

# CITY OF PORTLAND, MAINE

## PLANNING BOARD



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

## AGENDA PORTLAND PLANNING BOARD MEETING

The Planning Board will hold a remote meeting on **Tuesday, September 27, 4:30 p.m.** Due to the ongoing procedure of holding meetings remotely, the Portland Planning Board will conduct this meeting by remote methods/technology at the Zoom link provided on the agenda and in accordance with the requirements of 1 M.R.S. 403-B and the City Council's Remote Participation Policy.

If you are not able to attend live, a recording will be available following the meeting. For public comment, you will need to use the "raise your hand" feature. To raise your hand via the telephone, please hit \*9. You will be unmuted by the host when it is time for public comment.

For more information on submitting written public comments and participating in the remote meeting, please refer to the document, A Guide to Public Comment, Remote Mtg. and Public Participation, which can be found at <https://www.portlandmaine.gov/485/Development-Review>. Public comments will be taken for each item on the agenda during the estimated allotted time.

### Written Public Comment

Written comments received by email by 12:00 p.m. **the day before** the scheduled meeting date will be included in the agenda backup materials ("agenda packet").

Written comments received **by the aforementioned deadline** will be published in the agenda packet no later than 12:00 p.m. the day of the meeting. Written comments must be submitted to [planningboard@portlandmaine.gov](mailto:planningboard@portlandmaine.gov). If you have any questions or feedback regarding this process, please email [citymanager@portlandmaine.gov](mailto:citymanager@portlandmaine.gov)

Please note that the placement of each item on the agenda is subject to change. Please check the Agenda & Minutes Center prior to the meeting for the item start time here: <https://www.portlandmaine.gov/602/Agendas-Mintues>.

### ZOOM MEETING INSTRUCTIONS

You are invited to a Zoom webinar.

When: Sep 27, 2022 04:30 PM Eastern Time (US and Canada)

Topic: Planning Board Workshop and Public Hearing 9-27-2022

Please click the link below to join the webinar:

<https://portlandmaine-gov.zoom.us/j/89363649050>

Or One tap mobile :

US: +13017158592,,89363649050# or +13092053325,,89363649050#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 301 715 8592 or +1 309 205 3325 or +1 312 626 6799 or +1 646 931 3860 or +1 929 205 6099 or +1 564 217 2000 or +1 669 444 9171 or +1 669 900 6833 or +1 719 359 4580 or +1 253 215 8782 or +1 346 248 7799 or +1 386 347 5053

Webinar ID: 893 6364 9050

International numbers available: <https://portlandmaine-gov.zoom.us/j/89363649050>

### WORKSHOP - 4:30 PM



- i. Major Site Plan; 31 Forest Street; 31 Forest, LLC., Applicant. (estimated time 4:30 – 5:30 p.m.) The Planning Board will hold a remote workshop to consider the development of a three-unit, 1,230 square foot residential building at 31 Forest Street. The subject property is 2,625 square feet in size and is zoned R-6 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-002018-2022.

## **PUBLIC HEARING - 5:30 PM**

### **1. ROLL CALL AND DECLARATION OF QUORUM**

### **2. COMMUNICATION AND REPORTS**

### **3. REPORT OF ATTENDANCE AT THE MEETING HELD ON SEPTEMBER 13, 2022**

#### Afternoon Workshop

Technical Manual Updates: Chann, Murphy, Smith, Stanley present; Barker, Mazer, and Silk absent.  
343 Cumberland Avenue: Chann, Mazer, Murphy, Smith, Stanley present; Barker and Silk absent.

#### Evening Hearing

50 County Way: Chann, Mazer, Murphy, Smith, Stanley present; Barker and Silk absent.

### **4. REPORTS OF DECISIONS AT THE MEETING HELD ON SEPTEMBER 13, 2022**

- i. Zoning Map Amendment; 50 County Way; Cumberland County, Applicant. Mazer moved and Smith seconded a motion to find the proposed I-L to B-2 zoning map amendment consistent with the City of Portland's Comprehensive Plan and recommended its adoption to the City Council. Vote 5-0, Barker and Silk absent.

