards of this subdivision.

The applicant has adequate financial and technical capacity to meet the standards of this subdivision. Please see the Financial and Technical capacity information included as an attachment to this submission.

K. When situated, in whole or in part, within the watershed of any pond or lake within 250 feet of any wetland, great pond, or river as defined in Title 38, Chapter 3, Subchapter I, Article 2B, will not adversely affect the quality of such body of water or unreasonably affect the shoreline of such a body of water.

The proposed project is not sited whole or in part within the watershed of a pond or lake, within 250 ft of any great pond or river. There is a stream and associated wetlands located toward the back of the project area. The stream is not listed nor does it drain into an Urban Impaired Stream. No wetland impacts are proposed. No development is proposed within the setback of the stream. Please see the plan set.

L. Will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.

The proposed project involves the creation of a small residential subdivision. Water and sewer will be provided through municipal services and best management practices will be followed during construction. Retention basins have been proposed to encourage the infiltration of surface runoff. Please see the plan set and the stormwater narrative.

M. Is or is not in a flood prone area, based on the Federal Emergency Management Agency's flood boundary and floodway maps and flood insurance rate maps, and information presented by the applicant […].

The proposed development is not in a flood prone area. Please see the enclosed FEMA flood map figure.

N. Will provide for adequate stormwater management.

The proposed project has been designed to provide adequate stormwater management. Please see the stormwater narrative and the plan set.

O. Will not have lots with a lot depth-to-shore frontage ration greater than 5-1 if any lots in the proposed subdivision have shore frontage on a river, stream, brook, great pond, or coastal wetland as these features are defined in Title 38 480-B.

The proposed lots have been designed to be in compliance with the requirements outlined in the City Ordinance.

P. For any proposed subdivision that crosses municipal boundaries, will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the subdivision is located.

The proposed project area is located completely within the City of Portland.

January 9, 2023
20439-01

MEANS Group
Main Extensions and New Services
Portland Water District
225 Douglass Street
Portland, ME 04104-3553

Ability to Serve Request
Summit Street Subdivision
Portland, ME 04104

Dear MEANS Group:

On behalf of John Kelly, we respectfully request your review and confirmation of sufficient capacity to serve five (5) new single-family homes to be located on Summit Street in Portland. The existing site consists of four (4) parcels with addresses of 533, 539, 547, and 555 Summit Street. There are two existing single-family homes on the site with addresses 539 and 547 Summit Street. The proposed project will subdivide the four existing parcels of land to create a total of seven (7) house lots. The two existing homes will remain and maintain their existing services.

At this time, we are anticipating a total of five (5) new services to connect to the main located in Summit Street. New homes in Portland are required to have sprinklers, therefor the five services will be required to have capacity for both fire suppression and domestic use. The proposed house footprints are only a concept at this time, and no sprinkler system designs have started yet. At this time, we are assuming 3-bedroom homes (270 GPD) and anticipate that capacity needs can be met by 1.5”-2” services for each home.

We are hopeful that we have provided sufficient information for you to review the proposed development and to comment on the district’s ability to serve the project. Attached is a concept plan showing approximate service locations for your review and comment. During your review, please reach out with any questions. Thank you for your consideration.

Sincerely,

SEBAGO TECHNICS, INC.

Jeffrey Pollard, E.I.
Civil Engineer

Rebecca Gabryszewski

From: AMaP MEANS <means@pwd.org>
Sent: Monday, March 13, 2023 12:39 PM
To: Jeff Pollard
Cc: Steve Harding
Subject: RE: Ability to Serve - Summit Street, Portland - Fixture Counts - PRJ 525709

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Jeff,

Thank you for the information and your request for an Ability to Serve Letter for 555 Summit Street in Portland. Portland Water District – MEANS Group will review the information and get back to you with any questions and/or comments about the project.

Once all PWD requirements have been met an Ability to Serve Determination letter will be issued. This will take place within our typical 30-day turnaround timeframe.

Regards,
Kathryn

MEANS Group
Main Extensions and New Services
Portland Water District
225 Douglass Street
Portland, ME 04104-3553
P:(207)774-5961 Ext. 3199
F:(207)761-8307
MEANS@pwd.org

Portland Water District
225 Douglass Street, PO Box 3553
Portland, ME 04104
Phone: 207-774-5961 x3199
E-mail: means@pwd.org
http://www.pwd.org

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Please consider the environment before printing this email

From: Jeff Pollard <jpollard@sebagotechnics.com>
Sent: Friday, March 10, 2023 2:40 PM
To: AMaP MEANS <means@pwd.org>
Cc: Steve Harding <sharding@sebagotechnics.com>; Kathryn Wille <kwille@pwd.org>
Subject: Ability to Serve - Summit Street, Portland - Fixture Counts

ATTENTION: This email did NOT originate from Portland Water District. This email is from an external source outside of the District. Exercise EXTREME caution when opening external attachments or links from unknown senders.

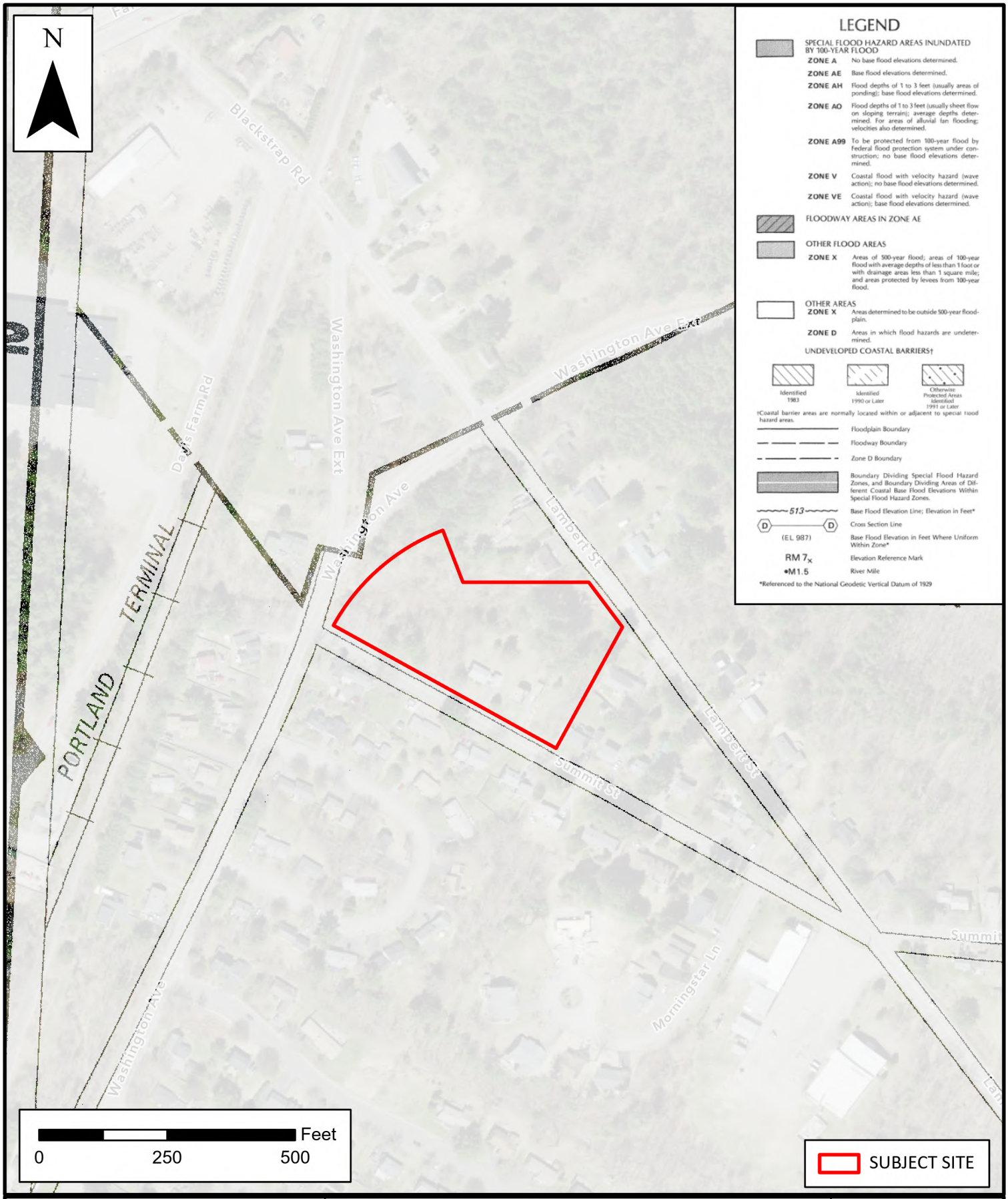
Good Afternoon,

Please see the attached fixture count spreadsheets and an updated preliminary utility plan for the proposed Summit Street Subdivision Project that will result in 5 new single-family homes. This information is a follow up to our previously submitted ability to serve request letter for the project. Please see the attached Utility Layout plan for lot numbering and proposed service locations. Sprinklers will be required by the city for each home, however we do not have sprinkler designs for the buildings at this time. We are hopeful this information will be adequate for PWD to be able to start review of the project and provide feedback on the service sizes, locations, and overall ability to serve the project.

Thank you,
Jeff

Jeffrey Pollard, EI *Civil Engineer*
Sebago Technics, Inc. | An Employee-Owned Company
75 John Roberts Rd., Suite 4A, South Portland, ME 04106
Office: 207.200.2100 | Direct: 207.200.2140 | Fax: 207.856.2206
jpollard@sebagotechnics.com | www.sebagotechnics.com

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SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

FEMA NATIONAL FLOOD HAZARDS

SUMMIT STREET SUBDIVISION

SCALE: 1:3,000

DATE: 3/30/2023

LOCATION:
SUMMIT STREET
PORTLAND, ME

INFORMATION:
FEMA FIRM PANEL 230051 0002 C
EFFECTIVE DECEMBER 8, 1998

Rebecca Gabryszewski

From: Keith Gray <kgray@portlandmaine.gov>
Sent: Wednesday, February 15, 2023 10:54 AM
To: Steve Harding
Cc: Caitlyn C. Abbott; Jeff Pollard; Rebecca Gabryszewski
Subject: Re: Summit

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That is correct, thank you.

On Wed, Feb 15, 2023 at 10:28 AM Steve Harding <sharding@sebagotechnics.com> wrote:

> Hi Keith –
>
> Thanks for taking time out of your schedule to discuss this project. In summary, we determined that the City would not pursue the entire replacement of the existing bituminous curb, but would start out with replacing any impacted areas with granite curb and expect to have granite tip-down transitions at the driveways. We would review the actual replacement with the City at the time of the replacement to confirm that granite would be the appropriate material to use.
>
> We also discussed the sidewalk, which if installed behind the utility poles, would greatly lessen the potential for impact to the existing curbing. You noted that the City would prefer the esplanade and we discussed the possibility of putting it right against the curb which would require the replacement of the curb, but we both felt that there is not enough space between the utility poles and the curb to install a 5-foot sidewalk. You also noted that you visited the site yesterday and noted that grades would be a challenge to overcome with the installation of the sidewalk. You added that the City has some new details in their detail library site so that we should review those details to avoid steep drop transitions at the driveways.
>
> Finally, we discussed overhead vs. underground power to the new homes. We discussed the preference to go overhead where it makes sense along the frontage of Summit, but that we might need to go underground to the back lots. You noted that the City requirements are to go underground, but that there have been waivers for hardships such as ledge that have been granted in the past to allow for overhead connections. I noted that we are in the midst of tracking down CMP for their input and you offered to check with your staff to see if anyone had a good contact at CMP. I will send you another email with a specific request so that you can readily forward that inquiry.
>
> Thanks for your help with this project and enjoy the spring-like weather for the next 48-hours or so.

Steve

From: Keith Gray <kgray@portlandmaine.gov>
Sent: Wednesday, February 15, 2023 9:50 AM
To: Steve Harding <sharding@sebagotechnics.com>
Cc: Caitlyn C. Abbott <cabbott@sebagotechnics.com>
Subject: Re: Summit

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Beat you to it yesterday, let's set up a quick call to discuss. I'm available now or around 11am. Send an invite if that works for you. Thank you

On Wed, Feb 15, 2023 at 9:24 AM Steve Harding <sharding@sebagotechnics.com> wrote:

Hi Keith – Looks like that there will be some stellar curb reviewing days coming up. I have something going on from 1:30 to 3:30 today and could meet in the morning tomorrow so let me know if you would like to get out for a bit of fresh air today or tomorrow…Steve

From: Steve Harding
Sent: Friday, February 10, 2023 3:11 PM
To: 'Keith Gray' <kgray@portlandmaine.gov>
Cc: Caitlyn C. Abbott <cabbott@sebagotechnics.com>; Jeff Pollard <jpollard@sebagotechnics.com>; Matt Grooms <mgrooms@portlandmaine.gov>
Subject: RE: Summit

Thanks Keith. Let me know if it makes sense to join you out at the site to review this subject in the field. We are hoping to close out this issue so that we can move confidently forward so let us now if there is any thing that we can do to facilitate the resolution. Have a good weekend, Steve

From: Keith Gray <kgray@portlandmaine.gov>
Sent: Friday, February 10, 2023 3:06 PM
To: Steve Harding <sharding@sebagotechnics.com>
Cc: Caitlyn C. Abbott <cabbott@sebagotechnics.com>; Jeff Pollard <jpollard@sebagotechnics.com>; Matt Grooms <mgrooms@portlandmaine.gov>
Subject: Re: Summit

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Hello,

It depends on how much the curb is disturbed along their frontage, as I would not recommend replacing all the curbing unless disturbed. We do not normally put back bituminous curbing so granite would need to be installed where the driveway cuts are shown. We do not have any immediate plans to pave Summit Street. I still need to take a ride out there and take a look, just havent had the time yet.

Thank you,
Keith

On Wed, Feb 1, 2023 at 2:59 PM Steve Harding <sharding@sebagotechnics.com> wrote:

> Hi Keith –
>
> Following up on our conversation last week about the curbing on Summit Street if our client installed a sidewalk with an esplanade along his frontage, attached is a markup of the possible utility layout that could be pursued. We haven't heard back from the Portland Water District so we don't have their direction as to the water services for the two back lots, but we are thinking that we can use the common driveway easement area to install those services along with the sanitary services. That common driveway would be an expansion of the existing driveway to Lot 2.
>
> We also will likely flip the driveway location from Lot 4 with the intention of putting water and sewer services in that driveway mirroring what is being shown on the adjacent Lot 7.
>
> Lots 2 and 3 have existing water and sewer connections so we would not affect those services.
>
> In total, there would be two new driveways with utilities within the drive (Lots 4 and 7); one new common drive with water and sewer services (Lots 2, 5, and 6); and Lot 1 which would use the common drive for access and a sewer service and may have a separate water service.

Let us know what you think. It would be good to resolve the curbing issue up front so that we can confidently move forward with the rest of the project design. You were also going to look into the repaving of Summit Street to determine if that schedule might influence the curb issue resolution.

Thanks for your help with this project, Steve

From: Steve Harding
Sent: Wednesday, January 25, 2023 10:51 AM
To: 'Keith Gray' <kgray@portlandmaine.gov>
Subject: Summit

Here is the concept plan…s

Stephen D. Harding, PE *Senior Project Manager*

Sebago Technics, Inc. | An Employee-Owned Company

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

Office: 207.200.2100 | Direct: 207.200.2057 | Cell: 207.749.3541

sharding@sebagotechnics.com | www.sebagotechnics.com

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--

Keith D. Gray, PE

Engineering Services Manager

City Engineer

City of Portland, Maine

kgray@portlandmaine.gov



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--

Keith D. Gray, PE

Engineering Services Manager

City Engineer

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--
Keith D. Gray, PE
Engineering Services Manager
City Engineer
City of Portland, Maine
kgray@portlandmaine.gov



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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' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Technical Manual Section 8.2.1	"For developments located adjacent to perennial streams, a minimum one hundred (100) foot buffer strip on either side of the stream should be maintained. For intermittent streams, the buffer strip may be reduced to twenty five(25) feet"	We are requesting to reduce the 100' stream buffer strip to 25' to allow the applicant to construct single family homes on the proposed lots.	There is currently developed lots well within 100' of the stream on abutting properties. The stream is not shown on the USGS Map, likely only sees significant flow during storm events, and is isolated from other streams/water-bodies. The conceptual lots have been designed to limit disturbance to roughly 50' from the stream on average, with minimal disturbance for foundation drains within 50'. A no disturbance buffer of 25' is also proposed on the subdivision plan. Buildings will be located outside of a 75' stream setback.

Financial Capability

Please see the attached letter from Colin Baier of Bangor Wealth Management to be utilized as proof of financial capability.

Bangor
WEALTH MANAGEMENT

A DIVISION OF BANGOR SAVINGS BANK

3/31/23

City of Portland Planning Department
389 Congress Street
Portland, ME 04101

Attention City of Portland Planning Department:

This letter serves as confirmation that John P. Kelly currently maintains liquid assets sufficient to complete the subdivision related aspects of his Summit Street project that will be required by the City upon the Planning Board's approval of said project. These liquid assets are not subject to the sale of any real estate. I am available directly at 207-420-3996 with any questions / concerns.

Thank you,

Colin J. Baier [he/him/his]
SVP, Team Leader & Senior Relationship Manager

Bangor Savings Bank
280 Fore Street | Portland, ME 04101
o: 207.420.3996 | c: 207.747.8374
colin.baier@bangor.com

Technical Capability

The applicant has retained Sebago Technics Inc. to complete the site design and permitting for this project.

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm with over 35 years of experience, 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, land surveying, and environmental engineering.

Included as part of this Exhibit are resumes of key personnel for this project.

STEPHEN D. HARDING, PE

Senior Project Manager



Mr. Harding joined Sebago Technics, Inc. (STI) in 2015, with over 37 years of engineering, permitting, and project management experience. He has extensive experience in various design aspects of civil engineering and land development including facility planning, site layout and design, grading, utility design, roadway design, hydrologic studies and drainage analysis, cost estimating, as well as construction administration, management, and inspection. He has worked extensively for a variety of client sectors being involved in private industrial and commercial projects as well as public municipal and U.S. Federal Government projects. He has also worked on projects with private and public funding requirements, traditional design-bid-build processes, and alternative design/build delivery models.

Mr. Harding is also experienced in land use and environmental permitting. He has worked directly with local jurisdictions, assorted state agencies, and U.S. Federal environmental authorities and is very familiar with those regulatory processes. In his past, Mr. Harding has permitted residential and commercial subdivisions, various public and private site development projects, linear projects such as transmission projects, and recreational complexes. He has a strong understanding of the diverse facets of the permitting processes and a sound ability to prioritize and accomplish the needs of a project in a comprehensive and timely fashion.

He also has extensive experience with municipal regulatory procedures in the representation of both applicants and municipalities. Mr. Harding has served as engineering consultant for the municipalities of Rye, New Hampshire since 1990, Cape Elizabeth, Maine since 1996, and Wells, Maine since 2005. In these various roles, he was responsible for the engineering review of proposed projects represented for approval for local regulatory review boards and in the design and construction of various municipal infrastructure and improvement projects.

EXPERIENCE

- **$200+M Colby College Athletic Center** – Waterville, ME
- **109 Capitol Street Office Building (125,000 SF) Complex** – Augusta, ME
- **Scott Dyer Road and Hill Way Road Reconstruction Projects** – Cape Elizabeth, ME
- **Long Creek Watershed Management District, Catchment C-08 Stormwater Improvements - Fairchild Semiconductor and Texas Instruments Plants** – South Portland, ME
- **Public Works Facility, Gull Crest Recreational Fields and Trails, Town Center Fire Station, and Police Station Projects** – Cape Elizabeth, ME
- **400-foot Elevated Boardwalk and Bridge across the Spurwink Marsh/River** – Cape Elizabeth, ME
- **$800M Facility Expansion – Texas Instruments (formerly National Semiconductor)** – South Portland, ME
- **$75M Portland Jetport Terminal Expansion** – Portland, ME
- **Milton CAT Sales and Service Facilities** – Londonderry, NH, Batavia, NY, and Richmond, VT
- **Public Safety Communications Tower** – Cape Elizabeth, ME
- **Shore Road Concept Planning Improvements** – Cape Elizabeth, ME
- **Fort Williams Multi-purpose Field** – Cape Elizabeth, ME

EDUCATION

University of Maine, Orono, ME
Bachelor of Science
Civil Engineering, 1985

CERTIFICATIONS

Professional Engineer:
Maine - PE6633
New Hampshire - No. 08164

MDOT Certification for Design of Locally Administered Projects
Recertification May 2018

MEMBERSHIPS

American Public Works Association (APWA)

SEBAGO TECHNICS

JEFFREY B. POLLARD, EI

Civil Engineer



Mr. Pollard joined Sebago Technics, Inc., (STI) in August of 2020. Mr. Pollard was an intern with Sebago in the summer of 2019 and is a recent graduate from UMaine with a degree in Civil Engineering. In his current role as Civil Engineer, Jeff is a member of a design team within the Project Delivery Group at Sebago Technics. He focuses on the technical aspects of site design, including complex grading, treatment and control of stormwater, utility layout, and roadway design.

EXPERIENCE

The Edge at Berwick – Berwick, ME: As one of the design engineers for the project, performed grading design, utility layout, and stormwater analysis for the project. The project is proposing a total of 12 mixed-use commercial and residential buildings with associated roadways, parking, and utility infrastructure.

The Maine Stay Inn & Cottages – Kennebunkport, ME: Design engineer for the redevelopment of the site for renovated cottages, a new parking lot, and redesigned common space. Work included grading of the site and stormwater analysis and improvements.

Bowden Point Road Extension – Prospect, ME: Design engineer for the conversion of a private gravel road to a town accepted paved road. Work included layout design and grading of dead-end turnaround and cost estimate.

Morong Falmouth Porsche – Falmouth, ME: Design engineer for the project, which includes a new dealership building and overflow parking lot. Performed grading of site, stormwater analysis and improvements, and assisted with layout of new utilities.

EDUCATION

University of Maine - Orono, ME
B.S., Civil Engineering
2020

SEBAGO TECHNICS

REBECCA L. GABRYSZEWSKI

Senior Team Leader, Entitlements Group



Ms. Gabryszewski joined Sebago Technics, Inc. (STI) in May of 2016 and serves as Senior Team Leader of the Entitlements Group. Rebecca brings to this role over 30 years of diverse experience, having worked with many different disciplines in the various aspects of permitting, environmental assessments and site planning. Rebecca has provided regulatory, environmental, and mapping services for projects throughout the Eastern states, Midwest, and New York. She has completed Environmental Assessments (NEPA), Phase I and Phase II Environmental Site Assessments, Monitoring reports, and Integrated Natural Resource Management Plans for various municipal, state and federal clients. She is responsible for the training and development of our team members for regulatory processes, creating clear, concise permitting applications, and the advancement of our map-making and graphic communications of our site information.

EXPERIENCE

Municipality/State/Federal Permitting

- **Lewiston Fire Station – Lewiston, ME:** Completed Conditional Use and Development Review applications for the City of Lewiston for the construction of a new 9,192 s.f. fire station.
- **Gorham School Department – Gorham, ME:** Completed local Site Plan Review application for the addition of new modular classrooms and cafeteria at the Narragansett School in Gorham.
- **Back Cove South Storage Facility – Portland, ME:** Completed local and State applications for the City of Portland CSO Abatement Project.
- **Maine Correctional Center – Windham, ME:** Completed local and State applications for the Maine Correctional Center. Phase 1 Conditional use, site plan, Minor Amendment. Phase 2 Site plan, SLODA, NRPA, ACOE.
- **109 Capitol Street DHHS & MePERS Office Buildings Complex, Augusta, Maine** – Conditional Use and Development Review
- **Whittier Field Bowdoin College – Brunswick, ME** – Major Development Review, DEP Site Location of Development

Environmental Work

- **Commons Phase I ESA – Sanford, ME:** Completed a Phase I ESA of the Sanford Medical Center properties that comprised the Summer Commons site.
- **LPA Marine SPCC Plan – 98 Island Ave, Peaks Island, Portland, ME:** Provided compliance updates and responded to EPA comments to LPA Marine's SPCC plan.
- **193 Main Street Ellsworth Phase I ESA and Air Test – Ellsworth, ME:** Completed a Phase I ESA of the site, coordinated air testing, and provided reporting memo of air test results.
- **1397 Washington Avenue – Portland, ME:** Completed a Phase I ESA of site, coordinated air test, and provided reporting memo of air test results.
- **Precision Manufacturing Phase I ESA – Biddeford, ME:** Completed a Phase I ESA for the former location of Precision Manufacturing in Biddeford.
- **Phase I ESAs for assorted solar projects:** Denmark, Sanford, Baldwin, ME.

VRAP review/respond to DEP comments

- Orono Public Works – Orono Maine

EDUCATION

B.A. Geography
University of Connecticut, Storrs, CT
1993

A.S. Office Management Systems
Sacred Heart University, Fairfield, CT
1988

TRAINING

U.S. Department of Transportation/ Federal Highway Administration NEPA Training

U.S. Army Corps Wetland Delineation methods course at the University of New Hampshire - Durham, NH

SEBAGO TECHNICS

Price Range

The final house design has not yet been decided upon for this project. Houses will most likely be comprised of market value 3-bedroom single family homes. The approximate price range for the houses will be $500,000 - $600,000.

Solid Waste

The proposed development is a residential subdivision. The proposed single-family houses are expected to generate typical municipal solid waste. The final house design has not yet been established, but it is anticipated that each house will have 3 bedrooms. The estimated amount of solid waste generated per day for the five additional houses is approximately 105 lbs per day (0.21 cy). This assumes 7 lbs of waste generated per bedroom.

(15 bedrooms x 7lbs per day)/500 = 0.21 cy

Wetlands

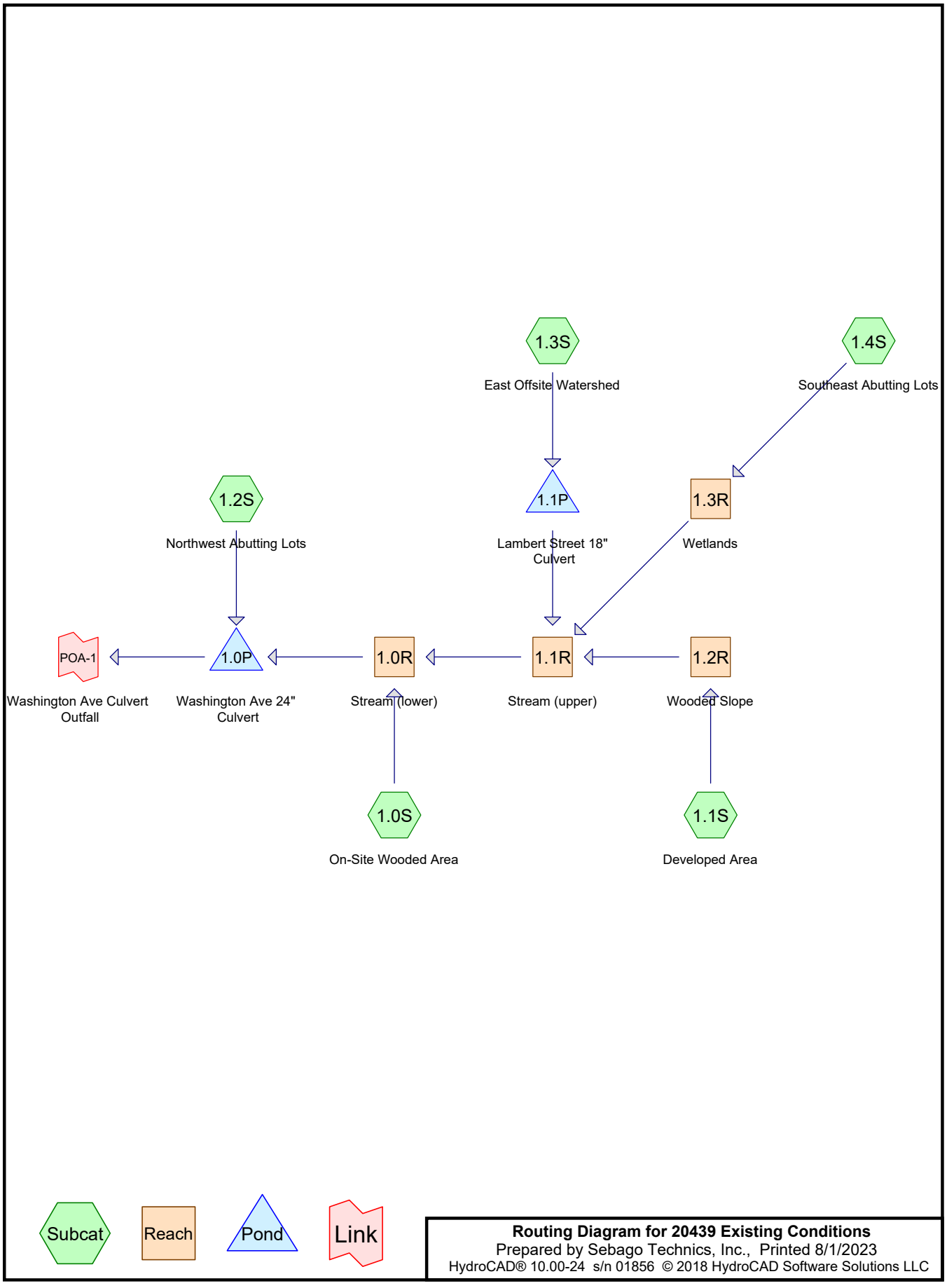
The proposed project will not result in any wetland impacts. Please see the plan set for the location of natural resources on the site.

Construction Plan

The construction sequence for the proposed project will depend on which lots generate interest. Please see the plan set. More detailed information on the sequence of construction will be provided during the permitting process for the individual house lots.

Erosion Control

Please see the plan set for the proposed erosion control measures.


1.3S
East Offsite Watershed
1.4S
Southeast Abutting Lots
1.2S
Northwest Abutting Lots
1.1P
Lambert Street 18" Culvert
1.3R
Wetlands
POA-1
Washington Ave Culvert Outfall
1.0P
Washington Ave 24" Culvert
1.0R
Stream (lower)
1.1R
Stream (upper)
1.2R
Wooded Slope
1.0S
On-Site Wooded Area
1.1S
Developed Area
Subcat
Reach
Pond
Link
Routing Diagram for 20439 Existing Conditions
Prepared by Sebago Technics, Inc., Printed 8/1/2023
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
4,921	57	1/3 acre lots, 30% imp, HSG A (1.2S)
22,085	72	1/3 acre lots, 30% imp, HSG B (1.2S)
2,917	86	1/3 acre lots, 30% imp, HSG D (1.2S)
80,835	61	1/4 acre lots, 38% imp, HSG A (1.3S)
60,200	75	1/4 acre lots, 38% imp, HSG B (1.3S, 1.4S)
19,265	83	1/4 acre lots, 38% imp, HSG C (1.3S, 1.4S)
208,895	87	1/4 acre lots, 38% imp, HSG D (1.3S, 1.4S)
2,982	61	>75% Grass cover, Good, HSG B (1.1S)
31,154	74	>75% Grass cover, Good, HSG C (1.1S)
573	80	>75% Grass cover, Good, HSG D (1.1S)
1,170	98	Impervious (1.1S)
21,170	83	Paved roads w/open ditches, 50% imp, HSG A (1.2S, 1.3S)
34,400	89	Paved roads w/open ditches, 50% imp, HSG B (1.2S, 1.3S, 1.4S)
8,165	92	Paved roads w/open ditches, 50% imp, HSG C (1.3S, 1.4S)
98,720	93	Paved roads w/open ditches, 50% imp, HSG D (1.2S, 1.3S, 1.4S)
42,705	30	Woods, Good, HSG A (1.3S)
74,940	55	Woods, Good, HSG B (1.0S, 1.2S, 1.3S)
21,896	70	Woods, Good, HSG C (1.0S, 1.3S)
592,470	77	Woods, Good, HSG D (1.0S, 1.3S)
1,329,463	**76**	**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: On-Site Wooded Area Runoff Area=76,700 sf 0.00% Impervious Runoff Depth=0.59"
Flow Length=155' Tc=9.1 min CN=66 Runoff=0.9 cfs 3,792 cf

Subcatchment1.1S: Developed Area Runoff Area=35,879 sf 3.26% Impervious Runoff Depth=0.97"
Flow Length=245' Tc=11.8 min CN=74 Runoff=0.7 cfs 2,907 cf

Subcatchment1.2S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=0.87"
Flow Length=475' Tc=19.6 min CN=72 Runoff=1.3 cfs 6,616 cf

Subcatchment1.3S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=1.14"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=19.7 cfs 97,774 cf

Subcatchment1.4S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=1.53"
Flow Length=665' Tc=9.7 min CN=83 Runoff=3.5 cfs 12,352 cf

Reach 1.0R: Stream (lower) Avg. Flow Depth=0.56' Max Vel=3.18 fps Inflow=11.8 cfs 116,825 cf
n=0.040 L=90.0' S=0.0222 '/' Capacity=141.1 cfs Outflow=11.8 cfs 116,825 cf

Reach 1.1R: Stream (upper) Avg. Flow Depth=0.54' Max Vel=3.19 fps Inflow=11.4 cfs 113,034 cf
n=0.040 L=435.0' S=0.0230 '/' Capacity=143.5 cfs Outflow=11.4 cfs 113,034 cf

Reach 1.2R: Wooded Slope Avg. Flow Depth=0.03' Max Vel=1.37 fps Inflow=0.7 cfs 2,907 cf
n=0.030 L=70.0' S=0.1000 '/' Capacity=6.8 cfs Outflow=0.7 cfs 2,907 cf

Reach 1.3R: Wetlands Avg. Flow Depth=0.18' Max Vel=1.69 fps Inflow=3.5 cfs 12,352 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=3.5 cfs 12,352 cf

Pond 1.0P: Washington Ave 24" Culvert Peak Elev=77.05' Storage=3,779 cf Inflow=12.9 cfs 123,441 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=12.2 cfs 123,441 cf

Pond 1.1P: Lambert Street 18" Culvert Peak Elev=93.08' Storage=18,817 cf Inflow=19.7 cfs 97,774 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=10.2 cfs 97,774 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=12.2 cfs 123,441 cf
Primary=12.2 cfs 123,441 cf

Total Runoff Area = 1,329,463 sf Runoff Volume = 123,441 cf Average Runoff Depth = 1.11"
82.57% Pervious = 1,097,795 sf 17.43% Impervious = 231,669 sf

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: On-Site Wooded Area Runoff Area=76,700 sf 0.00% Impervious Runoff Depth=1.46"
Flow Length=155' Tc=9.1 min CN=66 Runoff=2.5 cfs 9,339 cf

Subcatchment1.1S: Developed Area Runoff Area=35,879 sf 3.26% Impervious Runoff Depth=2.05"
Flow Length=245' Tc=11.8 min CN=74 Runoff=1.6 cfs 6,128 cf

Subcatchment1.2S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=1.89"
Flow Length=475' Tc=19.6 min CN=72 Runoff=3.1 cfs 14,436 cf

Subcatchment1.3S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=2.29"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=41.0 cfs 196,434 cf

Subcatchment1.4S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=2.81"
Flow Length=665' Tc=9.7 min CN=83 Runoff=6.5 cfs 22,761 cf

Reach 1.0R: Stream (lower) Avg. Flow Depth=0.72' Max Vel=3.68 fps Inflow=19.1 cfs 234,661 cf
n=0.040 L=90.0' S=0.0222 '/' Capacity=141.1 cfs Outflow=19.1 cfs 234,661 cf

Reach 1.1R: Stream (upper) Avg. Flow Depth=0.67' Max Vel=3.60 fps Inflow=17.1 cfs 225,322 cf
n=0.040 L=435.0' S=0.0230 '/' Capacity=143.5 cfs Outflow=17.0 cfs 225,322 cf

Reach 1.2R: Wooded Slope Avg. Flow Depth=0.04' Max Vel=1.89 fps Inflow=1.6 cfs 6,128 cf
n=0.030 L=70.0' S=0.1000 '/' Capacity=6.8 cfs Outflow=1.6 cfs 6,128 cf

Reach 1.3R: Wetlands Avg. Flow Depth=0.25' Max Vel=2.07 fps Inflow=6.5 cfs 22,761 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=6.5 cfs 22,761 cf

Pond 1.0P: Washington Ave 24" Culvert Peak Elev=78.16' Storage=11,427 cf Inflow=22.0 cfs 249,097 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=17.6 cfs 249,097 cf

Pond 1.1P: Lambert Street 18" Culvert Peak Elev=95.66' Storage=54,248 cf Inflow=41.0 cfs 196,434 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=13.6 cfs 196,434 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=17.6 cfs 249,097 cf
Primary=17.6 cfs 249,097 cf

Total Runoff Area = 1,329,463 sf Runoff Volume = 249,097 cf Average Runoff Depth = 2.25"
82.57% Pervious = 1,097,795 sf 17.43% Impervious = 231,669 sf

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: On-Site Wooded Area Runoff Area=76,700 sf 0.00% Impervious Runoff Depth=2.29"
Flow Length=155' Tc=9.1 min CN=66 Runoff=4.2 cfs 14,657 cf

Subcatchment1.1S: Developed Area Runoff Area=35,879 sf 3.26% Impervious Runoff Depth=3.02"
Flow Length=245' Tc=11.8 min CN=74 Runoff=2.4 cfs 9,022 cf

Subcatchment1.2S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=2.83"
Flow Length=475' Tc=19.6 min CN=72 Runoff=4.7 cfs 21,567 cf

Subcatchment1.3S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=3.31"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=59.4 cfs 283,245 cf

Subcatchment1.4S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=3.91"
Flow Length=665' Tc=9.7 min CN=83 Runoff=8.9 cfs 31,588 cf

Reach 1.0R: Stream (lower) Avg. Flow Depth=0.85' Max Vel=4.02 fps Inflow=25.8 cfs 338,511 cf
n=0.040 L=90.0' S=0.0222 '/' Capacity=141.1 cfs Outflow=25.8 cfs 338,511 cf

Reach 1.1R: Stream (upper) Avg. Flow Depth=0.78' Max Vel=3.89 fps Inflow=22.3 cfs 323,854 cf
n=0.040 L=435.0' S=0.0230 '/' Capacity=143.5 cfs Outflow=22.1 cfs 323,854 cf

Reach 1.2R: Wooded Slope Avg. Flow Depth=0.05' Max Vel=2.21 fps Inflow=2.4 cfs 9,022 cf
n=0.030 L=70.0' S=0.1000 '/' Capacity=6.8 cfs Outflow=2.4 cfs 9,022 cf

Reach 1.3R: Wetlands Avg. Flow Depth=0.30' Max Vel=2.30 fps Inflow=8.9 cfs 31,588 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=8.9 cfs 31,588 cf

Pond 1.0P: Washington Ave 24" Culvert Peak Elev=78.96' Storage=19,046 cf Inflow=30.0 cfs 360,078 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=20.6 cfs 360,078 cf

Pond 1.1P: Lambert Street 18" Culvert Peak Elev=97.49' Storage=91,595 cf Inflow=59.4 cfs 283,245 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=15.1 cfs 283,245 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=20.6 cfs 360,078 cf
Primary=20.6 cfs 360,078 cf

Total Runoff Area = 1,329,463 sf Runoff Volume = 360,078 cf Average Runoff Depth = 3.25"
82.57% Pervious = 1,097,795 sf 17.43% Impervious = 231,669 sf

Summary for Pond 1.0P: Washington Ave 24" Culvert

Inflow Area = 1,329,463 sf, 17.43% Impervious, Inflow Depth = 1.11" for 2-YR event
Inflow = 12.9 cfs @ 12.45 hrs, Volume= 123,441 cf
Outflow = 12.2 cfs @ 12.65 hrs, Volume= 123,441 cf, Atten= 5%, Lag= 11.8 min
Primary = 12.2 cfs @ 12.65 hrs, Volume= 123,441 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 77.05' @ 12.65 hrs Surf.Area= 5,049 sf Storage= 3,779 cf

Plug-Flow detention time= 3.4 min calculated for 123,441 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (889.4 - 886.1)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=12.2 cfs @ 12.65 hrs HW=77.05' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.2 cfs @ 3.89 fps)

Summary for Pond 1.0P: Washington Ave 24" Culvert

Inflow Area = 1,329,463 sf, 17.43% Impervious, Inflow Depth = 2.25" for 10-YR event
Inflow = 22.0 cfs @ 12.22 hrs, Volume= 249,097 cf
Outflow = 17.6 cfs @ 12.63 hrs, Volume= 249,097 cf, Atten= 20%, Lag= 24.6 min
Primary = 17.6 cfs @ 12.63 hrs, Volume= 249,097 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 78.16' @ 12.63 hrs Surf.Area= 8,539 sf Storage= 11,427 cf

Plug-Flow detention time= 5.9 min calculated for 249,056 cf (100% of inflow)
Center-of-Mass det. time= 5.9 min (883.1 - 877.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=17.6 cfs @ 12.63 hrs HW=78.16' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 17.6 cfs @ 5.59 fps)

Summary for Pond 1.0P: Washington Ave 24" Culvert

Inflow Area = 1,329,463 sf, 17.43% Impervious, Inflow Depth = 3.25" for 25-YR event
Inflow = 30.0 cfs @ 12.20 hrs, Volume= 360,078 cf
Outflow = 20.6 cfs @ 12.63 hrs, Volume= 360,078 cf, Atten= 31%, Lag= 26.2 min
Primary = 20.6 cfs @ 12.63 hrs, Volume= 360,078 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 78.96' @ 12.63 hrs Surf.Area= 10,463 sf Storage= 19,046 cf

Plug-Flow detention time= 8.0 min calculated for 360,018 cf (100% of inflow)
Center-of-Mass det. time= 8.0 min (888.6 - 880.5)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=20.6 cfs @ 12.63 hrs HW=78.96' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 20.6 cfs @ 6.54 fps)

Summary for Pond 1.1P: Lambert Street 18" Culvert

Inflow Area = 1,028,410 sf, 15.99% Impervious, Inflow Depth = 1.14" for 2-YR event
Inflow = 19.7 cfs @ 12.33 hrs, Volume= 97,774 cf
Outflow = 10.2 cfs @ 12.69 hrs, Volume= 97,774 cf, Atten= 48%, Lag= 21.7 min
Primary = 10.2 cfs @ 12.69 hrs, Volume= 97,774 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 93.08' @ 12.69 hrs Surf.Area= 10,152 sf Storage= 18,817 cf

Plug-Flow detention time= 18.4 min calculated for 97,774 cf (100% of inflow)
Center-of-Mass det. time= 18.2 min (887.2 - 868.9)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	158,050 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	100	0	0
91.00	5,000	2,550	2,550
92.00	8,000	6,500	9,050
93.00	10,000	9,000	18,050
94.00	12,000	11,000	29,050
95.00	16,000	14,000	43,050
100.00	30,000	115,000	158,050

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.00' / 86.22' S= 0.0378 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=10.2 cfs @ 12.69 hrs HW=93.08' TW=87.53' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.2 cfs @ 5.80 fps)