### **5. NEW BUSINESS**

- i. Conditional Use; 343 Cumberland Avenue; Preble Street, Applicant. (estimated time 5:30 – 6:30 p.m.) The Planning Board will hold a remote public hearing to consider a Conditional Use application for the siting of a 24-bed, 7,981 square foot emergency teen shelter in the existing building at 343 Cumberland Avenue. The subject property is 11,136 square feet in size and is zoned B-3 Downtown Business. A project and plan summary are available for viewing on the city's CSS Portal (<https://css.portlandmaine.gov/>) by referencing Plan Number CU-002134-2022.
- ii. Major Site Plan and Conditional Use; 780 Stevens Avenue; The University of New England, Applicant. (estimated time 6:30 p.m.) The Planning Board will hold a remote public hearing to consider a Major Site Plan and Conditional Use application for the development of a four-story, 111,813 square foot Center for Health Sciences building at the University of New England's Portland campus, located at 780 Stevens Avenue. The subject property is seven acres in size and is zoned R-5 Residential. A project and plan summary are available for viewing on the city's CSS Portal (<https://css.portlandmaine.gov/>) by referencing Plan Numbers CU-002017-2022 and PL-002015-2022.

# Memorandum

## Planning and Urban Development Department



**To:** Maggie Stanley, Chair and Members of the Planning Board  
**From:** Austen Torres Davis, Planner  
**Date:** September 23, 2022  
**Re:** Major Site Plan Application – 31 Forest Street  
**Project #:** PL-002018-2022  
**Meeting Date:** September 27, 2022

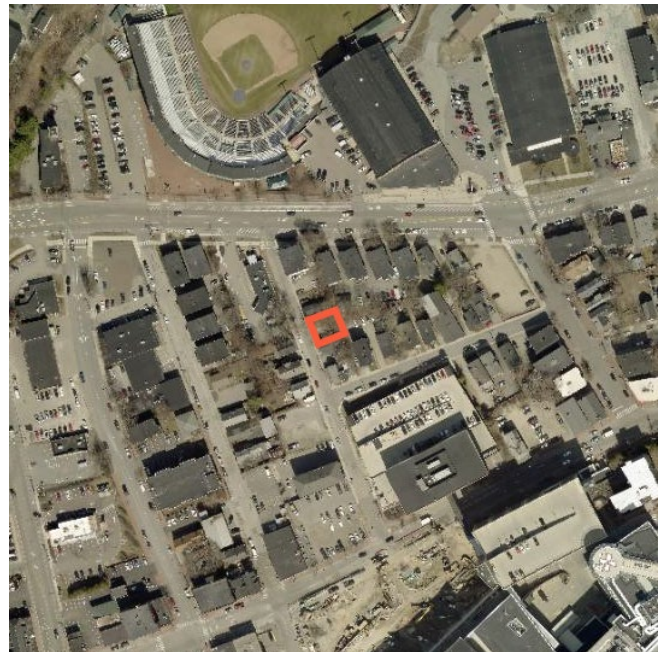
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### I. INTRODUCTION

31 Forest LLC has submitted a Major Site Plan application to facilitate the construction of a three-unit, 1,230 square foot residential building with ground floor parking at 31 Forest Street, within the Saint John Valley neighborhood.

The application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Site Plan Standards, Section 14.6.

In anticipation of this Planning Board Workshop, the Planning and Urban Development Department mailed 85 notices to residences within 500 feet of the subject property. A legal advertisement ran in the September 17, 2022 and September 20, 2022 editions of the *Portland Press Herald*.



*Figure 1. 31 Forest Street in Neighborhood Context*

**Applicant:** Ray Chang, 31 Forest LLC.

**Applicant Team:** Eric Dube, Trillium Engineering Group; Paul Lewandowski, Paul Designs Projects.

## II. PROJECT ACTIONS

| Applicant's Proposal | Applicable Standards                               |
|----------------------|----------------------------------------------------|
| Major Site Plan      | Land Use Code Sec. 14.6 Site Plan Review Standards |

## III. PROJECT DATA

| <i>SUBJECT</i>                 | <i>31 Forest Street</i>     |
|--------------------------------|-----------------------------|
| <b>Total area of the site</b>  | 2,625 square feet           |
| <b>Total Disturbed Area</b>    | 2,625 square feet           |
| <b>Existing Zoning</b>         | R-6 Residential             |
| <b>Existing Use</b>            | Vacant Lot                  |
| <b>Proposed Use</b>            | Multifamily Apartment Units |
| <b>Impervious Surface Area</b> |                             |
| --Existing                     | 0 square feet               |
| --Proposed                     | 1,679 square feet           |
| --Net Change                   | +1,679 square feet          |
| <b>Building Footprint</b>      |                             |
| --Existing                     | 0 square feet               |
| --Proposed                     | 1,230 square feet           |
| --Net Change                   | +1,230 square feet          |
| <b>Building Floor Area</b>     |                             |
| --Existing                     | 0 square feet               |
| --Proposed                     | 3,690 square feet           |
| --Net Change                   | +3,690 square feet          |
| <b>Number of Units</b>         | 3                           |
| <b>Parking Spaces</b>          | 3                           |
| <b>Bicycle parking Spaces</b>  | 2                           |

#### IV. BACKGROUND AND EXISTING CONDITIONS

##### Site Conditions

The subject property at 31 Forest Street consists of one vacant lot of 2,625 square feet in size, occupied by trees and other vegetation. The site on which the proposed development would sit is half of a block south of Hadlock Field, and one and one half blocks north of Maine Medical Center. The area is characterized by a mixture of single and multi-family residential buildings, with non-residential uses clustered along Congress Street to the south and St. John Street to the west. Historically, the site was occupied by a three story, two-unit building that was demolished under previous ownership. Development of a three-unit multi-family structure is appropriate in this context.



*Figure 2. 31 Forest Street, Existing Conditions*

The site is accessible to public transit with GP Metro Routes 9A, 9B, and 1 along Congress Street, and GP Metro Route 5 along Park Avenue.

#### V. PROPOSED DEVELOPMENT

The applicant proposes the development of a four-story residential building totaling approximately 3,690 square feet in floor area, with three residential units intended to be apartments for rent. Because the total number of residential units is below 10, the City's Inclusionary Zoning ordinance is not in effect. The proposed building would rise to a maximum height of approximately 35 feet. Information on the location of HVAC and other mechanical equipment is forthcoming.

All residential units in the structure are proposed to have two bedrooms, and include a reserved parking space. Three covered parking spaces would be provided on the ground floor of the new building located at 31 Forest Street. Parking would be accessed via a 15.6 foot curb cut off of Saint John Street.

Associated site improvements proposed in connection with the new building include a rebuilt sidewalk to be constructed of poured concrete with granite curbs, two street trees, and a rain garden to alleviate stormwater runoff.



*Figure 3. Site Renderings*

#### **VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY**

The owner of the property is 31 Forest LLC, a Maine-based limited liability company. The applicant has submitted a Statement of Financial Capacity letter from their financial institution, Camden National Bank, as demonstration of their financial capacity (Attachment E). A Statement of Technical Capacity has been provided by the applicant's representative, Trillium Engineering Group, which lists the consultant team and mentions the team's experience in design and development (Attachment F).



## VII. ZONING ANALYSIS

### A. DIMENSIONAL AND USE REQUIREMENTS

31 Forest Street (parcel 053 A011001), is located in the R-6 Residential zone. The R-6 dimensional standards are described in Table 7-A of the Land Use Code. Multi-family dwellings are listed as a permitted use in the R-6 zone as described in Table 6-A of the Land Use Code.

As per Article 19, Table 19-A, the minimum off-street parking requirement is calculated as one space per dwelling unit. However, within the R-6 zone, no off-street parking is required for the first three dwelling units as described in Table 19-B. Therefore, the baseline zoning requirement is for zero parking spaces at 31 Forest Street. The applicant proposes to provide three vehicular parking spaces and two bicycle parking spaces.