Summary for Pond 1.1P: Lambert Street 18" Culvert

Inflow Area = 1,028,410 sf, 15.99% Impervious, Inflow Depth = 2.29" for 10-YR event
Inflow = 41.0 cfs @ 12.31 hrs, Volume= 196,434 cf
Outflow = 13.6 cfs @ 12.82 hrs, Volume= 196,434 cf, Atten= 67%, Lag= 30.9 min
Primary = 13.6 cfs @ 12.82 hrs, Volume= 196,434 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 95.66' @ 12.82 hrs Surf.Area= 17,852 sf Storage= 54,248 cf

Plug-Flow detention time= 34.2 min calculated for 196,434 cf (100% of inflow)
Center-of-Mass det. time= 34.0 min (882.4 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	158,050 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	100	0	0
91.00	5,000	2,550	2,550
92.00	8,000	6,500	9,050
93.00	10,000	9,000	18,050
94.00	12,000	11,000	29,050
95.00	16,000	14,000	43,050
100.00	30,000	115,000	158,050

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.00' / 86.22' S= 0.0378 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=13.6 cfs @ 12.82 hrs HW=95.66' TW=87.62' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 13.6 cfs @ 7.68 fps)

Summary for Pond 1.1P: Lambert Street 18" Culvert

Inflow Area = 1,028,410 sf, 15.99% Impervious, Inflow Depth = 3.31" for 25-YR event
Inflow = 59.4 cfs @ 12.29 hrs, Volume= 283,245 cf
Outflow = 15.1 cfs @ 12.92 hrs, Volume= 283,245 cf, Atten= 75%, Lag= 37.8 min
Primary = 15.1 cfs @ 12.92 hrs, Volume= 283,245 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 97.49' @ 12.92 hrs Surf.Area= 22,975 sf Storage= 91,595 cf

Plug-Flow detention time= 52.0 min calculated for 283,198 cf (100% of inflow)
Center-of-Mass det. time= 52.0 min (889.8 - 837.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	158,050 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	100	0	0
91.00	5,000	2,550	2,550
92.00	8,000	6,500	9,050
93.00	10,000	9,000	18,050
94.00	12,000	11,000	29,050
95.00	16,000	14,000	43,050
100.00	30,000	115,000	158,050

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.00' / 86.22' S= 0.0378 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=15.1 cfs @ 12.92 hrs HW=97.49' TW=87.66' (Dynamic Tailwater)
1=Culvert (Barrel Controls 15.1 cfs @ 8.52 fps)

Summary for Subcatchment 1.0S: On-Site Wooded Area

Runoff = 4.2 cfs @ 12.13 hrs, Volume= 14,657 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
30,734	55	Woods, Good, HSG B
19,416	70	Woods, Good, HSG C
26,550	77	Woods, Good, HSG D
76,700	66	Weighted Average
76,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	60	0.1000	0.13		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	35	0.3860	3.11		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.3	60	0.0250	0.79		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
9.1	155	Total			

Summary for Subcatchment 1.1S: Developed Area

Runoff = 2.4 cfs @ 12.16 hrs, Volume= 9,022 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,170	98	Impervious
	2,982	61	>75% Grass cover, Good, HSG B
	31,154	74	>75% Grass cover, Good, HSG C
	573	80	>75% Grass cover, Good, HSG D
	35,879	74	Weighted Average
	34,709		96.74% Pervious Area
	1,170		3.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	40	0.0100	0.07		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
1.4	60	0.0100	0.70		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
1.2	145	0.0897	2.10		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
11.8	245	Total			

Summary for Subcatchment 1.2S: Northwest Abutting Lots

Runoff = 4.7 cfs @ 12.27 hrs, Volume= 21,567 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,800	83	Paved roads w/open ditches, 50% imp, HSG A
22,070	89	Paved roads w/open ditches, 50% imp, HSG B
2,360	93	Paved roads w/open ditches, 50% imp, HSG D
4,921	57	1/3 acre lots, 30% imp, HSG A
22,085	72	1/3 acre lots, 30% imp, HSG B
2,917	86	1/3 acre lots, 30% imp, HSG D
27,281	55	Woods, Good, HSG B
91,434	72	Weighted Average
65,342		71.46% Pervious Area
26,092		28.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	65	0.0140	0.06		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	85	0.0820	1.43		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.8	325	0.0330	6.42	32.09	**Channel Flow, C to D** Area= 5.0 sf Perim= 8.3' r= 0.60' n= 0.030 Earth, grassed & winding
19.6	475	Total			

Summary for Subcatchment 1.3S: East Offsite Watershed

Runoff = 59.4 cfs @ 12.29 hrs, Volume= 283,245 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
11,370	83	Paved roads w/open ditches, 50% imp, HSG A
5,900	89	Paved roads w/open ditches, 50% imp, HSG B
4,055	92	Paved roads w/open ditches, 50% imp, HSG C
80,945	93	Paved roads w/open ditches, 50% imp, HSG D
80,835	61	1/4 acre lots, 38% imp, HSG A
24,625	75	1/4 acre lots, 38% imp, HSG B
7,700	83	1/4 acre lots, 38% imp, HSG C
184,950	87	1/4 acre lots, 38% imp, HSG D
42,705	30	Woods, Good, HSG A
16,925	55	Woods, Good, HSG B
2,480	70	Woods, Good, HSG C
565,920	77	Woods, Good, HSG D
1,028,410	77	Weighted Average
863,993		84.01% Pervious Area
164,417		15.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	70	0.0350	0.13		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
10.1	700	0.0530	1.15		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
3.1	480	0.0200	2.58	33.56	**Channel Flow, C to D** Area= 13.0 sf Perim= 16.3' r= 0.80' n= 0.070 Sluggish weedy reaches w/pools
21.9	1,250	Total			

Summary for Subcatchment 1.4S: Southeast Abutting Lots

Runoff = 8.9 cfs @ 12.13 hrs, Volume= 31,588 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,430	89	Paved roads w/open ditches, 50% imp, HSG B
4,110	92	Paved roads w/open ditches, 50% imp, HSG C
15,415	93	Paved roads w/open ditches, 50% imp, HSG D
35,575	75	1/4 acre lots, 38% imp, HSG B
11,565	83	1/4 acre lots, 38% imp, HSG C
23,945	87	1/4 acre lots, 38% imp, HSG D
97,040	83	Weighted Average
57,050		58.79% Pervious Area
39,990		41.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	40	0.0400	0.13		**Sheet Flow, A to B**
					Grass: Dense n= 0.240 P2= 3.10"
4.4	625	0.0250	2.37		**Shallow Concentrated Flow, B to C**
					Grassed Waterway Kv= 15.0 fps
9.7	665	Total			

Summary for Reach 1.0R: Stream (lower)

Inflow Area = 1,238,029 sf, 16.61% Impervious, Inflow Depth = 3.28" for 25-YR event
Inflow = 25.8 cfs @ 12.18 hrs, Volume= 338,511 cf
Outflow = 25.8 cfs @ 12.18 hrs, Volume= 338,511 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.02 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 0.9 min

Peak Storage= 578 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 141.1 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 90.0' Slope= 0.0222 '/'
Inlet Invert= 77.00', Outlet Invert= 75.00'



‡

Summary for Reach 1.1R: Stream (upper)

Inflow Area = 1,161,329 sf, 17.70% Impervious, Inflow Depth = 3.35" for 25-YR event
Inflow = 22.3 cfs @ 12.17 hrs, Volume= 323,854 cf
Outflow = 22.1 cfs @ 12.20 hrs, Volume= 323,854 cf, Atten= 1%, Lag= 1.5 min

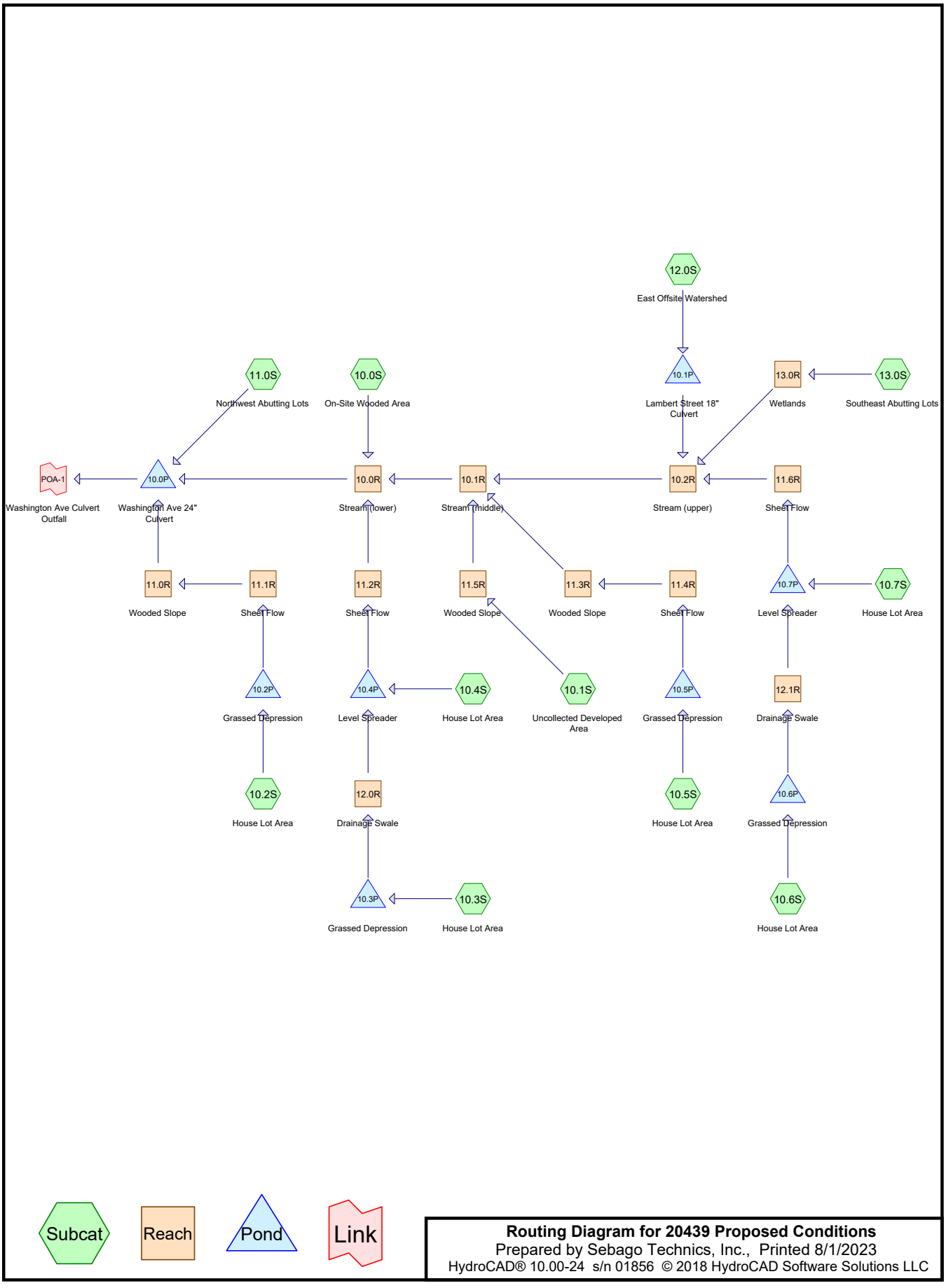
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.89 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 4.3 min

Peak Storage= 2,476 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 143.5 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 435.0' Slope= 0.0230 '/'
Inlet Invert= 87.00', Outlet Invert= 77.00'



‡



Routing Diagram for 20439 Proposed Conditions
Prepared by Sebago Technics, Inc., Printed 8/1/2023
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
4,921	57	1/3 acre lots, 30% imp, HSG A (11.0S)
22,085	72	1/3 acre lots, 30% imp, HSG B (11.0S)
2,917	86	1/3 acre lots, 30% imp, HSG D (11.0S)
80,835	61	1/4 acre lots, 38% imp, HSG A (12.0S)
60,200	75	1/4 acre lots, 38% imp, HSG B (12.0S, 13.0S)
19,265	83	1/4 acre lots, 38% imp, HSG C (12.0S, 13.0S)
208,895	87	1/4 acre lots, 38% imp, HSG D (12.0S, 13.0S)
2,750	61	>75% Grass cover, Good, HSG B (10.1S, 10.7S)
33,936	74	>75% Grass cover, Good, HSG C (10.1S, 10.2S, 10.3S, 10.4S, 10.5S, 10.6S, 10.7S)
573	80	>75% Grass cover, Good, HSG D (10.1S)
10,926	98	Impervious (10.1S, 10.2S, 10.4S, 10.5S, 10.6S, 10.7S)
659	98	Impvervious (10.3S)
21,170	83	Paved roads w/open ditches, 50% imp, HSG A (11.0S, 12.0S)
34,400	89	Paved roads w/open ditches, 50% imp, HSG B (11.0S, 12.0S, 13.0S)
8,165	92	Paved roads w/open ditches, 50% imp, HSG C (12.0S, 13.0S)
98,720	93	Paved roads w/open ditches, 50% imp, HSG D (11.0S, 12.0S, 13.0S)
42,705	30	Woods, Good, HSG A (12.0S)
74,460	55	Woods, Good, HSG B (10.0S, 11.0S, 12.0S)
6,106	70	Woods, Good, HSG C (10.0S, 12.0S)
592,470	77	Woods, Good, HSG D (10.0S, 12.0S)
1,326,158	**76**	**TOTAL AREA**

*Note: Area decrease results from new driveways draining to Summit Street

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: On-Site Wooded Area Runoff Area=60,430 sf 0.00% Impervious Runoff Depth=0.59"
Flow Length=75' Tc=6.5 min CN=66 Runoff=0.7 cfs 2,987 cf

Subcatchment10.1S: Uncollected Runoff Area=16,927 sf 14.47% Impervious Runoff Depth=1.14"
Tc=6.0 min CN=77 Runoff=0.5 cfs 1,609 cf

Subcatchment10.2S: House Lot Area Runoff Area=3,283 sf 18.12% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.1 cfs 328 cf

Subcatchment10.3S: House Lot Area Runoff Area=2,807 sf 23.48% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=80 Runoff=0.1 cfs 310 cf

Subcatchment10.4S: House Lot Area Runoff Area=5,698 sf 17.53% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.2 cfs 570 cf

Subcatchment10.5S: House Lot Area Runoff Area=5,026 sf 51.57% Impervious Runoff Depth=1.75"
Tc=6.0 min CN=86 Runoff=0.2 cfs 732 cf

Subcatchment10.6S: House Lot Area Runoff Area=4,918 sf 52.79% Impervious Runoff Depth=1.83"
Tc=6.0 min CN=87 Runoff=0.2 cfs 749 cf

Subcatchment10.7S: House Lot Area Runoff Area=10,185 sf 16.63% Impervious Runoff Depth=1.03"
Flow Length=225' Tc=7.2 min CN=75 Runoff=0.3 cfs 871 cf

Subcatchment11.0S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=0.87"
Flow Length=475' Tc=19.6 min CN=72 Runoff=1.3 cfs 6,616 cf

Subcatchment12.0S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=1.14"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=19.7 cfs 97,774 cf

Subcatchment13.0S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=1.53"
Flow Length=665' Tc=9.7 min CN=83 Runoff=3.5 cfs 12,352 cf

Reach 10.0R: Stream (lower) Avg. Flow Depth=0.57' Max Vel=3.13 fps Inflow=11.9 cfs 117,241 cf
n=0.040 L=190.0' S=0.0211 '/' Capacity=137.4 cfs Outflow=11.8 cfs 117,241 cf

Reach 10.1R: Stream (middle) Avg. Flow Depth=0.53' Max Vel=3.28 fps Inflow=11.5 cfs 113,637 cf
n=0.040 L=120.0' S=0.0250 '/' Capacity=149.7 cfs Outflow=11.5 cfs 113,637 cf

Reach 10.2R: Stream (upper) Avg. Flow Depth=0.52' Max Vel=3.29 fps Inflow=11.3 cfs 111,341 cf
n=0.040 L=195.0' S=0.0256 '/' Capacity=151.6 cfs Outflow=11.3 cfs 111,341 cf

Reach 11.0R: Wooded Slope Avg. Flow Depth=0.00' Max Vel=0.31 fps Inflow=0.0 cfs 159 cf
n=0.030 L=50.0' S=0.2000 '/' Capacity=9.6 cfs Outflow=0.0 cfs 159 cf

Reach 11.1R: Sheet Flow Avg. Flow Depth=0.01' Max Vel=0.04 fps Inflow=0.0 cfs 159 cf
n=0.400 L=50.0' S=0.0600 '/' Capacity=0.4 cfs Outflow=0.0 cfs 159 cf

Reach 11.2R: Sheet Flow Avg. Flow Depth=0.02' Max Vel=0.13 fps Inflow=0.1 cfs 616 cf
n=0.400 L=50.0' S=0.2400 '/' Capacity=2.0 cfs Outflow=0.1 cfs 616 cf

Reach 11.3R: Wooded Slope Avg. Flow Depth=0.01' Max Vel=1.11 fps Inflow=0.2 cfs 687 cf
n=0.030 L=80.0' S=0.2375 '/' Capacity=10.5 cfs Outflow=0.2 cfs 687 cf

Reach 11.4R: Sheet Flow Avg. Flow Depth=0.05' Max Vel=0.29 fps Inflow=0.2 cfs 687 cf
n=0.240 L=40.0' S=0.1250 '/' Capacity=0.7 cfs Outflow=0.2 cfs 687 cf

Reach 11.5R: Wooded Slope Avg. Flow Depth=0.02' Max Vel=1.51 fps Inflow=0.5 cfs 1,609 cf
n=0.030 L=90.0' S=0.2222 '/' Capacity=10.1 cfs Outflow=0.5 cfs 1,609 cf

Reach 11.6R: Sheet Flow Avg. Flow Depth=0.03' Max Vel=0.18 fps Inflow=0.5 cfs 1,215 cf
n=0.400 L=50.0' S=0.2200 '/' Capacity=1.9 cfs Outflow=0.3 cfs 1,215 cf

Reach 12.0R: Drainage Swale Avg. Flow Depth=0.02' Max Vel=1.00 fps Inflow=0.0 cfs 199 cf
n=0.030 L=40.0' S=0.0625 '/' Capacity=44.1 cfs Outflow=0.0 cfs 199 cf

Reach 12.1R: Drainage Swale Avg. Flow Depth=0.06' Max Vel=1.81 fps Inflow=0.2 cfs 615 cf
n=0.030 L=115.0' S=0.0652 '/' Capacity=45.0 cfs Outflow=0.2 cfs 615 cf

Reach 13.0R: Wetlands Avg. Flow Depth=0.18' Max Vel=1.69 fps Inflow=3.5 cfs 12,352 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=3.5 cfs 12,352 cf

Pond 10.0P: Washington Ave 24" Culvert Peak Elev=77.05' Storage=3,790 cf Inflow=12.9 cfs 124,015 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=12.2 cfs 124,015 cf

Pond 10.1P: Lambert Street 18" Culvert Peak Elev=93.08' Storage=18,817 cf Inflow=19.7 cfs 97,774 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=10.2 cfs 97,774 cf

Pond 10.2P: Grassed Depression Peak Elev=88.75' Storage=171 cf Inflow=0.1 cfs 328 cf
Outflow=0.0 cfs 159 cf

Pond 10.3P: Grassed Depression Peak Elev=95.82' Storage=114 cf Inflow=0.1 cfs 310 cf
Outflow=0.0 cfs 199 cf

Pond 10.4P: Level Spreader Peak Elev=92.26' Storage=158 cf Inflow=0.2 cfs 769 cf
Outflow=0.1 cfs 616 cf

Pond 10.5P: Grassed Depression Peak Elev=106.05' Storage=52 cf Inflow=0.2 cfs 732 cf
Outflow=0.2 cfs 687 cf

Pond 10.6P: Grassed Depression Peak Elev=106.98' Storage=159 cf Inflow=0.2 cfs 749 cf
Outflow=0.2 cfs 615 cf

Pond 10.7P: Level Spreader Peak Elev=99.27' Storage=284 cf Inflow=0.5 cfs 1,487 cf
Outflow=0.5 cfs 1,215 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=12.2 cfs 124,015 cf
Primary=12.2 cfs 124,015 cf

Total Runoff Area = 1,326,158 sf Runoff Volume = 124,900 cf Average Runoff Depth = 1.13"
81.75% Pervious = 1,084,075 sf 18.25% Impervious = 242,084 sf

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: On-Site Wooded Area Runoff Area=60,430 sf 0.00% Impervious Runoff Depth=1.46"
Flow Length=75' Tc=6.5 min CN=66 Runoff=2.2 cfs 7,358 cf

Subcatchment10.1S: Uncollected Runoff Area=16,927 sf 14.47% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=77 Runoff=1.0 cfs 3,233 cf

Subcatchment10.2S: House Lot Area Runoff Area=3,283 sf 18.12% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=78 Runoff=0.2 cfs 650 cf

Subcatchment10.3S: House Lot Area Runoff Area=2,807 sf 23.48% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=80 Runoff=0.2 cfs 596 cf

Subcatchment10.4S: House Lot Area Runoff Area=5,698 sf 17.53% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=78 Runoff=0.4 cfs 1,128 cf

Subcatchment10.5S: House Lot Area Runoff Area=5,026 sf 51.57% Impervious Runoff Depth=3.10"
Tc=6.0 min CN=86 Runoff=0.4 cfs 1,296 cf

Subcatchment10.6S: House Lot Area Runoff Area=4,918 sf 52.79% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=87 Runoff=0.4 cfs 1,308 cf

Subcatchment10.7S: House Lot Area Runoff Area=10,185 sf 16.63% Impervious Runoff Depth=2.13"
Flow Length=225' Tc=7.2 min CN=75 Runoff=0.6 cfs 1,807 cf

Subcatchment11.0S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=1.89"
Flow Length=475' Tc=19.6 min CN=72 Runoff=3.1 cfs 14,436 cf

Subcatchment12.0S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=2.29"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=41.0 cfs 196,434 cf

Subcatchment13.0S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=2.81"
Flow Length=665' Tc=9.7 min CN=83 Runoff=6.5 cfs 22,761 cf

Reach 10.0R: Stream (lower) Avg. Flow Depth=0.74' Max Vel=3.63 fps Inflow=19.5 cfs 235,206 cf
n=0.040 L=190.0' S=0.0211 '/' Capacity=137.4 cfs Outflow=19.5 cfs 235,206 cf

Reach 10.1R: Stream (middle) Avg. Flow Depth=0.66' Max Vel=3.73 fps Inflow=17.3 cfs 226,388 cf
n=0.040 L=120.0' S=0.0250 '/' Capacity=149.7 cfs Outflow=17.3 cfs 226,388 cf

Reach 10.2R: Stream (upper) Avg. Flow Depth=0.64' Max Vel=3.69 fps Inflow=16.3 cfs 221,904 cf
n=0.040 L=195.0' S=0.0256 '/' Capacity=151.6 cfs Outflow=16.3 cfs 221,904 cf

Reach 11.0R: Wooded Slope Avg. Flow Depth=0.01' Max Vel=0.82 fps Inflow=0.1 cfs 481 cf
n=0.030 L=50.0' S=0.2000 '/' Capacity=9.6 cfs Outflow=0.1 cfs 481 cf

Reach 11.1R: Sheet Flow Avg. Flow Depth=0.05' Max Vel=0.12 fps Inflow=0.2 cfs 481 cf
n=0.400 L=50.0' S=0.0600 '/' Capacity=0.4 cfs Outflow=0.1 cfs 481 cf

Reach 11.2R: Sheet Flow Avg. Flow Depth=0.04' Max Vel=0.23 fps Inflow=0.6 cfs 1,460 cf
n=0.400 L=50.0' S=0.2400 '/' Capacity=2.0 cfs Outflow=0.5 cfs 1,460 cf

Reach 11.3R: Wooded Slope Avg. Flow Depth=0.01' Max Vel=1.40 fps Inflow=0.4 cfs 1,251 cf
n=0.030 L=80.0' S=0.2375 '/' Capacity=10.5 cfs Outflow=0.4 cfs 1,251 cf

Reach 11.4R: Sheet Flow Avg. Flow Depth=0.07' Max Vel=0.36 fps Inflow=0.4 cfs 1,251 cf
n=0.240 L=40.0' S=0.1250 '/' Capacity=0.7 cfs Outflow=0.4 cfs 1,251 cf

Reach 11.5R: Wooded Slope Avg. Flow Depth=0.03' Max Vel=2.02 fps Inflow=1.0 cfs 3,233 cf
n=0.030 L=90.0' S=0.2222 '/' Capacity=10.1 cfs Outflow=1.0 cfs 3,233 cf

Reach 11.6R: Sheet Flow Avg. Flow Depth=0.06' Max Vel=0.28 fps Inflow=1.0 cfs 2,710 cf
n=0.400 L=50.0' S=0.2200 '/' Capacity=1.9 cfs Outflow=0.9 cfs 2,710 cf

Reach 12.0R: Drainage Swale Avg. Flow Depth=0.05' Max Vel=1.67 fps Inflow=0.2 cfs 485 cf
n=0.030 L=40.0' S=0.0625 '/' Capacity=44.1 cfs Outflow=0.2 cfs 485 cf

Reach 12.1R: Drainage Swale Avg. Flow Depth=0.08' Max Vel=2.21 fps Inflow=0.4 cfs 1,175 cf
n=0.030 L=115.0' S=0.0652 '/' Capacity=45.0 cfs Outflow=0.4 cfs 1,175 cf

Reach 13.0R: Wetlands Avg. Flow Depth=0.25' Max Vel=2.07 fps Inflow=6.5 cfs 22,761 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=6.5 cfs 22,761 cf

Pond 10.0P: Washington Ave 24" Culvert Peak Elev=78.18' Storage=11,577 cf Inflow=22.2 cfs 250,122 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=17.6 cfs 250,122 cf

Pond 10.1P: Lambert Street 18" Culvert Peak Elev=95.66' Storage=54,248 cf Inflow=41.0 cfs 196,434 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=13.6 cfs 196,434 cf

Pond 10.2P: Grassed Depression Peak Elev=88.78' Storage=177 cf Inflow=0.2 cfs 650 cf
Outflow=0.2 cfs 481 cf

Pond 10.3P: Grassed Depression Peak Elev=95.84' Storage=119 cf Inflow=0.2 cfs 596 cf
Outflow=0.2 cfs 485 cf

Pond 10.4P: Level Spreader Peak Elev=92.28' Storage=164 cf Inflow=0.6 cfs 1,613 cf
Outflow=0.6 cfs 1,460 cf

Pond 10.5P: Grassed Depression Peak Elev=106.08' Storage=55 cf Inflow=0.4 cfs 1,296 cf
Outflow=0.4 cfs 1,251 cf

Pond 10.6P: Grassed Depression Peak Elev=107.01' Storage=171 cf Inflow=0.4 cfs 1,308 cf
Outflow=0.4 cfs 1,175 cf

Pond 10.7P: Level Spreader Peak Elev=99.29' Storage=292 cf Inflow=1.0 cfs 2,982 cf
Outflow=1.0 cfs 2,710 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=17.6 cfs 250,122 cf
Primary=17.6 cfs 250,122 cf

Total Runoff Area = 1,326,158 sf Runoff Volume = 251,007 cf Average Runoff Depth = 2.27"
81.75% Pervious = 1,084,075 sf 18.25% Impervious = 242,084 sf

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: On-Site Wooded Area Runoff Area=60,430 sf 0.00% Impervious Runoff Depth=2.29"
Flow Length=75' Tc=6.5 min CN=66 Runoff=3.6 cfs 11,548 cf

Subcatchment10.1S: Uncollected Runoff Area=16,927 sf 14.47% Impervious Runoff Depth=3.31"
Tc=6.0 min CN=77 Runoff=1.5 cfs 4,662 cf

Subcatchment10.2S: House Lot Area Runoff Area=3,283 sf 18.12% Impervious Runoff Depth=3.40"
Tc=6.0 min CN=78 Runoff=0.3 cfs 931 cf

Subcatchment10.3S: House Lot Area Runoff Area=2,807 sf 23.48% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=80 Runoff=0.3 cfs 842 cf

Subcatchment10.4S: House Lot Area Runoff Area=5,698 sf 17.53% Impervious Runoff Depth=3.40"
Tc=6.0 min CN=78 Runoff=0.5 cfs 1,616 cf

Subcatchment10.5S: House Lot Area Runoff Area=5,026 sf 51.57% Impervious Runoff Depth=4.22"
Tc=6.0 min CN=86 Runoff=0.6 cfs 1,767 cf

Subcatchment10.6S: House Lot Area Runoff Area=4,918 sf 52.79% Impervious Runoff Depth=4.33"
Tc=6.0 min CN=87 Runoff=0.6 cfs 1,773 cf

Subcatchment10.7S: House Lot Area Runoff Area=10,185 sf 16.63% Impervious Runoff Depth=3.11"
Flow Length=225' Tc=7.2 min CN=75 Runoff=0.8 cfs 2,642 cf

Subcatchment11.0S: Northwest Abutting Runoff Area=91,434 sf 28.54% Impervious Runoff Depth=2.83"
Flow Length=475' Tc=19.6 min CN=72 Runoff=4.7 cfs 21,567 cf

Subcatchment12.0S: East Offsite Runoff Area=1,028,410 sf 15.99% Impervious Runoff Depth=3.31"
Flow Length=1,250' Tc=21.9 min CN=77 Runoff=59.4 cfs 283,245 cf

Subcatchment13.0S: Southeast Abutting Runoff Area=97,040 sf 41.21% Impervious Runoff Depth=3.91"
Flow Length=665' Tc=9.7 min CN=83 Runoff=8.9 cfs 31,588 cf

Reach 10.0R: Stream (lower) Avg. Flow Depth=0.87' Max Vel=3.96 fps Inflow=26.3 cfs 338,967 cf
n=0.040 L=190.0' S=0.0211 '/' Capacity=137.4 cfs Outflow=26.2 cfs 338,967 cf

Reach 10.1R: Stream (middle) Avg. Flow Depth=0.77' Max Vel=4.04 fps Inflow=22.7 cfs 325,225 cf
n=0.040 L=120.0' S=0.0250 '/' Capacity=149.7 cfs Outflow=22.7 cfs 325,225 cf

Reach 10.2R: Stream (upper) Avg. Flow Depth=0.74' Max Vel=3.99 fps Inflow=21.2 cfs 318,842 cf
n=0.040 L=195.0' S=0.0256 '/' Capacity=151.6 cfs Outflow=21.1 cfs 318,842 cf

Reach 11.0R: Wooded Slope Avg. Flow Depth=0.01' Max Vel=1.11 fps Inflow=0.3 cfs 762 cf
n=0.030 L=50.0' S=0.2000 '/' Capacity=9.6 cfs Outflow=0.2 cfs 762 cf

Reach 11.1R: Sheet Flow Avg. Flow Depth=0.08' Max Vel=0.16 fps Inflow=0.3 cfs 762 cf
n=0.400 L=50.0' S=0.0600 '/' Capacity=0.4 cfs Outflow=0.3 cfs 762 cf

Reach 11.2R: Sheet Flow Avg. Flow Depth=0.06' Max Vel=0.26 fps Inflow=0.8 cfs 2,194 cf
n=0.400 L=50.0' S=0.2400 '/' Capacity=2.0 cfs Outflow=0.7 cfs 2,194 cf

Reach 11.3R: Wooded Slope Avg. Flow Depth=0.02' Max Vel=1.58 fps Inflow=0.5 cfs 1,722 cf
n=0.030 L=80.0' S=0.2375 '/' Capacity=10.5 cfs Outflow=0.5 cfs 1,722 cf

Reach 11.4R: Sheet Flow Avg. Flow Depth=0.08' Max Vel=0.41 fps Inflow=0.6 cfs 1,722 cf
n=0.240 L=40.0' S=0.1250 '/' Capacity=0.7 cfs Outflow=0.5 cfs 1,722 cf

Reach 11.5R: Wooded Slope Avg. Flow Depth=0.03' Max Vel=2.33 fps Inflow=1.5 cfs 4,662 cf
n=0.030 L=90.0' S=0.2222 '/' Capacity=10.1 cfs Outflow=1.5 cfs 4,662 cf

Reach 11.6R: Sheet Flow Avg. Flow Depth=0.08' Max Vel=0.32 fps Inflow=1.4 cfs 4,009 cf
n=0.400 L=50.0' S=0.2200 '/' Capacity=1.9 cfs Outflow=1.3 cfs 4,009 cf

Reach 12.0R: Drainage Swale Avg. Flow Depth=0.07' Max Vel=1.89 fps Inflow=0.3 cfs 732 cf
n=0.030 L=40.0' S=0.0625 '/' Capacity=44.1 cfs Outflow=0.3 cfs 732 cf

Reach 12.1R: Drainage Swale Avg. Flow Depth=0.10' Max Vel=2.45 fps Inflow=0.5 cfs 1,640 cf
n=0.030 L=115.0' S=0.0652 '/' Capacity=45.0 cfs Outflow=0.5 cfs 1,640 cf

Reach 13.0R: Wetlands Avg. Flow Depth=0.30' Max Vel=2.30 fps Inflow=8.9 cfs 31,588 cf
n=0.070 L=90.0' S=0.0778 '/' Capacity=90.2 cfs Outflow=8.9 cfs 31,588 cf

Pond 10.0P: Washington Ave 24" Culvert Peak Elev=78.99' Storage=19,291 cf Inflow=30.3 cfs 361,295 cf
24.0" Round Culvert n=0.025 L=120.0' S=0.0417 '/' Outflow=20.6 cfs 361,295 cf

Pond 10.1P: Lambert Street 18" Culvert Peak Elev=97.49' Storage=91,578 cf Inflow=59.4 cfs 283,245 cf
18.0" Round Culvert n=0.025 L=100.0' S=0.0378 '/' Outflow=15.1 cfs 283,245 cf

Pond 10.2P: Grassed Depression Peak Elev=88.78' Storage=179 cf Inflow=0.3 cfs 931 cf
Outflow=0.3 cfs 762 cf

Pond 10.3P: Grassed Depression Peak Elev=95.85' Storage=122 cf Inflow=0.3 cfs 842 cf
Outflow=0.3 cfs 732 cf

Pond 10.4P: Level Spreader Peak Elev=92.29' Storage=166 cf Inflow=0.8 cfs 2,347 cf
Outflow=0.8 cfs 2,194 cf

Pond 10.5P: Grassed Depression Peak Elev=106.09' Storage=58 cf Inflow=0.6 cfs 1,767 cf
Outflow=0.6 cfs 1,722 cf

Pond 10.6P: Grassed Depression Peak Elev=107.03' Storage=179 cf Inflow=0.6 cfs 1,773 cf
Outflow=0.5 cfs 1,640 cf

Pond 10.7P: Level Spreader Peak Elev=99.30' Storage=297 cf Inflow=1.4 cfs 4,281 cf
Outflow=1.4 cfs 4,009 cf

Link POA-1: Washington Ave Culvert Outfall Inflow=20.6 cfs 361,295 cf
Primary=20.6 cfs 361,295 cf

Total Runoff Area = 1,326,158 sf Runoff Volume = 362,180 cf Average Runoff Depth = 3.28"
81.75% Pervious = 1,084,075 sf 18.25% Impervious = 242,084 sf

Summary for Pond 10.0P: Washington Ave 24" Culvert

Inflow Area = 1,326,158 sf, 18.25% Impervious, Inflow Depth = 1.12" for 2-YR event
Inflow = 12.9 cfs @ 12.45 hrs, Volume= 124,015 cf
Outflow = 12.2 cfs @ 12.65 hrs, Volume= 124,015 cf, Atten= 5%, Lag= 12.2 min
Primary = 12.2 cfs @ 12.65 hrs, Volume= 124,015 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 77.05' @ 12.65 hrs Surf.Area= 5,057 sf Storage= 3,790 cf
0.00' Increase
Plug-Flow detention time= 3.3 min calculated for 123,995 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (889.4 - 886.0)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=12.2 cfs @ 12.65 hrs HW=77.05' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.2 cfs @ 3.89 fps)

Summary for Pond 10.0P: Washington Ave 24" Culvert

Inflow Area = 1,326,158 sf, 18.25% Impervious, Inflow Depth = 2.26" for 10-YR event
Inflow = 22.2 cfs @ 12.20 hrs, Volume= 250,122 cf
Outflow = 17.6 cfs @ 12.62 hrs, Volume= 250,122 cf, Atten= 21%, Lag= 25.3 min
Primary = 17.6 cfs @ 12.62 hrs, Volume= 250,122 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 78.18' @ 12.62 hrs Surf.Area= 8,581 sf Storage= 11,577 cf
0.02' Increase
Plug-Flow detention time= 6.0 min calculated for 250,122 cf (100% of inflow)
Center-of-Mass det. time= 5.9 min (882.7 - 876.8)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=17.6 cfs @ 12.62 hrs HW=78.18' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 17.6 cfs @ 5.61 fps)

Summary for Subcatchment 10.0S: On-Site Wooded Area

Runoff = 3.6 cfs @ 12.10 hrs, Volume= 11,548 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
30,254	55	Woods, Good, HSG B
3,626	70	Woods, Good, HSG C
26,550	77	Woods, Good, HSG D
60,430	66	Weighted Average
60,430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	35	0.0571	0.09		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	20	0.4500	3.35		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.2	20	0.0750	1.37		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
6.5	75	Total			

Summary for Subcatchment 10.1S: Uncollected Developed Area

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 4,662 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	2,450	98	Impervious
	570	61	>75% Grass cover, Good, HSG B
	13,334	74	>75% Grass cover, Good, HSG C
	573	80	>75% Grass cover, Good, HSG D
	16,927	77	Weighted Average
	14,477		85.53% Pervious Area
	2,450		14.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.2S: House Lot Area

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 931 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	595	98	Impervious
	2,688	74	>75% Grass cover, Good, HSG C
	3,283	78	Weighted Average
	2,688		81.88% Pervious Area
	595		18.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.3S: House Lot Area

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 842 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	659	98	Impvervious
	2,148	74	>75% Grass cover, Good, HSG C
	2,807	80	Weighted Average
	2,148		76.52% Pervious Area
	659		23.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.4S: House Lot Area

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,616 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	999	98	Impervious
	4,699	74	>75% Grass cover, Good, HSG C
	5,698	78	Weighted Average
	4,699		82.47% Pervious Area
	999		17.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.5S: House Lot Area

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,767 cf, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	2,592	98	Impervious
	2,434	74	>75% Grass cover, Good, HSG C
	5,026	86	Weighted Average
	2,434		48.43% Pervious Area
	2,592		51.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.6S: House Lot Area

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,773 cf, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	2,596	98	Impervious
	2,322	74	>75% Grass cover, Good, HSG C
	4,918	87	Weighted Average
	2,322		47.21% Pervious Area
	2,596		52.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.7S: House Lot Area

Runoff = 0.8 cfs @ 12.10 hrs, Volume= 2,642 cf, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,694	98	Impervious
	2,180	61	>75% Grass cover, Good, HSG B
*	6,311	74	>75% Grass cover, Good, HSG C
	10,185	75	Weighted Average
	8,491		83.37% Pervious Area
	1,694		16.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
1.4	95	0.0263	1.14		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
1.0	105	0.0667	1.81		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
7.2	225	Total			

Summary for Subcatchment 11.0S: Northwest Abutting Lots

Runoff = 4.7 cfs @ 12.27 hrs, Volume= 21,567 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,800	83	Paved roads w/open ditches, 50% imp, HSG A
22,070	89	Paved roads w/open ditches, 50% imp, HSG B
2,360	93	Paved roads w/open ditches, 50% imp, HSG D
4,921	57	1/3 acre lots, 30% imp, HSG A
22,085	72	1/3 acre lots, 30% imp, HSG B
2,917	86	1/3 acre lots, 30% imp, HSG D
27,281	55	Woods, Good, HSG B
91,434	72	Weighted Average
65,342		71.46% Pervious Area
26,092		28.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	65	0.0140	0.06		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	85	0.0820	1.43		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.8	325	0.0330	6.42	32.09	**Channel Flow, C to D** Area= 5.0 sf Perim= 8.3' r= 0.60' n= 0.030 Earth, grassed & winding
19.6	475	Total			

Summary for Subcatchment 12.0S: East Offsite Watershed

Runoff = 59.4 cfs @ 12.29 hrs, Volume= 283,245 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
11,370	83	Paved roads w/open ditches, 50% imp, HSG A
5,900	89	Paved roads w/open ditches, 50% imp, HSG B
4,055	92	Paved roads w/open ditches, 50% imp, HSG C
80,945	93	Paved roads w/open ditches, 50% imp, HSG D
80,835	61	1/4 acre lots, 38% imp, HSG A
24,625	75	1/4 acre lots, 38% imp, HSG B
7,700	83	1/4 acre lots, 38% imp, HSG C
184,950	87	1/4 acre lots, 38% imp, HSG D
42,705	30	Woods, Good, HSG A
16,925	55	Woods, Good, HSG B
2,480	70	Woods, Good, HSG C
565,920	77	Woods, Good, HSG D
1,028,410	77	Weighted Average
863,993		84.01% Pervious Area
164,417		15.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	70	0.0350	0.13		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
10.1	700	0.0530	1.15		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
3.1	480	0.0200	2.58	33.56	**Channel Flow, C to D** Area= 13.0 sf Perim= 16.3' r= 0.80' n= 0.070 Sluggish weedy reaches w/pools
21.9	1,250	Total			

Summary for Subcatchment 13.0S: Southeast Abutting Lots

Runoff = 8.9 cfs @ 12.13 hrs, Volume= 31,588 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,430	89	Paved roads w/open ditches, 50% imp, HSG B
4,110	92	Paved roads w/open ditches, 50% imp, HSG C
15,415	93	Paved roads w/open ditches, 50% imp, HSG D
35,575	75	1/4 acre lots, 38% imp, HSG B
11,565	83	1/4 acre lots, 38% imp, HSG C
23,945	87	1/4 acre lots, 38% imp, HSG D
97,040	83	Weighted Average
57,050		58.79% Pervious Area
39,990		41.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	40	0.0400	0.13		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
4.4	625	0.0250	2.37		**Shallow Concentrated Flow, B to C** Grassed Waterway Kv= 15.0 fps
9.7	665	Total			

Summary for Reach 10.0R: Stream (lower)

Inflow Area = 1,231,441 sf, 17.49% Impervious, Inflow Depth = 3.30" for 25-YR event
Inflow = 26.3 cfs @ 12.15 hrs, Volume= 338,967 cf
Outflow = 26.2 cfs @ 12.16 hrs, Volume= 338,967 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 1.9 min

Peak Storage= 1,258 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 137.4 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 190.0' Slope= 0.0211 '/'
Inlet Invert= 79.00', Outlet Invert= 75.00'



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Summary for Reach 10.1R: Stream (middle)

Inflow Area = 1,162,506 sf, 18.39% Impervious, Inflow Depth = 3.36" for 25-YR event
Inflow = 22.7 cfs @ 12.16 hrs, Volume= 325,225 cf
Outflow = 22.7 cfs @ 12.17 hrs, Volume= 325,225 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.04 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 1.1 min