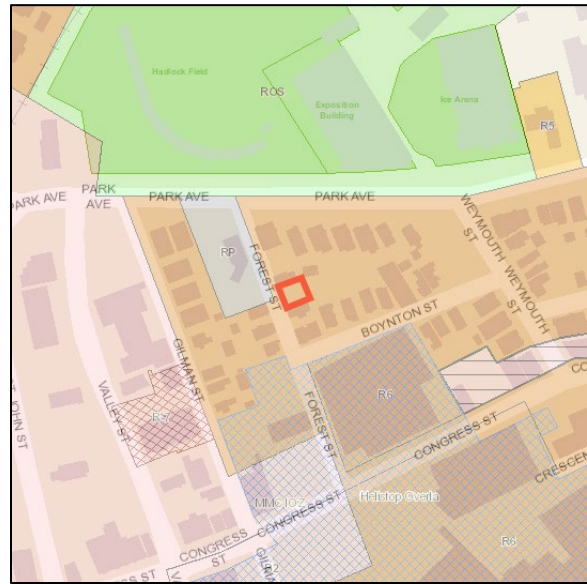


Figure 4. 31 Forest Street in R-6 Zone Context



The following table shows the dimensional requirements of the R-6 zone which are met by this proposal:

| <i>Standard</i>                     | <i>R-6 Zoning Requirement</i>                     | <i>31 Forest Street</i>                     |
|-------------------------------------|---------------------------------------------------|---------------------------------------------|
| Minimum Lot Area                    | 2,000 square feet                                 | 2,625 square feet                           |
| Minimum Lot Area Per Dwelling Unit  | 725 square feet                                   | 875 square feet                             |
| Minimum Street Frontage             | 20 feet                                           | 49.39 feet                                  |
| Minimum Front Setback               | 5 feet (or average depth of adjacent front yards) | 4.45 feet (average of adjacent front yards) |
| Minimum Rear Setback                | 10 feet                                           | 16.72 feet                                  |
| Minimum Side Setback (>2.5 stories) | 5 feet                                            | 5.91 feet (R)<br>5.48 feet (L)              |
| Maximum Lot Coverage                | 60%                                               | 45.98%                                      |
| Minimum Lot Width                   | 20 feet                                           | 49.39 feet                                  |
| Maximum Structure Height            | 45 feet                                           | 34.95 feet                                  |
| Minimum Landscaped Open Area        | 20%                                               | 21.5%                                       |
| Minimum Off-Street Parking          | 0                                                 | 3                                           |
| Minimum Off-Street Bicycle Storage  | 2 Spaces (per 5 units)                            | 2                                           |

## VIII. DEVELOPMENT REVIEW

## A. SITE PLAN REVIEW STANDARDS (Section 14.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and other applicable regulations. Staff comments are listed below.

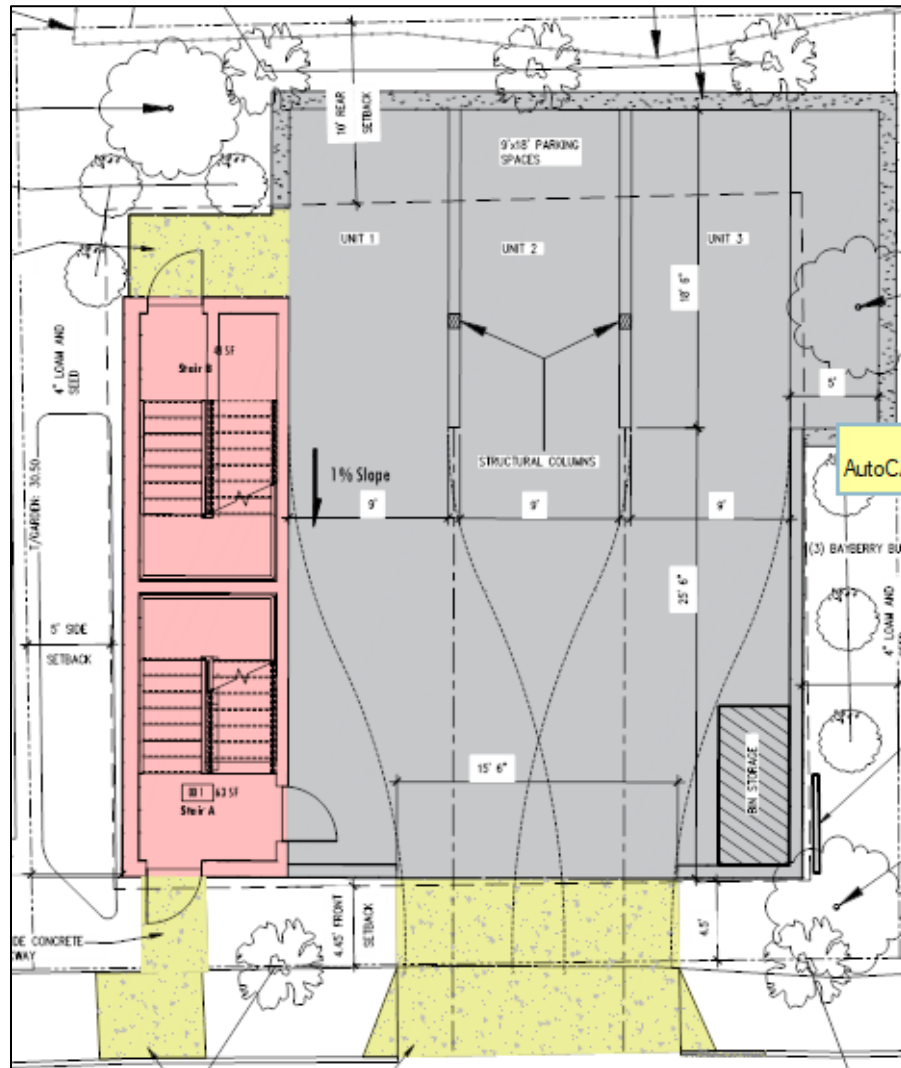


Figure 5. Site & Landscape Plan of 31 Forest Street

a) Transportation Standards

### 1. Impact on Surrounding Street Systems

The proposed project is located on Forest Street, which is a minor residential street, and the applicant is proposing to provide three parking spaces for a three-unit residential building. The site is accessible to public transit and it is not anticipated to adversely affect surrounding street systems.

2. **Access and Circulation**

The applicant proposes a driveway leading from Forest Street to the three proposed parking spaces located on the ground floor of 31 Forest Street. New sidewalk and curbs would be built, as well as a new curb cut for the driveway and walkway to the front entrance. At 15 feet and six inches in width, the driveway conforms to the width standards of the *Technical Manual*. A turning template has been requested to demonstrate how vehicles would maneuver between Forest Street and the proposed parking area.

3. **Public Transit Access**

All residential developments consisting of 20 or more dwelling units shall provide a transit shelter adjacent to or within the public right-of-way along its frontage. The proposed project provides a total of three units, therefore this standard is not applicable.

4. **Parking: Vehicle and Bicycle**

This development proposes three parking spaces that are to be used by residents of the new building yielding a parking ratio of one space per unit, with no changes to on-street parking. This amount is greater than the zero parking spaces which are required for this development per zoning. The applicant proposes to include two bicycle parking spaces. All vehicle parking is located on the ground floor tucked under the new building.

**b) Environmental Quality Standards****1. Preservation of Significant Natural Features**

This is an urban infill site; aside from the existing building on site, the lot currently consists of denatured land devoid of significant natural features as defined by Section 14.6.2.

**2. Landscaping and Landscape Preservation**

The applicant proposes to plant two new street trees as well as plantings and shrubbery in various areas throughout around the new building. With three residential units proposed the applicant is required to plant three street trees or may utilize a street tree alternative as described in the City's Technical Manual Section 4.6.4 to meet the requirement.

The proposal to plant two street trees may not be feasible due to site constraints such as the adjacent sidewalk's width. Planning & Development Department staff recommend paying a total of \$1,200 into the city's Tree Fund (\$400 per-tree for three trees) as an alternative to planting street trees on site.

Three large trees are proposed to be removed to facilitate this development. Comments from the City Arborist are forthcoming.

**3. Water Quality, Storm Water Management and Erosion Control**

The Applicant has provided a detailed Stormwater Management Report (Attachment J), as well as an Erosion and Sedimentation Control Report to meet the Basic Standards.