Peak Storage= 674 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 149.7 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 82.00', Outlet Invert= 79.00'



‡

Summary for Reach 10.2R: Stream (upper)

Inflow Area = 1,140,553 sf, 18.30% Impervious, Inflow Depth = 3.35" for 25-YR event
Inflow = 21.2 cfs @ 12.17 hrs, Volume= 318,842 cf
Outflow = 21.1 cfs @ 12.18 hrs, Volume= 318,842 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 1.9 min

Peak Storage= 1,033 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 151.6 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 195.0' Slope= 0.0256 '/'
Inlet Invert= 87.00', Outlet Invert= 82.00'



‡

Summary for Reach 11.0R: Wooded Slope

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 2.78" for 25-YR event
Inflow = 0.3 cfs @ 12.15 hrs, Volume= 762 cf
Outflow = 0.2 cfs @ 12.16 hrs, Volume= 762 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.11 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 2.8 min

Peak Storage= 11 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 9.6 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 50.0' Slope= 0.2000 '/'
Inlet Invert= 85.00', Outlet Invert= 75.00'



Summary for Reach 11.1R: Sheet Flow

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 2.78" for 25-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 762 cf
Outflow = 0.3 cfs @ 12.15 hrs, Volume= 762 cf, Atten= 17%, Lag= 3.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.16 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 27.2 min

Peak Storage= 79 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 0.4 cfs

20.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 22.00'
Length= 50.0' Slope= 0.0600 '/'
Inlet Invert= 88.00', Outlet Invert= 85.00'



Summary for Reach 11.2R: Sheet Flow

Inflow Area = 8,505 sf, 19.49% Impervious, Inflow Depth = 3.10" for 25-YR event
Inflow = 0.8 cfs @ 12.10 hrs, Volume= 2,194 cf
Outflow = 0.7 cfs @ 12.13 hrs, Volume= 2,194 cf, Atten= 6%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 14.5 min

Peak Storage= 140 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.10' Flow Area= 5.1 sf, Capacity= 2.0 cfs

50.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 52.00'
Length= 50.0' Slope= 0.2400 '/'
Inlet Invert= 92.00', Outlet Invert= 80.00'



Summary for Reach 11.3R: Wooded Slope

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 4.11" for 25-YR event
Inflow = 0.5 cfs @ 12.11 hrs, Volume= 1,722 cf
Outflow = 0.5 cfs @ 12.12 hrs, Volume= 1,722 cf, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.58 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 3.3 min

Peak Storage= 27 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 10.5 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 80.0' Slope= 0.2375 '/'
Inlet Invert= 101.00', Outlet Invert= 82.00'



Summary for Reach 11.4R: Sheet Flow

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 4.11" for 25-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,722 cf
Outflow = 0.5 cfs @ 12.11 hrs, Volume= 1,722 cf, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.41 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 7.0 min

Peak Storage= 53 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.10' Flow Area= 1.6 sf, Capacity= 0.7 cfs

15.00' x 0.10' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 10.0 '/' Top Width= 17.00'
Length= 40.0' Slope= 0.1250 '/'
Inlet Invert= 106.00', Outlet Invert= 101.00'



Summary for Reach 11.5R: Wooded Slope

Inflow Area = 16,927 sf, 14.47% Impervious, Inflow Depth = 3.31" for 25-YR event
Inflow = 1.5 cfs @ 12.09 hrs, Volume= 4,662 cf
Outflow = 1.5 cfs @ 12.10 hrs, Volume= 4,662 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.33 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 2.6 min

Peak Storage= 58 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 10.1 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 90.0' Slope= 0.2222 '/'
Inlet Invert= 102.00', Outlet Invert= 82.00'



Summary for Reach 11.6R: Sheet Flow

Inflow Area = 15,103 sf, 28.40% Impervious, Inflow Depth = 3.19" for 25-YR event
Inflow = 1.4 cfs @ 12.11 hrs, Volume= 4,009 cf
Outflow = 1.3 cfs @ 12.14 hrs, Volume= 4,009 cf, Atten= 4%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 12.3 min

Peak Storage= 203 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.10' Flow Area= 5.1 sf, Capacity= 1.9 cfs

50.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 52.00'
Length= 50.0' Slope= 0.2200 '/'
Inlet Invert= 99.00', Outlet Invert= 88.00'



Summary for Reach 12.0R: Drainage Swale

Inflow Area = 2,807 sf, 23.48% Impervious, Inflow Depth = 3.13" for 25-YR event
Inflow = 0.3 cfs @ 12.10 hrs, Volume= 732 cf
Outflow = 0.3 cfs @ 12.10 hrs, Volume= 732 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 1.0 min

Peak Storage= 6 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 44.1 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 40.0' Slope= 0.0625 '/'
Inlet Invert= 95.00', Outlet Invert= 92.50'



Summary for Reach 12.1R: Drainage Swale

Inflow Area = 4,918 sf, 52.79% Impervious, Inflow Depth = 4.00" for 25-YR event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 1,640 cf
Outflow = 0.5 cfs @ 12.11 hrs, Volume= 1,640 cf, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 2.5 min

Peak Storage= 26 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 45.0 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 115.0' Slope= 0.0652 '/'
Inlet Invert= 106.50', Outlet Invert= 99.00'



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Summary for Reach 13.0R: Wetlands

Inflow Area = 97,040 sf, 41.21% Impervious, Inflow Depth = 3.91" for 25-YR event
Inflow = 8.9 cfs @ 12.13 hrs, Volume= 31,588 cf
Outflow = 8.9 cfs @ 12.14 hrs, Volume= 31,588 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 2.3 min

Peak Storage= 348 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 90.2 cfs

10.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 90.0' Slope= 0.0778 '/'
Inlet Invert= 95.00', Outlet Invert= 88.00'



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Summary for Pond 10.0P: Washington Ave 24" Culvert

Inflow Area = 1,326,158 sf, 18.25% Impervious, Inflow Depth = 3.27" for 25-YR event
Inflow = 30.3 cfs @ 12.18 hrs, Volume= 361,295 cf
Outflow = 20.6 cfs @ 12.62 hrs, Volume= 361,295 cf, Atten= 32%, Lag= 26.7 min
Primary = 20.6 cfs @ 12.62 hrs, Volume= 361,295 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 78.99' @ 12.62 hrs Surf.Area= 10,519 sf Storage= 19,291 cf
0.03' Increase
Plug-Flow detention time= 8.2 min calculated for 361,295 cf (100% of inflow)
Center-of-Mass det. time= 8.1 min (888.1 - 880.0)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	31,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.00	100	0	0
76.00	1,050	575	575
77.00	4,900	2,975	3,550
78.00	8,150	6,525	10,075
79.00	10,550	9,350	19,425
80.00	13,000	11,775	31,200

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**24.0" Round Culvert** L= 120.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.00' / 70.00' S= 0.0417 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=20.6 cfs @ 12.62 hrs HW=78.99' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 20.6 cfs @ 6.57 fps)

Summary for Pond 10.1P: Lambert Street 18" Culvert

Inflow Area = 1,028,410 sf, 15.99% Impervious, Inflow Depth = 3.31" for 25-YR event
Inflow = 59.4 cfs @ 12.29 hrs, Volume= 283,245 cf
Outflow = 15.1 cfs @ 12.92 hrs, Volume= 283,245 cf, Atten= 75%, Lag= 37.8 min
Primary = 15.1 cfs @ 12.92 hrs, Volume= 283,245 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 97.49' @ 12.92 hrs Surf.Area= 22,973 sf Storage= 91,578 cf

Plug-Flow detention time= 52.2 min calculated for 283,245 cf (100% of inflow)
Center-of-Mass det. time= 52.0 min (889.8 - 837.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	158,050 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	100	0	0
91.00	5,000	2,550	2,550
92.00	8,000	6,500	9,050
93.00	10,000	9,000	18,050
94.00	12,000	11,000	29,050
95.00	16,000	14,000	43,050
100.00	30,000	115,000	158,050

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.00' / 86.22' S= 0.0378 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=15.1 cfs @ 12.92 hrs HW=97.49' TW=87.64' (Dynamic Tailwater)
1=Culvert (Barrel Controls 15.1 cfs @ 8.52 fps)

Summary for Pond 10.2P: Grassed Depression

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 931 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 762 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 762 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 88.78' @ 12.09 hrs Surf.Area= 313 sf Storage= 179 cf

Plug-Flow detention time= 108.3 min calculated for 762 cf (82% of inflow)
Center-of-Mass det. time= 35.1 min (855.7 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	253 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	145	0	0
89.00	360	253	253

Device	Routing	Invert	Outlet Devices
#1	Primary	88.75'	**20.0' 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=0.3 cfs @ 12.09 hrs HW=88.78' TW=88.07' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 0.3 cfs @ 0.45 fps)

Summary for Pond 10.3P: Grassed Depression

Inflow Area = 2,807 sf, 23.48% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 842 cf
Outflow = 0.3 cfs @ 12.10 hrs, Volume= 732 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 732 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 95.85' @ 12.10 hrs Surf.Area= 231 sf Storage= 122 cf

Plug-Flow detention time= 87.0 min calculated for 732 cf (87% of inflow)
Center-of-Mass det. time= 28.0 min (843.5 - 815.5)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	159 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	66	0	0
95.50	153	55	55
96.00	265	105	159

Device	Routing	Invert	Outlet Devices
#1	Primary	95.80'	**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=0.3 cfs @ 12.10 hrs HW=95.85' TW=95.06' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.55 fps)

Summary for Pond 10.4P: Level Spreader

Inflow Area = 8,505 sf, 19.49% Impervious, Inflow Depth = 3.31" for 25-YR event
Inflow = 0.8 cfs @ 12.09 hrs, Volume= 2,347 cf
Outflow = 0.8 cfs @ 12.10 hrs, Volume= 2,194 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.8 cfs @ 12.10 hrs, Volume= 2,194 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 92.29' @ 12.10 hrs Surf.Area= 309 sf Storage= 166 cf

Plug-Flow detention time= 48.6 min calculated for 2,194 cf (93% of inflow)
Center-of-Mass det. time= 14.2 min (842.2 - 828.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.50'	453 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.50	120	0	0
92.00	230	88	88
93.00	500	365	453

Device	Routing	Invert	Outlet Devices
#1	Primary	92.25'	**35.0' 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=0.8 cfs @ 12.10 hrs HW=92.29' TW=92.05' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.8 cfs @ 0.53 fps)

Summary for Pond 10.5P: Grassed Depression

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 4.22" for 25-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,767 cf
Outflow = 0.6 cfs @ 12.09 hrs, Volume= 1,722 cf, Atten= 1%, Lag= 0.2 min
Primary = 0.6 cfs @ 12.09 hrs, Volume= 1,722 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 106.09' @ 12.11 hrs Surf.Area= 134 sf Storage= 58 cf

Plug-Flow detention time= 25.0 min calculated for 1,722 cf (97% of inflow)
Center-of-Mass det. time= 9.6 min (808.5 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	105.50'	122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.50	60	0	0
106.50	184	122	122

Device	Routing	Invert	Outlet Devices
#1	Primary	106.00'	**15.0' 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=0.5 cfs @ 12.09 hrs HW=106.09' TW=106.08' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.37 fps)

Summary for Pond 10.6P: Grassed Depression

Inflow Area = 4,918 sf, 52.79% Impervious, Inflow Depth = 4.33" for 25-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,773 cf
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 1,640 cf, Atten= 2%, Lag= 1.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 1,640 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 107.03' @ 12.10 hrs Surf.Area= 439 sf Storage= 179 cf

Plug-Flow detention time= 63.1 min calculated for 1,639 cf (92% of inflow)
Center-of-Mass det. time= 24.0 min (819.8 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	106.50'	435 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
106.50	240	0	0
107.00	425	166	166
107.50	650	269	435

Device	Routing	Invert	Outlet Devices
#1	Primary	106.92'	**6.0' 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=0.5 cfs @ 12.10 hrs HW=107.03' TW=106.60' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.83 fps)

Summary for Pond 10.7P: Level Spreader

Inflow Area = 15,103 sf, 28.40% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 1.4 cfs @ 12.11 hrs, Volume= 4,281 cf
Outflow = 1.4 cfs @ 12.11 hrs, Volume= 4,009 cf, Atten= 0%, Lag= 0.2 min
Primary = 1.4 cfs @ 12.11 hrs, Volume= 4,009 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 99.30' @ 12.11 hrs Surf.Area= 521 sf Storage= 297 cf

Plug-Flow detention time= 46.7 min calculated for 4,008 cf (94% of inflow)
Center-of-Mass det. time= 13.1 min (839.3 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	410 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
98.50	230	0	0
99.00	405	159	159
99.50	600	251	410

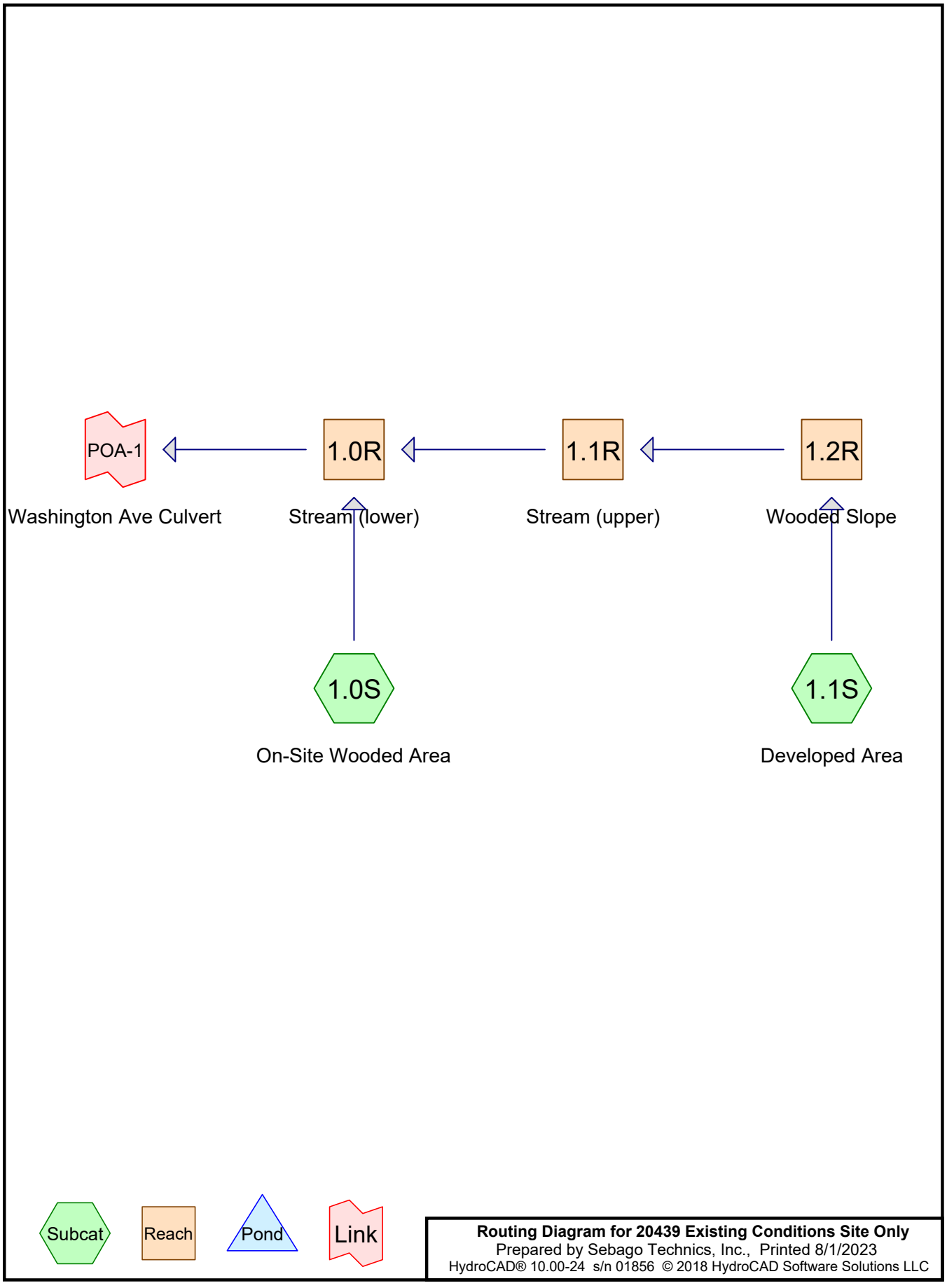
Device	Routing	Invert	Outlet Devices
#1	Primary	99.25'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.4 cfs @ 12.11 hrs HW=99.30' TW=99.08' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.4 cfs @ 0.56 fps)

Summary for Link POA-1: Washington Ave Culvert Outfall

Inflow Area = 1,326,158 sf, 18.25% Impervious, Inflow Depth = 3.27" for 25-YR event
Inflow = 20.6 cfs @ 12.62 hrs, Volume= 361,295 cf
Primary = 20.6 cfs @ 12.62 hrs, Volume= 361,295 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs


POA-1
1.0R
1.1R
1.2R
Washington Ave Culvert
Stream (lower)
Stream (upper)
Wooded Slope
1.0S
1.1S
On-Site Wooded Area
Developed Area
Subcat
Reach
Pond
Link
Routing Diagram for 20439 Existing Conditions Site Only
Prepared by Sebago Technics, Inc., Printed 8/1/2023
HydroCAD® 10.00-24 s/n 01856 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,982	61	>75% Grass cover, Good, HSG B (1.1S)
31,154	74	>75% Grass cover, Good, HSG C (1.1S)
573	80	>75% Grass cover, Good, HSG D (1.1S)
1,170	98	Impervious (1.1S)
30,734	55	Woods, Good, HSG B (1.0S)
19,416	70	Woods, Good, HSG C (1.0S)
26,550	77	Woods, Good, HSG D (1.0S)
112,579	**69**	**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: On-Site Wooded Area Runoff Area=76,700 sf 0.00% Impervious Runoff Depth=0.59"
Flow Length=155' Tc=9.1 min CN=66 Runoff=0.9 cfs 3,792 cf

Subcatchment1.1S: Developed Area Runoff Area=35,879 sf 3.26% Impervious Runoff Depth=0.97"
Flow Length=245' Tc=11.8 min CN=74 Runoff=0.7 cfs 2,907 cf

Reach 1.0R: Stream (lower) Avg. Flow Depth=0.16' Max Vel=1.55 fps Inflow=1.4 cfs 6,699 cf
n=0.040 L=90.0' S=0.0222 '/' Capacity=141.1 cfs Outflow=1.4 cfs 6,699 cf

Reach 1.1R: Stream (upper) Avg. Flow Depth=0.10' Max Vel=1.18 fps Inflow=0.7 cfs 2,907 cf
n=0.040 L=435.0' S=0.0230 '/' Capacity=143.5 cfs Outflow=0.6 cfs 2,907 cf

Reach 1.2R: Wooded Slope Avg. Flow Depth=0.03' Max Vel=1.37 fps Inflow=0.7 cfs 2,907 cf
n=0.030 L=70.0' S=0.1000 '/' Capacity=6.8 cfs Outflow=0.7 cfs 2,907 cf

Link POA-1: Washington Ave Culvert Inflow=1.4 cfs 6,699 cf
Primary=1.4 cfs 6,699 cf

Total Runoff Area = 112,579 sf Runoff Volume = 6,699 cf Average Runoff Depth = 0.71"
98.96% Pervious = 111,409 sf 1.04% Impervious = 1,170 sf

Summary for Subcatchment 1.0S: On-Site Wooded Area

Runoff = 0.9 cfs @ 12.15 hrs, Volume= 3,792 cf, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
30,734	55	Woods, Good, HSG B
19,416	70	Woods, Good, HSG C
26,550	77	Woods, Good, HSG D
76,700	66	Weighted Average
76,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	60	0.1000	0.13		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	35	0.3860	3.11		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.3	60	0.0250	0.79		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
9.1	155	Total			

Summary for Subcatchment 1.1S: Developed Area

Runoff = 0.7 cfs @ 12.18 hrs, Volume= 2,907 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	1,170	98	Impervious
	2,982	61	>75% Grass cover, Good, HSG B
	31,154	74	>75% Grass cover, Good, HSG C
	573	80	>75% Grass cover, Good, HSG D
	35,879	74	Weighted Average
	34,709		96.74% Pervious Area
	1,170		3.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	40	0.0100	0.07		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
1.4	60	0.0100	0.70		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
1.2	145	0.0897	2.10		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
11.8	245	Total			

Summary for Reach 1.0R: Stream (lower)

Inflow Area = 112,579 sf, 1.04% Impervious, Inflow Depth = 0.71" for 2-YR event
Inflow = 1.4 cfs @ 12.20 hrs, Volume= 6,699 cf
Outflow = 1.4 cfs @ 12.21 hrs, Volume= 6,699 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.55 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 2.7 min

Peak Storage= 80 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 141.1 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 90.0' Slope= 0.0222 '/'
Inlet Invert= 77.00', Outlet Invert= 75.00'



‡

Summary for Reach 1.1R: Stream (upper)

Inflow Area = 35,879 sf, 3.26% Impervious, Inflow Depth = 0.97" for 2-YR event
Inflow = 0.7 cfs @ 12.18 hrs, Volume= 2,907 cf
Outflow = 0.6 cfs @ 12.26 hrs, Volume= 2,907 cf, Atten= 11%, Lag= 4.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.18 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 15.4 min

Peak Storage= 236 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 143.5 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 435.0' Slope= 0.0230 '/'
Inlet Invert= 87.00', Outlet Invert= 77.00'



‡

Summary for Reach 1.2R: Wooded Slope

Inflow Area = 35,879 sf, 3.26% Impervious, Inflow Depth = 0.97" for 2-YR event
Inflow = 0.7 cfs @ 12.18 hrs, Volume= 2,907 cf
Outflow = 0.7 cfs @ 12.18 hrs, Volume= 2,907 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.37 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 2.8 min

Peak Storage= 37 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 6.8 cfs

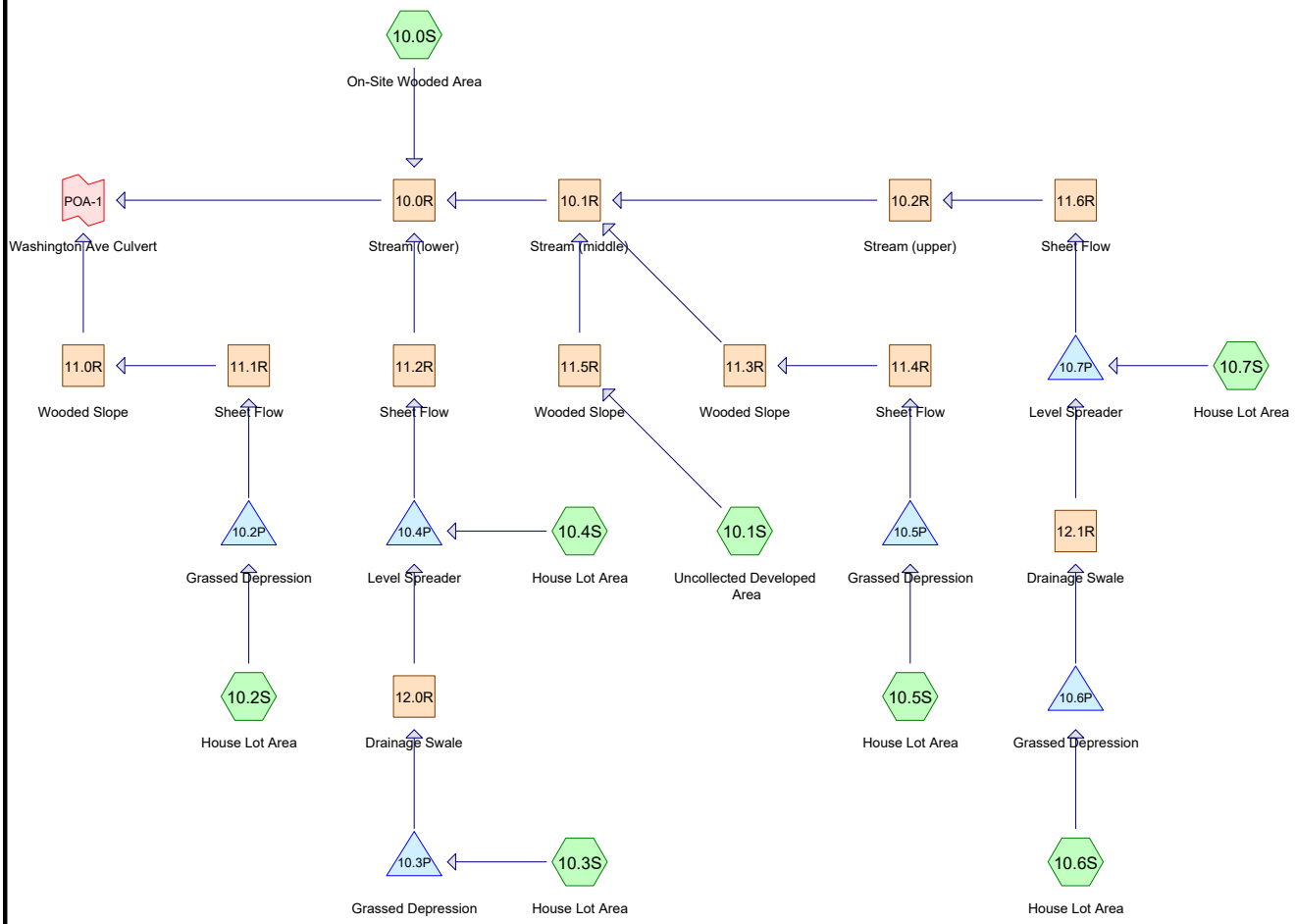
20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 70.0' Slope= 0.1000 '/'
Inlet Invert= 94.00', Outlet Invert= 87.00'



Summary for Link POA-1: Washington Ave Culvert

Inflow Area = 112,579 sf, 1.04% Impervious, Inflow Depth = 0.71" for 2-YR event
Inflow = 1.4 cfs @ 12.21 hrs, Volume= 6,699 cf
Primary = 1.4 cfs @ 12.21 hrs, Volume= 6,699 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



Subcat Reach Pond Link

Routing Diagram for 20439 Proposed Conditions Site Only
Prepared by Sebago Technics, Inc., Printed 8/1/2023
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,750	61	>75% Grass cover, Good, HSG B (10.1S, 10.7S)
33,936	74	>75% Grass cover, Good, HSG C (10.1S, 10.2S, 10.3S, 10.4S, 10.5S, 10.6S, 10.7S)
573	80	>75% Grass cover, Good, HSG D (10.1S)
10,926	98	Impervious (10.1S, 10.2S, 10.4S, 10.5S, 10.6S, 10.7S)
659	98	Impvervious (10.3S)
30,254	55	Woods, Good, HSG B (10.0S)
3,626	70	Woods, Good, HSG C (10.0S)
26,550	77	Woods, Good, HSG D (10.0S)
109,274	**72**	**TOTAL AREA**

*Note: Area decrease results from new driveways draining to Summit Street

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: On-Site Wooded Area Runoff Area=60,430 sf 0.00% Impervious Runoff Depth=0.59"
Flow Length=75' Tc=6.5 min CN=66 Runoff=0.7 cfs 2,987 cf

Subcatchment10.1S: Uncollected Runoff Area=16,927 sf 14.47% Impervious Runoff Depth=1.14"
Flow Length=65' Slope=0.1000 '/' Tc=6.0 min CN=77 Runoff=0.5 cfs 1,609 cf

Subcatchment10.2S: House Lot Area Runoff Area=3,283 sf 18.12% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.1 cfs 328 cf

Subcatchment10.3S: House Lot Area Runoff Area=2,807 sf 23.48% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=80 Runoff=0.1 cfs 310 cf

Subcatchment10.4S: House Lot Area Runoff Area=5,698 sf 17.53% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.2 cfs 570 cf

Subcatchment10.5S: House Lot Area Runoff Area=5,026 sf 51.57% Impervious Runoff Depth=1.75"
Tc=6.0 min CN=86 Runoff=0.2 cfs 732 cf

Subcatchment10.6S: House Lot Area Runoff Area=4,918 sf 52.79% Impervious Runoff Depth=1.83"
Tc=6.0 min CN=87 Runoff=0.2 cfs 749 cf

Subcatchment10.7S: House Lot Area Runoff Area=10,185 sf 16.63% Impervious Runoff Depth=1.03"
Flow Length=225' Tc=7.2 min CN=75 Runoff=0.3 cfs 871 cf

Reach 10.0R: Stream (lower) Avg. Flow Depth=0.17' Max Vel=1.53 fps Inflow=1.4 cfs 7,114 cf
n=0.040 L=190.0' S=0.0211 '/' Capacity=137.4 cfs Outflow=1.4 cfs 7,114 cf

Reach 10.1R: Stream (middle) Avg. Flow Depth=0.10' Max Vel=1.26 fps Inflow=0.7 cfs 3,511 cf
n=0.040 L=120.0' S=0.0250 '/' Capacity=149.7 cfs Outflow=0.7 cfs 3,511 cf

Reach 10.2R: Stream (upper) Avg. Flow Depth=0.06' Max Vel=0.88 fps Inflow=0.3 cfs 1,215 cf
n=0.040 L=195.0' S=0.0256 '/' Capacity=151.6 cfs Outflow=0.3 cfs 1,215 cf

Reach 11.0R: Wooded Slope Avg. Flow Depth=0.00' Max Vel=0.31 fps Inflow=0.0 cfs 159 cf
n=0.030 L=50.0' S=0.2000 '/' Capacity=9.6 cfs Outflow=0.0 cfs 159 cf

Reach 11.1R: Sheet Flow Avg. Flow Depth=0.01' Max Vel=0.04 fps Inflow=0.0 cfs 159 cf
n=0.400 L=50.0' S=0.0600 '/' Capacity=0.4 cfs Outflow=0.0 cfs 159 cf

Reach 11.2R: Sheet Flow Avg. Flow Depth=0.02' Max Vel=0.13 fps Inflow=0.1 cfs 616 cf
n=0.400 L=50.0' S=0.2400 '/' Capacity=2.0 cfs Outflow=0.1 cfs 616 cf

Reach 11.3R: Wooded Slope Avg. Flow Depth=0.01' Max Vel=1.11 fps Inflow=0.2 cfs 687 cf
n=0.030 L=80.0' S=0.2375 '/' Capacity=10.5 cfs Outflow=0.2 cfs 687 cf

Reach 11.4R: Sheet Flow Avg. Flow Depth=0.05' Max Vel=0.29 fps Inflow=0.2 cfs 687 cf
n=0.240 L=40.0' S=0.1250 '/' Capacity=0.7 cfs Outflow=0.2 cfs 687 cf

Reach 11.5R: Wooded Slope Avg. Flow Depth=0.02' Max Vel=1.51 fps Inflow=0.5 cfs 1,609 cf
n=0.030 L=90.0' S=0.2222 '/' Capacity=10.1 cfs Outflow=0.5 cfs 1,609 cf

Reach 11.6R: Sheet Flow Avg. Flow Depth=0.03' Max Vel=0.18 fps Inflow=0.5 cfs 1,215 cf
n=0.400 L=50.0' S=0.2200 '/' Capacity=1.9 cfs Outflow=0.3 cfs 1,215 cf

Reach 12.0R: Drainage Swale Avg. Flow Depth=0.02' Max Vel=1.00 fps Inflow=0.0 cfs 199 cf
n=0.030 L=40.0' S=0.0625 '/' Capacity=44.1 cfs Outflow=0.0 cfs 199 cf

Reach 12.1R: Drainage Swale Avg. Flow Depth=0.06' Max Vel=1.81 fps Inflow=0.2 cfs 615 cf
n=0.030 L=115.0' S=0.0652 '/' Capacity=45.0 cfs Outflow=0.2 cfs 615 cf

Pond 10.2P: Grassed Depression Peak Elev=88.75' Storage=171 cf Inflow=0.1 cfs 328 cf
Outflow=0.0 cfs 159 cf

Pond 10.3P: Grassed Depression Peak Elev=95.82' Storage=114 cf Inflow=0.1 cfs 310 cf
Outflow=0.0 cfs 199 cf

Pond 10.4P: Level Spreader Peak Elev=92.26' Storage=158 cf Inflow=0.2 cfs 769 cf
Outflow=0.1 cfs 616 cf

Pond 10.5P: Grassed Depression Peak Elev=106.05' Storage=52 cf Inflow=0.2 cfs 732 cf
Outflow=0.2 cfs 687 cf

Pond 10.6P: Grassed Depression Peak Elev=106.98' Storage=159 cf Inflow=0.2 cfs 749 cf
Outflow=0.2 cfs 615 cf

Pond 10.7P: Level Spreader Peak Elev=99.27' Storage=284 cf Inflow=0.5 cfs 1,487 cf
Outflow=0.5 cfs 1,215 cf

Link POA-1: Washington Ave Culvert Inflow=1.4 cfs 7,273 cf
Primary=1.4 cfs 7,273 cf

Total Runoff Area = 109,274 sf Runoff Volume = 8,158 cf Average Runoff Depth = 0.90"
89.40% Pervious = 97,689 sf 10.60% Impervious = 11,585 sf

Summary for Subcatchment 10.0S: On-Site Wooded Area

Runoff = 0.7 cfs @ 12.11 hrs, Volume= 2,987 cf, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
30,254	55	Woods, Good, HSG B
3,626	70	Woods, Good, HSG C
26,550	77	Woods, Good, HSG D
60,430	66	Weighted Average
60,430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	35	0.0571	0.09		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	20	0.4500	3.35		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.2	20	0.0750	1.37		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
6.5	75	Total			

Summary for Subcatchment 10.1S: Uncollected Developed Area

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,609 cf, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	2,450	98	Impervious
	570	61	>75% Grass cover, Good, HSG B
	13,334	74	>75% Grass cover, Good, HSG C
	573	80	>75% Grass cover, Good, HSG D
	16,927	77	Weighted Average
	14,477		85.53% Pervious Area
	2,450		14.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	65	0.1000	0.20		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
0.6					**Direct Entry, Direct**
6.0	65	Total			

Summary for Subcatchment 10.2S: House Lot Area

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 328 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	595	98	Impervious
	2,688	74	>75% Grass cover, Good, HSG C
	3,283	78	Weighted Average
	2,688		81.88% Pervious Area
	595		18.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.3S: House Lot Area

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 310 cf, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	659	98	Impvervious
	2,148	74	>75% Grass cover, Good, HSG C
	2,807	80	Weighted Average
	2,148		76.52% Pervious Area
	659		23.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.4S: House Lot Area

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 570 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	999	98	Impervious
	4,699	74	>75% Grass cover, Good, HSG C
	5,698	78	Weighted Average
	4,699		82.47% Pervious Area
	999		17.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.5S: House Lot Area

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 732 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	2,592	98	Impervious
	2,434	74	>75% Grass cover, Good, HSG C
	5,026	86	Weighted Average
	2,434		48.43% Pervious Area
	2,592		51.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.6S: House Lot Area

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 749 cf, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	2,596	98	Impervious
	2,322	74	>75% Grass cover, Good, HSG C
	4,918	87	Weighted Average
	2,322		47.21% Pervious Area
	2,596		52.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Summary for Subcatchment 10.7S: House Lot Area

Runoff = 0.3 cfs @ 12.11 hrs, Volume= 871 cf, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	1,694	98	Impervious
	2,180	61	>75% Grass cover, Good, HSG B
*	6,311	74	>75% Grass cover, Good, HSG C
	10,185	75	Weighted Average
	8,491		83.37% Pervious Area
	1,694		16.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
1.4	95	0.0263	1.14		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
1.0	105	0.0667	1.81		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
7.2	225	Total			

Summary for Reach 10.0R: Stream (lower)

Inflow Area = 105,991 sf, 10.37% Impervious, Inflow Depth = 0.81" for 2-YR event
Inflow = 1.4 cfs @ 12.12 hrs, Volume= 7,114 cf
Outflow = 1.4 cfs @ 12.15 hrs, Volume= 7,114 cf, Atten= 3%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.53 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 5.8 min

Peak Storage= 173 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 137.4 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 190.0' Slope= 0.0211 '/'
Inlet Invert= 79.00', Outlet Invert= 75.00'



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Summary for Reach 10.1R: Stream (middle)

Inflow Area = 37,056 sf, 25.18% Impervious, Inflow Depth = 1.14" for 2-YR event
Inflow = 0.7 cfs @ 12.11 hrs, Volume= 3,511 cf
Outflow = 0.7 cfs @ 12.13 hrs, Volume= 3,511 cf, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.26 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 4.1 min

Peak Storage= 67 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 149.7 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 82.00', Outlet Invert= 79.00'



‡

Summary for Reach 10.2R: Stream (upper)

Inflow Area = 15,103 sf, 28.40% Impervious, Inflow Depth = 0.96" for 2-YR event
Inflow = 0.3 cfs @ 12.26 hrs, Volume= 1,215 cf
Outflow = 0.3 cfs @ 12.33 hrs, Volume= 1,215 cf, Atten= 9%, Lag= 4.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 7.2 min

Peak Storage= 59 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 22.0 sf, Capacity= 151.6 cfs

5.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 17.00'
Length= 195.0' Slope= 0.0256 '/'
Inlet Invert= 87.00', Outlet Invert= 82.00'



‡

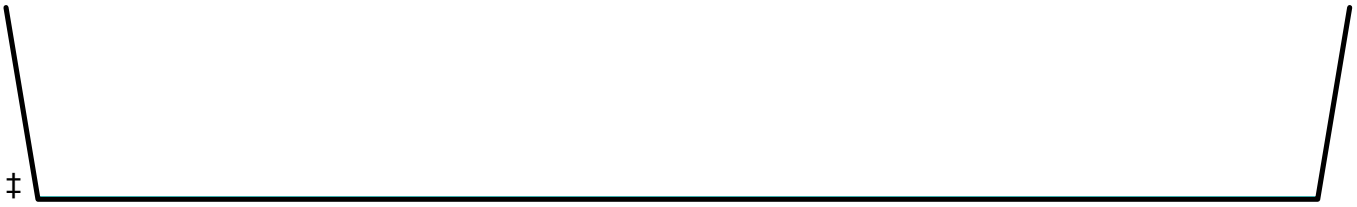
Summary for Reach 11.0R: Wooded Slope

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 0.58" for 2-YR event
Inflow = 0.0 cfs @ 13.41 hrs, Volume= 159 cf
Outflow = 0.0 cfs @ 13.44 hrs, Volume= 159 cf, Atten= 0%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 3.6 min

Peak Storage= 2 cf @ 13.44 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 9.6 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 50.0' Slope= 0.2000 '/'
Inlet Invert= 85.00', Outlet Invert= 75.00'



Summary for Reach 11.1R: Sheet Flow

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 0.58" for 2-YR event
Inflow = 0.0 cfs @ 12.83 hrs, Volume= 159 cf
Outflow = 0.0 cfs @ 13.41 hrs, Volume= 159 cf, Atten= 30%, Lag= 34.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.04 fps, Min. Travel Time= 18.7 min
Avg. Velocity = 0.02 fps, Avg. Travel Time= 40.6 min

Peak Storage= 11 cf @ 13.41 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 0.4 cfs

20.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 22.00'
Length= 50.0' Slope= 0.0600 '/'
Inlet Invert= 88.00', Outlet Invert= 85.00'



Summary for Reach 11.2R: Sheet Flow

Inflow Area = 8,505 sf, 19.49% Impervious, Inflow Depth = 0.87" for 2-YR event
Inflow = 0.1 cfs @ 12.16 hrs, Volume= 616 cf
Outflow = 0.1 cfs @ 12.38 hrs, Volume= 616 cf, Atten= 21%, Lag= 12.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 6.7 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 20.8 min

Peak Storage= 45 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.10' Flow Area= 5.1 sf, Capacity= 2.0 cfs

50.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 52.00'
Length= 50.0' Slope= 0.2400 '/'
Inlet Invert= 92.00', Outlet Invert= 80.00'



Summary for Reach 11.3R: Wooded Slope

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 1.64" for 2-YR event
Inflow = 0.2 cfs @ 12.12 hrs, Volume= 687 cf
Outflow = 0.2 cfs @ 12.13 hrs, Volume= 687 cf, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.11 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 4.2 min

Peak Storage= 16 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 10.5 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 80.0' Slope= 0.2375 '/'
Inlet Invert= 101.00', Outlet Invert= 82.00'



Summary for Reach 11.4R: Sheet Flow

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 1.64" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 687 cf
Outflow = 0.2 cfs @ 12.12 hrs, Volume= 687 cf, Atten= 4%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.29 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 9.5 min

Peak Storage= 31 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.10' Flow Area= 1.6 sf, Capacity= 0.7 cfs

15.00' x 0.10' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 10.0 '/' Top Width= 17.00'
Length= 40.0' Slope= 0.1250 '/'
Inlet Invert= 106.00', Outlet Invert= 101.00'



Summary for Reach 11.5R: Wooded Slope

Inflow Area = 16,927 sf, 14.47% Impervious, Inflow Depth = 1.14" for 2-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,609 cf
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 1,609 cf, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.51 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 3.5 min

Peak Storage= 30 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 10.1 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 90.0' Slope= 0.2222 '/'
Inlet Invert= 102.00', Outlet Invert= 82.00'



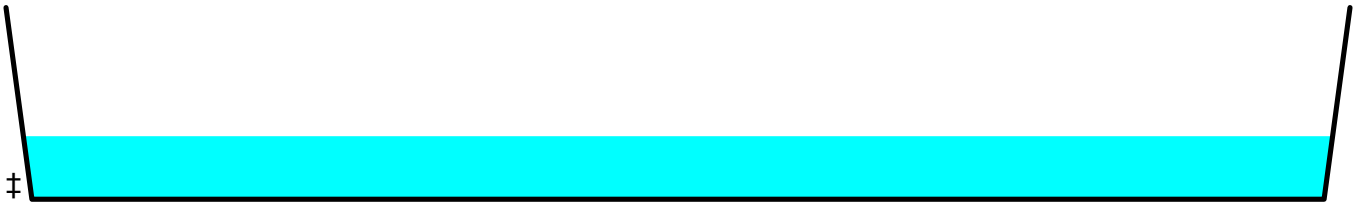
Summary for Reach 11.6R: Sheet Flow

Inflow Area = 15,103 sf, 28.40% Impervious, Inflow Depth = 0.96" for 2-YR event
Inflow = 0.5 cfs @ 12.15 hrs, Volume= 1,215 cf
Outflow = 0.3 cfs @ 12.26 hrs, Volume= 1,215 cf, Atten= 37%, Lag= 6.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.18 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 17.6 min

Peak Storage= 83 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.10' Flow Area= 5.1 sf, Capacity= 1.9 cfs

50.00' x 0.10' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 52.00'
Length= 50.0' Slope= 0.2200 '/'
Inlet Invert= 99.00', Outlet Invert= 88.00'