***Justin Pellarin, DPW Senior Engineer, offers the following comments:***

The grading plan indicates that runoff from the easterly adjacent parcel will be diverted around the proposed stormwater management system and be directed towards the northerly edge of the parcel. There the plan provides a lack of clarity as to how stormwater will be routed around the rain garden without impacting the neighboring parcel (35 Forest Street). The applicant must provide a plan which clearly shows that stormwater is not being directed towards neighboring property.

## Public Infrastructure and Community Safety Standards

### 1. Consistency with City Master Plans

This development is consistent with the goals and policies outlined in *Portland's Plan 2030*. The new housing development aligns with the City's vision statements and goals by increasing the overall housing supply in a contextual manner in a walkable, transit accessible location, which has the ability to enable people who work in Portland to have the option to live in Portland.

#### 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.
- Housing: 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.
- Housing: 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.



Figure 6. Vision Statement from Portland's Plan 2030

### 2. Public Safety and Fire Prevention (CPTED and Fire)

The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance addresses the principles of natural surveillance, access control and territorial reinforcement so that the design of developments enhance the security of public and private spaces and reduce the potential for crime. The site's landscaping reinforces ownership while its windows and relation to neighboring buildings promote natural surveillance. The lighting is sufficient to promote visibility and security.

Staff recommend utilizing a secured garage door to promote security and clearly demarcate the separation between public and private space.

Comments from the Life Safety Reviewer are forthcoming.

### 3. Availability and Adequate Capacity of Public Utilities

The Applicant has requested an ability to serve confirmation from the Portland Water District. Central Maine Power conducted a site evaluation and has approved overhead service for 31 Forest Street. Staff is awaiting the submittal of documentation of Wastewater Capacity Authorization from the Department of Public Works.



**c) Site Design Standards****1. Massing, Ventilation and Wind Impact**

The new building proposed is not anticipated to impact any adjacent structures as it relates to bulk or diminution of available light and air to abutting properties. The building does not differ substantially from adjacent and nearby structures regarding massing so negative impacts are not anticipated. The proposed building rises up to a height of approximately 35 feet, which is below the maximum 45 feet permitted in the R-6 zone.

**2. Shadows**

As an infill development that conforms to dimensional standards and setbacks, negative impacts regarding shadows are not anticipated; additionally, the development site is not proximate to any parkland.

**3. Snow and Ice Loading**

The applicant's current plans do not show information related to snow and ice storage and removal. Planning & Urban Development staff are requesting that the applicant submit updated plans with this information.

**4. View Corridors**

Not applicable.

**5. Historic Resources**

The site is not within or proximate to an established historic district, nor within 100 feet of a historic landmark.

**6. Exterior Lighting**

Applicants have submitted lighting specifications and cut sheets, and have also submitted a photometrics plan to show compliance with lighting standards.

This item is currently under review by staff.

**7. Noise and Vibration**

All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will be required to meet state and federal emissions requirements. Clarification on the location of this equipment and how it will be shielded from view should be included in final submissions.

**8. Signage and Wayfinding**

No signage or wayfinding is proposed in this development.

**9. Zoning Related Design Standards**

As this development is located within the R-6 zone, a design review was conducted according to the City of Portland Design Manual Standards. Planning staff and the city's Urban Designer reviewed site plans and renderings against the R-6 Residential Zone Standards (Appendix 7 of the Design Manual).

Preliminary design review comments from staff are attached (Attachment 1).

**IX. PUBLIC COMMENT**

At the time of writing this memo, the Planning and Urban Development Department has received no public comments.

**X. NEXT STEPS**

At this time, staff are requesting the Board's feedback on the aforementioned topics related to:

- Landscape and vegetation
- Grading and stormwater

The final submission will need to:

- Update plan to include snow and ice storage and plans for removal.
- Update plan to show adjacent structures' setbacks.

**XI. ATTACHMENTS****PLANNING BOARD REPORT ATTACHMENTS**

1. Preliminary Site Plan Review Comments from Staff
2. Preliminary Design Review Comments from Staff

**APPLICANT'S SUBMITTAL**

- A. Project Narrative
- B. Major Site Plan Checklist
- C. Right, Title, and Interest
- D. Zoning Assessment
- E. Financial Capacity
- F. Technical Capability
- G. PWD Request for Ability to Serve
- H. Stormwater Narrative
- I. Lighting Specs
- J. Construction Management Report
- K. CMP Letter

**PLANS**

- Plan 1 – Cover Sheet
- Plan 2 – Survey
- Plan 3 – Site and Landscape Plan
- Plan 4 – Existing Site Plan
- Plan 5 – Proposed Grading and Drainage Plan
- Plan 6 – Pre-Development Watershed Plan
- Plan 7 – Post-Development Watershed Plan
- Plan 8 – Site Details
- Plan 9 – Erosion Control Details
- Plan 10 – Photometrics Plan
- Plan 11 – Construction Management Plan
- Plan 12 – Architectural Plans

## Planning and Urban Development Department

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**Subject:** Site Plan Review Comments – 31 Forest Street.

**Written by:** Austen Torres Davis, Planner

**Date Written:** September 23, 2022

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Dear Ray Chang,

The proposed multi-family building and associated site improvements located at 31 Forest Street (PL-002018-2022) was reviewed against Chapter 14 of the City of Portland Land Use Code, as well as the City of Portland Technical Manual. Please find below, comments from Planning & Urban Development Department staff and site plan peer-reviewers.

### General Comments from Planning Staff

- As various trees are proposed to be removed to facilitate this development, a tree survey should be conducted showing all trees on site that are 10" DBH or greater to determine if tree replacement requirements are applicable.
- The proposal to plant two street trees may not be feasible due to site constraints such as the adjacent sidewalk's width. Planning & Development Department staff recommend paying a total of \$1,200 into the city's Tree Fund (\$400 per-tree for three trees) as an alternative to planting street trees on site.
- Snow and ice storage should be shown on plans.
- Access to the first floor garage area should be controlled with a garage door to meet public safety standards of Land Use Code section 14.6.3 (B).
- The applicant is proposing to close the existing sidewalk along the property frontage during construction. The applicant will be required to divert pedestrians across the street and meet all ADA standards. The locations being proposed by the applicant will require the construction of temporary ADA sidewalk ramps. The construction management plan should be updated to show these temporary crossings. Any sidewalk disturbances created by these temporary crossings shall be restored by the applicant contractor at the conclusion of construction.

### Comments from Traffic and Circulation Reviewers:

- New curb and sidewalk shall be constructed along the entire property frontage on Forest Street based on the proposed curb cut relocation and driveway construction.
- Forest Street from Congress Street to Park Avenue is part of the City's brick sidewalk district as indicated in the City's sidewalk and driveway material policy located in Appendix A of the City's Technical Manual. There are certain exceptions to this policy listed in appendix A. A formal waiver request would be required to install brick sidewalk along this proposed frontage.

- The applicant shall provide further clarity on the proposed driveway grading through the City's sidewalk to ensure it meets sidewalk ADA standards. The driveway apron detail provided in the plan set does not appear to be feasible based on the narrow width of the existing sidewalk. It appears the sidewalk will need to be tipped down to some extent in the driveway zone to ensure ADA cross slope requirements are met. A detail depicting two options for how driveway aprons should be constructed at narrow sidewalk locations is attached to these comments. The grading plan shall be updated to show key spot grades in the driveway apron area to ensure the standard is being met. A detail from the upcoming Tech Manual update has been provided to show this general configuration.
- DPW is requesting that the two proposed street trees be installed 1'-2' back further from the sidewalk on private property due to the narrow width of the existing sidewalk facility along this frontage.
- Sidewalk and curbing details from the City's upcoming technical manual update have been provided and should be added to the plan set.

Comments from Zoning Reviewers:

- Plans and the submitted survey show partial footprints of the abutting properties. These properties should be annotated with their setbacks to confirm the averaging the front yard setback.
- As building height is measured to the highest point of the roof beam (section 7.2) on a flat roof, applicants should indicate the top of the roof beam in elevations to confirm the building height is meeting standard.