Summary for Reach 12.0R: Drainage Swale

Inflow Area = 2,807 sf, 23.48% Impervious, Inflow Depth = 0.85" for 2-YR event
Inflow = 0.0 cfs @ 12.28 hrs, Volume= 199 cf
Outflow = 0.0 cfs @ 12.29 hrs, Volume= 199 cf, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.00 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 44.1 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 40.0' Slope= 0.0625 '/'
Inlet Invert= 95.00', Outlet Invert= 92.50'



Summary for Reach 12.1R: Drainage Swale

Inflow Area = 4,918 sf, 52.79% Impervious, Inflow Depth = 1.50" for 2-YR event
Inflow = 0.2 cfs @ 12.11 hrs, Volume= 615 cf
Outflow = 0.2 cfs @ 12.12 hrs, Volume= 615 cf, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.81 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 3.0 min

Peak Storage= 15 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 45.0 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 115.0' Slope= 0.0652 '/'
Inlet Invert= 106.50', Outlet Invert= 99.00'



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Summary for Pond 10.2P: Grassed Depression

Inflow Area = 3,283 sf, 18.12% Impervious, Inflow Depth = 1.20" for 2-YR event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 328 cf
Outflow = 0.0 cfs @ 12.83 hrs, Volume= 159 cf, Atten= 87%, Lag= 44.4 min
Primary = 0.0 cfs @ 12.83 hrs, Volume= 159 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 88.75' @ 12.83 hrs Surf.Area= 307 sf Storage= 171 cf

Plug-Flow detention time= 261.1 min calculated for 159 cf (48% of inflow)
Center-of-Mass det. time= 134.6 min (985.5 - 850.9)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	253 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	145	0	0
89.00	360	253	253

Device	Routing	Invert	Outlet Devices
#1	Primary	88.75'	**20.0' 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=0.0 cfs @ 12.83 hrs HW=88.75' TW=88.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.16 fps)

Summary for Pond 10.3P: Grassed Depression

Inflow Area = 2,807 sf, 23.48% Impervious, Inflow Depth = 1.33" for 2-YR event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 310 cf
Outflow = 0.0 cfs @ 12.28 hrs, Volume= 199 cf, Atten= 51%, Lag= 11.3 min
Primary = 0.0 cfs @ 12.28 hrs, Volume= 199 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 95.82' @ 12.28 hrs Surf.Area= 224 sf Storage= 114 cf

Plug-Flow detention time= 183.9 min calculated for 199 cf (64% of inflow)
Center-of-Mass det. time= 74.9 min (919.4 - 844.4)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	159 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	66	0	0
95.50	153	55	55
96.00	265	105	159

Device	Routing	Invert	Outlet Devices
#1	Primary	95.80'	**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=0.0 cfs @ 12.28 hrs HW=95.82' TW=95.02' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.31 fps)

Summary for Pond 10.4P: Level Spreader

Inflow Area = 8,505 sf, 19.49% Impervious, Inflow Depth = 1.09" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 769 cf
Outflow = 0.1 cfs @ 12.16 hrs, Volume= 616 cf, Atten= 20%, Lag= 4.2 min
Primary = 0.1 cfs @ 12.16 hrs, Volume= 616 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 92.26' @ 12.16 hrs Surf.Area= 301 sf Storage= 158 cf

Plug-Flow detention time= 121.8 min calculated for 616 cf (80% of inflow)
Center-of-Mass det. time= 39.8 min (908.8 - 868.9)

Volume	Invert	Avail.Storage	Storage Description
#1	91.50'	453 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.50	120	0	0
92.00	230	88	88
93.00	500	365	453

Device	Routing	Invert	Outlet Devices
#1	Primary	92.25'	**35.0' 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=0.1 cfs @ 12.16 hrs HW=92.26' TW=92.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.1 cfs @ 0.29 fps)

Summary for Pond 10.5P: Grassed Depression

Inflow Area = 5,026 sf, 51.57% Impervious, Inflow Depth = 1.75" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 732 cf
Outflow = 0.2 cfs @ 12.09 hrs, Volume= 687 cf, Atten= 2%, Lag= 0.3 min
Primary = 0.2 cfs @ 12.09 hrs, Volume= 687 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 106.05' @ 12.12 hrs Surf.Area= 129 sf Storage= 52 cf

Plug-Flow detention time= 47.9 min calculated for 687 cf (94% of inflow)
Center-of-Mass det. time= 14.9 min (838.8 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	105.50'	122 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.50	60	0	0
106.50	184	122	122

Device	Routing	Invert	Outlet Devices
#1	Primary	106.00'	**15.0' 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=0.2 cfs @ 12.09 hrs HW=106.05' TW=106.05' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.2 cfs @ 0.27 fps)

Summary for Pond 10.6P: Grassed Depression

Inflow Area = 4,918 sf, 52.79% Impervious, Inflow Depth = 1.83" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 749 cf
Outflow = 0.2 cfs @ 12.11 hrs, Volume= 615 cf, Atten= 3%, Lag= 1.2 min
Primary = 0.2 cfs @ 12.11 hrs, Volume= 615 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 106.98' @ 12.11 hrs Surf.Area= 419 sf Storage= 159 cf

Plug-Flow detention time= 109.2 min calculated for 615 cf (82% of inflow)
Center-of-Mass det. time= 37.2 min (857.4 - 820.2)

Volume	Invert	Avail.Storage	Storage Description
#1	106.50'	435 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
106.50	240	0	0
107.00	425	166	166
107.50	650	269	435

Device	Routing	Invert	Outlet Devices
#1	Primary	106.92'	**6.0' 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=0.2 cfs @ 12.11 hrs HW=106.98' TW=106.56' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.2 cfs @ 0.62 fps)

Summary for Pond 10.7P: Level Spreader

Inflow Area = 15,103 sf, 28.40% Impervious, Inflow Depth = 1.18" for 2-YR event
Inflow = 0.5 cfs @ 12.12 hrs, Volume= 1,487 cf
Outflow = 0.5 cfs @ 12.15 hrs, Volume= 1,215 cf, Atten= 4%, Lag= 2.2 min
Primary = 0.5 cfs @ 12.15 hrs, Volume= 1,215 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 99.27' @ 12.15 hrs Surf.Area= 512 sf Storage= 284 cf

Plug-Flow detention time= 109.3 min calculated for 1,215 cf (82% of inflow)
Center-of-Mass det. time= 32.9 min (893.8 - 860.9)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	410 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
98.50	230	0	0
99.00	405	159	159
99.50	600	251	410

Device	Routing	Invert	Outlet Devices
#1	Primary	99.25'	**50.0' 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=0.5 cfs @ 12.15 hrs HW=99.27' TW=99.01' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.39 fps)

Summary for Link POA-1: Washington Ave Culvert

Inflow Area = 109,274 sf, 10.60% Impervious, Inflow Depth = 0.80" for 2-YR event
Inflow = 1.4 cfs @ 12.15 hrs, Volume= 7,273 cf
Primary = 1.4 cfs @ 12.15 hrs, Volume= 7,273 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach 1.2R: Wooded Slope

Inflow Area = 35,879 sf, 3.26% Impervious, Inflow Depth = 3.02" for 25-YR event
Inflow = 2.4 cfs @ 12.16 hrs, Volume= 9,022 cf
Outflow = 2.4 cfs @ 12.17 hrs, Volume= 9,022 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.21 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 2.0 min

Peak Storage= 76 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.10' Flow Area= 2.1 sf, Capacity= 6.8 cfs

20.00' x 0.10' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 21.00'
Length= 70.0' Slope= 0.1000 '/'
Inlet Invert= 94.00', Outlet Invert= 87.00'



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Summary for Reach 1.3R: Wetlands

Inflow Area = 97,040 sf, 41.21% Impervious, Inflow Depth = 3.91" for 25-YR event
Inflow = 8.9 cfs @ 12.13 hrs, Volume= 31,588 cf
Outflow = 8.9 cfs @ 12.14 hrs, Volume= 31,588 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 2.3 min

Peak Storage= 348 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 90.2 cfs

10.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 90.0' Slope= 0.0778 '/'
Inlet Invert= 95.00', Outlet Invert= 88.00'



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Stormwater Management Plan Report

Summit Street Subdivision
Summit Street, Portland

I. Introduction:

This stormwater management plan has been prepared to address the City of Portland's Stormwater Management standards as outlined in Section 5 of the City of Portland Technical Manual. Section 5 of the Technical Manual requires that all subdivisions as defined in Article 15 of the Land Use Code submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including General and Flooding standards.

II. Existing Conditions:

The project site is located in the City of Portland R-2 Residential Zoning District and currently consists of four (4) residential lots under common ownership. The four lots are identified as B001, B002, B026, and B032 on Portland Tax Map 385. Two of the lots have existing single family homes with addresses 539 and 547 Summit Street. The project site is ultimately tributary to Presumpscot River, which flows to the Atlantic Ocean. The Presumpscot River is not identified as an urban impaired stream in DEP Chapter 502.

The majority of the site generally slopes north to a small unnamed stream that flows along the northern boundary from Lambert Street to Washington Avenue. The stream is conveyed offsite through a culvert beneath Washington Avenue and into an area of forested wetlands. The front yards and driveways of the existing homes drain onto Summit Street and into the existing closed drainage system.

III. Proposed Development:

The project proposes to further subdivide the existing four lots to create a total of seven (7) single family house lots. The existing homes located at 539 and 547 Summit Street will remain, but will require alteration to the existing garages to allow room for a shared driveway on Lot 2 and to meet the setback requirements on Lot 3. Three of the new proposed lots (Lots 1, 4, and 5) will be accessed by individual driveways on Summit Street, 547 Summit Street (Lot 3) will keep the existing driveway, and the two new back lots (Lots 6 & 7) will have a shared driveway with the existing house at 539 Summit Street (Lot 2).

IV. Applicable Standards and Exemptions:

The project does not require stormwater permitting through Maine DEP, and would not normally be required to meet the General or Flooding standards based on Chapter 500 thresholds. However, the proposed project is classified as a subdivision under Article 15 of the Land Use Code. Section 5 of the City of Portland Technical Manual requires subdivision projects to meet the General and Flooding standards of DEP Chapter 500 even if the project does not trigger the thresholds set by DEP for which these standards normally apply.

Although this project is technically defined as a subdivision, the project does not have the typical subdivision characteristics that would allow for the practical collection and treatment of stormwater that would be necessary to meet the above standards. Normally, a subdivision consists of a new road and right-of-way that can be used as the primary avenue of stormwater conveyance, either through catch basins or ditches. This allows the majority of runoff from the development to be collected and conveyed to a common location or locations for stormwater detention and treatment. Instead, the project more accurately reflects five separate Minor Residential projects because of the lack of a new road and the existing homes that will remain in the middle of the project site. For this reason, the project is proposing to use the Minor Residential exemption, which requires only the Basic Erosion and Sediment Control Standards of Chapter 500 under the City of Portland Technical Manual, Section 5, II., C., Exemption 1.

Due to the topography of the site, a large portion of runoff from the driveways cannot be collected on-site and will ultimately drain into the existing closed drainage system in Summit Street. Additionally, the back of the site is constrained by a small stream, wetlands, and a relatively steep slope. This restricts the amount of space available to construct stormwater conveyance and treatment measures behind the houses. Due to these site constraints, it would not be feasible for the project to collect, detain, and treat the quantity of runoff needed to meet the General and Flooding standards of Chapter 500. Since the scope of the project is essentially the construction of five additional residential lots, two of which exist today, we believe that the application of the City's standards for individual residential lots is appropriate for the stormwater management plan of the project.

V. Stormwater Management:

The site has been designed to collect and retain stormwater on each individual lot to the greatest extent practicable in accordance with the stormwater management exemption for Minor Residential developments. Multiple shallow retention basins are located in strategic locations to provide temporary storage of stormwater during storm events. After the storm event, the basins will gradually return to a dry grassed condition that blends in with the remainder of the yard. During larger rainfall events, these shallow retention areas will act as level spreaders to convey the collected runoff offsite as sheet flow.

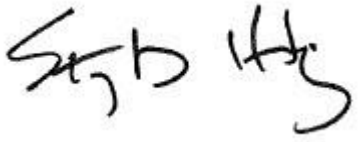
Areas draining to the back of the site will drain as sheet flow to the wooded upland area located adjacent to the existing stream and wetlands that run through the northern portion of the lots. By draining to the wooded slope as sheet flow, the undisturbed slope will act as an informal wooded buffer for the stormwater to flow through before reaching the small on-site stream. Areas draining to the front of the site will be collected on site to the greatest extent practicable and the remainder of uncollected runoff will be conveyed along the curb line of Summit Street and into the existing closed drainage system. This approach is consistent with the characteristics of adjacent properties and this condition is not anticipated to have a negative impact to the existing closed drainage system in Summit Street. Erosion and sedimentation control measures will include sediment barriers down gradient of construction areas and inlet protection on nearby catch basins as needed. Additional erosion and sedimentation control notes and details are provided within project plan set.

VI. Conclusions:

The proposed project has been designed to meet the standards allowed by the Minor Residential exemption outlined in the City of Portland Technical Manual, Section 5, II., C. Due to the site constraints and unique conditions presented by the project, it is not feasible or practical for the project to meet the General and Flooding standards outlined in Maine DEP Chapter 500. Additionally, the project would not typically be required to meet these standards as it is not a large enough development to trip the General and Flooding standard thresholds contained in Chapter 500. Stormwater management has instead been designed to meet the typical standards held by the City of Portland for a Minor Residential development. This approach includes shallow retention areas and level spreaders that will provide retention and reduce runoff rates leaving the site to the greatest extent practicable. Additionally, erosion and sedimentation control measures have been included and will adhere to the Basic Standards outlined in Chapter 500.

Prepared by,

SEBAGO TECHNICS, INC.



Stephen D. Harding, PE
Senior Project Manager



Jeffrey B. Pollard, EI
Civil Engineer

EXISTING CLEARED AREA (8,770 SF)

PROPOSED CLEARED AREA (11,000 SF)

PROPOSED PRESERVED AREA (60,162 SF)

LAMBERT STREET

SUMMIT STREET

WASHINGTON AVENUE

N/F CITY OF PORTLAND 385-B-027

N/F CURT CHIM & TOEUM CHIM 3134/62 385-B-025

N/F JAMES CIAMPI 15641/318 & 8452/221 385-B-026

N/F MICHAEL & TRACEY SCALA 23478/16 385-B-008

N/F ARLENE VERRE & PATTI GAY 24648/129 385-B-011

LOT 1 10,123 S.F. 0.23 AC.

LOT 2 10,125 S.F. 0.23 AC.

LOT 3 21,087 S.F. 0.48 AC.

LOT 4 16,902 S.F. 0.39 AC.

LOT 5 38,581 S.F. 0.89 AC.

LOT 6 15,193 S.F. 0.35 AC.

LOT 7 11,593 S.F. 0.27 AC.

N 67°12'56" E 186.28'

S 21°40'24" E 107.58'

95.34'

FENCE (APPARENT ENCROACHMENT)

SHED (APPARENT ENCROACHMENT)

12.31'

80.95'

S 89°49'24" E 246.23'

84.87'

70.61'

54.79'

S 36°58'24" E 109.58'

54.79'

N 53°01'36" E 75.86'

5/8" REBAR FOUND AT GRADE "LEWIS & MASINA PLS2114"

25' NO DISTURBANCE STREAM BUFFER

50'

N 28°54'47" E 151.78'

N 28°54'47" E 200.16' (TOTAL)

N 28°54'47" E 231.26' (TOTAL)

N 28°54'47" E 94.27' (TOTAL)

66.83'

140.94'

12'

10' WIDE UNDERGROUND UTILITY EASEMENT FOR LOT 6. 836 S.F.

10' WIDE OVERHEAD UTILITY EASEMENT TO CMP 200 S.F.

ACCESS EASEMENT FOR LOT 6

ACCESS EASEMENT FOR LOT 7 WE GRADE 2348 STATEWIDE SURV

5/8" IRON ROD FOUND

EL9 (TOTAL 19.95'

EL8 44.30'

EL10 19.95'

EL13 19.95'

EL14 16.80'

EL17 19.95'

EL18 10'

EL19 S 26°53'59" W 265.98'

EL20 25.00'

S 61°05'12" E 81.00'

EL7

EL11

S 61°06'01" E 80.96'

SHARED DRIVEWAY ACCESS AND UTILITY EASEMENT FOR LOTS 2, 6 AND 7

EL4

EL5

SHARED DRIVEWAY ACCESS AND UTILITY EASEMENT FOR LOTS 6 AND 7

OVERHEAD POWER TAKEN FROM DESIGN PLANS

N 25°54'47" E 125.00'

GARAGE TO BE REMOVED OR RELOCATED TO MEET SETBACK REQUIREMENT

GARAGE TO BE REDUCED TO LESS THAN 250 S.F. REQUIRED FOR BUILDING TO HAVE 5' SETBACK

BREEZEWAY TO BE REMOVED

16.53'

10' MINIMUM FROM OVERHEAD UTILITY

EL12

EL3

EL6

N 25°54'47" E 125.00'

125.00'

10' WIDE OVERHEAD UTILITY EASEMENT TO CMP 1,250 S.F.

1.25" IRON PIPE FOUND 2"BELOW GRADE

UP 52

SHARED DRIVEWAY ACCESS AND UTILITY EASEMENT FOR LOTS 2, 6 AND 7

20'

UP 53

81.00'

6"X6" GRANITE MONUMENT FOUND 6" BELOW GRADE WITH DH

N 61°05'12" W 510.92'

83.01'

81.00'

81.00'

SEE NOTE 3

12'

12.05'

19'

EL1

EL2

11.94'

17.58'

17.79'

93.50'

UP 54

10' WIDE UNDERGROUND UTILITY EASEMENT FOR LOT 5 320 S.F.

3' WIDE SIDWALK EASEMENT TO THE CITY OF PORTLAND

185.42'

75.49'

25'

C1

100' STREAM SETBACK

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	CENTERLINE	
⊡	MONUMENT	
◎	IRON PIPE/ROD	● C1/L1
C1/L1	CURVE/LINE NO.	
N/F	NOW OR FORMERLY	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
(LP)	PROPANE TANK	

PROPERTY CURVE TABLE

CURVE	LENGTH	RADIUS	CRD BEARING	CRD LENGTH
C1	114.59'	678.20'	S 27°05'17" W	114.45'

EASEMENT LINE TABLE

LINE	BEARING	DISTANCE
EL1	S 26°53'32" E	21.26'
EL2	N 26°53'32" W	42.77'
EL3	S 28°54'47" W	99.23'
EL4	N 16°27'24" W	36.69'
EL5	N 73°32'36" E	34.42'
EL6	S 28°54'47" W	100.51'
EL7	N 61°05'13" W	16.16'
EL8	N 28°53'59" E	14.32'
EL9	S 61°06'01" E	39.91'
EL10	N 28°53'59" E	14.33'
EL11	N 61°06'01" W	14.22'
EL12	N 28°53'59" E	125.01'
EL13	S 47°17'32" E	73.07'
EL14	S 47°17'32" E	73.06'
EL15	S 63°16'27" E	7.62'
EL16	N 28°53'59" E	125.00
EL17	N 28°53'59" E	10.30'
EL18	N 61°06'01" W	10.00'
EL19	N 28°53'59" E	20.01'
EL20	N 28°53'59" E	10.30'

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 INCH = 20 FT.

SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite A-4
South Portland, ME 04106
Tel. 207-200-2100

TREE PRESERVATION EXHIBIT
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET,
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	1" = 20'
PROJECT	20439

SHEET 1 OF 1

20439 S.dwg, TAB 3 SUBDIVISION PLAN

October 12, 2023
20439

Charles Tetelman
Planner
City of Portland
389 Congress Street
Portland, ME 04101

Application PL-002453-2023
533 Summit Street

Dear Charles:

Thank you for meeting with us to discuss the Summit Street project after the previously assigned planner Austen Torres Davis left the City of Portland. We have prepared the following responses to City review comments that we had received in a July 17, 2023 email from Austen, as well as additional comments received on August 9th, September 5th, and October 6th. We have also submitted an updated set of plans revision dated October 12, 2023 that reflects the most recent changes.

Please note that CMP has installed new poles alongside Summit Street and we anticipate that the overhead wire will be transferred to the new poles from the existing poles and the existing poles will be removed. The new poles are located slightly more away from the edge of Summit Street and we have adjusted the location of the proposed sidewalk so as to not be impacted by the new pole locations. The location of the adjusted sidewalk will still be within the proposed 3-foot-wide sidewalk easement that the applicant will provide the City as delineated on the Subdivision Plan (Sheet 3).

From the September 5th email:

1. *The applicant should provide documentation on the need for the width of the internal driveway (27 feet).*

   Response: A segment of the internal shared driveway width was originally proposed to be 27 feet to provide parallel parking spaces for the benefit of Lot 2. As shown on the Site Plan (Sheet 4), we have revised the width of this section of the shared drive to have a consistent 18-foot width and have widened the drive connection to the relocated garage on Lot 2 to accommodate two parked vehicles.

2. *The crosswalk alignment should be perpendicular and not angled. Additionally, warning signs shall be added.*

   Response: The crosswalk alignment was originally angled to avoid a conflict with the end of the existing guardrail on Washington Avenue. As shown on the Site Plan (Sheet 4), the crosswalk alignment has been updated to be perpendicular to Washington Avenue with notes that the coordination will be required with DPW to relocate the end of the guardrail. Warning

signs have also been added to the plans, as well as the City of Portland detail (I-21) for pedestrian signs from the Technical Manual. See the Site Plan (Sheet 4) for the location of the warning signs and the Details plan (Sheet 10) for the detail of the warning signs.

3. *DPW asks that the proposed accessible ramp be installed perpendicular to Washington Avenue to ensure all users are directed to the proposed ramp and not make the assumption that an alternate crossing exists.*

   Response: As discussed in the previous comment, the proposed accessible ramp is now shown perpendicular to Washington Avenue to match the revised crosswalk orientation. Coordination will be required with DPW to locate these ramps in a manner that protects the guardrail on both sides of Washington Avenue.

4. *It's unclear how the proposed 9" deep stormwater depressions are intended to function long term especially if maintenance is not required. Has the applicant investigated the infiltration capacity of the soils onsite? Water Resources would be concerned that the depressions could potentially be saturated frequently and not provide the intended function. Based on the level of disturbance associated with this project, DPW would advocate that these depressions be redesigned as green infrastructure and that the homeowner's association for the subdivision be required to enter into a stormwater maintenance agreement with the City to maintain the infrastructure on an annual basis.*

   Response: The proposed project will not have a Homeowners Association as it will not function as a more traditional subdivision with shared infrastructure to maintain jointly among the residents. The site currently contains four existing single-family house lots and is proposing to subdivide the lots further to create one new lot with frontage on Summit Street and two new lots with frontage on Lambert Street. Due to site limitations and a desire not to impact wetlands with an access drive off Lambert Street, the two new lots with frontage on Lambert Street (Lots 6 and 7) will be accessed from a shared driveway on Summit Street. The existing driveway for house number 533 Summit Street (Lot 2) will be widened and used as the shared driveway. We anticipate that a driveway maintenance agreement will need to be formulated between Lots 2, 6, and 7 to facilitate the future maintenance and use of the shared drive.

   The vegetated depressions proposed on several of the lots were devised to provide a means to passively treat runoff from the developed areas within the lots and were not intended to become planted rain gardens whose functionality would be subject to the level of maintenance each homeowner would provide. Rather, these depressions were intended to discreetly be included in the future lawn areas and require little maintenance be functional. While we anticipate that runoff trapped in these depressions will be readily absorbed, a secondary means of draining the depressions via an underdrain has been added to the depressions as shown on the Grading & Erosion Control Plan (Sheet 5). A note has also been added to the Typical Vegetated Depression Cross-Section on the Details plan (Sheet 8) indicating that at the time of the specific site plan permitting for the actual residential home development, a test pit will be dug at the location of the depressions and the underdrain will be implemented if the soils do not prove to be suitable permeability for infiltration.

   While it may appear that the development of the new lots will be extensive given the small lots being created in this infill development, it should be noted that the proposed development's impact is relatively minor with less than 1-acre of impervious area being created and the runoff being separates and discharged as sheet flow through a wide area into the vegetated buffer located along the receiving stream.

5. *Water Resources has reviewed the stormwater modeling provided by the applicant and is satisfied with the applicant's conclusion that the proposed development will have a negligible effect on the capacity of the City's 24" culvert which crosses Washington Avenue downstream of the project area as long as the designed stormwater infrastructure is constructed and maintained such that it is able to function long term.*

   Response: Acknowledged.

6. *Conditions of approval should be added to future building permits within the subdivision to ensure that grading and stormwater management is implemented per the approved site plan.*

   Response: We agree that the conceptual grading and stormwater management approach should serve as a basis for the future lot development site plans which will be sought as part of the Building Permit process. Flexibility within this approach will need to be incorporated during the Building Permit process, however, as to how the actual final stormwater design is implemented with respect to the specific proposed residence and supporting site plan design.

7. *Drainage easements should be established between property owners and recorded on the approved subdivision plan to memorialize each property owner's right to drain stormwater runoff onto abutting properties as depicted on the grading and drainage plan.*

   Response: Note #12 has been added to the Subdivision Plan (Sheet 3) to address the rights of lot owners within this subdivision to drain runoff flow across other lots within the subdivision to the receiving stream and the public drainage system within Summit Street. The exact manner in which the runoff flows across the various lots will be formalized during the Site Plan review process as part of the Building Permits for each lot. These drainage easements will also be formalized in each lot's deed.

8. *Proposed clearing associated with the daylighting of foundation drains should be minimized. Outlet protection should be installed at the daylight end of foundation drains to mitigate any potential erosion towards the stream channel.*

   Response: A note has been added to the Grading & Erosion Control Plan (Sheet 5) to minimize clearing for the daylighting of foundation drains to the greatest extent practicable. Riprap aprons have been added to the plans at the outlet location of each foundation drain to mitigate potential erosion.

9. *The applicant should provide a detail depicting the proposed level flow spreaders to ensure they are constructed correctly and provide the intended function.*

   Response: The vegetated depressions are intended to receive runoff from isolated drainage areas and will have a relatively limited storage capacity. The overflow outlets to these areas are intended to be flat vegetated areas that will be able to convey the overflow in a manner that will allow for non-erosive conditions that will not warrant a formal level spreader as would be applicable in a much larger BMP. Any noted areas of erosion associated with these vegetated depressions will need to be addressed as part of the ongoing maintenance operations.

10. *A second filter barrier row should be added to better protect the adjacent wetlands and streams.*

    Response: A second filter barrier row has been added to the Grading & Erosion Control Plan (Sheet 5) to protect the adjacent wetlands and stream.

11. *The applicant should provide more detail on how areas being disturbed within the stream set back zone will be permanently stabilized with vegetation.*

    Response: Disturbed areas on the site will be graded and revegetated with 4-inches of loam and seed. Erosion control measures are specified in the plan set on Sheet 7 of 10.

12. *Please note: Some feedback is framed as in response to site plan submittal, despite "conceptual housing" being shown on plans. Certain comments, such as 30% preservation guidance, applies to both/ either subdivisional and site plan submission information.*

    Response: Acknowledged.

13. *Site plan / Existing conditions plans - Applicant should provide location and size information on existing trees 10" or greater DBH within required setback areas to depict if development exceeds 30% minimum tree preservation requirements. Comply with as described in 14.6.2.B.3 for landscape preservation to determine tree replacement requirements shown in table 14-D in land use code.*

    Response: The total site contains approximately 79,932 square feet of area within the 100' stream setback. Of this total area, the site currently has cleared approximately 8,770 square feet within the setback area. Using the proposed tree line, this project is proposing to clear an additional 11,000 square feet within the 100' setback, for a total clearing of approximately 19,770 square feet. Based on these areas, the project will be preserving approximately 75% of trees within the 100' setback. We believe this demonstration of preservation is adequate to address this standard without needing to perform further field survey work to locate all existing trees 10" or greater DBH within the large 79,932 square foot area. See attached exhibit of tree clearing and preserved area calculations.

    <u>Approximate Tree Clearing within 100' of Stream:</u>

Total Area within setback:	**79,932 sf**
Existing Cleared Area:	**8,770 sf**
Proposed Additional Cleared Area:	**11,000 sf**
Total Cleared Area:	**19,770 sf**
Total Preserved Area:	**60,162 sf**
Percentage Preserved:	**60,162 / 79,932 = 75.3%**

14. *Site plan - Show extents of tree protection limits on existing trees to be preserved. Include reference to tree protection / preservation details and signage in accordance with tree preservation standards in 4.3 of Chapter 4 of city technical manual, and Diagram IV-2 in that chapter.*

    Response: The limits of the tree clearing has been shown on the Grading & Erosion Control Plan (Sheet 5) based on the conceptual development of lots. As this comment is reflective of a Site Plan requirement, this item would be more effectively addressed during the Site Plan approval of the actual proposed residences during the Building Permit process.

15. *Site plan - per chapter 14.6.2C.1 (landscaping buffers) in conjunction with technical manual street tree requirements, applicant proposes approximately 503' of frontage along summit street, necessitating at least one tree per 30' of frontage, (per 14.6.2C.1) or 16.78 trees (17 trees*

rounded up). With updated plans showing existing, preserved trees with name and size information, such existing trees preserved can count towards number of trees required for frontage numbers.

Response: This Site Plan requirement conflicts with the City's subdivision standard of requiring two street trees per lot. As depicted on the Site Plan (Sheet 4), two new street trees are proposed on Lots 3, 4, and 5 which directly abut Summit Street. Existing trees meeting the City's street tree standards are proposed to be preserved on Lots 1 and 2. The two back lots, 6 and 7, do not directly abut Summit Street and there is ample vegetation including mature trees in the back of the proposed lots along Lambert Street. Additionally, a significant number of trees along property frontage at the corner of Summit Street and Washington Ave will be preserved, which in total with the proposed trees will far exceed 17 trees.

16. *Site plan - in interest of low impact design principals and providing for more robust and supportive site conditions for new trees, Lot 1 house driveway may benefit from connection to new internal access drive as opposed to summit street connection.*

    Response: We understand from our conversations with you that the City Staff has reconsidered this comment and agrees that it is acceptable for the proposed Lot 1 driveway be located such that it utilizes the existing curb cut that was previously installed for the use of Lot 1.

17. *Site plan - Honeylocust species proposed are suitable street trees, however, Parks department strongly recommends inclusion of an additional native species from different scientific genus of honeylocust to ensure better genetic diversity within street tree plants, and to act as a break in any planting pathogen chains that might occur from a monocultural species.*

    Response: As depicted on Site Plan (Sheet 4) Plant Schedule, two Red Maple trees have been added to provide diversity.

18. *SIte plan - Lot 4, To extent possible, the applicant is encouraged to reduce utility conflicts for proposed trees such as overhead power lines over tree locations, or trees planted near underground infrastructure, in accordance with recommended planting offsets as required by specific utilities.*

    Response: In our opinion, the two new street trees for Lot 4 have been sited to reduce the conflicts associated with overhead utility connection to Lot 4 and the proposed underground utility connection to Lot 5. The exact location of the new street trees and utilities will be formalized during the Site Plan review process for the Lot 4 Building Permit.

From the August 9th e-mail:

1 *Please state if the publicly sourced lidar data used was based on NAVD88 or NGVD29/City vertical datum when used to supplement the ground survey. This can be added to the current existing conditions plan general note 5.*

Response: The City of Portland Datum, close to NGVD29 (refer to Note #7 on the Subdivision Plan), was used for the Supplemental LIDAR (per Note #5) based upon the calculated difference and was field checked based upon paved surface points.

2 *Please label at least two survey markers on the plan with their state plane coordinate values.*

Response: Coordinates with Latitudes and Longitudes have been added to opposite corners of the subdivision as shown on the Subdivision Plan (Sheet 3).

3 *Please consider labelling the sewer and stormwater structures with their City asset IDs and not simply the structure numbers your survey and engineering plans have labelled them with. This assists City staff in the review of your plans. If the preparers of the plan set have City GIS information to map the utility information from (as stated on your plan sheets), then the asset IDs should be readily available. Also please consider labelling the utility poles with the numbers and identifiers (typically numbers) present on utility poles in the field as this will make utility coordination easier.*

Response: The sewer and stormwater structures have been relabeled with the City GIS ID's, and the utility poles have been labeled with the numbers shown on the poles (see Sheet 6, Utility Plan, for this information).

4 *The submitted plans do not show the existing invert elevations on the various sheets for the catch basins in Summit Street or Washington Ave, as typically required. Some of the stormwater pipes are obscured by text masks on the utility plan sheet.*

Response: Invert information has been added to Sheet 6, Utility Plan, as requested.

5 *The submitted plans do not show all the length, material, diameter, and slope of all storm sewer and sanitary sewer piping, as is typically required.*

Response: The existing pipe materials, sizes, and invert elevations have been added to Sheet 6, Utility Plan, for existing storm and sanitary sewers.

6 *The culvert under Washington Ave's size, type of material, and invert elevations of both of the culverts' ends are not shown on the plan sheets. Typically, this information should be shown for both ends of the culvert. Additionally, only one end of the Lambert Street culvert ends is labelled with this sort of information. The labelling could be achieved with a symbol and associated label or a simple text label if the culvert's end is off the edge of the sheet. This is in keeping with typical engineering plan requirements.*

Response: Culvert inverts have been added to Sheet 6, Utility Plan, with leaders pointing off the sheets for the opposite sides of Washington Avenue and Lambert Street culverts as requested.

7 *Not all existing and proposed survey monuments (especially the granite monuments) are shown in a bold line type on all utility and site plans, as typically required. This is necessary to avoid conflicts between existing and proposed monuments with buried utilities and will serve to make site contractors aware of the monument locations. The buried monument found in front of 547 Summit Street is missing from many of the sheets where it should be shown. Also, there is a record monument at the northeasterly corner of Washington Ave and Summit Street. Given a sidewalk and/or ramp is proposed for this location it will be important this missing monument be added to the plan set sheets. Both of these existing City street right of way monuments need to be incorporated into the design of the proposed sidewalk and protected. The monuments can either be made to be flush with the finished sidewalk as they are currently installed or placed*

under survey monument boxes as described in City standard details. The monument at the northeasterly corner of Washington Ave and Summit Street is present as of a site visit on 8/4/2023 and seems to be missing from your plan sheets, It should be noted on your plans sheets as consideration for the sidewalk on this project.

Response: The monuments have been added with labels as requested. The monument buried in front of 547 Summit Street will be protected by a cast iron frame and cover per the City's detail for granite street monuments, included on plan sheet 10. The proposed sidewalk location has been modified to avoid impact to the monument at the northeasterly corner of Washington Ave and Summit Street. A sidewalk cannot be made flush with the top of the existing monument, which currently sticks out above existing grade. We believe that as part of DPW's preparation for winter plowing activities, a grade stake will need to be added next to this monument to protect it during winter plowing operations.

8 *The deed book and page reference for the City lot on the northwesterly side of the project is missing. This is typically required so as to show the abutters' source of title.*

Response: The Deed Book and Page information has been added to the Subdivision Plan (Sheet 3).

9 *A general note on the subdivision plan describing the dedication of a 3-foot-wide sidewalk easement to the City of Portland along all the lots fronting on Summit Street is needed in addition to more than one note along the sidewalk area of the current subdivision plan. It is unclear from the single note along the sidewalk area of the current version of the plan if this easement is to extend along all the project's lot frontages along Summit Street. The use of general note will allow adequate space to state this and state the developer is reserving the right to convey such an easement to the City in all lots created by the subdivision plan.*

Response: Note #13 has been added to the Subdivision Plan (Sheet 3) to clarify easement as requested.

10 *Please also note all deeds for the lots fronting on Summit Street shall need to incorporate similar language reserving the easement to the City and/or the right to subsequently convey the easement right to the City. These requests are typical of the subdivision of lots where some form of right, title, and interest will be granted to the City. It is my recommendation that the easement be conveyed to the City once the subdivision project is approved by the City and Planning Board, and before any of these lots are sold to private owners.*

Response: The easement is intended to be conveyed to the City upon approval.

11 *The accepted and public status of Washington Av, Summit St, and Lambert Street should be shown on the Existing Conditions, Subdivision, and Site plans to show they are existing public ways as part of the typical requirements plan submissions to the City.*

Response: They are all listed now as (PUBLIC WAY).

From the October 6th e-mail

1 *We would at a minimum require drainage easements between the established lots to allow for a more unified drainage system.*

Response: We agree that a drainage easement is needed to allow lots to drain over one another. As noted previously, Note #12 has been added to the Subdivision Plan (Sheet 3) to address the rights of lot owners within this subdivision to drain runoff flow across other lots within the subdivision to the receiving stream and the public drainage system within Summit Street. The exact way the runoff flows across the various lots will be formalized during the Site Plan review process as part of the Building Permits for each lot. These drainage easements will also be formalized in each lot's deed.

2 *We feel as if a system for the whole site (which would require an HOA) would be better, we understand that for a single-family subdivision that could be a burden.*

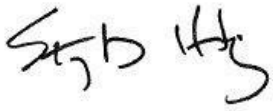
Response: It would have been easier for us during the design if the characteristics of the property would readily accommodate a subdivision-wide system. Given the configuration of the lots and the terrain, it would take a substantial number of physical changes to the site with multiple drainage basins, drainage pipes, and new swales to direct the stormwater to one location to be handled before discharge into the receiving stream. Rather, we took advantage of the length of the receiving stream and its associated buffer area to split the runoff in lot-sized chunks and convey the surface water to the stream in multiple locations so that the flows are lessened and can be distributed throughout a larger receiving area. In our opinion, this approach is a less intensive and invasive solution to the stormwater needs of this project and fits the scope of project in a more efficient manner.

3 *The City would definitely push for drainage easements to allow flow across properties and perhaps make some additional changes based off of our most recent round of comments.*

Response: As noted previously, Note #12 has been added to the Subdivision Plan (Sheet 3) to address the rights of lot owners within this subdivision to drain runoff flow across other lots within the subdivision to the receiving stream and the public drainage system within Summit Street. The exact manner in which the runoff flows across the various lots will be formalized during the Site Plan review process as part of the Building Permits for each lot. These drainage easements will also be formalized in each lot's deed.

Sincerely,

Sebago Technics, Inc.



Stephen D. Harding, P.E.
Senior Project Manager

SDH/jbp/mwe/rlg
enclosure
cc: Jon Giles, City of Portland
Matt Grooms, City of Portland
Jeff Pollard, Sebago Technics
Matt Ek, Sebago Technics
Rebecca Gabryszewski, Sebago Technics

August 9, 2023
20439

Charles Tetleman
Planner
City of Portland
389 Congress Street
Portland, ME 04101

Application PL-002453-2023
533 Summit Street

Dear Charles:

We understand that you will be taking over this project from Austen Torres Davis who is no longer working for the City of Portland. We have prepared the following responses to City review comments that we had received earlier from Austin in a July 17, 2023 email. We understand that the City Surveyor has yet to provide his comments on the project and would appreciate any efforts on your behalf to get us those comments as we are anxious to complete this aspect of the review process and get onto a Planning Board meeting agenda.

DPW WATER RESOURCES

• *This entire project watershed area is tributary to a 24" culvert which crosses Washington Avenue near the Summit Street intersection and discharges into a tributary stream of the Presumpscot River. DPW's records indicate the culvert is in poor condition and appears to be undersized for the area draining to it. DPW does not have a watershed model of this drainage area or the existing culvert. It's our opinion that the existing system does not have the capacity to manage increased runoff flows which will be generated by this development. The applicant will need to provide stormwater management to ensure post development flow rates do not exceed pre development flow rates for the 2-, 10-, and 25-year, 24-hour storm events. The alternative would be for the applicant to complete a full watershed study for area draining to the existing Washington Avenue culvert and prove that the increased runoff flows from the proposed project won't cause/exacerbate downstream capacity issues.*

Response: The site has been designed to capture and detain stormwater runoff to the greatest extent practicable. Due to topography, the proposed modest lot sizes, and restrictions in place to protect the natural resources of the site, it is not feasible to have stormwater management structure large enough to detain the 10- and 25-year, 24-hour storm events on the site. The grassed depressions are intended to detain and treat lesser amounts of runoff (typically 1" storm) that would effectively treat the first flush storm events in a manner that appears natural to the residential units proposed for the site and that requires limited maintenance from homeowners. The attached stormwater model was created using HydroCAD and confirms that the development as designed will not result in an increase in peak flow rates to the 24" culvert during the 2-year storm event. In order to detain the 10- and 25-year storm events, larger stormwater basins, ponds, or other stormwater management systems would be required. We believe these larger systems are not practical for single family lots proposed for this development.

To analyze the proposed development's impact to the 24" receiving culvert during the 2-, 10-, and 25-year storms relative to the overall watershed draining to it, a second HydroCAD model was created. This model includes roughly 28-acres of additional offsite area that was determined to be draining to the 24" culvert at Washington Avenue based on available LIDAR and City GIS information. This model does not include areas that drain to the outfall(s) along Auburn Street or any of the enclosed drainage system on Summit Street or Washington Avenue. The HydroCAD model demonstrates the capacity issue of both the 24" culvert at Washington Avenue, as well as the upstream 18" culvert at Lambert Street by showing the ponding depths predicted to occur during the storm events. Based on the included offsite area, the model predicts that the development will result in an increase to the ponding depth upstream of the 24" culvert by only 0.02' and 0.03' during the 10- and 25-year storms respectively, and no change to ponding depth during the 2-year storm. We believe these minimal increases in ponding elevation during the 10- and 25-year storm events would not be significant enough to exacerbate the current capacity issues. It should also be noted that although the model predicts a slight increase in the estimated peak runoff rates to the culvert inlet, there was no change to the flow rates exiting the culvert.

Based on the City's GIS data and other available records from DPW, the 24" culvert appears to connect to a structure in Washington Avenue prior to the outfall located on the eastern side of the street. This would suggest that there is significantly more area draining to this outfall than what was included in our model. This further suggests that the proposed development, relative to the entire watershed, would not result in a significant impact to cause/exacerbate the downstream capacity issues.

• It is suggested that the proposed stormwater depressions be re-designed as rain gardens or grassed soil filters/infiltration systems.
Response: The proposed stormwater depressions have been designed as shallow informal infiltration areas to provide temporary detention of small volumes of runoff to control peak flow rates during smaller storm events. The lot layouts are not final designs as the building footprints are conceptual only for the purposes of the Planning Board review process. Individual lot plans will be finalized prior to the development of each lot as part of the Building Permit process, however the depicted approach of utilizing strategically placed stormwater depressions is anticipated to be generally followed in the specific future development site plans for each lot. In creating this stormwater treatment approach, we believe that the future homeowners will be readily able to maintain these depressions without the burden of maintaining systems that are more suitably applied to multi-unit residential or commercial developments.

• The swale running along the north-easterly project limit appears to direct stormwater runoff onto neighboring private property. This is not allowed per land use code 14.6.2-D without being granted legal permission from the adjacent property owner.
Response: The drainage swale was revised to prevent runoff from being directed onto the abutting property. Please see plan set Sheet 5 of 9, Grading & Erosion Control Plan.

• Technical manual standard 8.2.1 requires a 100' setback from perennial streams. The applicant has not requested a formal waiver of this standard.
Response: A formal waiver request for Technical Manual Standard 8.2.1 has been submitted with this comment response for the proposed work within 100' of the stream. We believe that this waiver request is reasonable given the residential nature of the project and is in keeping with both the existing neighborhood development and Maine Department of Environmental Protection policies which also regulates development alongside of streams.

• Direct storm drain connections into City of Portland catch basins are not allowable. New connections shall be made directly to the storm drain main in Summit Street in accordance with section 2 of the Technical Manual.
Response: The proposed storm drain connection to the catch basin in Summit Street has been removed from the plans and that previous connection has been redirected to the rear of the proposed single-family unit to flow overland and eventually draining into the receiving stream. Therefore, the project is not proposing any direct connections to the storm drain network in Summit Street.

DPW TRANSPORTATION
• The proposed project would not be expected to create mobility or safety issues in the project vicinity.
Response: Acknowledged.

• The applicant shall install an ADA compliant crossing of Washington Avenue and connect the crosswalk to the existing sidewalk on Washington Avenue.
Response: A painted crosswalk has been added to the plans, as well as a sidewalk extension along Washington Avenue that will tie into the existing sidewalk.

• DPW should comment on the project preserving bituminous curbing along the project frontage.
Response: Our original April 6, 2023 submission to the Planning Department included an email correspondence with City Engineer Keith Gray with the conclusion that the City would not pursue the replacement of the bituminous curbing along the project frontage.

•From an access management perspective, it would be beneficial if the easternmost lot's driveway be accessed off the 18-foot shared driveway.
Response: The applicant would like to request that DPW allow the driveway location to remain as shown. As proposed, the driveway will be located at an existing curb cut and prevent the need to install new curbing along Summit Street. The location of the existing curb cut is adjacent to a catch basin, and a new granite tip down has been installed adjacent to the catch basin headstone. We believe this location was selected intentionally and will allow the applicant to keep the existing tip down in place. Given the limited trip generation from this single-family home onto the Summit Street local roadway, utilizing the existing curb cut that is in place to serve this lot would be the most straightforward approach to provide access to this lot while minimally affecting the access management of this residential neighborhood.

• The applicant shall revise the plans to remove the proposed tip downs / curb cut. The proposed sidewalk shall be tied into the existing top of the curb.
Response: The proposed sidewalk and esplanade have been designed to tie into the existing top of the curb. The proposed tip downs and curb cuts are required for the proposed driveways and ADA accessible crosswalk at Washington Avenue. Disturbance of the existing curb will occur only as required for driveways and the Washington Avenue crosswalk. Standard granite tip downs are proposed at new driveway locations and the Washington Avenue crosswalk only. The granite tip downs were selected based on discussion with the City Engineer in early 2023, and match the nearby driveways on Washington Avenue. The project has been designed to preserve the existing bituminous curb on Summit Street to the greatest extent practicable.

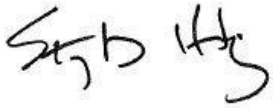
• The City's Technical Manual was updated and approved in 2022. The applicant shall update all proposed details (Site, Sewer, Stormwater, Landscape, …. details) to meet the requirements of the

recently approved technical manual update or add a note to each to the proposed details that states the City standard detail (figure # and name) shall be followed. CAD files can be obtained upon request.
Response: The proposed details have been revised to include the applicable details contained within the City's updated Technical Manual. Please note that additional details have been provided that are not contained within the City's Technical Manual.

We trust that these comments will address the City's comments, but let us know if there are any further questions or comments. Also as noted earlier, we would greatly appreciate getting the City Surveyor's comments so that we could address all of the City's review comments and move onto the Planning Board review of this project. Should you have any questions or comments regarding this project as you familiarizing yourself with it, please do not hesitate to contact us.

Sincerely,

Sebago Technics, Inc.



Stephen D. Harding, P.E.
Town Engineer

SDH/jbp/rlg

cc: Matt Grooms, City of Portland
Jeff Pollard, Sebago Technics
Rebecca Gabryszewski, Sebago Technics

CITY OF PORTLAND, MAINE

PLANNING BOARD

Brandon Mazer, Chair
Justin Barker, Vice Chair
Marpheen Chann
Sean Murphy
Maggie Stanley
David Silk
Austin Smith

October 10, 2023

John Kelly
533 Summit Street
Portland, ME 04103

Steve Harding
Sebago Technics Inc.
75 John Roberts Road Unit: 4A
South Portland, ME 04106

Project Name:	533 Summit Street Subdivision	**Project ID:**	PL-002453-2022
Address:	533 Summit Street	**CBLs:**	385 B032001, 385 B002001, 385 B001001, 385 B026001
Applicant:	John Kelly	**Planner:**	Charles Tetelman

To John Kelley and Steve Harding:

On October 24, 2023, the Planning Board approved a Subdivision application to subdivide four existing parcels into seven new parcels at 533 Summit Street in the R-2 Residential zone. The decision is based upon the application, documents, and plans as submitted. The Planning Board reviewed the proposal for conformance with the standards of the Subdivision Standards Section 15.4. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on October 24, 2023, which is attached hereto and incorporated herein by reference, and based on those findings, conclusions and recommendations, the Planning Board found the application met all relevant standards and voted _____ to approve the application with the following waiver and conditions as presented below.

Waivers

The Planning Board voted _____ to waive the following *City of Portland Technical Manual* standards:

1. The Planning Board finds, based upon City Staff and the Third-Party Stormwater Engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the City of Portland's *Technical Manual* Section 8.2.1 which requires a 100 ft. buffer adjacent to perennial streams.

Subdivision Standards

Based on the plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on October 24, 2023 for application #PL-002453-2022 relevant to the subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board voted _____ to find that the plan is in conformance with the subdivision standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO THE SUBMISSION OF THE PLAT FOR PLANNING BOARD SIGNATURE

2. The applicant will need to submit finalized drainage and access easements as well as a driveway maintenance agreement to the satisfaction of the Planning Authority, the Department of Public Works, and Corporation Counsel.
3. The subdivision plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel and Department of Public Works and include clear descriptions of the number, location, type, size of all subdivided units, along with relevant notes and conditions, and any easements or and agreements associated with the site.

PRIOR TO PRECONSTRUCTION MEETING

4. The applicant will need to submit ability to serve for all utilities including electric, gas, wastewater, and water for review and approval by the Planning Authority and Department of Public Works.
5. The applicant will need to submit a final Stormwater Management Plan for review and approval by the Planning Authority, Department of Public Works, and the Third-Party Stormwater Engineer.

PRIOR TO RELEASE OF PERFORMANCE GUARANTEES

6. The applicant shall contribute to the City's tree fund in the amount of $400 per tree for the two remaining trees for a total of $800.
7. The applicant shall not commence any tree clearing or vegetation removal activity outside of the areas where site work associated with this application have been approved until minor residential site plans are approved.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Subdivision Recording Plat: A final recording plat, listing all conditions of subdivision approval must be submitted to the Planning and Urban Development Department for review. Once approved, the plat shall be signed by the Planning Board. A performance guarantee must be issued prior to release of the recording plat for recording at the Cumberland County Registry of Deeds. One mylar copy of the recording plat with signatures and the recorded book and page must be returned to the Planning and Urban Development Department.

2. Subdivision Waivers: Pursuant to 30-A MRSA section 4406(B)(1), any waiver must be specified on the subdivision plan or outlined in a notice. The plan or notice must be recorded in the Cumberland County Registry of Deeds within two (2) years of the final subdivision approval.

3. Site Plan Expiration: The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

4. Subdivision Expiration: Subdivision approval is valid for up to three (3) years from the date of Planning Board approval.

5. Separate Building Permits Are Required: This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

6. Performance Guarantee and Inspection Fees: A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

7. Construction Management Plans: The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

8. Preconstruction Meeting: Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

9. Department of Public Works Permits: If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment

siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828 (only excavators licensed by the City of Portland are eligible).

10. Develop Site According to Plan: The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

11. Stormwater Management: The owner/operator of an 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.
    A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

12. Third Party Inspections: For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

13. Defect Guarantee: A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

14. As-Built Final Plans: Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater.

15. Mylar Copies: Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy

16. Impact Fees: New development or changes of use that result in net new residential dwelling units, non- residential building square footage, or water meters, are subject to the City of

Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit https://www.portlandmaine.gov/2409/Impact-Fees.

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at (207) 874-8901 or via email at drc@portlandmaine.gov. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Charles Tetelman at (207) 874-8724 or via ctetelman@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

1. 533 Planning Board Report (10.24.23) w/ incorporated attachments
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet

PLANNING BOARD REPORT
PORTLAND, MAINE

533 Summit Street
Subdivision
PL-002453-2022
John Kelly, Applicant

Submitted to:	Portland Planning Board	**Prepared By:**	Charles Tetelman
Public Hearing Date:	October 24, 2023	**Date:**	October 20, 2023

I. INTRODUCTION

John Kelly has submitted a Subdivision application to subdivide four existing parcels at 533 Summit Street into seven new parcels. This subdivision will help to facilitate the future construction of five single-family residential homes. The proposed lots will all be accessed from Summit Street, though two of the lots would also have frontage on Lambert Street. This application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Subdivision Standards, section 15.4.



Figure 1: Surrounding Context

The Planning and Urban Development Department mailed 67 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the October 14, 2023 and October 17, 2023 editions of the *Portland Press Herald*.

Applicant:	John Kelly
Applicant Representatives:	Sebago Technics, Inc.

II. REQUIRED REVIEWS + PROJECT DATA

Review	*Applicable Standards*
Subdivision Review Standards	Section 15. 4

Waiver Requests	*Applicable Standards*
The applicant is requesting a waiver to reduce the 100' stream buffer strip to 25' to allow for site grading, erosion and sedimentation control work, driveways, and future residential development.	*City of Portland Technical Manual* Section 8.2.1: "For developments located adjacent to perennial streams, a minimum one hundred (100) foot buffer strip on either side of the stream should be maintained. For intermittent streams, the buffer strip may be reduced to twenty-five (25) feet."

Project Data	
Existing Zoning	R-2 Residential
Property Size	123,604 sq. ft.
Existing Use	Single-Family Homes / Undeveloped Lots
Proposed Use	Single-Family Residential

III. EXISTING CONDITIONS AND SURROUNDING AREA



Figure 2: Existing Homes

The proposed subdivision is located in the North Deering neighborhood and within the R-2 Residential zone near the Portland-Falmouth municipal boundary. The neighborhood is predominantly low-density single-family homes. The proposed subdivision consists of four parcels, totaling 123,604 sq. ft., that currently feature two single-family homes along Summit Street. These parcels are bounded by Summit Street to the south, Washington Avenue to the west, and Lambert Street to the north. The site generally slopes north towards an unnamed stream that flows along the northern boundary of the proposed subdivision, from Lambert Street to Washington Avenue. Wetlands surround the stream across the site. The stream discharges to a culvert underneath Washington Avenue.

IV. PROPOSED SUBDIVISION PLAT + SITE WORK

The applicant is proposing to subdivide the existing four parcels into seven new parcels. Figure 3 shows the proposed lot lines for the subdivision. This subdivision will facilitate the development of five new single-family homes along the site.

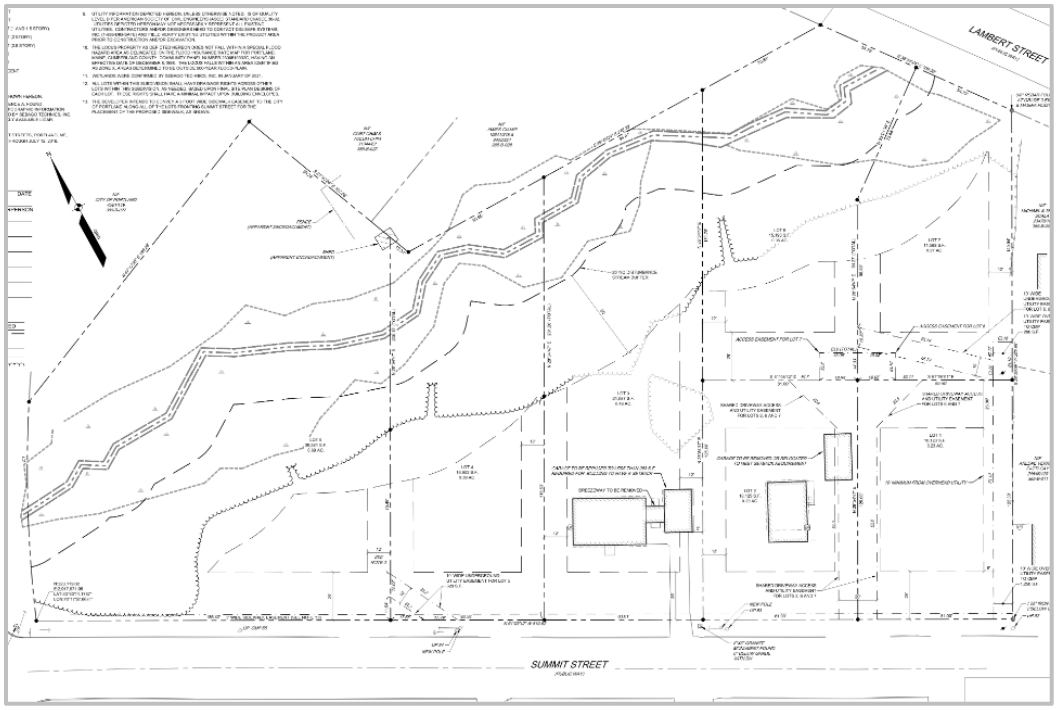


Figure 3: Proposed Subdivision

The applicant is also proposing site work and utility installations alongside the subdivision application shown on Figure 4 below. The applicant proposes relocating the detached garage of the eastern-most single-family home to behind the building. The applicant proposes widening that existing curb cut and constructing a new private shared driveway to provide access to the four easternmost proposed lots within

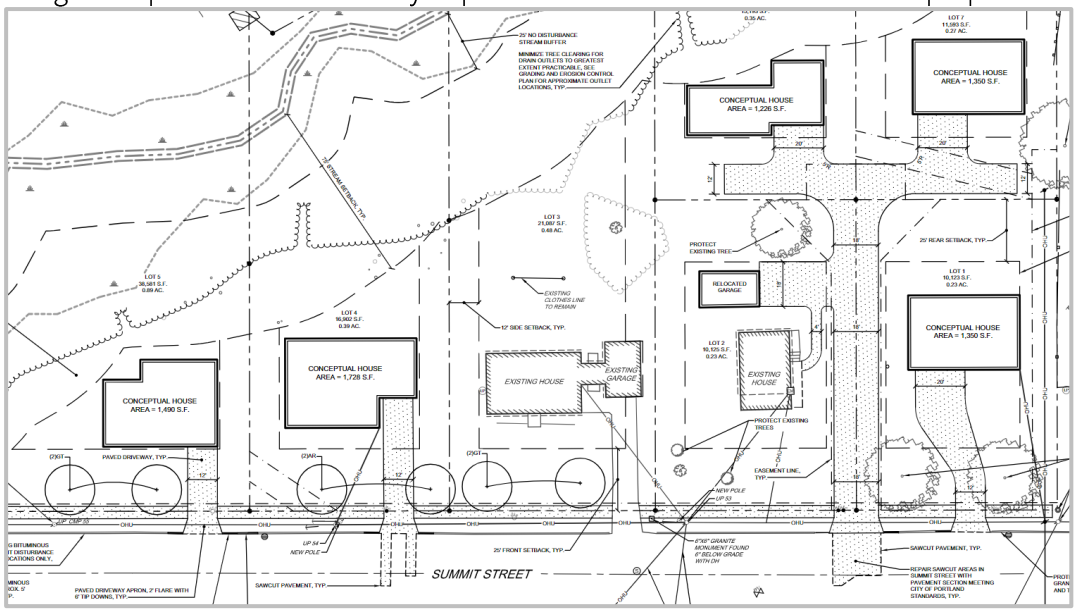


Figure 4: Proposed Site Work

the subdivision. Two of the proposed lots have frontage on Lambert Street, however the unnamed stream and wetlands restrict access to these lots from the Lambert Street. Additionally, the applicant will be utilizing an existing curb cut for the eastern-most lot along Summit Street for a driveway. The applicant is proposing two new curb cuts for driveways along Summit Street for the lots located on the western side of the property. The applicant will be connecting into existing utility features along Summit Street to serve the entire subdivision.

V. RIGHT, TITLE, & INTEREST

The applicant has submitted a short form quitclaim deed with covenant dated July 18, 2016 (Attachment 3) for the parcels associated with the proposed subdivision at 533 Summit Street as demonstration of Right, Title, and Interest.

The applicant will need to provide drainage easements for all the new parcels associated with the project. Additionally, the applicant will need to provide an access easement as well as a driveway maintenance agreement between lots 1, 2, 6, and 7.

VI. FINANCIAL & TECHNICAL CAPACITY

The applicant has submitted a letter from Bangor Wealth Management dated March 31, 2023 which confirms that the applicant has the ability to demonstrate sufficient financial capacity to complete the proposed subdivision and all proposed site work (Attachment 9)

The applicant has provided evidence demonstrating technical capacity (Attachment 10) which highlights key members of the Sebago Technics, Inc. team assisting with this application.

VII. ZONING ANALYSIS



Figure 5: Zoning Context

The proposed subdivision is located entirely within the R-2 Residential zone, which provides for low-density residential development characterized by single-family homes on individual lots in outlying areas of the city and along traffic corridors with limited additional traffic capacity. Aside from residential uses, the R-2 zone also permits governmental uses, agriculture, parks and open spaces, and minor solar energy systems. The applicant is proposing site work to facilitate the future development of five new single-family homes on the five new lots. The parcels will be subject to *Table 7-A: Residential Zone Dimensional Standards* in Chapter 14 Article 7 Dimensional Requirements. The table below provides information on these dimensional requirements in the R-2 zone:

R-2 Residential Zoning Analysis			
Dimensional Requirement	Required	Proposed	Status
Minimum Lot Area	10, 000 sq. ft.	10,123-37,672 sq. ft.	Met
Minimum Street Frontage	50 ft.	70-189 ft.	Met
Minimum Lot Width	80 ft.	80 ft.	Met
Minimum Front Setback	25 ft.	26-70 ft.	Met
Minimum Rear Setback	25 ft. (5 ft. for detached accessory < 250 sq. ft. footprint)	38-174 ft.	Met
Minimum Side Setback	14 ft.	12-15 ft.	Met

VIII. SUBDIVISION REVIEW STANDARDS (Section 15.4)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below:

1. Will Not Result in Undue Water and Air Pollution (Section 15.4.1.A), and will not result in undue soil erosion (Section 15.4.1.D)

   Staff Finding: The stormwater for the site flows into an unnamed stream which is surrounded by wetlands. The applicant is constructing over 1,000 sq. ft. of impervious surface and is subject to the Maine DEP Chapter 500 Stormwater standards. The applicant has submitted a Stormwater Management Plan (Attachment 17). A condition of approval has been included to submit a final Stormwater Management Plan approved by DPW and the third-party Stormwater Engineer reviewer. The applicant is seeking to treat stormwater without installing BMPs that would require a Homeowner's Association agreement. As noted above, City Staff have requested drainage easements between properties to allow for more effective stormwater management.

   The applicant has submitted a waiver request for *COP Technical Manual Standard* 8.2.1 to facilitate site work within the 100 ft. perennial stream buffer. The applicant notes in the waiver request that

the residential nature of the project matches existing development in the surrounding area and the low-impact single-family homes will not impact the unnamed stream within the property. City Staff have reviewed this waiver request and support allowing the applicant to work within the 100 ft. perennial stream buffer.

2. Has sufficient water available and will not cause unreasonable burden on existing water supply (Section 15.4.1.B and C)
   Staff Finding: The applicant will be utilizing existing water supply along Summit Street. The applicant has submitted an Ability to Serve request to the Portland Water District. Although City Staff do not anticipate any unreasonable burden on the existing water supply, the applicant will need to submit final approval and confirmation from Portland Water district. This has been included as a condition of approval.

3. Will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highway or public roads existing or proposed (Section 15.4.1.E)
   Staff Finding: The applicant proposes two new curb cuts for the new western lots and will be utilizing existing curb cuts for the remaining two driveways. Single-family homes will not have a significant impact on the surrounding traffic network and City Staff do not anticipate any unsafe conditions or unreasonable public road conditions.

4. Will provide for adequate sanitary sewer and stormwater disposal (Section 15.4.1.F) and will not cause an unreasonable burden on municipal solid waste and sewage (Section 15.4.1.G)
   Staff Finding: The proposed subdivision will utilize existing public sewer along Summit Street. Although City Staff do not expect any impact or unreasonable burden to municipal solid waste and sewage, the applicant will need to submit a wastewater capacity approval as a condition of approval.

5. Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat (Section 15.4.1.H)
   Staff Finding: The site is mostly undeveloped with existing vegetation and tree cover. The site work associated with the subdivision will not result in extensive vegetation or tree removal. The single-family homes will be subject to landscape and vegetation preservation requirements and will be reviewed at the time of approval. City Staff do not see any undue adverse effect on the scenic or natural beauty of the area. The applicant is proposing street trees as part of this application to account for the future development across the subdivision, with a total requirement of 10 street trees, based upon there being five newly proposed single-family dwellings. The applicant is proposing six new street trees and preserving two existing street trees on Lot 1. City Staff have included a contribution to the street tree fund ($400 per tree) for the remaining two trees as a condition of approval.

6. Is in conformance with the Comprehensive Plan (Section 15.4.1.I)
   Staff Finding: The applicant notes that the proposed development will be generating five new single-family homes in North Deering that is zoned R-2 Residential. This application conforms with the Comprehensive Plan and contributes to the 'Livable City (Policy Guide: Housing)' portion of the plan. Local goals include:

   "Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences, and financial capabilities of all Portland Residents."

"Encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods."

"Pursue policies to enable people who work in Portland to have the option to live in Portland."

7. Adequate financial and technical capacity (Section 15.4.1.J)
   Staff Finding: As discussed in Section VI of this report, the applicant has demonstrated adequate financial and technical capacity.

8. Whenever situated, in whole or in part, within the watershed of any pond or lake or within 250 feet of any wetland, great pond, or river, will not adversely affect the quality of such body of water or unreasonably affect the shoreline of such body of water (Section 15.4.1.K)
   Staff Finding: City Staff find the proposed subdivision and anticipated single-family residential development to not adversely affect the quality of the existing wetlands on site. The low-intensity nature of single-family homes and the proposed driveways will not impact the wetlands. The applicant will need to submit a finalized stormwater management plan.

9. Will not, adversely affect the quality and quantity of groundwater (Section 15.4.1.L)
   Staff Finding: City Staff do not anticipate any impact to the quality or quantity of groundwater on site.

10. Is or is not in a flood-prone area (Section 15.4.1.M)
    The site is not located within any designated flood-prone areas.

11. Will provide for adequate stormwater management (Section 15.4.1.N)
    Staff Finding: As noted above, the applicant is required to submit a Stormwater Management Plan as the proposed site work will create over 1,000 sq. ft. of impervious surface. A condition of approval has been included to submit a final Stormwater Management Plan approved by City Staff and the Third-Party Stormwater Engineer reviewer.

12. Will not have lots with a lot depth-to-shore frontage ratio greater than 5 to 1 if any lots in the proposed subdivision have shore frontage on a river, stream brook, great pond, or coastal wetland (Section 15.4.1.O)
    The site does not have shore frontage on any lots.

13. For any proposed subdivision that crosses municipal boundaries, will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the subdivision is located (Section 15.4.1.P)
    The proposed subdivision does not cross municipal boundaries.

IX. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant was not required to hold a neighborhood meeting.

No public comment has been submitted to the Planning & Urban Development Department.

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff recommends to the Planning Board that the proposed project meets the applicable standards of Portland's Land Use Code.

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 October 24, 2023 for application #PL-002453-2022 at 70 533 Summit Street relevant to the subdivision standards of the Land Use Code and Portland's Technical and Design Standards, and other regulations, and the testimony presented at the Planning Board public hearing:

1. The Planning Board **[finds/does not find]**, based upon City Staff and the Third-Party Stormwater Engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the City of Portland's *Technical Manual* Section 8.2.1 which requires a 100 ft. buffer adjacent to perennial streams.

B. SUBDIVISION 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 October 24, 2023 for application #PL-002453-2022 relevant to the subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board **[finds/does not find]** that the plan is in conformance with the subdivision standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO THE SUBMISSION OF THE PLAT FOR PLANNING BOARD SIGNATURE

2. The applicant will need to submit finalized drainage and access easements as well as a driveway maintenance agreement to the satisfaction of the Planning Authority, the Department of Public Works, and Corporation Counsel.
3. The subdivision plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel and Department of Public Works and include clear descriptions of the number, location, type, size of all subdivided units, along with relevant notes and conditions, and any easements or and agreements associated with the site.

PRIOR TO PRECONSTRUCTION MEETING

4. The applicant will need to submit ability to serve documentation for all utilities including electric, gas, wastewater, and water for review and approval by the Planning Authority and Department of Public Works.
5. The applicant will need to submit a final Stormwater Management Plan for review and approval by the Planning Authority, Department of Public Works, and the Third-Party Stormwater Engineer.

PRIOR TO RELEASE OF PERFORMANCE GUARANTEES

6. The applicant shall contribute to the City's tree fund in the amount of $400 per tree for the two remaining trees for a total of $800.
7. The applicant shall not commence any tree clearing or vegetation removal activity outside of the areas where site work associated with this application have been approved until minor residential site plans are approved.

XII. ATTACHMENTS

APPLICANT SUBMITTAL

1. Project Description
2. Subdivision Checklist
3. RTI
4. Evidence of Approvals
5. Zoning Analysis Table
6. Standards of Review
7. Standards of Review
8. Waiver Table
9. Financial Capability
10. Technical Capability
11. Price Range
12. Solid Waste
13. Wetlands
14. Construction Plan
15. Erosion Control
16. HydroCAD Reports
17. Stormwater Management
18. Tree Preservation Exhibit
19. Comment Response 10.12.23
20. Comment Response 8.9.23

PLANS

Plan 1. Cover sheet
Plan 2. Notes + Legend
Plan 3. Subdivision Plan
Plan 4. Site Plan.
Plan 5. Grading + Erosion Control
Plan 6. Utility Plan
Plan 7. Erosion Control Notes
Plan 8. Details
Plan 9. Details
Plan 10. Details
Plan 11. Existing Conditions

CHAPTER 32 STORM WATER

Art. I. Prohibited Discharges, §§ 32-1--32-15
Art. II. Prohibited Discharges, §§ 32-16--32-35
Art. III. Post-Construction Stormwater Management, §§32-36—32-40

ARTICLE I. IN GENERAL

Sec. 32-1. Definitions.

For the purposes of this article, the terms listed below are defined as follows:

Applicant. "Applicant" means a person with requisite right, title or interest or an agent for such person who has filed an application for a development project that requires a post-construction stormwater management plan under this article.

Best management practices ("BMP"). "Best management practices" or "BMPs" means schedules or activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Clean Water Act. "Clean Water Act" means the federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*, also known as the "Clean Water Act"), and any subsequent amendments thereto.

Discharge. "Discharge" means any spilling, leaking, pumping, pouring, emptying, dumping, disposing or other addition of pollutants to "waters of the state." "Direct discharge" or "point source" means any discernable, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft, from which pollutants are or may be discharged.

Enforcement authority. "Enforcement authority" means the person(s) or department authorized under section 32-3 of this article to administer and enforce this article.

Exempt person or discharge. "Exempt person or discharge" means any person who is subject to a multi-sector general permit for industrial activities, a general permit for construction activity, a general permit for the discharge of storm water from the Maine department of transportation and the Maine turnpike authority

municipal separate storm sewer systems, or a general permit for the discharge of storm water from state or federally owned authority municipal separate storm sewer system facilities; and any non-storm water discharge permitted under a NPDES permit, waiver, or waste discharge license or order issued to the discharger and administered under the authority of the U.S. environmental protection agency ("EPA") or the Maine department of environmental protection ("DEP").City of Portland

Municipality. "Municipality" means the city of Portland.

Municipal separate storm sewer system, or MS4. "Municipal separate storm sewer system" or "MS4," means conveyances for storm water, including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels or storm drains (other than publicly owned treatment works and combined sewers) owned or operated by any municipality, sewer or sewage district, fire district, state agency or federal agency or other public entity that discharges directly to surface waters of the state.

National pollutant discharge elimination system (NPDES) storm water discharge permit. "National pollutant discharge elimination system (NPDES) storm water discharge permit" means a permit issued by the EPA or by the DEP that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-storm water discharge. "Non-storm water discharge" means any discharge to an MS4 that is not composed entirely of storm water.

Person. "Person" means any individual, firm, corporation, municipality, quasi-municipal corporation, state agency or federal agency or other legal entity which creates, initiates, originates or maintains a discharge of storm water or a non-storm water discharge.

Pollutant. "Pollutant" means dredged spoil, solid waste, junk, incinerator residue, sewage, refuse, effluent, garbage, sewage sludge, munitions, chemicals, biological or radiological materials, oil, petroleum products or by-products, heat, wrecked or discarded equipment, rock, sand, dirt and industrial, municipal, domestic, commercial or agricultural wastes of any kind.

Post-construction stormwater management plan. "Post-construction stormwater management plan" means BMPs employed by a development project to meet the stormwater standards of Section V of the department of planning and urban development's Technical and Design Standards and Guidelines.

Premises. "Premises" means any building, lot, parcel of land, or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips, located within the municipality from which discharges into the storm drainage system are or may be created, initiated, originated or maintained.

Qualified post-construction stormwater inspector. "Qualified post-construction stormwater inspector" means a person who conducts post-construction stormwater best management practice inspections for compensation and who has received the appropriate training for the same from DEP or otherwise meets DEP requirements to perform said inspections.

Regulated small MS4. "Regulated small MS4" means any small MS4 regulated by the State of Maine "general permit for the discharge of storm water from small municipal separate storm sewer systems" dated July 1, 2008 ("general permit") or the general permits for the discharge of storm water from the Maine department of transportation and Maine turnpike authority small MS4s or state or federally owned or operated small MS4s, including all those located partially or entirely within an urbanized area (UA).

Small municipal separate storm sewer system, or small MS4. "Small municipal separate storm sewer system", or "small MS4," means any MS4 that is not already covered by the phase I MS4 storm water program including municipally owned or operated storm sewer systems, state or federally-owned systems, such as colleges, universities, prisons, Maine department of transportation and Maine turnpike authority road systems and facilities, and military bases and facilities.

Storm drainage system. "Storm drainage system" means the City of Portland's regulated small MS4 and other conveyances for storm water located in areas outside the UA that drain into the regulated small MS4.

Storm water. "Storm water" means any storm water runoff, snowmelt runoff, and surface runoff and drainage; "Stormwater" has the same meaning as "storm water".

Urbanized area ("UA"). "Urbanized area" or "UA" means the areas of the State of Maine so defined by the latest decennial (2000) census by the U.S. Bureau of Census.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-2. Reserved.
Sec. 32-3. Reserved.

Sec. 32-4. Reserved.

Sec. 32-5. Reserved.
Sec. 32-6. Reserved.
Sec. 32-7. Reserved.
Sec. 32-8. Reserved.
Sec. 32-9. Reserved.
Sec. 32-10. Reserved.
Sec. 32-11. Reserved.
Sec. 32-12. Reserved.
Sec. 32-13. Reserved.
Sec. 32-14. Reserved.
Sec. 32-15. Reserved.

ARICLE II. PROHIBITED DISCHARGES

Sec. 32-16. Applicability.

This Article shall apply to all persons discharging storm water and/or non-storm water discharges from any premises into the storm drainage system.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-17. Responsibility for administration.

The department of public services is the enforcement authority who shall administer, implement, and enforce the provisions of this article.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10; 8-17-09)

Sec. 32-18. Prohibition of non-storm water discharges.

(a) *General prohibition.* Except as allowed or exempted herein, no person shall create, initiate, originate or maintain a non-storm water discharge to the storm drainage system. Such non-storm water discharges are prohibited notwithstanding the fact that the city may have approved the connections, drains or conveyances by which a person discharges un-allowed non-storm water discharges to the storm drainage system.

(b) *Allowed non-storm water discharges.* The creation, initiation, origination and maintenance of the following non-storm water discharges to the storm drainage system is allowed:

(1) Landscape irrigation; diverted stream flows; rising ground waters; uncontaminated flows from foundation drains; air conditioning and compressor condensate; irrigation water; flows from uncontaminated springs; uncontaminated water from crawl space pumps; uncontaminated flows from footing drains; lawn watering runoff; flows from riparian habitats and wetlands; residual street wash water (where spills/leaks of toxic or hazardous materials have not

occurred, unless all spilled material has been removed and detergents are not used); hydrant flushing and fire fighting activity runoff; water line flushing and discharges from potable water sources; individual residential car washing; and de-chlorinated swimming pool discharges.

(2) Discharges specified in writing by the enforcement authority as being necessary to protect public health and safety.

(3) Dye testing, with verbal notification to the enforcement authority prior to the time of the test.

(c) *Exempt person or discharge.* This article shall not apply to an exempt person or discharge, except that the enforcement authority may request from exempt persons and persons with exempt discharges copies of permits, notices of intent, licenses and orders from the EPA or DEP that authorize the discharge(s).
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-19. Suspension of access to the city's small MS4.

The enforcement authority may, without prior notice, physically suspend discharge access to the storm drainage system to a person when such suspension is necessary to stop an actual or threatened non-storm water discharge to the storm drainage system which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the storm drainage system, or which may cause the city to violate the terms of its environmental permits. Such suspension may include, but is not limited to, blocking pipes, constructing dams or taking other measures, on public ways or public property, to physically block the discharge to prevent or minimize a non-storm water discharge to the storm drainage system. If a person fails to comply with a suspension order issued in an emergency, the enforcement authority may take such steps as deemed necessary to prevent or minimize damage to the storm drainage system, or to minimize danger to persons.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-20. Monitoring of discharges.

In order to determine compliance with this article, the enforcement authority may enter upon and inspect premises subject to this article at reasonable hours to inspect the premises and connections thereon to the storm drainage system; and to conduct monitoring, sampling and testing of the discharge to the storm drainage system.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-21. Enforcement.

It shall be unlawful for any person to violate any provision of or to fail to comply with any of the requirements of this article. Whenever the enforcement authority believes that a person has violated this article, the enforcement authority may enforce this article in accordance with 30-A M.R.S.A. § 4452.

(a) *Notice of violation.* Whenever the enforcement authority believes that a person has violated this article, the enforcement authority may order compliance with this article by written notice of violation to that person indicating the nature of the violation and ordering the action necessary to correct it, including, without limitation:

(1) The elimination of non-storm water discharges to the storm drainage system, including, but not limited to, disconnection of the premises from the MS4.

(2) The cessation of discharges, practices, or operations in violation of this article.

(3) At the Person's expense, the abatement or remediation (in accordance with best management practices in DEP rules and regulations) of non-storm water discharges to the storm drainage system and the restoration of any affected property; and/or

(4) The payment of fines, of the city's remediation costs and of the city's reasonable administrative costs and attorneys' fees and costs. If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such abatement or restoration must be completed.

(b) *Penalties/fines/injunctive relief.* In addition to the imposition of any other costs or penalties provided for herein, any person who violates this section shall be subject to fines, penalties and orders for injunctive relief and shall be responsible for the city's attorney's fees and costs, all in accordance with 30-A M.R.S.A. § 4452. Each day such violation continues shall constitute a separate violation. Moreover, any person who violates this section also shall be responsible for any and all fines, penalties, damages and costs, including, but not limited to attorneys' fees and costs, incurred by the city for violation of federal and State environmental laws and

regulations caused by or related to that person's violation of this article; this responsibility shall be in addition to any penalties, fines or injunctive relief imposed under this section.

(c) *Consent agreement.* The enforcement authority may, with the approval of the city manager, enter into a written consent agreement with the violator to address timely abatement of the violation(s) of this article for the purposes of eliminating violations of this article and of recovering fines, costs and fees without court action.

(d) *Appeal of notice of violation.* Any person receiving a notice of violation or suspension notice may appeal the determination of the enforcement authority to the city manager or his or her designee. The notice of appeal must be received within 30 days from the date of receipt of the notice of violation. The city manager shall hold a hearing on the appeal within 30 days from the date of receipt of the notice of appeal, except that such hearing may be delayed by agreement of the city manager and the appellant. The city manager may affirm, reverse or modify the decision of the enforcement authority. A suspension under Section 32-5 of this article remains in place unless or until lifted by the city manager or by a reviewing court. A party aggrieved by the decision of the city manager may appeal that decision to the Maine superior court within 45 days of the date of the city manager's decision pursuant to Rule 80B of the Maine Rules of Civil Procedure.

(e) *Enforcement measures.* If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or, in the event of an appeal to the city manager, within 45 days of a decision of the city manager affirming the enforcement authority's decision, then the enforcement authority may recommend that the corporation counsel's office file an enforcement action in a Maine court of competent jurisdiction under Rule 80K of the Maine Rules of Civil Procedure.

(f) *Ultimate responsibility of discharger.* The standards set forth herein are minimum standards; therefore this article does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants into waters of the U.S. caused by said person. This article shall not create liability on the part of the city, or any officer agent or employee thereof for any damages that

result from any person's reliance on this article or any administrative decision lawfully made hereunder.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-22. Severability.

The provisions of this article are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this article or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions, clauses, sentences, or paragraphs or application of this article.
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

Sec. 32-23. Reserved.
Sec. 32-24. Reserved.
Sec. 32-25. Reserved.
Sec. 32-26. Reserved.
Sec. 32-27. Reserved.
Sec. 32-28. Reserved.
Sec. 32-29. Reserved.
Sec. 32-30. Reserved.
Sec. 32-31. Reserved.
Sec. 32-32. Reserved.
Sec. 32-33. Reserved.
Sec. 32-34. Reserved.
Sec. 32-35. Reserved.

ARTICLE III. POST-CONSTRUCTION STORMWATER MANAGEMENT.

Sec. 32-36. Applicability.

This article applies to all development projects that require a stormwater management plan pursuant to section V of the department of planning and urban development's Technical and Design Standards and Guidelines.
(Ord. No. 35-09/10, 8-17-09)

Sec. 32-37. Post-construction stormwater management plan approval.

Notwithstanding any ordinance provision to the contrary, no applicant for a development project to which this article is applicable shall receive approval for that development project unless the applicant also receives approval for its post-construction stormwater management plan and for the best management practices ("BMPs") for that development project.
(Ord. No. 35-09/10, 9-17-09)

Sec. 32-38. Post-construction stormwater management plan compliance.

Any person owning, operating, or otherwise having control over a BMP required by a post construction stormwater management plan shall maintain the BMPs in accordance with the approved plan and shall demonstrate compliance with that plan as follows:

(a) *Inspections.* The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

(b) *Maintenance and repair.* If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) 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 action(s) to the department of public services ("DPS") in the annual report.

(c) *Annual report.* The owner or operator of a BMP 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 to DPS in a form provided by DPS, certifying that the person has inspected the BMP(s) and that the yare 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 action(s) taken.

(d) *Filing fee.* Any persons required to file and annual certification under this section shall include with the annual certification a filing fee established by DPS to pay the administrative and technical costs of review of the annual certification.

(e) *Right of entry.* In order to determine compliance with this article and with the post-construction stormwater management plan, DPS may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMPs.

Sec. 32-39. Enforcement.

It shall be unlawful for any person to violate any provision of or to fail to comply with any of the requirements of this article or of the post-construction stormwater management plan. Whenever the enforcement authority believes that a person has violated this article, DPS may enforce this article in accordance with 30-A M.R.S.A. § 4452. Each day on which a violation exists shall constitute a separate violation for purposes of this section.

(a) *Notice of violation.* Whenever DPS believes that a person has violated this article or the post-construction stormwater management plan, DPS may order compliance by written notice of violation to that person indicating the nature of the violation and ordering eh action necessary to correct it, including, without limitation:

(1) The abatement of violations, and the cessation of practices or operations in violation of this article or of the post-construction stormwater management plan;

(2) At the person's expense, compliance with BMPs required as a condition of approval of the development project, the repair of BMPs and/or the restoration of any affected property; and/or

(3) The payment of fines, of the City's remediation costs and of the City's reasonable administrative costs and attorneys' fees and costs.

(4) If abatement of a violation, compliance with BMPs, repair of BMPs and/or restoration of affected property is required, the notice shall set forth a deadline within which such abatement, compliance, repair and/or restoration must be completed.

(b) *Penalties/fines/injunctive relief.* In addition to the imposition of any other costs or penalties provided for herein, any person who violates this section shall be subject to fines, penalties and orders for injunctive relief and shall be responsible for the city's attorney's fees and costs, all in accordance with 30-A M.R.S.A. § 4452. Each day such violation continues shall constitute a separate violation. Moreover, any person who violates this section also shall be responsible for any and all fines, penalties, damages and costs, including, but not limited to

attorneys' fees and costs, incurred b y the city for violation of federal and state environmental laws and regulations caused by or related to that person's violation of this article; this responsibility shall be in addition to any penalties, fines or injunctive relief imposed under this section.

(c) *Consent agreement.* The enforcement authority may, without approval of the city manager, enter into a written consent agreement with the violator to address timely abatement of the violation(s) of this article for the purposes of eliminating violations of this article and of recovering fines, costs and fees without court action.

(d) *Appeal of notice of violation.* Any person receiving a notice of violation or suspension notice may appeal the determination of the enforcement authority to the city manager or his or her designee. The notice of appeal must be received within 30 days from the date of receipt of the notice of violation. The city manager shall hold a hearing on the appeal within 30 days from the date of receipt of the notice of appeal, except that such hearing may be delayed by agreement of the city manager and the appellant. The city manager may affirm, reverse or modify the decision of the DPS. A party aggrieved by the decision of the city manager may appeal that decision to the Maine superior court within forty-five (45) days of the date of the city manager's decision pursuant to Rule 80B of the Maine Rules of Civil Procedure.

(e) *Enforcement measures.* If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or , in the event of an appeal to the city manger, within forty-five (45) days of a decision of the city manager affirming the enforcement authority's decision, then the enforcement authority may recommend that the corporation counsel's office file an enforcement action in a Maine court of competent jurisdiction under Rule 80K of the Maine Rules of Civil Procedure.

(Ord. No. 35-09/10, 8-17-09)

Sec. 32-40. Severability.

The provisions of this article are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this article or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions, clauses, sentences, or paragraphs or application of this article.

(Ord. No. 35-09/10, 8-17-09)

STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT

For SITE PLANS (THAT ARE NOT SUBDIVISIONS)

IN CONSIDERATION OF the site plan approval granted by the Planning Board/Planning Authority of the City of Portland to the proposed _____ (*name of development and project number)*), and the associated Grading, Drainage & Erosion Control Plan (*insert correct name of plan)* (Exhibit A) submitted by_____, prepared by _____ (*engineer/agent*) of _____(address) dated _____, and pursuant to a condition thereof, _____ (*name of owner*) a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of _____, 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 _____ (*details of the system such as underdrained subsurface sand filter BMP system, rain gardens, storm drain pipes, underdrain pipes, catch basins*), (hereinafter collectively referred to as the "stormwater system"), as shown on the _____Plan in Exhibit A and in strict compliance with the approved Stormwater Maintenance and Inspection Agreement (*insert correct name of document)* prepared for the Owner by _____ (copy attached at Exhibit B) 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 site plan most recently and formally approved by the Planning Board/Planning Authority 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 Condominium Association or management company, and 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 _____, 2014.

_____
(*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 Grading and Drainage Plan *(name of the plan showing the Stormwater System in detail)*

Exhibit B: Approved Stormwater Maintenance and Inspection Agreement

Performance Guarantee, Inspection Fee, and Infrastructure Financial Contribution Packet
Portland, Maine

Planning and Urban Development Department

A. Site Plan/Subdivision Performance Guarantees Requirement

Portland's Land Use Code requires all developers with approved site plan and/or subdivision applications to submit a performance guarantee to the City prior to the start of any construction or site improvements. The performance guarantee represents 100% of the total cost of site improvements, as determined by the City.

The code further requires developers to pay an inspection fee of 2% of the performance guarantee amount to the City for the administrative costs associated with inspecting construction activity to ensure that it conforms with plans and specifications. (Portland's Land Use Code, Sections 14.11.3 and 14.11.4)

B. Cost Estimate Form and Inspection Fee

The performance guarantee covers major site improvements related to site plan and subdivision review, such as paving, roadway, utility connections, drainage, landscaping, lighting, etc. Please submit an itemized cost estimate form to determine the detailed costs of both public and private site improvements to the Planning office for review and approval. The cost estimate form is a downloadable excel spreadsheet that can be downloaded from the website here: https://www.portlandmaine.gov/467/Performance-Guarantee

The approved amount on the Cost Estimate form is the amount to be covered by the performance guarantee and is the basis for calculating the 2% inspection fee.

C. Acceptable Types of Performance Guarantees

The accepted forms of a performance guarantee, covering the amount approved on the Cost Estimate form, must be one of the following options listed below, with NO exceptions.

PG Letter of Credit from a Bank/Credit Union
PG Escrow Account with Financial Institution
PG Escrow Account with the City

NOTE: No land use application of any kind shall be processed, reviewed or issued, no signed subdivision plat shall be released or recorded, and no building permit of any kind shall be issued unless all fees have been paid in full and every aspect of the proposed development is in compliance with the City of Portland Code, as determined by the Development Review Coordinator in the Planning and Urban Development Department.

The developer is eligible to receive up to three reductions from the performance guarantee in a calendar year equal to the estimated cost of the completed improvements. In no case, however, shall any performance guarantee be reduced 1) in any line item where improvements remain to be completed; or 2) to a value which is less than the estimated cost of completing all remaining required improvements; or 3) to a value less than 10% of the Performance Guarantee. *(The Cost Estimate Form can also be used during the construction phase to submit reductions of fully completed site work items)*

At the conclusion of the project, the City will release 90% of the performance guarantee after the Development Review Coordinator determines that site improvements have been satisfactorily completed at the time of the final inspection. The City will then retain a 10% defect guarantee to cover the workmanship and durability of materials used in construction. The defect guarantee will be released one (1) year from date of acceptance, subject to the Development Review Coordinator inspecting the site and finding it in compliance with the approved site plan.

D. Housing Replacement Performance Guarantees

For those projects that are subject to Portland's Housing Preservation and Replacement Ordinance (Section 18.1) and have an approved plan, then a performance guarantee is required for housing replacement. An owner or developer must post a performance guarantee in the form of a letter of credit in the amount equivalent to the amount the applicant would have been required to contribute to the City's Housing Fund, if the applicant had chosen that option. The guarantee shall be valid for no more than three years, after which the full amount shall be provided to the City's Housing Trust Fund, if replacement units meeting the code do not have certificates of occupancy. The guarantee can be released upon the issuance of a certificate of occupancy for the replacement units.

PG Housing Replacement Letter of Credit

E. Infrastructure Accounts

Contributions to infrastructure accounts may be required as part of the conditions of site plan approval. The contributions must be submitted prior to the issuance of any permits, unless stated otherwise in the approval.

Infrastructure Financial Contribution Form

F. Administrative Process for Submitting a Performance Guarantee

- Step 1 – Submit a Cost Estimate for Review
  Submit completed cost estimate form to the Planning Division for review and approval. Once approved, use this total amount as the performance guarantee amount in Step 2.

- **Step 2 – Drafting a Performance Guarantee**
  Complete a draft of 1 of the 3 performance guarantee templates listed above, inputting project specific information (refer to last page of this document for a help guide) into blank and bracketed areas, and submit to the Planning Office for final approval. Submit a draft to DRC@portlandmaine.gov to ensure fields are correctly entered. Once staff approves the draft, the applicant shall submit the official signed original performance guarantee document, which for option 1) or 2) **must be on Bank/Credit Union letterhead** with original signatures.

- **Step 3 - Submit Performance Guarantee, Inspection Fee, and Infrastructure Contributions**
  Submit the final original Performance Guarantee, the required inspection fee, and any infrastructure contributions to the Planning Division. The Planning Office will confirm that the final documents are accurate and acceptable.

- **Step 4 - Release of Recording Plat and Permits**
  Only after the performance guarantee is issued, fees paid, and all other conditions of site plan approval and compliance are met, will the recording plat be released for recording at the Cumberland County Registry of Deeds and/or City permits issued.

Contact: Please email the Cost Estimate Form to Max Martin at DRC@portlandmaine.gov. Once the cost estimate is approved, all Performance Guarantees and Infrastructure Contributions can be submitted by mail to:

City of Portland
Planning and Urban Development Department
389 Congress Street, 4th Floor
Portland, ME 04101

Guide for Determining Performance Guarantee Fields

[Please note: While drafting, the tracking feature should remain enabled]

Fields	What to Use
Address of Project, Portland, Maine	Reference Application Approval Letter
Amount of Performance Guarantee	Reference Grand Total on the Approved Cost Estimate Form
Application ID #	Reference Project's Approval Letter
Approval Date	See First Sentence of the Approval Letter which contains the Date of Approval. *(Note: If any amendments occurred following the approval, please list, "and amended on [add amendment date]"*
Date	The Date of the Agreement Indicates the Effective Start Date of the Agreement
Date one year from the date of this Letter of Credit [or] Escrow Account	The Expiration Date of the Agreement will be at least One-year from the Effective Date of the Agreement *[**Note**: If the one-year expiration date falls between October 30th and April 15th, the expiration should default to April 15th]*
Name of Applicant	Reference Entity Listed on Application Approval Letter *(Note: The entity eligible to post the Performance Guarantee must be the Applicant/Developer listed on the Approval Letter)*
subdivision and/ or site plan	Reference Application Approval Letter for Applicable Type of Approval. *(Ex. If pertaining to both, the text would read, "subdivision and site plan,")*

Additional Fields on Financial Institution Templates

(i.e. Letter of Credit or Escrow Account with Financial Institution)

Account Number	Any Number the Financial Institution Chooses to Assign the Agreement
Name of Bank/Credit Union	The Name of Financial Institution (i.e. the Surety) posting funds for the Applicant/Developer
Address of Financial Institution	Address of Financial Institution's Office Managing Letter of Credit and/or Escrow Accounts
Name	The Name of the Financial Institution's Authorized Signatory
Title	Title of Authorized Signatory

SUMMIT STREET SUBDIVISION

SUMMIT STREET
PORTLAND, MAINE 04101

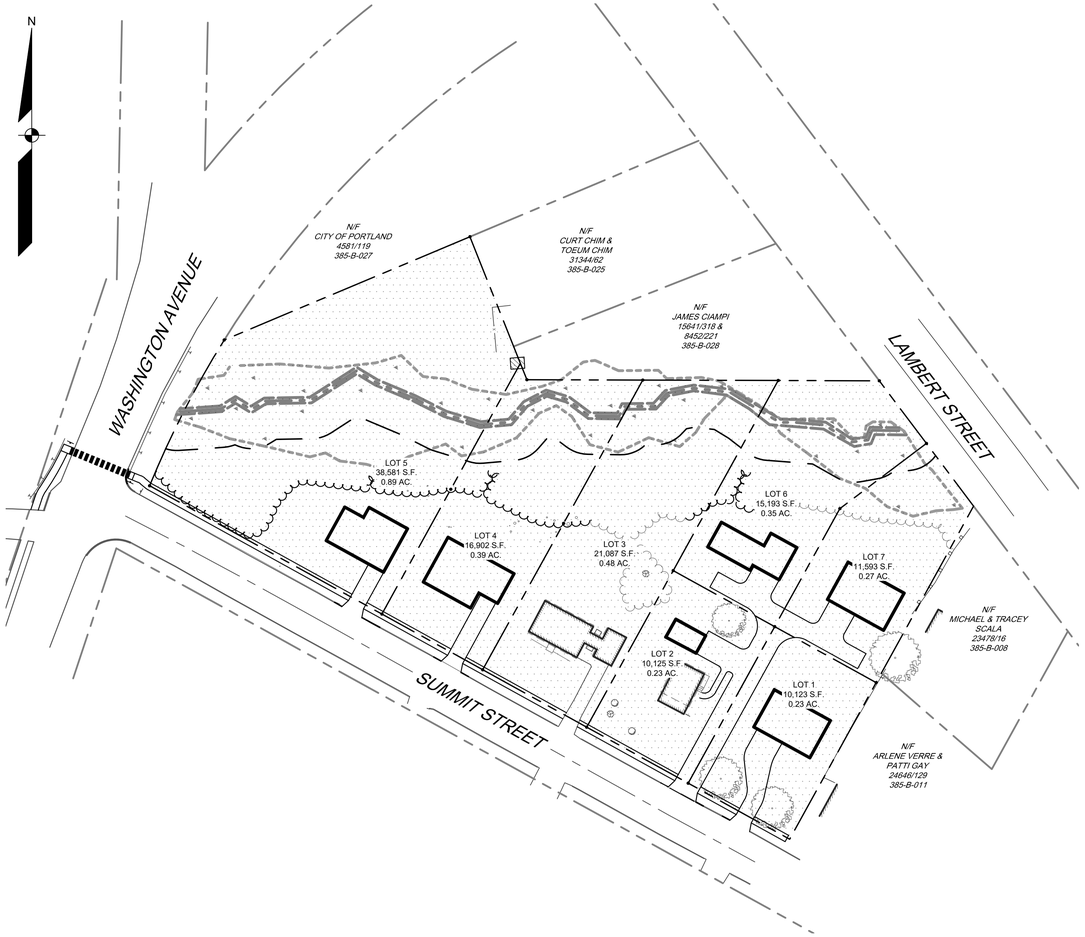
APPLICANT:

J P REAL ESTATE LLC

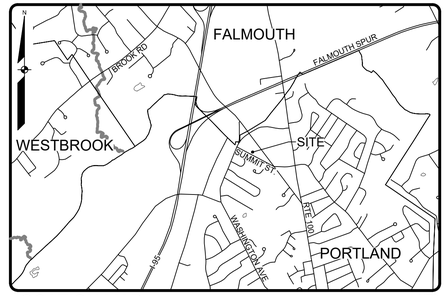
P.O. BOX 617
PORTLAND, MAINE 04101

ENGINEER/SURVEYOR/ LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100



GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.



LOCATION MAP NTS

Sheet List Table

SHEET	TITLE
1	COVER SHEET
2	NOTES & LEGEND
3	SUBDIVISION PLAN
4	SITE PLAN
5	GRADING & EROSION CONTROL PLAN
6	UTILITY PLAN
7	EROSION CONTROL NOTES
8	DETAILS
9	DETAILS
10	DETAILS
1 OF 1	EXISTING CONDITIONS PLAN

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE #6633

STATE OF MAINE · STEPHEN D. HARDING · No. 6633 · REGISTERED PROFESSIONAL ENGINEER · 10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/09/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

THIS PLAN SHALL NOT BE MODIFIED 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.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

COVER SHEET
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	1" = 50'
PROJECT	20439

SHEET 1 OF10

20439 C-dwg, TAB-1 COVER SHEET

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
	MONUMENT	
	IRON PIPE/ROD	
	DRILL HOLE	
C1/L1	DEED CALL	
C1/L1	CURVE/LINE NO.	C1/L1
	SOILS	
	ZONE LINE	
	ZONE LINE ON PL	
BENCHMARK DESCRIPTION WITH ELEVATION	BENCHMARK	
	SURVEY CONTROL	
TP-1	TEST PIT	
MW-1	MONITORING WELL	
B-1	BORING	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
	LEDGE	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	CHAIN LINK FENCE	
X	BARB WIRE FENCE	X
	STOCKADE FENCE	
	GUARD RAIL	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
	BOLLARD	
	SIGN	
	RAILROAD	
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	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
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	E
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	DRAINAGE DITCH	
	EROSION CONTROL BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	
	BOULDER	
	STREAM	

GENERAL NOTES

1. THE RECORD OWNER OF THE FOUR PARCELS IS J P REAL ESTATE BY DEEDS DATED JULY 18, 2016 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD) IN BOOK 33287 PAGES: 184 (LOT 1) 533 SUMMIT STREET; 186 (LOT 2) 539 SUMMIT STREET; 188 (LOT 3) 547 SUMMIT STREET; AND 190 (LOT 4) 555 SUMMIT STREET.

2. THE PROPERTIES ARE SHOWN AS LOTS 32 (LOT 1 - 533 SUMMIT ST), 2 (LOT 2 - 539 SUMMIT ST), 26 (LOT 3 - 547 SUMMIT ST), AND 1 (LOT 4 - 555 SUMMIT ST) ON THE CITY OF PORTLAND TAX MAP 385 WITHIN BLOCK B AND ARE LOCATED IN THE RESIDENTIAL 2 (R2) DISTRICT.

3. SPACE AND BULK CRITERIA FOR THE RESIDENTIAL 2 DISTRICT ARE AS FOLLOWS:

MINIMUM LOT SIZE:	10,000 SQUARE FEET
MINIMUM LOT WIDTH:	80 FEET
MINIMUM STREET FRONTAGE:	50 FEET
MINIMUM FRONT YARD:	25 FEET
MINIMUM SIDE YARD:	12 FEET (1 AND 1.5 STORY)
	14 FEET (2 STORY)
	16 FEET (2.5 STORY)
MINIMUM REAR YARD:	25 FEET
MAXIMUM BUILDING HEIGHT:	35 FEET
MAXIMUM BUILDING COVERAGE:	20 PERCENT
DETACHED ACCESSORY (<250 S.F. FOOTPRINT)	5 FEET

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. EXISTING AND PROPOSED AREAS OF EACH PARCEL ARE SHOWN HEREON.

5. BOUNDARY SHOWN HEREON IS BASED UPON PLAN REFERENCE A, FOUND MONUMENTATION, AND UPDATED SURVEY RESEARCH. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER OF 2021 AND SUPPLEMENTED WITH PUBLICLY AVAILABLE LIDAR.

6. PLAN REFERENCES:
   A. PROPOSED LOT DIVISION PLAN ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY AND J P REAL ESTATE, LLC, DATED THROUGH JULY 12, 2016.
   B. BOUNDARY & WETLANDS SURVEY ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY, BY STATEWIDE SURVEYS, INC., DATED DECEMBER OF 2015.
   C. BOUNDARY SURVEY OF 166 LAMBERT STREET, FOR RAY PEPPERS, BY LEWIS AND WASINA, INC., DATED THROUGH JUNE 23, 2005, AND RECORDED IN CCRD PLAN BOOK 206, PAGE 207.

7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM (NEAR NGVD29), BASED ON CITY CONTROL POINTS (T125-14-1649 & T125-14-1651), AND PLAN REFERENCE A.

8. BENCHMARK:
   BM-1 X CUT ON UPPER BONNET BOLT OF HYDRANT ELEVATION: 109.056' (CITY)

9. UTILITY INFORMATION DEPICTED HEREON, UNLESS OTHERWISE NOTED, IS OF QUALITY LEVEL D PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD CI/ASCE 38-02. 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 WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION AND/OR EXCAVATION.

10. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 2300510002C, HAVING AN EFFECTIVE DATE OF DECEMBER 8,1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS ZONE X, AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.

11. THE STREAM AND WETLAND DELINEATION IS BASED UPON PLAN REFERENCE B AND WAS CONFIRMED BY SEBAGO TECHNICS IN JANUARY 2021.

12. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.

13. 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.

14. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.

15. PROVIDE 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.

16. 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.

17. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.

18. 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.

19. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

20. 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, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

21. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.

22. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

23. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.

24. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

25. 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.

26. 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.

27. 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 JUDGEMENT OF SEBAGO TECHNICS, INC.

28. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.

29. 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.

30. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.

31. 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.

32. 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.

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.

2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND IN ACCORDANCE WITH PROJECT PLANS.

3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.

4. EXISTING SEWER AND STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING SEWER AND STORM DEMOLITION AND NEW CONSTRUCTION. DAMAGE TO EXISTING SEWER INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.

5. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE AND BUILDING DRAWINGS.

6. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLANS TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.

7. CONTRACTOR REQUIRED TO CONFIRM/MAINTAIN BENCHMARKS. IF IMPACTED CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION/RELOCATION AND COORDINATION WITH PROJECT TEAM.

GRADING & EROSION NOTES

1. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H: V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.

2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

3. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

CONSTRUCTION PLAN

1. PROVIDE EROSION CONTROL MEASURES PRIOR TO SITE DISTURBANCE.

2. WETLANDS, ASSOCIATED SETBACKS AND STREAM SETBACKS TO BE STAKED BY OWNER PRIOR TO SITE DISTURBANCE.

3. BEFORE TREE CLEARING, REFER TO PLANS FOR STREAM BUFFER LOCATIONS. TREES SHALL NOT BE CLEARED WITHIN DESIGNATED STREAM BUFFER AREAS.

4. GRADING AND CLEARING LIMITS SHALL NOT ENCROACH ON ADJACENT PROPERTIES UNLESS NOTED OTHERWISE ON THE PLANS.

5. OPEN AREAS SHALL BE LIMITED TO AREAS BEING WORKED IN. THE AREA STRIPPED OF EXISTING VEGETATION AT ANY GIVEN TIME SHALL BE MINIMIZED AND BE PHASED WHERE PRACTICAL SO THAT AREAS ARE REVEGETATED AND PERMANENTLY STABILIZED BEFORE ADDITIONAL AREAS ARE STRIPPED OF EXISTING VEGETATION. STABILIZE CONSTRUCTION AREAS BY USE OF RIPRAP, SEED, MULCH, OR OTHER GROUND COVER WITHIN ONE WEEK FROM THE TIME IT WAS ACTIVELY WORKED. SURFACES SHALL BE STABILIZED PRIOR TO DIRECTING STORMWATER RUNOFF TOWARD STORMWATER BMPS.

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.

13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED, AREA SHALL BE LOAM AND SEEDED.

UTILITY NOTES

1. 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. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.

2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE OR NOT USE A GROUND LASER.

3. MAINTAIN MINIMUM 5'-6" OF COVER ABOVE TOP OF WATER SERVICE PIPE.

4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES.

5. LOWER OR RAISE WATER SERVICES AS REQUIRED TO MAINTAIN MINIMUM 12 INCH VERTICAL SEPARATION FROM OTHER UTILITIES. WATER SERVICES CROSSING SEWERS SHALL MAINTAIN 12 INCH MINIMUM SEPARATION BETWEEN THE BOTTOM OF WATER LINE AND TOP OF SEWER UNLESS NOTED OTHERWISE ON THE PLANS.

6. PIPE:
   - SEWER PIPE SHALL BE SDR 35 PVC OR APPROVED EQUAL.
   - STORMDRAIN SHALL BE ADS N-12 DUAL WALL HDPE PIPE WITH SMOOTH-WALLED INTERIOR OR APPROVED EQUAL UNLESS NOTED OTHERWISE ON THE UTILITY PLANS.
   - WATER PIPE AND FITTINGS SHALL CONFORM TO THE DISTRICT HAVING JURISDICTION'S SPECIFICATIONS. MAIN WATER SERVICE PIPE SHALL BE DUCTILE IRON, CLASS 52 PUSH-ON PIPE MEETING THE REQUIREMENTS OF AWWA/ANSI C-111/A21.11 (LATEST REVISION). PIPE SHALL BE CEMENT-LINED AWWA/ANSI C104/A21.4 WITH LINING TWICE THE THICKNESS SPECIFIED, AND COATED TWICE WITH A BITUMINOUS SEAL COATING. PROVIDE THRUST BLOCKS AT ALL WATER SERVICE BENDS.

7. COORDINATE ALL UTILITY LOCATIONS AND INVERTS AT BUILDING WITH ARCHITECTURAL, STRUCTURAL AND PLUMBING DRAWINGS.

8. WATER SERVICE ENTRANCE DESIGNS TO INCLUDE METERS AND BACKFLOW PREVENTERS TO MEET ALL STANDARDS AND REQUIREMENTS OF THE PORTLAND WATER DISTRICT.

9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.

10. CONTRACTOR SHALL FURNISH AND INSTALL TRENCHING, MATERIALS AND BACKFILL FOR ALL UTILITIES. ELECTRICAL AND TELECOM/DATA PROVIDERS WILL PULL PRIMARY SERVICE TO TRANSFORMER AND PANEL. CONTRACTOR RESPONSIBLE FOR TIMING AND COORDINATION WITH UTILITIES AND DRAWINGS. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONDUIT SCHEDULE, TYPE AND SIZES.

11. COORDINATE ALL WATER RELATED WORK WITH PORTLAND WATER DISTRICT.

12. 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.

13. 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.

14. 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.

15. UTILITY CONTACTS:
   ELECTRIC:
   CENTRAL MAINE POWER (CMP)
   c/o ERIKA JORDAN
   TELEPHONE: (207) 383-5347
   EMAIL: erica.jordan@cmpco.com

   WATER:
   PORTLAND WATER DISTRICT
   MEANS GROUP
   TELEPHONE: (207) 774-5961 Ext. 3199
   EMAIL: MEANS@pwd.org

TYPICAL ABBREVIATIONS

AC	ACRE
AFG	ABOVE FINISH GRADE
APPROX.	APPROXIMATELY
BC	BOTTOM OF CURB
BCC	BITUMINOUS CONCRETE CURB
BIT	BITUMINOUS
BLDG	BUILDING
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CONT	CONTINUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
E.W.	EACH WAY
ELEV	ELEVATION
FFE	FINISH FLOOR ELEVATION
FIN. GR.	FINISH GRADE
FTG	FOOTING
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HMA	HOT MIX ASPHALT
INV	INVERT
LF	LINEAR FEET
OC	ON CENTER
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SCH	SCHEDULE
SCSC	SLIPFORM CONCRETE SLOPED CURB
SCVC	SLIPFORM CONCRETE VERTICAL CURB
SD	STORM DRAIN
SGC	SLOPED GRANITE CURB
SMH	SEWER MANHOLE SPECS SPECIFICATIONS
SS	SANITARY SEWER
SSGC	SALVAGED SLOPED GRANITE CURB
SVGC	SALVAGED VERTICAL GRANITE CURB
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6833

STATE OF MAINE — STEPHEN D. HARDING No. 6833 — REGISTERED PROFESSIONAL ENGINEER — 10/12/2023

REV.	BY	DATE	STATUS
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	06/08/2023	SUBMITTED TO CITY FOR REVIEW
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOTES & LEGEND
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	N/A
PROJECT	20439

20439 NL.dwg, TAB:2 NOTES & LEGEND

SHEET 2 OF10

GENERAL NOTES:

1. THE RECORD OWNER OF THE FOUR PARCELS IS J P REAL ESTATE BY DEEDS DATED JULY 18, 2016 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD) IN BOOK 33287 PAGES: 184 (LOT 1) 533 SUMMIT STREET; 186 (LOT 2) 539 SUMMIT STREET; 188 (LOT 3) 547 SUMMIT STREET; AND 190 (LOT 4) 555 SUMMIT STREET.
2. THE PROPERTIES ARE SHOWN AS LOTS 32 (LOT 1 - 533 SUMMIT ST), 2 (LOT 2 - 539 SUMMIT ST), 26 (LOT 3 - 547 SUMMIT ST), AND 1 (LOT 4 - 555 SUMMIT ST) ON THE CITY OF PORTLAND TAX MAP 385 WITHIN BLOCK B AND ARE LOCATED IN THE RESIDENTIAL 2 (R2) DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE RESIDENTIAL 2 DISTRICT ARE AS FOLLOWS:

MINIMUM LOT SIZE:	10,000 SQUARE FEET
MINIMUM LOT WIDTH	80 FEET
MINIMUM STREET FRONTAGE:	50 FEET
MINIMUM FRONT YARD:	25 FEET
MINIMUM SIDE YARD:	12 FEET (1 AND 1.5 STORY)
	14 FEET (2 STORY)
	16 FEET (2.5 STORY)
MINIMUM REAR YARD:	25 FEET
MAXIMUM BUILDING HEIGHT:	35 FEET
MAXIMUM BUILDING COVERAGE:	20 PERCENT
DETACHED ACCESSORY (<250 S.F. FOOTPRINT)	5 FOOT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. EXISTING AND PROPOSED AREAS OF EACH PARCEL ARE SHOWN HEREON.
5. BOUNDARY SHOWN HEREON IS BASED UPON PLAN REFERENCE A, FOUND MONUMENTATION, AND UPDATED SURVEY RESEARCH. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER OF 2021 AND SUPPLEMENTED WITH PUBLICLY AVAILABLE LIDAR.
6. PLAN REFERENCES:
   A. PROPOSED LOT DIVISION PLAN ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY AND J P REAL ESTATE, LLC, DATED THROUGH JULY 12, 2016.
   B. BOUNDARY & WETLANDS SURVEY ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY, BY STATEWIDE SURVEYS, INC., DATED DECEMBER OF 2015.
   C. BOUNDARY SURVEY OF 166 LAMBERT STREET, FOR RAY PEPPERS, BY LEWIS AND WASINA, INC., DATED THROUGH JUNE 23, 2005, AND RECORDED IN CCRD PLAN BOOK 206, PAGE 207.
7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM (NEAR NGVD29), BASED ON CITY CONTROL POINTS (T125-14-1649 & T125-14-1651), AND PLAN REFERENCE A.
8. BENCHMARK:
   BM-1 X CUT ON UPPER BONNET BOLT OF HYDRANT ELEVATION: 109.056' (CITY)
9. UTILITY INFORMATION DEPICTED HEREON, UNLESS OTHERWISE NOTED, IS OF QUALITY LEVEL D PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD CI/ASCE 38-02. 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 WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 2300510002C, HAVING AN EFFECTIVE DATE OF DECEMBER 8,1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS ZONE X, AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.
11. WETLANDS WERE CONFIRMED BY SEBAGO TECHNICS, INC. IN JANUARY OF 2021.
12. ALL LOTS WITHIN THIS SUBDIVISION SHALL HAVE DRAINAGE RIGHTS ACROSS OTHER LOTS WITHIN THIS SUBDIVISION, AS NEEDED, BASED UPON FINAL SITE PLAN DESIGNS OF EACH LOT. THESE RIGHTS SHALL HAVE A MINIMAL IMPACT UPON BUILDING ENVELOPES.
13. THE DEVELOPER INTENDS TO CONVEY A 3 FOOT WIDE SIDEWALK EASEMENT TO THE CITY OF PORTLAND ALONG ALL OF THE LOTS FRONTING SUMMIT STREET FOR THE PLACEMENT OF THE PROPOSED SIDEWALK, AS SHOWN.

CONDITIONS OF APPROVAL:

APPROVAL-
CITYOF PORTLAND
PLANNING BOARD

DATE

CHAIRPERSON

LEGEND

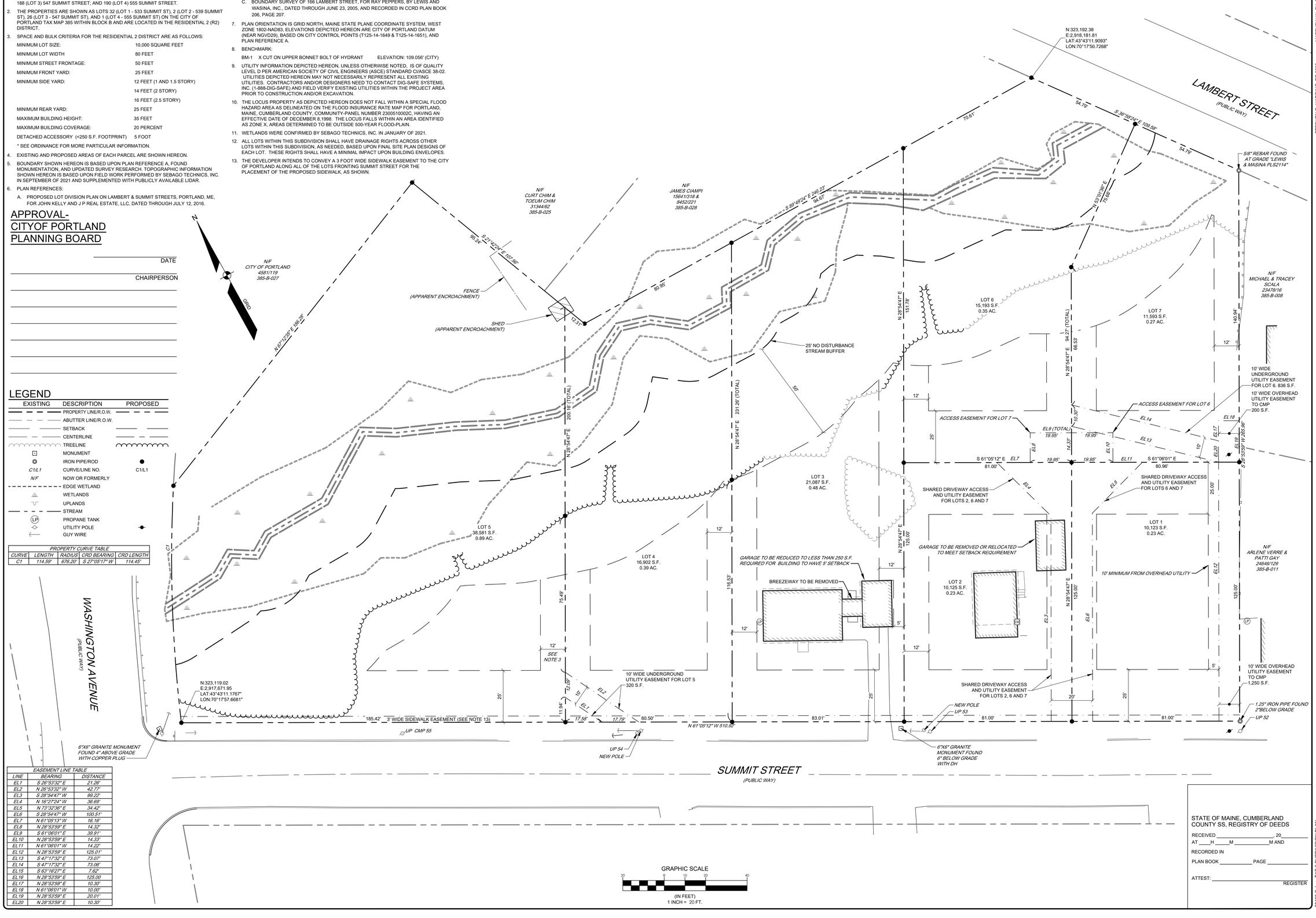
EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	CENTERLINE	
	TREELINE	
⊡	MONUMENT	
⊚	IRON PIPE/ROD	●
C1/L1	CURVE/LINE NO.	C1/L1
N/F	NOW OR FORMERLY	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
LP	PROPANE TANK	
	UTILITY POLE	
	GUY WIRE	

PROPERTY CURVE TABLE

CURVE	LENGTH	RADIUS	CRD BEARING	CRD LENGTH
C1	114.59'	676.20'	S 27°05'17" W	114.45'

EASEMENT LINE TABLE

LINE	BEARING	DISTANCE
EL1	S 26°53'32" E	21.26'
EL2	N 26°53'32" W	42.77'
EL3	S 28°54'47" W	99.22'
EL4	N 16°27'24" W	36.69'
EL5	N 73°32'36" E	34.42'
EL6	S 28°54'47" W	100.51'
EL7	N 61°05'13" W	16.16'
EL8	N 28°53'59" E	14.32'
EL9	S 61°06'01" E	39.91'
EL10	N 28°53'59" E	14.33'
EL11	N 61°06'01" W	14.22'
EL12	N 28°53'59" E	125.01'
EL13	S 47°17'32" E	73.07'
EL14	S 47°17'32" E	73.06'
EL15	S 63°16'27" E	7.62'
EL16	N 28°53'59" E	125.00
EL17	N 28°53'59" E	10.30'
EL18	N 61°06'01" W	10.00'
EL19	N 28°53'59" E	20.01'
EL20	N 28°53'59" E	10.30'



GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

STATE OF MAINE, CUMBERLAND COUNTY SS, REGISTRY OF DEEDS

RECEIVED _____, 20____
AT ____H ____M _____M AND
RECORDED IN
PLAN BOOK _____ PAGE _____
ATTEST: _____
REGISTER

MATTHEW W. EK, PLS 2117

STEPHEN D. HARDING, PE 6833

REV	BY	DATE:	STATUS
A.	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW
B.	SDH	06/09/2023	SUBMITTED TO CITY FOR REVIEW
C.	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW

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SEBAGO TECHNICS
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100
WWW.SEBAGOTECHNICS.COM

SUBDIVISION PLAN
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	1" = 20'
PROJECT	20439

20439 S.dwg, TAB:3 SUBDIVISION PLAN

SHEET 3 OF10

PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
GT	GLEDITSIA TRICANTHIOS VAR. INERMIS 'STREET KEEPER'	STREET KEEPER HONEY LOCUST	2.5" CAL.
AR	ACER RUBRUM 'KARPICK'	KARPICK RED MAPLE	2.5" CAL.

N

GRID

LAMBERT STREET

N/F
CURT CHIM &
TOEUM CHIM
3134/62
385-B-025

N/F
JAMES CIAMPI
15641/318 &
8452/221
385-B-028

N/F
CITY OF PORTLAND
4581/119
385-B-027

5/8" REBAR FOUND
AT GRADE "LEWIS
& MASINA PLS2114"

N/F
MICHAEL & TRACEY
SCALA
23478/16
385-B-008

PROTECT EXISTING
TREE LINE TO LIMITS
SHOWN

LOT 6
15,193 S.F.
0.35 AC.

LOT 7
11,593 S.F.
0.27 AC.

25' NO DISTURBANCE
STREAM BUFFER

MINIMIZE TREE CLEARING FOR
DRAIN OUTLETS TO GREATEST
EXTENT PRACTICABLE, SEE
GRADING AND EROSION CONTROL
PLAN FOR APPROXIMATE OUTLET
LOCATIONS, TYP.

CONCEPTUAL HOUSE
AREA = 1,226 S.F.

CONCEPTUAL HOUSE
AREA = 1,350 S.F.

PROTECT
EXISTING TREE

75' STREAM SETBACK, TYP.

LOT 3
21,087 S.F.
0.48 AC.

PROTECT
EXISTING TREE

RELOCATED
GARAGE

LOT 1
10,123 S.F.
0.23 AC.

PROPOSED
EASEMENT, TYP.

25' REAR SETBACK, TYP.

BUILDING
SETBACK TO BE
MIN. 10' FROM
OVERHEAD
UTILITY LINES

N/F
ARLENE VERRE &
PATTI GAY
24646/129
385-B-011

LOT 5
38,581 S.F.
0.89 AC.

REPAIR DISTURBED AREAS
WITH LOAM AND SEED, TYP.
(SEE SHEET 7 FOR EROSION
CONTROL MEASURES)

LOT 4
16,902 S.F.
0.39 AC.

EXISTING
CLOTHES LINE
TO REMAIN

12' SIDE SETBACK, TYP.

CONCEPTUAL HOUSE
AREA = 1,490 S.F.

CONCEPTUAL HOUSE
AREA = 1,728 S.F.

EXISTING HOUSE

EXISTING
GARAGE

LOT 2
10,125 S.F.
0.23 AC.

EXISTING
HOUSE

CONCEPTUAL HOUSE
AREA = 1,350 S.F.

EXISTING
PROPANE
TANK, TYP.

WASHINGTON AVENUE

EXISTING GUARDRAIL TO BE MODIFIED FOR
SIDEWALK, COORDINATE WITH DPW
(APPROXIMATE LOCATION SHOWN)

GRANITE CURB TIP-DOWN

COORDINATE GUY WIRE CLEARANCE
FOR SIDEWALK WITH CMP

PROTECT EXISTING TREES
ALONG FRONTAGE TO
APPROXIMATE LIMITS SHOWN

CROSSWALK
SIGNAGE, TYP.
BOTH SIDES

DETECTABLE
WARNING STRIP

PAINTED
CROSSWALK

PROTECT EXISTING
UTILITY POLES, TYP.

(2)GT

PAVED DRIVEWAY, TYP.

(2)AR

(2)GT

PROTECT EXISTING
TREES

EASEMENT LINE,
TYP.

NEW POLE
UP 53

PROTECT
EXISTING TREES

1.25" IRON PIPE FOUND
2"BELOW GRADE

UP 52

UP CMP 55

UP 54

NEW POLE

6"X6" GRANITE MONUMENT
FOUND 4" ABOVE GRADE
WITH COPPER PLUG

SIDEWALK RAMP

PROTECT ALL EXISTING BITUMINOUS
CURB TO REMAIN, LIMIT DISTURBANCE
TO NEW DRIVEWAY LOCATIONS ONLY,
TYP.

INSTALL 5' WIDE BITUMINOUS
SIDEWALK WITH APPROX. 5'
WIDE ESPLANADE, TYP.

PAVED DRIVEWAY APRON, 2' FLARE WITH
6' TIP DOWNS, TYP.

SAWCUT PAVEMENT, TYP.

25' FRONT SETBACK, TYP.

6"X6" GRANITE
MONUMENT FOUND
6" BELOW GRADE
WITH DH

SAWCUT PAVEMENT, TYP.

REPAIR SAWCUT AREAS IN
SUMMIT STREET WITH
PAVEMENT SECTION MEETING
CITY OF PORTLAND
STANDARDS, TYP.

PROTECT EXISTING
GRANITE HEADSTONE
AND TIP DOWN

SUMMIT STREET

CONSTRUCT 5' WIDE
BITUMINOUS SIDEWALK
WITHIN RIGHT-OF-WAY

PROTECT EXISTING
GUARDRAIL TO REMAIN
(APPROXIMATE
LOCATION SHOWN)

INSTALL 6' GRANITE
TIP-DOWNS AT NEW DRIVEWAY
LOCATIONS, SAVE AND REUSE
EXISTING TIP-DOWNS WHERE
POSSIBLE, TYP.

INSTALL VERTICAL GRANITE
CURB AS REQUIRED TO FILL IN
GAP FROM TIP-DOWN TO CATCH
BASIN HEADSTONE

PROTECT ALL EXISTING
OVERHEAD SERVICES, TYP.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

HENRY A. HESS, RLA 4841

LANDSCAPE ARCHITECT
HENRY HESS
4841
LICENSED
STATE OF MAINE
10/12/2023

STEPHEN D. HARDING, PE 6633

STATE OF MAINE
STEPHEN D. HARDING
No. 6633
REGISTERED
PROFESSIONAL
ENGINEER
10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/08/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	1" = 20'
PROJECT	20439

SHEET 4 OF10

20439 S.dwg, TAB:4 SITE PLAN

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6633

STATE OF MAINE — STEPHEN D. HARDING — No. 6633 — REGISTERED PROFESSIONAL ENGINEER — 10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/09/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

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GRADING & EROSION CONTROL PLAN

OF:

SUMMIT STREET SUBDIVISION

SUMMIT STREET
PORTLAND, MAINE 04101

FOR RECORD OWNER:

J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	1" = 20'
PROJECT	20439

SHEET 5 OF10

20439 G.dwg, TAB:5 GRADING & EROSION CONTROL PLAN

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

UTILITY NOTES:

1. UTILITY LOCATIONS SHOWN ARE BASED ON A COMBINATION OF FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC., RECORD DRAWINGS, AND CITY GIS DATA.
2. UTILITY DATA REFERENCES:
   A. STI SURVEY: INFORMATION FROM FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER OF 2021.
   B. GIS: INFORMATION PROVIDED BY AVAILABLE CITY GIS DATA.
   C. RECORD PLAN: INFORMATION FROM THE CITY'S RECORD DRAWING TITLED "RECONSTRUCTION OF: SUMMIT STREET" BY HUNTER - BALLEW ASSOCIATES OF PORTLAND, MAINE, DATED AUGUST 2,1974.

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GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6633

STATE OF MAINE
STEPHEN D. HARDING
No. 6633
REGISTERED PROFESSIONAL ENGINEER
10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/09/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

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SHEET 6 OF10

20439 U.dwg, TAB:6 UTILITY PLAN

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED 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. THE PLACEMDVT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

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 COMMENCEMENT 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

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (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 33%. 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.

2. 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. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS 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.

4. 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 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 NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL 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 NOT BE USED ADJACENT TO WETLANDS. INSTALL 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. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

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.

5. 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 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: STONE 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: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE 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.

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.

6. 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. 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.

7. STABILIZED CONSTRUCTION ENTRANCE/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 TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

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. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

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 MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

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: (CONSERVATION MIX)

SEED TYPE	APPLICATION RATE
FESCUE, FAWN	0.34 LBS/1,000 S.F. (15 LBS/ACRE)
BIRDS FOOT TREFOIL, VARIETY NOT STATED	0.28 LBS/1,000 S.F. (12 LBS/ACRE)
ANNUAL RYEGRASS	0.18 LBS/1,000 S.F. (8 LBS/ACRE)
TIMOTHY, CLIMAX	0.18 LBS/1,000 S.F. (8 LBS/ACRE)
ALSIKE CLOVER	0.11 LBS/1,000 S.F. (5 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TOTAL	1.14 LBS/1,000 S.F. (50 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 2016 OR LATEST REVISION.

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 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.

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 15% (10H: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 WOOD WASTE COMPOST 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 OCTOBER 1. 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 WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H: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 15%. 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.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

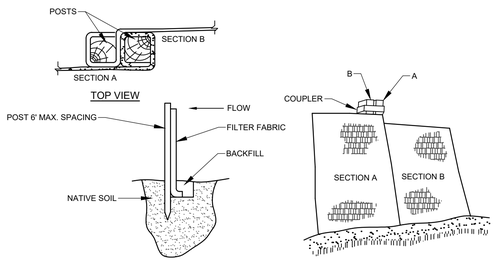
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS 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. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. 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, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, 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 REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, 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 BY THE DEPARTMENT.

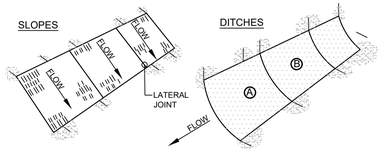
6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSM



INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

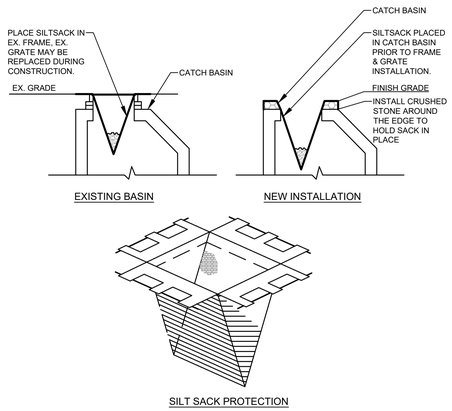
FILTER BARRIER
NOT TO SCALE



NOTES:

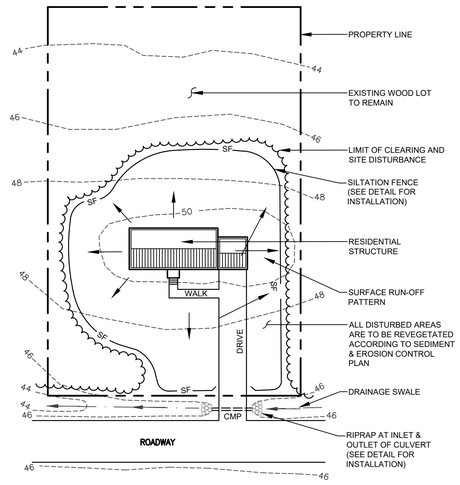
1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE

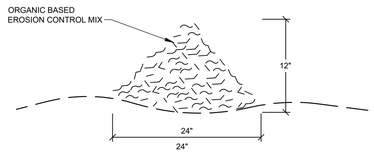


NOTES:
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG I) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL
NOT TO SCALE



EROSION CONTROL MEASURES FOR RESIDENTIAL LOTS
NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

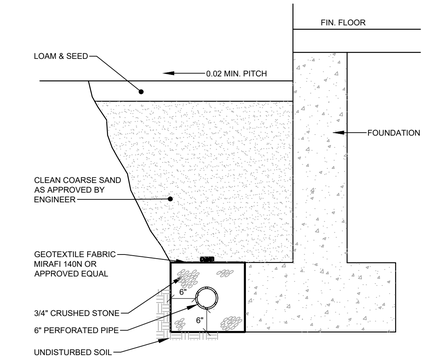
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

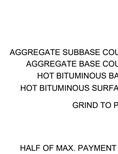
3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

EROSION CONTROL MIX BERM
NOT TO SCALE



FOUNDATION DRAIN SECTION
NOT TO SCALE



LOAM & SEED SECTION
NOT TO SCALE

NOTES

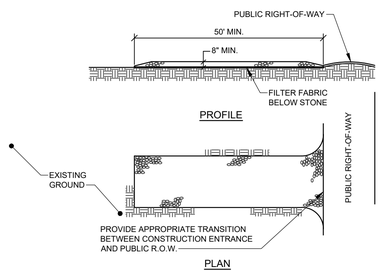
1. ALTERNATIVE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
3. DIMENSION B SHALL BE SUFFICIENT 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 9".
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.

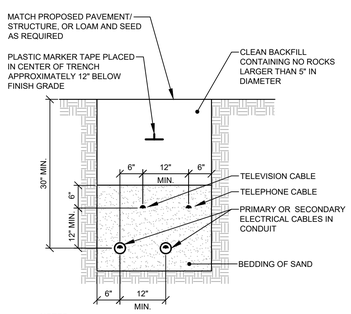
TYPICAL PIPE TRENCH INSTALLATION
NOT TO SCALE



NOTES:

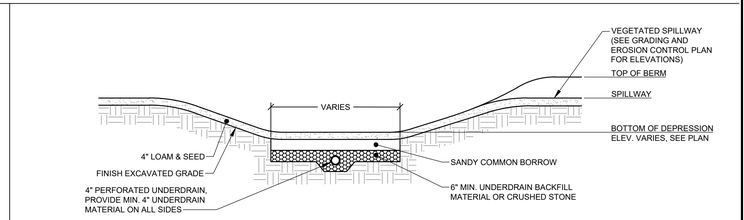
1. STONE SIZE - AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



NOTES:
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT.

UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



NOTES:
UNDERDRAINED BASINS MAY BE SUBSTITUTED FOR INFILTRATION BASINS UPON APPROVED PERMEABILITY TESTING OF EXISTING ON SITE SOILS.

TYPICAL VEGETATED DEPRESSION CROSS-SECTION
NOT TO SCALE

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6833

STATE OF MAINE — STEPHEN D. HARDING No. 6833 — REGISTERED PROFESSIONAL ENGINEER — 10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/08/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AS PROVIDED BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

DETAILS

OF:

SUMMIT STREET SUBDIVISION

SUMMIT STREET
PORTLAND, MAINE 04101

FOR RECORD OWNER:

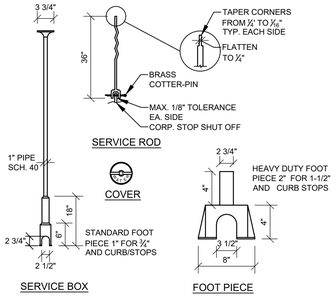
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	N.T.S.
PROJECT	20439

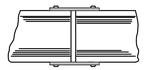
SHEET 8 OF10

20439 D dwg, TAB DETAILS - 1

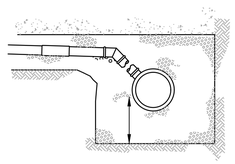


NOTE:
ANY EXTENSION OF SERVICE BOX REQUIRES:
1. 1" FEMALE IRON PIPE COUPLING
2. 1" THREADED PIPE (THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)

TYPICAL WATER SERVICE
NOT TO SCALE



FERNCO COUPLING FOR REPAIR OR REPLACEMENT



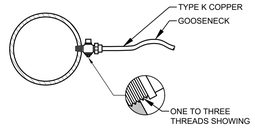
NOTE:
PIPE DIAMETERS MAY VARY.

SECTION

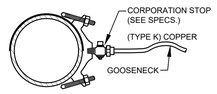
NOTE:
LOCATIONS AND ELEVATIONS OF STUBS SHOWN ON THE PLANS ARE TO BE CONSIDERED AS APPROXIMATE AND MAY BE ADJUSTED AS DIRECTED TO SUIT FIELD CONDITIONS.

HOUSE CONNECTIONS AND CATCH BASINS CONNECTIONS TO THE MAIN LINE OF THE SEWER, SHALL CONSIST OF AN APPROPRIATE WYE BRANCH CONNECTION AS SHOWN ON THE PLANS, OR AS DIRECTED. ACTUAL WYE LOCATIONS FOR HOUSE CONNECTIONS AND CATCH BASIN CONNECTIONS SHALL BE DETERMINED DURING CONSTRUCTION. THE CONTRACTOR SHALL KEEP A COMPLETE RECORD OF WYE LOCATIONS WHICH SHALL BE GIVEN TO THE CITY OF PORTLAND UPON COMPLETION OF THE CONTRACT. ALL PVC TO PVC COUPLING SHALL BE "SOLID PVC COUPLINGS".

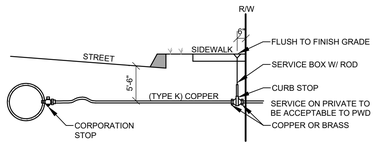
TYPICAL EXISTING LATERAL CONNECTION
NOT TO SCALE



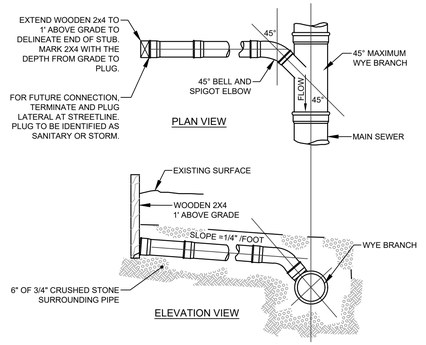
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)

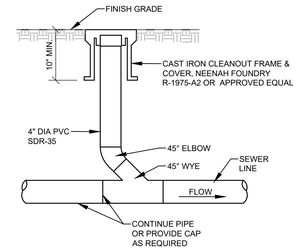


SERVICE CONNECTION
NOT TO SCALE

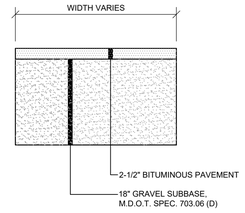


NOTE:
LOCATION / WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.

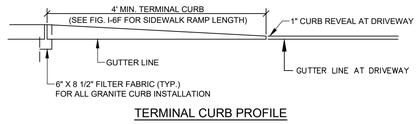
TYPICAL HOUSE LATERAL TEE/WYE CONNECTION
NOT TO SCALE



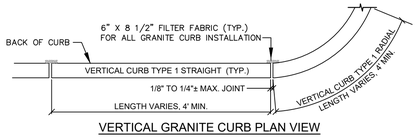
SEWER CLEANOUT
NOT TO SCALE



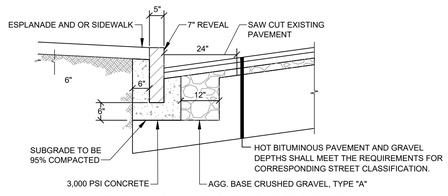
PAVED DRIVEWAY SECTION
NOT TO SCALE



TERMINAL CURB PROFILE



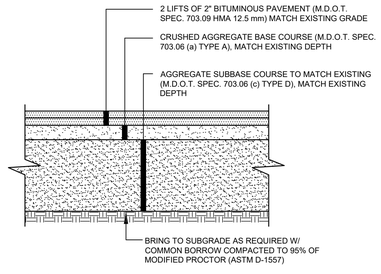
VERTICAL GRANITE CURB PLAN VIEW



VERTICAL GRANITE CURB CROSS SECTION

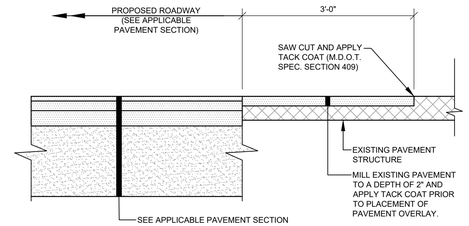
NOTES:
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB
NOT TO SCALE

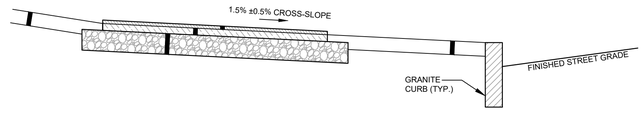


NOTES:
1. CONTRACTOR SHALL VERIFY DEPTHS WITH PUBLIC WORKS DEPARTMENT PRIOR TO PLACEMENT.
2. COMPACT GRAVEL SUBBASE AND BASE COURSES TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
3. HOT MIX ASPHALT SURFACE COARSE SHALL BE COMPACTED TO 95% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041). BASE COARSE SHALL BE COMPACTED TO 95% ±2.5% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041).
4. APPLY TACK COAT BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.

TRENCH REPAIR IN STREET
NOT TO SCALE



PAVEMENT JOINT
NOT TO SCALE



NOTES:
1. CITY OF PORTLAND STANDARD DETAIL I-11C TO BE FOLLOWED

BITUMINOUS SIDEWALK
NOT TO SCALE

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6833

STATE OF MAINE
STEPHEN D. HARDING
No. 6833
HENRY BOUDREAU
PROFESSIONAL ENGINEER
10/12/2023

REV.	BY	DATE	STATUS
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	08/09/2023	SUBMITTED TO CITY FOR REVIEW
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW

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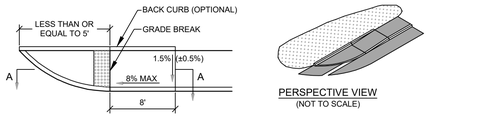
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DETAILS
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	N.T.S
PROJECT	20439

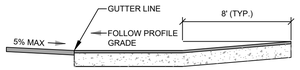
20439 D dwg, TAB:DETAILS - 2

SHEET 9 OF10

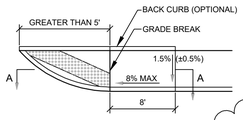


PERSPECTIVE VIEW
(NOT TO SCALE)

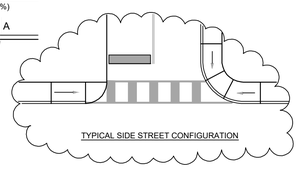
*PLAN VIEW



SECTION A-A



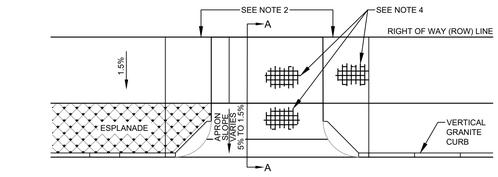
**PLAN VIEW



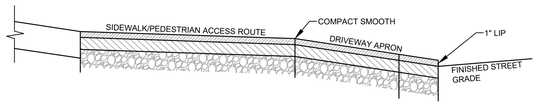
TYPICAL SIDE STREET CONFIGURATION

NOTES:
1. FOR USE ONLY WHEN NO SIDEWALK IS PRESENT ON THE SIDE ROAD.
2. USE *THIS* DETECTABLE WARNING PLACEMENT IF THE DISTANCE FROM THE GRADE BREAK TO THE GUTTERLINE IS LESS THAN OR EQUAL TO 5 FEET.
3. USE **THIS** DETECTABLE WARNING PLACEMENT IF THE DISTANCE FROM THE GRADE BREAK TO THE GUTTERLINE IS GREATER THAN 5 FEET.
4. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

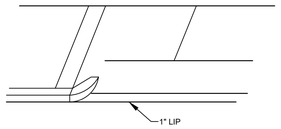
SIDE STREET RAMP WITH OR WITHOUT ESPLANADE
NOT TO SCALE



STANDARD RESIDENTIAL DRIVEWAY APRON LAYOUT
(NOT TO SCALE)

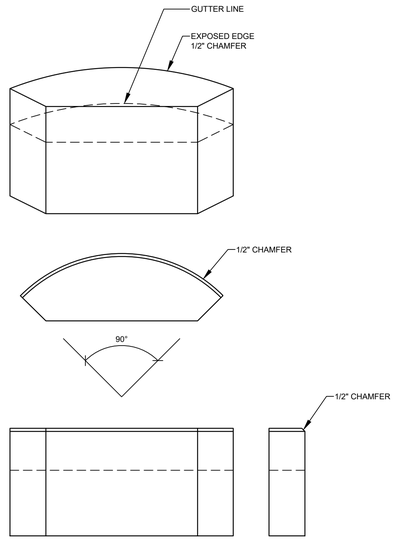


SECTION A-A
(NOT TO SCALE)

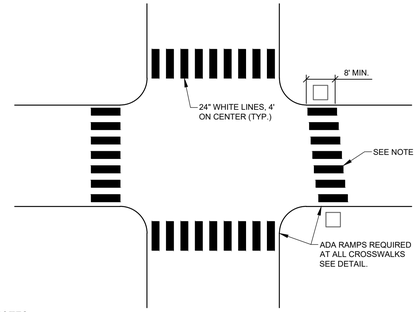


NOTES:
1. MATCH EXISTING GRADE AT ROW LINE. WHERE REQUIRED TO MEET ADA AND DRIVEWAY APRON SLOPE REQUIREMENTS, A CONSTRUCTION EASEMENT MAY BE REQUIRED.
2. IF MATCHING THE EXISTING GRADE AT ROW CAUSES APRON SLOPE TO EXCEED RECOMMENDED %, SIDEWALK TRANSITION AREAS MAY BE ADDED, BUT SHALL NOT EXCEED 8.33%.
3. TWO-FOOT RADIUS CORNER GRANITE PIECES ("BUGS") ARE REQUIRED AT LOW-VOLUME DRIVEWAYS UNLESS OTHERWISE DIRECTED BY DPW. AT OTHER DRIVEWAYS, STANDARD FLARE/TIPDOWN TREATMENTS SHALL BE USED.
4. ALL MATERIALS IN ROW TO COMPLY WITH CITY'S SIDEWALK & DRIVEWAY MATERIAL POLICY. BRICK IN DRIVEWAY APRONS, WHERE APPLICABLE, SHALL BE ORIENTED IN THE SAME WAY AS THE ADJACENT BRICK SIDEWALK.
5. THIS LAYOUT MAY BE REQUIRED AT MINOR DRIVEWAYS SERVING COMMERCIAL OR INDUSTRIAL USES.
6. CITY OF PORTLAND STANDARD DETAIL I-9A SHALL BE FOLLOWED.

RESIDENTIAL DRIVEWAY APRON
NOT TO SCALE

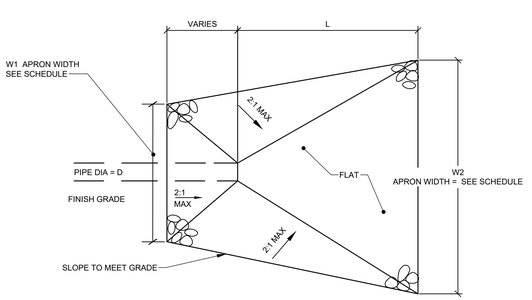


GRANITE RADIUS CORNER "BUG"
NOT TO SCALE

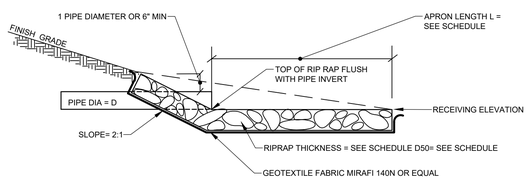


NOTES:
1. CROSSWALK BLOCKS SHALL BE STAGGERED AND REMAIN PARALLEL TO THE ROADWAY CENTERLINE AT SKEWED CROSSING LOCATIONS.
2. CROSSWALK MARKINGS LOCATED ON ARTERIAL STREETS SHALL BE APPLIED WITH A THERMOPLASTIC MATERIAL (OR APPROVED EQUAL) MEETING ALL MANUFACTURER AND MUTCD REQUIREMENTS.
3. THE ESTABLISHMENT PERIOD FOR CROSSWALK MARKINGS SHALL BE BASED ON MANUFACTURER'S SPECIFICATIONS AND SHALL AT A MINIMUM MEET MAINE DOT STANDARD SPECIFICATION 627.07 ESTABLISHMENT PERIOD REQUIREMENTS.

CROSSWALK MARKINGS
NOT TO SCALE



PLAN VIEW



SECTION VIEW

TYPICAL RIPRAP APRON SCHEDULE

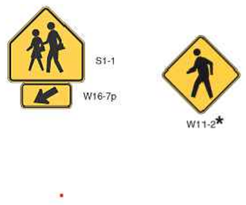
CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
4	2	1	3	4	9
6	3	1.5	3	4	9
8	3	2	4	4	9

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.
6. AREAS WITH SIDE BY SIDE 4" AND 6" PIPES SHALL USE APRON SIZING FOR A SINGLE 8" PIPE.

RIPRAP APRON
NOT TO SCALE



SCHOOL AREA CROSSING SIGNS

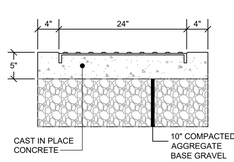


PEDESTRIAN CROSSING SIGN

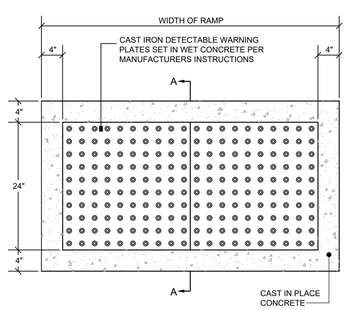
NOTE:
REFER TO CITY OF PORTLAND DETAIL I-21 FROM THE TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION OF THE TECHNICAL MANUAL (SECTION I).

TYPICAL CROSSWALK SIGNAGE
NOT TO SCALE

NOTE:
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.

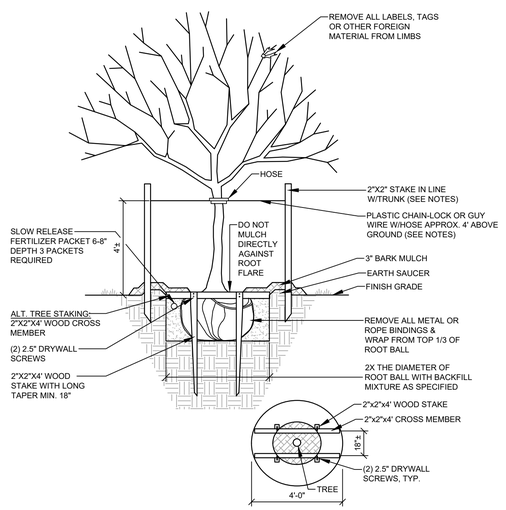


SECTION A-A



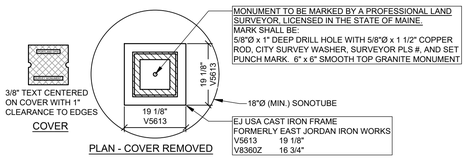
PLAN VIEW

SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE



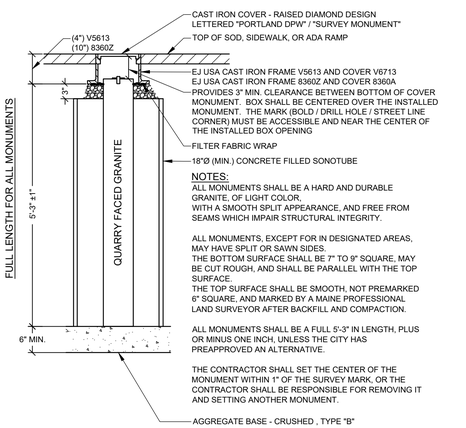
ALT. TREE STAKING PLAN
NOT TO SCALE

DECIDUOUS TREES
NOT TO SCALE



COVER

PLAN - COVER REMOVED



NOTES:
ALL MONUMENTS SHALL BE A HARD AND DURABLE GRANITE, OF LIGHT COLOR, WITH A SMOOTH SPLIT APPEARANCE, AND FREE FROM SEAMS WHICH IMPAIR STRUCTURAL INTEGRITY.

ALL MONUMENTS, EXCEPT FOR IN DESIGNATED AREAS, MAY HAVE SPLIT OR SAWN SIDES. THE BOTTOM SURFACE SHALL BE 7" TO 9" SQUARE, MAY BE CUT ROUGH, AND SHALL BE PARALLEL WITH THE TOP SURFACE. THE TOP SURFACE SHALL BE SMOOTH, NOT PREMARKED 6" SQUARE, AND MARKED BY A MAINE PROFESSIONAL LAND SURVEYOR AFTER BACKFILL AND COMPACTION.

ALL MONUMENTS SHALL BE A FULL 5'-3" IN LENGTH, PLUS OR MINUS ONE INCH, UNLESS THE CITY HAS PREAPPROVED AN ALTERNATIVE.

THE CONTRACTOR SHALL SET THE CENTER OF THE MONUMENT WITHIN 1" OF THE SURVEY MARK, OR THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING IT AND SETTING ANOTHER MONUMENT.

GRANITE STREET MONUMENT - NEW OR REPLACEMENT
NOT TO SCALE

NOT FOR CONSTRUCTION

STEPHEN D. HARDING, PE 6833

STATE OF MAINE
STEPHEN D. HARDING
No. 6833
REGISTERED PROFESSIONAL ENGINEER
10/12/2023

REV	BY	DATE	STATUS
A	SDH	04/06/2023	SUBMITTED TO CITY FOR REVIEW
B	SDH	06/09/2023	SUBMITTED TO CITY FOR REVIEW
C	SDH	10/12/2023	SUBMITTED TO CITY FOR REVIEW

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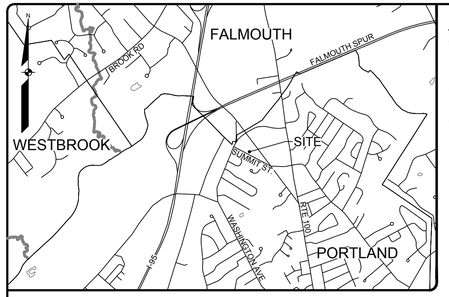
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DETAILS
OF:
SUMMIT STREET SUBDIVISION
SUMMIT STREET
PORTLAND, MAINE 04101
FOR RECORD OWNER:
J P REAL ESTATE LLC
P.O. BOX 617
PORTLAND, MAINE 04101

DESIGNED	JBP
DRAWN	AB / JMC
CHECKED	SDH / JMC
DATE	2/10/2023
SCALE	N.T.S
PROJECT	20439

SHEET10 OF10

20439 D.dwg TAB:DETAILS - 3



N.T.S.

LOCATION MAP

GENERAL NOTES:

1. THE RECORD OWNER OF THE FOUR PARCELS IS J P REAL ESTATE BY DEEDS DATED JULY 18, 2016 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD) IN BOOK 33287 PAGES: 184 (LOT 1) 533 SUMMIT STREET; 186 (LOT 2) 539 SUMMIT STREET; 188 (LOT 3) 547 SUMMIT STREET; AND 190 (LOT 4) 555 SUMMIT STREET.
2. THE PROPERTIES ARE SHOWN AS LOTS 32 (LOT 1 - 533 SUMMIT ST), 2 (LOT 2 - 539 SUMMIT ST), 26 (LOT 3 - 547 SUMMIT ST), AND 1 (LOT 4 - 555 SUMMIT ST) ON THE CITY OF PORTLAND TAX MAP 385 WITHIN BLOCK B AND ARE LOCATED IN THE RESIDENTIAL 2 (R2) DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE RESIDENTIAL 2 DISTRICT ARE AS FOLLOWS:

MINIMUM LOT SIZE:	10,000 SQUARE FEET
MINIMUM LOT WIDTH	80 FEET
MINIMUM STREET FRONTAGE:	50 FEET
MINIMUM FRONT YARD:	25 FEET
MINIMUM SIDE YARD:	12 FEET (1 AND 1.5 STORY)
	14 FEET (2 STORY)
	16 FEET (2.5 STORY)
MINIMUM REAR YARD:	25 FEET
MAXIMUM BUILDING HEIGHT:	35 FEET
MAXIMUM BUILDING COVERAGE:	20 PERCENT
DETACHED ACCESSORY (<250 S.F. FOOTPRINT)	5 FEET

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. EXISTING AND PROPOSED AREAS OF EACH PARCEL ARE SHOWN HEREON.
5. BOUNDARY SHOWN HEREON IS BASED UPON PLAN REFERENCE A, FOUND MONUMENTATION, AND UPDATED SURVEY RESEARCH. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER OF 2021 AND SUPPLEMENTED WITH PUBLICLY AVAILABLE LIDAR.
6. PLAN REFERENCES:
   A. PROPOSED LOT DIVISION PLAN ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY AND J P REAL ESTATE, LLC, DATED THROUGH JULY 12, 2016.
   B. BOUNDARY & WETLANDS SURVEY ON LAMBERT & SUMMIT STREETS, PORTLAND, ME, FOR JOHN KELLY, BY STATEWIDE SURVEYS, INC., DATED DECEMBER OF 2015.
   C. BOUNDARY SURVEY OF 166 LAMBERT STREET, FOR RAY PEPPERS, BY LEWIS AND WASINA, INC., DATED THROUGH JUNE 23, 2005, AND RECORDED IN CCRD PLAN BOOK 206, PAGE 207.
7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM (NEAR NGVD29), BASED ON CITY CONTROL POINTS (T125-14-1649 & T125-14-1651), AND PLAN REFERENCE A.
8. BENCHMARK:
   BM-1 X CUT ON UPPER BONNET BOLT OF HYDRANT ELEVATION: 109.056' (CITY)
9. UTILITY INFORMATION DEPICTED HEREON, UNLESS OTHERWISE NOTED, IS OF QUALITY LEVEL D PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD CI/ASCE 38-02. 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 WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 2300510002C, HAVING AN EFFECTIVE DATE OF DECEMBER 8,1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS ZONE X, AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.
11. THE STREAM AND WETLAND DELINEATION IS BASED UPON PLAN REFERENCE B AND CONFIRMED BY SEBAGO TECHNICS IN JANUARY OF 2021.

PROPERTY CURVE TABLE

CURVE	LENGTH	RADIUS	CRD BEARING	CRD LENGTH
C1	114.59'	676.20'	S 27°05'17" W	114.45'

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- SETBACK
- MONUMENT
- IRON PIPE/ROD
- N/F NOW OR FORMERLY
- BM-1 BENCHMARK
- BUILDING
- DECK/STEPS/ OVERHANG
- EDGE PAVEMENT
- CURB LINE
- TREELINE
- 120 118 CONTOURS
- STOCKADE FENCE
- DECIDUOUS TREE
- CONIFEROUS TREE
- MULCH LINE
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- OVERHEAD UTILITY
- ELECTRIC METER
- UTILITY POLE
- GUY WIRE
- MAILBOX
- EDGE WETLAND
- WETLANDS

MATTHEW W. EK, PLS 2117

STATE OF MAINE · MATTHEW W. EK 2117 · PROFESSIONAL LAND SURVEYOR

REV.	BY	DATE	STATUS
B	MWE	4/6/23	LIDAR ADDED, ZONING NOTES ADDED, RELEASED FOR REVIEW
A	MWE	12/7/21	RELEASED FOR CLIENT REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS PLAN
OF:
SUMMIT STREET LOTS
SUMMIT STREET
PORTLAND, ME
FOR RECORD OWNER:
JP REAL ESTATE
P.O. BOX 617
PORTLAND, ME 04104

DESIGNED	-
DRAWN	TSL / JMC
CHECKED	MWE
DATE	10/25/2021
SCALE	1" = 20'
PROJECT	20439

SHEET 1 OF 1

20439EC.dwg, TAB EC

Planning Board Report
Planning & Urban Development Department

921 Ocean Avenue; 410, 422 & 426 Presumpscot Street; Parcel 418A A006
Zoning Map Amendment
ZN-002427-2023

Submitted to:	Portland Planning Board	**Prepared By:**	Zach Powell
Public Hearing Date:	October 24, 2023	**Date:**	October 20, 2023

I. INTRODUCTION

Backyard ADUs has submitted a zoning map amendment application requesting to rezone property at 921 Ocean Avenue, 422 & 426 Presumpscot Street, and parcel 418A A006 from R-3 Residential to R-5 Residential. The zoning map amendment is intended to facilitate a future 41-unit housing development comprised of semi-detached two-family dwellings and accessory dwelling units (ADUs). Based on discussion concerning the proposed zoning boundary at the September 26th Planning Board workshop, Planning Staff have included 410 Presumpscot Street as part of the rezoning area under consideration. 410 Presumpscot Street is not owned by the applicant, and is not proposed to be developed as part of the applicant's conceptual development plan



Figure 1: 2021 Aerial View of the subject properties (Outlined in Green). Please note that the structure shown in the image at 410 Presumpscot Street has been demolished.

The Planning and Urban Development Department mailed 26 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the October 14, 2023 and October 18, 2023 editions of the *Portland Press Herald*.

Applicant: Christopher Lee, Backyard ADUs
Authorized Agent: John Whitten, Haley Ward

II. PROJECT DATA

Property Size	921 Ocean Avenue: 20,320 square feet (0.47 acre) 410 Presumpscot Street: 16,981 square feet (0.39 acre) 422 Presumpscot Street: 55,419 square feet (1.27 acres) 426 Presumpscot Street: 36,771 square feet (0.84 acre) 418A A006: 15,255 square feet (0.35 acre)
Existing Zone	R-3 (Residential)
Existing Uses	Residential (Single-family dwelling) & Undeveloped Land
Proposed Zones	R-5 (Residential)
Proposed Uses	Residential (41-51 dwelling units)

III. EXISTING CONDITIONS AND SURROUNDING AREA

The project area is bounded by Presumpscot Street to the east and Ocean Avenue (State Route 9) to the west, both of which serve as major urban collector streets. The proposed zoning map amendment encompasses 921 Ocean Avenue (Chart 418A, Block A, Lot 005001), which is improved by a single-family dwelling, and undeveloped parcels at 410 (Chart 418A, Block A, Lot 004001), 422 (Chart 418A, Block A, Lot 008001) and 426 (Chart 418A, Block A, Lot 007001) Presumpscot Street and parcel 418A A006.



Figure 2: Route Map (Source: Greater Portland Metro)

The subject properties are located in the East Deering neighborhood and are approximately a mile from Lunts Corner (Ocean & Washington Avenue intersection). In the surrounding area, commercial and industrial uses are primarily located to the south along Presumpscot Street, zoned I-M Industrial Moderate and I-L Industrial Low-Impact and lower-density residential uses to the west along Ocean Avenue (excluding the Dragon cement factory at 921 Ocean Avenue), zoned R-3 Residential. The site is not currently served by City sewer service.

The properties are an approximately twenty-minute walk and 4-minute bike ride from the nearest METRO Route 9A/9B line, which stops at Lunts Corner every 35 minutes. The closest dedicated bicycle facilities are located approximately a mile away along Washington Avenue and there are inconsistent pedestrian facilities along Ocean Avenue & Presumpscot Street.

All properties proposed for rezoning are located within the R-3 (Residential) zone, which continues to the north, west, and southwest.

IV. SEPTEMBER 26, 2023 WORKSHOP

A Planning Board workshop was held on September 26, 2023 for this project. At the workshop, Planning Staff provided the Board and public with an overview of the applicant's proposed zoning map amendment. The Board was supportive of the proposed rezoning to R-5 and recommended the inclusion of neighboring 410 Presumpscot Street as part of the rezoning, in order to avoid having one isolated parcel zoned R-3 Residential.

In the previously submitted application, the proposed rezoning included a B-1b zone along Presumpscot Street. At the workshop, Board members raised questions on whether the proposed B-1b rezoning would successfully facilitate the mixed-use node intended by the Applicant. Additional questions were raised as to how the site would meet the walkable intent of the B-1b zoning district, when pedestrian facilities are inadequate along Presumpscot Street. Board members considered whether an industrial zoning classification along Presumpscot Street would be more appropriate given the adjacent I-L & I-M zoning districts. The Applicant stated that the proposed site design includes a mixed-use building with maker's space and residential uses above, which could not be constructed in an industrial district.

Based on feedback from the workshop, the Applicant has revised the application to remove the B-1b portion of the rezoning and just propose an R-5 designation. The concept plan has also been updated to remove the proposed maker's space along Presumpscot Street and townhouse units. A mixture of 10-20 units (ADUs and principal dwelling units) along Presumpscot Street is still being contemplated by the Applicant.

V. PROPOSED PROJECT

Not including 410 Presumpscot Street, the proposed zoning map amendment to R-5 would facilitate Backyard ADUs' plan to retain the existing single-family structure at 921 Ocean Avenue and construct nine, two-family dwellings with 20 ADUs, and an additional 10-20 dwelling units on Presumpscot Road. The conceptual site plan envisions a mixture of 100% AMI units and ownership market-rate units. The proposed development would require the submission of a major site plan application to be reviewed by the Planning Board.



Figure 3: Conceptual Site Plan

The submitted application aims to increase permissible housing density for the subject properties by means of a zoning map amendment. As part of the applicant's vision for the site, lots would consist of a two-family dwelling along with two ADUs. Integrating the construction of ADUs into a larger subdivision is a novel development strategy in the City. The Applicant has stated that the proposed zoning map amendment will allow for a diversification of housing typologies and affordability with market-rate ownership units and rental units at 100% AMI. However, it is important to note that zoning map amendments do not regulate whether or not a future project will be affordable or market rate. Amending the zoning map changes the allowable uses and permitted dimensional standards.

Currently, the project area is constrained by the amount of street frontage and lot width available for the site, which results in a maximum density of five principal dwelling units and 10 ADUs, for a total of 15 dwelling units. Given these constraints, the applicant has proposed the construction of a road that bisects the project area and increases the total street frontage from 388 feet to 1,104 feet. Under the current R-3 zoning standards, 57 units could be constructed (19 principal units and 38 ADUs) in 19 structures, for a total of 57 units. Under the submitted application, 41 -51 units are proposed.

VI. PROPOSED MAP AMENDMENT

The applicant proposes a zoning map amendment to rezone the subject properties from R-3 (Residential) to R-5 (Residential), shown in Figure 4 with the proposed zone boundaries shown in Figure 5. The applicant's submittal (Plan 2) shows the proposed Zoning Map Amendment.

VII. ZONING ANALYSIS

R-3 (Residential) Zone

All of the subject properties are currently zoned R-3 (Residential). The purpose of the R-3 zone is to:

> *"provide medium-density residential development characterized by single-family homes on individual lots and also to provide for planned residential unit developments on substantially sized parcels."*

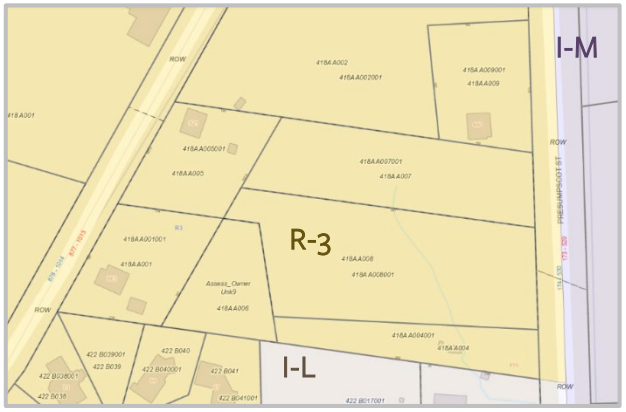


Figure 4: Current zoning with R-3 in tan, I-L in gray, and I-M in darker gray.

The R-3 zone limits residential density by requiring a minimum of 6,500 square feet of lot area per dwelling unit, a minimum lot width of 65 feet, and minimum street frontage of 50 feet. The maximum height in the R-3 zone is 35 feet, and affordable housing height and density bonuses are not permitted for development within most residential zones, including the R-3 zone. A number of categorical exemptions to off-street parking minimums are permitted for development in the R-3 zone (e.g., Affordable housing, Multi-Family housing, Transit proximate development and uses) and can be found in Table 19-B of the Land Use Code.

R-5 (Residential) Zone

The submitted application proposes to rezone the the subject parcels to R-5. The purpose of the R-5 zone is to:

> *"provide appropriate areas of the city for medium-density residential development characterized by single-family, two-family, and low-intensity multifamily dwellings on individual lots; to ensure the stability of established medium-density neighborhoods by controlling residential conversion; and to provide for planned residential unit development on substantially-sized parcels."*

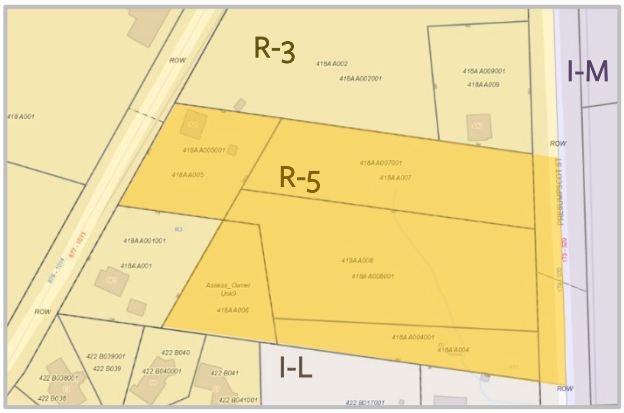


Figure 5: Proposed Zoning Map Amendment, with the R-5 shown in orange

The R-5 zone limits residential density by requiring a minimum of 3,000 square feet of lot area per dwelling unit and further requires a minimum lot area of 6,000 square feet for residential uses or 5,000 square feet for sites governed by the R-5 Small Residential Lot Development Dimensional Standards (Table 7-C). The maximum height in the R-5 zone is 35 feet and affordable housing height and density bonuses are not permitted. A number of categorical exemptions to off-street parking minimums are permitted for development in the R-5 zone (e.g., Affordable housing, Multi-Family housing, Transit proximate development and uses) and can be found in Table 19-B of the Land Use Code.

Table 1 provides a comparison of the permitted uses for zones under consideration. Uses marked with a 'P' are permitted uses in the zone. A 'C' indicates a conditional use. Uses with an empty cell are not permitted in the zone. '**' indicates that other restrictions may apply. These additional restrictions or use parameters are listed under the Supplemental Use Standards (Sec. 6.4), and the Conditional Uses Section (Sec. 6.5).

Table 1 - Permitted Uses	R-3	R-5
Single-family dwellings	P	P
Two-family dwellings		P
Multi-family dwellings	C*	C*
Multiplex		P
Handicapped family units	P	P
Planned Residential Unit Developments	P	
Special needs independent dwelling units		P
Lodging houses		C
Sheltered care group homes	C	C
Elementary, middle, and secondary schools	C	C
Governmental uses	P	P
Hospitals		C
Intermediate care facilities	C	C
Long-term and extended care facilities	C	C
Places of assembly (<10,000 sq. ft.)	C	C
Places of assembly (>10,000 sq. ft.)	C	C
Preschool facilities	C	C
Post-secondary schools		C
Off-street parking	C	C
Parks and open spaces	P	P
Solar energy system (minor)	P	P
Utility substations	C	C

Table 2 provides a comparison of the dimensional requirements for zones under consideration.

Table 2 - Dimensional Standards	R-3	R-5
Lot Size (min)	6,500 sq. ft. to 10 ac. (depending on use)	6,000 sq. ft. to 5 ac. (depending on use)
Density (lot are per dwelling unit)	6,500 sq. ft.	3,000 sq. ft.
Street Frontage (min)	50 ft.	50 ft.
Front Yard (min)	25 ft. (or average depth of adjacent yards)	25 ft. (or average depth of adjacent yards)
Front Yard (max)		
Rear Yard (min)	25 ft.	20 ft.
Side Yard (min)	5-20 ft. (depending on height and location)	5-15 ft. (depending on height and location)
Lot Coverage (max)	35%	40%
Lot Width (min)	65 ft.	General: 60 ft. Multiplex: 90 ft.
Building Height (max)	Principal: 35 ft. Accessory: 18 ft.	Principal: 35 ft. Accessory: 18 ft.

An assessment of maximum permitted densities of the site under different zoning classifications for the entirety of the site, as well as whether a new road is constructed are included in Attachment 1. Please note that site features such as grading and significant natural resources were not considered as part of this assessment and may reduce the maximum feasible permitted density for the site.

VIII. COMPREHENSIVE PLAN CONSISTENCY

Relevant sections of the Comprehensive Plan that the Planning Board should take under consideration for this zoning map amendment application may include:

Environment

Local Goal

Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation.

Strategy

Coordinate future land use policy changes with long-range regional transportation planning, including planning for transit, pedestrian, and bicycle improvements, to reduce local and regional vehicle miles traveled.

Continue to develop land use policies which support complete neighborhoods.



Figure 6: Visions of Portland's Plan 2030.

Housing

Local Goal

Encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods.

Strategy

Coordinate linkages between accessible transportation and housing affordability.

The submitted application would significantly increase the potential residential density of the project site from 57 to 126 dwelling units under a PRUD. As part of the Board's review of this change in land use policy, a number of Comprehensive Plan goals direct future growth to expand existing nodes of development, connect affordable housing with accessible transportation, and align growth in areas that support complete neighborhoods. Existing conditions including the absence of sewer service and connections to a robust multi-modal network are potential considerations in the review of this rezoning. Additionally, while proximate to a recently reviewed rezoning at 920 Ocean Avenue to R-5a, the proposed rezoning would be surrounded by zoning districts with lower permitted residential densities. These surrounding zoning designations may limit the nodal growth envisioned in the goals of the Comprehensive Plan.

IX. NEIGHBORHOOD MEETING & PUBLIC COMMENT

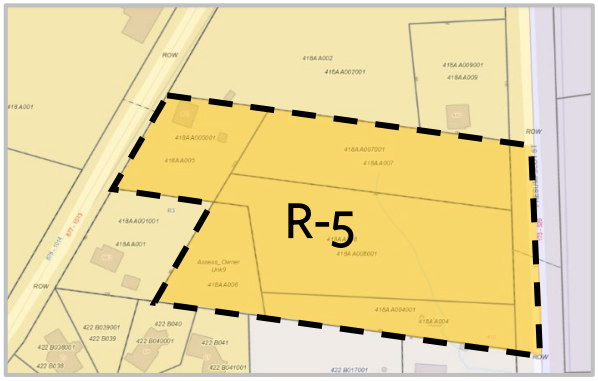
No public comment has been submitted. The Applicant held a neighborhood meeting on May 16, 2023 and was attended by two people. One favorable comment for the project was noted and a question was raised about the proposed site layout.

X. REQUISITE COUNCIL ACTION

Any proposed rezoning, regardless of whether it is favorably or unfavorably recommended by the Planning Board, must be approved by City Council vote in order to take effect.

XI. PROPOSED MOTION

1. On the basis of materials submitted by the applicant, the City of Portland Land Use Code, Portland's Comprehensive Plan, public comment, and the information provided in the public hearing on October 10, 2023 for the application ZN-002427-2023 (921 Ocean Avenue & 410, 422, and 426 Presumpscot Street & Parcel 418A A006), and/or other findings, the Planning Board finds that the proposed zoning map amendment **[is/is not]** consistent with the Comprehensive Plan for the city of Portland; and therefore, the Planning Board **[recommends/does not recommend]** to the City Council adoption of the Zoning Map amendment for the area of land that includes 921 Ocean Avenue & 410, 422, and 426 Presumpscot Street & Parcel 418A A006 as shown to the right:



XII. ATTACHMENTS

REPORT ATTACHMENT

1. Maximum Permitted Densities Assessment

APPLICANT SUBMITTAL

A. Project Summary 2023-03-27
A1. Project Summary 2023-10-13
B. Consistency with Comprehensive Plan 2023-09-12
B1. Consistency with Comprehensive Plan 2023-10-13
C. Checklist
D. Right, Title, & Interest
E. Neighborhood Meeting Materials

PLANS

Plan 1. Vicinity Map
Plan 2. Existing and Proposed Zoning Maps 2023-09-13
Plan 2a. Existing and Proposed Zoning Maps 2023-10-13
Plan 3. Conceptual Site Plan -R-5 & B-1b Zoning
Plan 4. Conceptual Site Plan – RN-4 & B-1 Zoning
Plan 5. Conceptual Site Plan – R-5 Zoning 2023-10-18

Attachment 1: Maximum Permitted Density Analysis							
Zoning	Minimum lot area	Minimum lot area per unit	Minimum lot width	Minimum street frontage	Permitted Unit Types	Maximum permitted number of units	
R-3 (No private road)	6,500 square feet		65 feet	50 feet	1-Family; PRUD (if >3 acres); ADUs	15	5 Principal Units 10 ADUs
R-3 (Private road)	6,500 square feet		65 feet			57	19 principal units 38 ADUs
R-3 (PRUD)	3 acres	6,500 square feet	-	-		N/A	Site is <3 acres
R-5 (No private road)	5-6,000 square feet		60 feet; 90 feet for multiplex	40-50 feet	1-Family; 2-Family; Multiplex; PRUD (if >2 acres); ADUs	33	25 Principal Units 8 ADUs
R-5 (Private road)			60 feet; 90 feet for multiplex			61	25 Principal Units 36 ADUs
R-5 PRUD	2 acres	3,000 square feet	-	-		126	42 Principal Units 84 ADUs

Total area of site: 127,765 square feet (2.93 acres)

Total Street Frontage without private road: 388 feet

Total Street Frontage with proposed private road: 1,104 feet

Note 1: Cells highlighted in green indicate dimensional or use standards that dictate the maximum permitted density for the site. Additional site features or constraints may modify the feasible permitted density for the site.

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

March 27, 2023

Planning & Urban Development Department
Attn: Matthew Grooms, Development Review Manager
City of Portland
389 Congress Street, 4th Floor

Re: Zoning Map Amendment | Backyard ADUs, LLC | 921 Ocean Avenue & 426 Presumpscot Street | Portland, Maine

Dear Mr. Grooms,

On behalf of the applicant/owner, Backyard ADUs, LLC (Attn: Christopher Lee), Haley Ward, Inc. is pleased to submit this zoning map amendment for the approximately 2.8-acre area located between Ocean Avenue and Presumpscot Street (921 Ocean Avenue and 426 Presumpscot Street, Tax Map 418A/A005, A007, A008). The applicant is proposing four parcels, currently within the R-3 zoning district (medium density residential,) to be rezoned into the R-5a zoning district (medium and high-density residential) and the B-1b zoning district (Neighborhood Business).

The above-mentioned parcels currently include a single-family home and undeveloped forest with a variety of topographic features, scenic vistas, drainage channels, and wetland areas. The parcels are bound between Ocean Avenue and Presumpscot Street to the West and East, and residential, commercial, and vacant lots to the North and South. Lots directly to the south and east, along Presumpscot Street, are located within the IL and IM zones, respectively.

The applicant is seeking a zoning map amendment to best accomplish their goal of developing a residential project that will include rental units with a target rent affordable to 100% AMI as well as market-rate, residential condominium units and a mixed-use maker space along Presumpscot Street. With an approved zoning map amendment by City Council, the project would be then subject to the City's PRUD standards and reviewed under the Major Site Plan process with the Planning Board.

120 Main Street, Suite 132, Saco, ME 04072
T: 207.283.9151 | HALEYWARD.COM

We are pleased to submit this zoning map amendment application which is consistent with Portland's Comprehensive Plan and will allow an increase in the City's available housing supply through a low-impact approach.

Sincerely,
Haley Ward, Inc.



Jon Whitten, Jr., PE
Senior Project Manager

DJO/JHW-

Att. A1

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

October 13, 2023

Planning & Urban Development Department
Attn: Matthew Grooms, Development Review Manager
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Re: Amended Application for Zoning Map Amendment | Backyard ADUs, LLC | 921 Ocean Avenue & 426 Presumpscot Street | Portland, Maine

Dear Mr. Grooms,

On behalf of the applicant/owner, Backyard ADUs, LLC (Attn: Christopher Lee), Haley Ward, Inc. is submitting this amended request for a zoning map amendment for the approximately 2.8-acre area located between Ocean Avenue and Presumpscot Street (921 Ocean Avenue and 426 Presumpscot Street, Tax Map 418A/A005, A007, A008).

The applicant recently proposed that four parcels, currently within the R-3 zoning district (medium density residential,) be rezoned into the R-5 zoning district (medium and high-density residential) and the B-1b zoning district (Neighborhood Business). After discussing the proposal with Staff and Planning Board, during the September 26th Workshop session, the applicant understands the hesitation of City to convert existing residential zoning into business, and is willing to alleviate these concerns by proposing that the entire property be rezoned to the R-5 District. Therefore, the proposal to amend a portion of this area into B-1b has been withdrawn.

We have included an updated map illustrating the properties involved with this proposal and an updated narrative discussing how this proposal aligns with the City's Comprehensive Plan.

120 Main Street, Suite 132, Saco, ME 04072
T: 207.283.9151 | HALEYWARD.COM

We look forward to discussing this in more detail with the City's Planning Board and Staff in the coming weeks. Please feel free to reach out to us with any questions in the meantime.

Sincerely,
Haley Ward, Inc.



Jon Whitten, Jr., PE
Senior Project Manager

JHW-

Consistency with Portland's Comprehensive Plan

Please see below for an analysis of how this zone change request is in conformance with the goals, policies and land use plan of Portland's Comprehensive Plan and Portland's Plan 2030.

The R-5 and B-1b designations will allow this site to better meet goals and strategies in the Housing and Environment sections of the Comprehensive Plan, as well as strategies from other areas. By unlocking the potential for higher density, access to the PRUD standards of development allowed under the R-5 and mixed-use development allowed in B-1b, this property can diversify its development plan, do it in a more efficient way and be more consistent with the Comprehensive Plan than the existing R-3 designation.

The R-5 zone is intended to provide appropriate areas of the city for medium-density residential development characterized by single-family, two-family and low-intensity multifamily dwellings on individual lots; to ensure the stability of established medium-density neighborhoods by controlling residential conversions; and to provide for Planned Residential Unit development (PRUD) on substantially sized parcels. It allows for a plan that preserves open space and sensitive environmental areas, while allowing for efficient use of portions of the site that will be developed. The B-1b zone is intended to "provide appropriate opportunities for the establishment of small-scale ground floor commercial uses to serve a local market, while supporting mixed-use building with residential uses above ground floor commercial space…", and "The zone also provides the opportunity for mixed-use and high residential density." Given the complex geography of this part of the city, this zoning designation will allow for both housing development and environmental protection.

Conversely, the R-3 zone is intended for areas "characterized by single-family homes on individual lots." The Ocean Avenue corridor does not currently meet this characterization. In addition, the Comprehensive Plan doesn't envision it as a single-family corridor.

Specifically, this map change helps achieve the following Plan goals:

Housing

- Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents.

- Encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods.

- Pursue policies to enable people who work in Portland to have the option to live in Portland.

Environment

- Adopt sustainable land use and transportation policies that support connectivity,

walkable neighborhoods, and multi-modal transportation.

Additionally, it helps meet the following strategies:

Housing

- Evaluate whether current zoning allows for new development consistent with historic patterns of form, density, and/or use, as well as whether it allows for priority growth areas.

- Coordinate linkages between accessible transportation and housing affordability.

- Support programs and tools that facilitate aging safely in place.

Facilities & Services

- Make fiscal stability a factor in land use planning by considering both public investments and potential gains in the City's tax base when planning for a sustainable future for the city, while recognizing that not all land use decisions will be driven by the fiscal impacts of the development produced.

Portland's Plan 2030 sets a goal of production of at least 2,557 new housing units in next ten years, or 256 a year. This map change will help meet that goal.

In summary, this map change is fully consistent with the Comprehensive Plan. In fact, it is more consistent with City goals and strategies outlined in the plan than the existing R-3 designation.

Consistency with Portland's Comprehensive Plan

Please see below for an analysis of how this zone change request is in conformance with the goals, policies and land use plan of Portland's Comprehensive Plan and Portland's Plan 2030.

The R-5 designation will allow this site to better meet goals and strategies in the Housing and Environment sections of the Comprehensive Plan, as well as strategies from other areas. By unlocking the potential for higher density, access to the PRUD standards of development allowed under the R-5, this property can diversify its development plan, do it in a more efficient way and be more consistent with the Comprehensive Plan than the existing R-3 designation.

The R-5 zone is intended to provide appropriate areas of the city for medium-density residential development characterized by single-family, two-family and low-intensity multifamily dwellings on individual lots; to ensure the stability of established medium-density neighborhoods by controlling residential conversions; and to provide for Planned Residential Unit development (PRUD) on substantially sized parcels. It allows for a plan that preserves open space and sensitive environmental areas, while allowing for efficient use of portions of the site that will be developed. Given the complex geography of this part of the city, this zoning designation will allow for both housing development and environmental protection.

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In summary, this map change is fully consistent with the Comprehensive Plan. In fact, it is more consistent with City goals and strategies outlined in the plan than the existing R-3 designation.

CITY OF PORTLAND
Planning & Urban Development Department

MAP AMENDMENT SUBMISSION CHECKLIST * Please submit each document and drawing as a separate PDF file * Please submit all drawings in a 24 x 36 sheet size * Please confirm each item by electronically checking the boxes to the left for each document/drawing	
GENERAL APPLICATION DOCUMENTS	
☑	**Project Description** • Cover Letter with detailed project description
☑	**Consistency with Comprehensive Plan** • Analysis of the consistency of the zone change request with the goals, policies and land use plan of Portland's Comprehensive Plan.
☑	**Completed Checklist – Map Amendment Application** **(this document)**
☑	**Right, Title and Interest** • Deeds, leases, or purchase and sales agreements
PLANS	
☑	**Vicinity Map**
☑	**Proposed Map Amendment** (please use the Portland zoning map as a reference)
☑	**Site Plan (if applicable)** Provide a site plan of the property showing existing and proposed improvements, including such features as buildings, parking, driveways, walkways, landscape and property boundaries.

DOC :49957 BK:39750 PG:256
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
09/30/2022, 08:57:47A
Register of Deeds Jessica M. Spaulding E-RECORDED

Att. D

MAINE REAL ESTATE TAX-Paid

QUITCLAIM DEED WITH COVENANT
Statutory Short Form

DLN: 1002240212107

KNOW ALL BY THESE PRESENTS, That **We, Roswell Furman and John R. Jordan**, whose mailing address is **796 Forest Avenue, Portland, ME 04103,** for consideration paid, grant to **Christopher Lee** of **Brunswick** County of **Cumberland** and State of **Maine** whose mailing address is **245 Coombs Road, Brunswick, ME 04011**, with Quitclaim Covenant the real property in the City of **Portland**, County of **Cumberland** and State of **Maine**, more particularly described as follows:

A certain lot or parcel of land with the buildings thereon situated on the northwesterly side of Presumpscot Street at the easterly corner of land conveyed by James E. Levier et al, to Roscoe A. Doak et al, by deed dated October 20, 1956, and recorded in the Cumberland County Registry of Deeds in Book 2320, Page 39 thence northeasterly by Presumpscot Street to the southerly corner of land formerly of Driscoll; thence northwesterly by said Driscoll land to land formerly of Wilbur Dresser; thence southwesterly by said Dresser land to the northerly corner of said Doak land; thence southeasterly by said Doak land to the point of beginning.

Meaning and intending to convey and conveying the real property described in a deed to Lincoln Capital, LLC, dated April 6, 2017 and recorded in the Cumberland County Registry of Deeds at Book 33928, Page 187 and a deed to John R. Jordan dated September 30, 2004 and recorded in the Cumberland County Registry of Deeds at Book 21848, Page 120. Reference is hereby made to a deed to Roswell Furman and John R. Jordan to be recorded immediately prior hereto.

Witness my hand and seal this 29th day of September, 2022.

Witness:

Roswell Furman

John R. Jordan

STATE OF **MAINE**
COUNTY OF **CUMBERLAND**, ss.

September 29, 2022

Personally appeared on the above date, the above-named **Roswell Furman and John R. Jordan** and acknowledged the foregoing instrument to be their free act and deed.

Kerry E. Kimball
State of Maine
Attorney at Law
Bar #8577

Before me,

Notary Public/Attorney at Law
Print name:
Exp: _____

MAINE REAL ESTATE TAX-Paid

WARRANTY DEED

DLN: 1002240212106

KNOW ALL PERSONS BY THESE PRESENTS, that Lincoln Capital, LLC, a Maine limited liability company with its principal place of business in Portland, Maine, whose mailing address is 796 Forest Ave Portland Maine 04103, for consideration paid, **grants** to Roswell Furman and John Jordan, of Portland, County of Cumberland and State of Maine, whose mailing address 796 Forest Avenue, Portland, Me 04103 with **Warranty Covenants**, certain lots or parcels of land with buildings thereon, known as 422 and 426 Presumpscot Street, City of Portland, County of Cumberland and State of Maine, described as follows:

See Exhibit A attached hereto and made a part hereof.

Meaning and intending to convey and conveying the same premises conveyed to Lincoln Capital, LLC, by virtue of a deed dated April 6, 2017 and recorded in the Cumberland County Registry of Deeds at Book 33928, Page 187.

IN WITNESS WHEREOF Todd A. Miranda, authorized member of Lincoln Capital, LLC has caused this deed to be executed on this 29th day of September,2022

Lincoln Capital, LLC

Witness

By: Todd A. Miranda
Its: Member

State of Maine
County of Cumberland

September 29, 2022

Then personally appeared before me the above Todd A. Miranda, Member of Lincoln Capital, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and acknowledged the foregoing to be the free act and deed of the said LLC.

Before me,

ASHLEY HALLSTROM
Notary Public - Maine
My Commission Expires
October 26, 2025

Notary Public/ Attorney at Law
Print name: Ashley Hallstrom
Exp: 10/26/2025

DOC :49956 BK:39750 PG:255
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
09/30/2022, 08:53:55A
Register of Deeds Jessica M. Spaulding E-RECORDED

EXHIBIT A

A certain lot or parcel of land with the buildings thereon situated on the northwesterly side of Presumpscot Street at the easterly corner of land conveyed by James E. Levier et al, to Roscoe A. Doak et al, by deed dated October 20, 1956, and recorded in the Cumberland County Registry of Deeds in Book 2320, Page 39 thence northeasterly by Presumpscot Street to the southerly corner of land formerly of Driscoll; thence northwesterly by said Driscoll land to land formerly of Wilbur Dresser; thence southwesterly by said Dresser land to the northerly corner of said Doak land; thence southeasterly by said Doak land to the point of beginning.

MAINE REAL ESTATE TAX-Paid

QUITCLAIM DEED WITH COVENANT

Statutory Short Form

DLN: 1002240212110

KNOW ALL BY THESE PRESENTS, That, **921 Ocean Ave LLC, a Maine Limited Liability Company** with a principal place of business in **796 Forest Avenue, Portland, Cumberland** County, State of **Maine**, for consideration paid, grants to **Christopher Lee** of Brunswick County of Cumberland and State of Maine whose mailing address is 245 Coombs Road, Brunswick, ME 04011, with Quitclaim Covenant the real property in the City of **Portland**, County of **Cumberland** and State of **Maine**, more particularly described as follows:

A certain lot or parcel of land. with the buildings thereon, situated on Ocean Avenue in the City of Portland, County of Cumberland and State of Maine, on Rock Hill or Graves Hill, so-called, and bounded and described as follows:

Beginning at a point on Ocean Avenue one hundred fifty-seven and one-half (157 1/2) feet, more or less, from the westerly end of the stone wall formerly of James Knowles; thence northerly along Ocean Avenue, one hundred fifty-seven and one-half (157 1/2) feet, more or less, to a monument; thence from said monument easterly one hundred thirty-eight (138) feet, more or less, to a monument; thence from said monument southerly one hundred fifty-seven and one-half (157 1/2) feet, more or less, to a line parallel with and one hundred fifty-seven and one-half (157 1/2) feet from the stone wall of James Knowles; thence by said line parallel with and one hundred fifty-seven and one-half (157 1/2) feet distant from said stone wall one hundred thirty-eight (138) feet, more or less, to the point of beginning.

Meaning and intending to convey and conveying the real property described in a deed to **921 Ocean Ave LLC** dated 09/15/2016 and recorded with the Cumberland County Registry of Deeds in Book 33444, Page 295

Witness my hand and seal this 29th day of September, 2022.

Witness:

921 Ocean Ave LLC

_____

Witness

By: _____

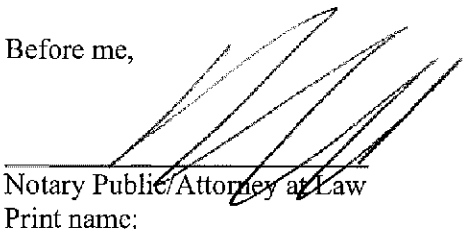
John Jordan, Member

DOC :49940 BK:39750 PG:201
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
09/30/2022, 08:10:37A
Register of Deeds Jessica M. Spaulding E-RECORDED

STATE OF **MAINE**
COUNTY OF **CUMBERLAND**, ss. September 29, 2022

Personally appeared on the above date, the above-named **John Jordan, Member** of said **921 Ocean Ave LLC, a Maine Limited Liability Company,** and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of said **Limited Liability Company.**

Before me,



Notary Public/Attorney at Law
Print name:
Exp: _____

Kerry E. Kimball
State of Maine
Attorney at Law
Bar #8577

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

NEIGHBORHOOD MEETING CERTIFICATION

I, Jon Whitten, Jr, PE, (Haley Ward, Inc. – consultant,) hereby certify that a neighborhood meeting was held on May 16, 2023 at Greater Portland Council of Governments at 17:00 for the proposed project located at 426 Presumpscot Street/921 Ocean Avenue.

I also certify that on May 5, 2023, notices 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 (1,000 feet for subdivisions within an industrial zone or industrial zone changes).

2. Residents on the "interested parties" list.

Signed,

Jon Whitten, Jr., P.E.
Senior Project Manager

May 25, 2023

JHW/tal
Attachments
1. Copy of the notice sent
2. Sign-in sheet
3. Record of feedback

One Merchants Plaza, Suite 701, Bangor, ME 04401
T: 207.989.4824 | HALEYWARD.COM

NEIGHBORHOOD MEETING SIGN-IN SHEET

May 16, 2023
Greater Council Portland of
Governments
Map Amendment at Ocean Avenue/Presumpscot Street

Members of the Public in Attendance:

Name	Email
Matthew Tonello	mtonelleo@consigli.com 207-253-5749
Michael George	mfgeorge@ichooa.com 207-749-2332

Developer and Consultant Team in Attendance:

Name	Email
Drew Olehowski,- Haley Ward	dolehowski@haleyward.com
Jon Whitten, Jr. – Haley Ward	jwhitten@haleyward.com
Christopher Lee - Backyard ADUs	chris.lee@backyardadus.com
Austin Gregory - Backyard ADUs	austin.gregory@backyardadus.com

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

May 5, 2023

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a Zoning Map Amendment located at 921 Ocean Avenue & 426 Presumpscot Street.

Meeting Location: Greater Portland Council of Governments
970 Baxter Blvd #201
Portland, ME 04103
Meeting Date: May 16, 2023
Meeting Time: 5:00 PM

The Land Use Code requires that neighboring property owners and residents on an "interested parties list" be invited to participate in this neighborhood meeting. A sign-in sheet will be circulated, and a record of the meeting will be taken. Both the sign-in sheet and record will be submitted to the Planning Board.

If you have any questions, please call Haley Ward, Inc. at 207-989-4824 and request to speak to Jon Whitten.

Signed,
Haley Ward, Inc.

Jon Whitten, Jr., PE

JHW/djo/tal

Note: Under the City of Portland land use code, an applicant for a major site plan, master development plan, subdivision of over five lots, or zoning map amendment is required to hold a neighborhood meeting within 30 days of an application being deemed complete and no less than seven calendar days before a public hearing. Should you wish to offer additional comments on this proposed development, you may forward them by e-mail to planning@portlandmaine.gov or by mail to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101.

120 Main Street, Suite 132, Saco, ME 04072
T: 207.283.9151 | HALEYWARD.COM

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PAGE _____ OF _____

PROJECT: Presumpscot St / Ocean Ave Map Amendment JOB # _____

SUBJECT: Neighborhood Meeting

COMP. BY: _____ CHK. BY: _____ DATE: 5/16/23

SIGN-IN

MATTHEW TONELLO	207-253-5749	Mtonello@consigli.com
MICHAEL GEORGE	207-749-2332	MKGEORGE@icloud.com

APPLICANT TEAM:
Jon Whitten, Jr. - Haley Ward
Drew Olehowski - Haley Ward
Chris Lee - Backyard ADU's
Austin Gregory - Backyard ADU's

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

MEETING MINUTES

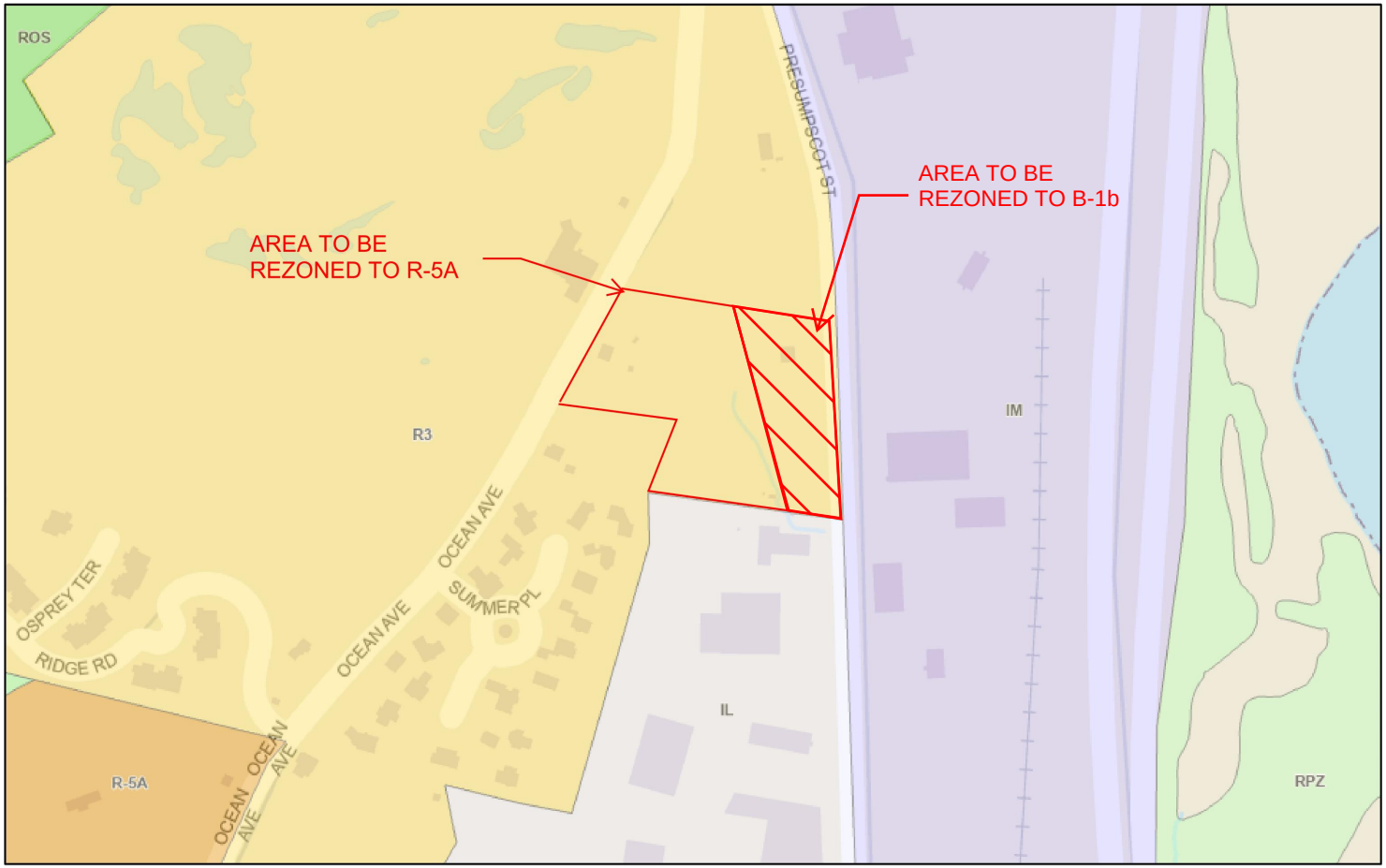
Meeting Date:	May 16, 2023
Meeting Time:	5:00 PM
Meeting Location:	Greater Portland Council of Governments
Client:	Backyard ADUs
Project:	Map Amendment for Presumpscot Street/Ocean Avenue
Re:	Neighborhood Meeting

17:00 – Meeting Begins. Christopher Lee (Backyard ADU's) presents project and opens the floor to public comment. Site Plan/Map Amendment drawings were shown on projector screen.

17:10 – Michael George expresses optimism/overall satisfaction in the project. Has minor questions regarding proposed layout of future development. No issues, complaints, or outstanding items requiring follow-up.

17:30 – No further public comments/questions – meeting adjourns.

ArcGIS Web Map



2/15/2023, 7:42:18 AM

Zoning

- R3 Residential
- R-5A Residential
- IL Industrial - Low Impact
- IM Industrial - Moderate Impact
- RPZ Resource Protection
- ROS Recreation Open Space

1:4,699

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.18 km

City of Portland, DPS

ArcGIS Web AppBuilder
City of Portland, DPS |

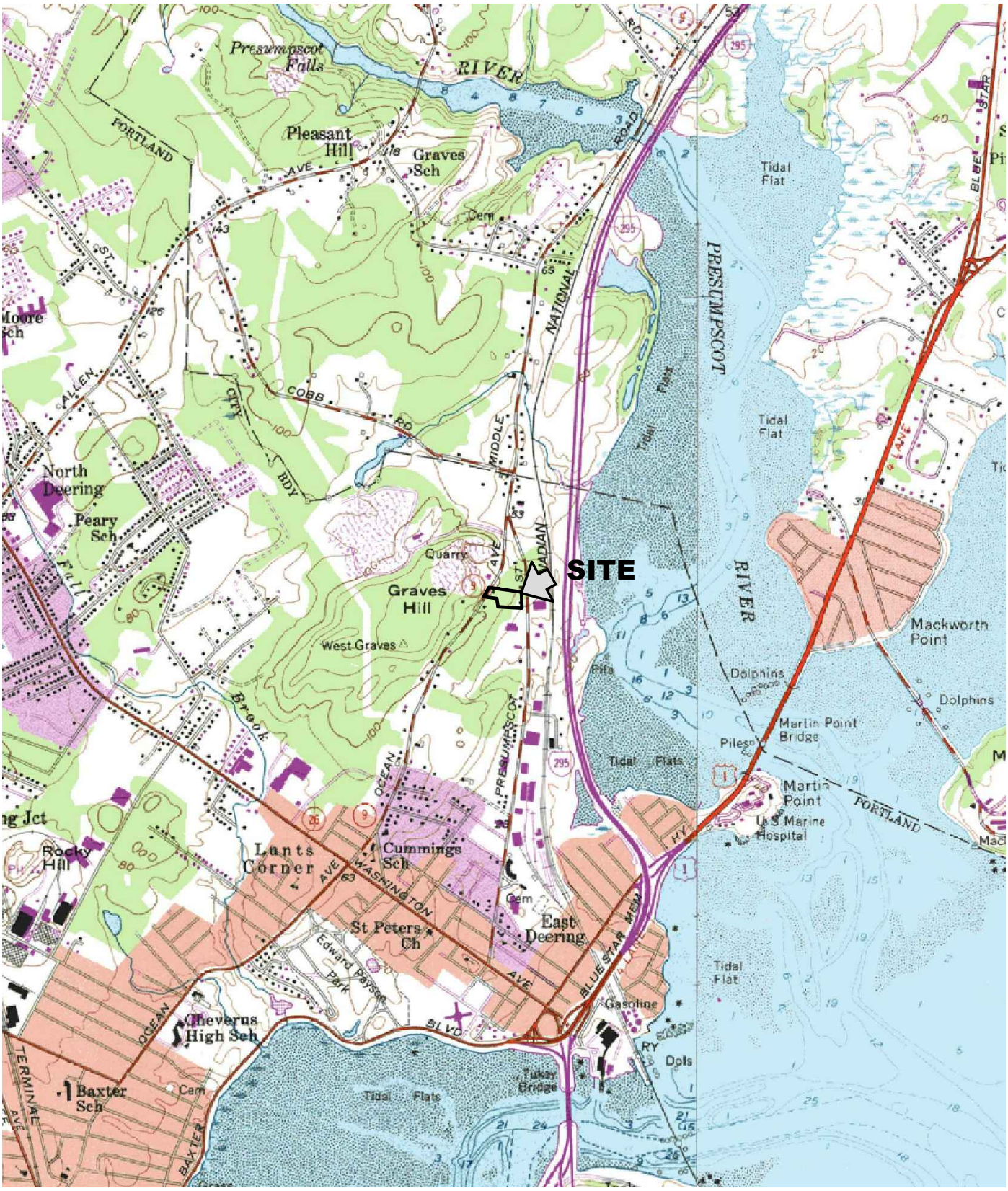
PROJECT	**BACKYARD ADUS** **PORTLAND, MAINE**	DWG No.	**1**
TITLE	**PROPOSED MAP AMENDMENT**	JN	14062.001
		SCALE	N.T.S.
		BY	WAB
		DATE	2023.02.15
		REV.	
		REV. DATE	

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING



February 26, 2023	Prepared by Scott Douglass for Maine Backyard ADUs LLC (Applicant)	Conceptual Site Plan 4 Ocean Ave. Portland, Maine

Terrain Navigator.© Maptech 800-627-7236



SOURCE:
U.S.G.S. TOPOGRAPHIC QUADRANGLE
PORTLAND WEST
@ 1:24,000

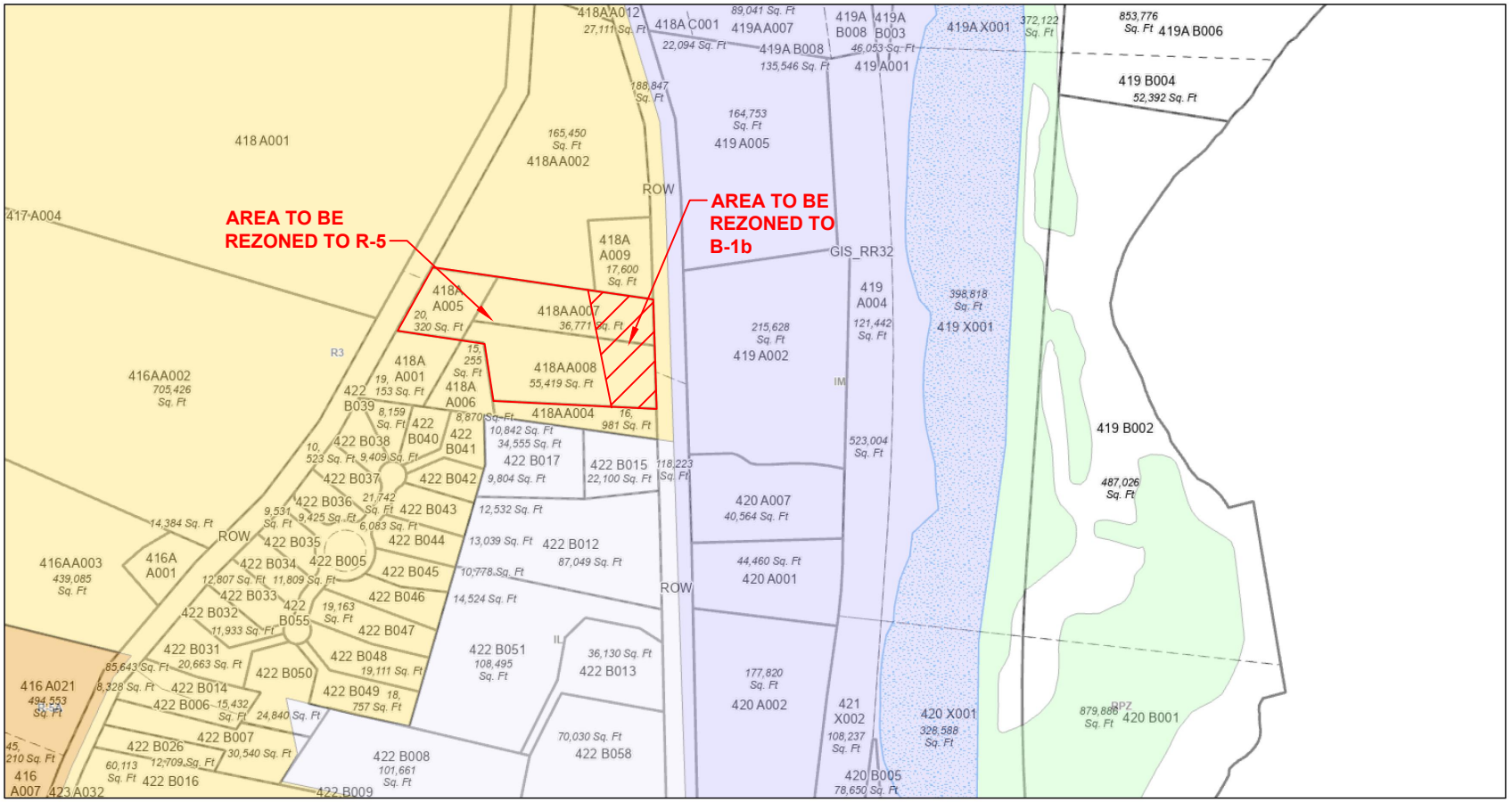
HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

BACKYARD ADUS
PORTLAND, MAINE

LOCATION MAP

2023.02.15
14062.001

ArcGIS Web Map



9/13/2023, 2:18:52 PM

Zoning

- R3 Residential
- R-5A Residential
- IL Industrial - Low Impact
- IM Industrial - Moderate Impact
- RPZ Resource Protection
- Shoreland Overlay Zone

parcels

- Tax
- Conveyance

1:2,425

0 0.03 0.06 0.12 mi

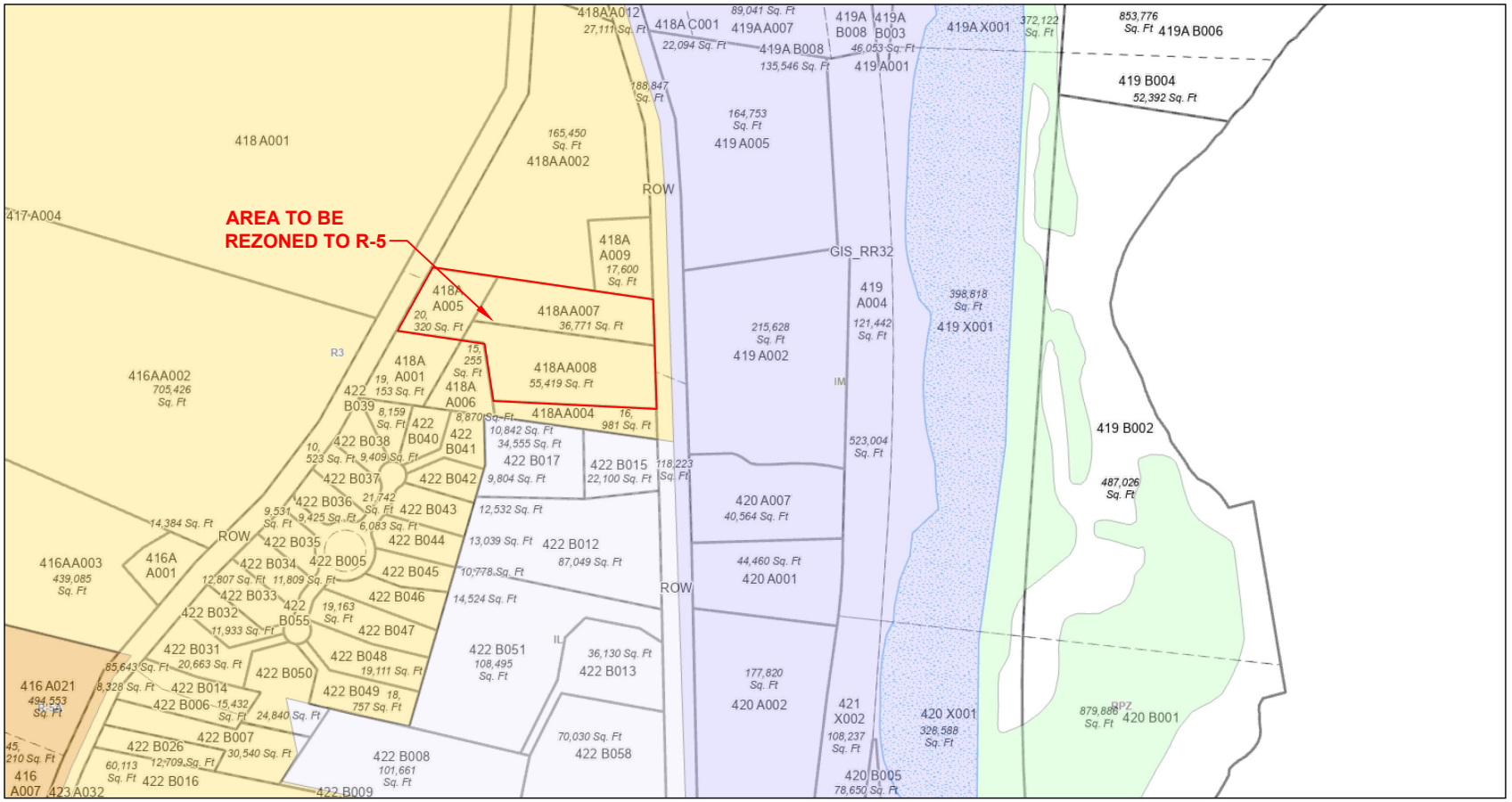
0 0.05 0.1 0.19 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

PROJECT: **BACKYARD ADUS** **PORTLAND, MAINE**	DWG No. **1**	BY WAB	HALEY WARD ENGINEERING | ENVIRONMENTAL | SURVEYING
		DATE 2023.02.15	
TITLE: **PROPOSED MAP AMENDMENT**	JN 14062.001	REV. 1	
	SCALE N.T.S.	REV. DATE 2023.09.13	

ArcGIS Web Map



9/13/2023, 2:18:52 PM

Zoning

- R3 Residential
- R-5A Residential
- IL Industrial - Low Impact
- IM Industrial - Moderate Impact
- RPZ Resource Protection
- Shoreland Overlay Zone

parcels

- Tax
- Conveyance

1:2,425

0 0.03 0.06 0.12 mi

0 0.05 0.1 0.19 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

PROJECT: **BACKYARD ADUS** **PORTLAND, MAINE**	DWG No. **1**	BY WAB/PJM	HALEY WARD ENGINEERING | ENVIRONMENTAL | SURVEYING
		DATE 2023.02.15	
TITLE: **PROPOSED MAP AMENDMENT**	JN 14062.001	REV. 2	
	SCALE N.T.S.	REV. DATE 2023.10.13	



February 26, 2023	Prepared by Scott Douglass for Maine Backyard ADUs LLC (Applicant)	Conceptual Site Plan 4 Ocean Ave. Portland, Maine



February 26, 2023	Prepared by Scott Douglass for Maine Backyard ADUs LLC (Applicant)	Conceptual Site Plan 4 Ocean Ave. Portland, Maine


PROPOSED UNITS
1. ADUs (13) - 7 single level, 3 sunken, 3 over sunken
1-Bedroom Apartments (100% AMI rental)
2. Duplex Units (18) - 9 buildings
3-Bedroom Condominiums (owned)
3. Existing House Renovation (1) - Existing
3-Bedroom House (Owned)
4 OCEAN AVENUE
MAP 418A LOTS
A005, A006, A007,A008, & A011
TOTAL AREA 2.8 AC
SITE BOUNDARY
OCEAN AVENUE
PRESUMPSCOT ROAD
An additional 10-20 units will be developed along Presumpscot Road
Lot 1
N
1"=60'
October 18, 2023
Prepared by Scott Douglass for Maine Backyard ADUs LLC (Applicant)
Conceptual Site Plan 4 Ocean Ave. Portland, Maine