Comments from Stormwater Management Reviewers:

- The applicant shall install a backflow preventer between the building sanitary outlet and the proposed storm drain connection.
- Further clarification shall be added to the plans regarding the drain line/sewer connection at the property line.
- The proposed 6" building sewer lateral shall be connected to the 15" combined sewer line in the street by the use of wyes, tee/gyes or Inserta-Tees per tech manual standard 2.5.7. Notes should be updated on the plan to reflect how the connection will be made. A note shall also be added to the plan which states "The contractor must obtain a sewer connection permit from the Department of Public Works prior to making any connections into the City's sewer system in the street."
- The grading plan indicates that runoff from the easterly adjacent parcel will be diverted around the proposed stormwater management system and be directed towards the northerly edge of the parcel. There the plan provides a lack of clarity as to how stormwater will be routed around the rain garden without impacting the neighboring parcel (35 Forest Street). The applicant must provide a plan which clearly shows that stormwater is not being directed towards neighboring property.
- The edge of the proposed rain garden appears to be located less than 1' from the adjacent property at 35 Forest Street. It appears the construction of the proposed rain garden will impact the adjacent property. The applicant should provide a plan which will not impact neighboring properties during construction.

- The proposed rain garden is located within two feet of an existing building foundation located on adjacent property. The rain garden should be redesigned to move further away from the adjacent building foundation and shall be constructed with an impermeable liner to ensure that the rain garden does not exfiltrate towards the adjacent building foundation.

# Design Review

## Planning and Urban Development Department



**Subject:** 31 Forest Street  
**Zone:** R-6  
**Date of** September 22, 2022  
**Review:** Design Review  
**Reviewer(s):** Sean King (Urban Designer), Austen Davis (Planner), Kevin Kraft (Deputy Director)  
**Project ID:** PL-002018-2022

### I. INTRODUCTION

The project was reviewed against the R6 Residential Zone Standards (Appendix 7 of the Design Manual).

#### R-6 ZONE INFILL DEVELOPMENT

(1) STANDARDS. Small residential lot development located in the R-6 zone on lots of ten thousand (10,000) square feet or less shall provide a high degree of architectural quality and compatibility with the surrounding neighborhood as demonstrated by compliance with the principles and standards of the R-6 Infill Development Principles and Standards, promulgated by the Planning Board and contained in Appendix 7 of this manual. Any proposal required to obtain a certificate of appropriateness under Portland's historic preservation ordinance is exempt from the R-6 design review standard.

### II. DESIGN REVIEW COMMENTS: **bold** text denotes recent updates met, **red** text denotes standards not met to require resubmission.

***PRINCIPLE A - Overall Context.*** A building design shall contribute to and be compatible with the predominant character-defining architectural features of the neighborhood. - Met

#### **STANDARD A-1 - Scale and Form:**

Scale and form is compatible with the nearby multi-family residential buildings within the neighborhood.

#### **STANDARD A-2 - Composition of Principal Facades:**

Composition of the new building façade includes a projection with windows at second and third levels, variation of façade materials and rhythm, size, orientation and proportion of window openings that is compatible with the neighborhood.

#### **STANDARD A-3 - Relationship to Street:**

The building placement towards the street is consistent with the spacing and rhythm of the residential fabric. The building's main entry is oriented toward the street, indicated with an overhead canopy and positioned towards the downhill side of the front façade that is consistent with the multi-family residential buildings in the neighborhood.

***PRINCIPLE B - Massing*** – The massing of the building has a relationship with the multi-family residential buildings that anchor Forest Street. The building massing is sculpted at the front

elevation to assist with identifying the primary entrance / stairs, delineate floors and expressed through a variety of façade materials. – **Not Met**

**STANDARD B-1 - Massing - Met**

The building's massing is appropriate in relationship to size, scale and shape for a multi-family residential building within the existing neighborhood.

**STANDARD B-2 - Roof Forms – Met**

Roof form is compatible with the predominant character-defining architectural features of the neighborhood with multi-family at or below 35 feet that utilize a flat roof form expressed by a continuous cornice line.

**STANDARD B-3 - Main Roofs and Subsidiary Roofs – Not met**

The building main roof form is compatible with subsidiary roof forms appropriately identified as flat roof that are parallel and perpendicular to the street. **Staff recommends continuing the pronounced cornice detail currently shown over the living space to the stair tower portion of the building.**

**STANDARD B-4 - Roof Pitch – Met**

The proposed roof form for multi-family at or below 35 feet is a flat roof form expressed by a pronounced cornice.

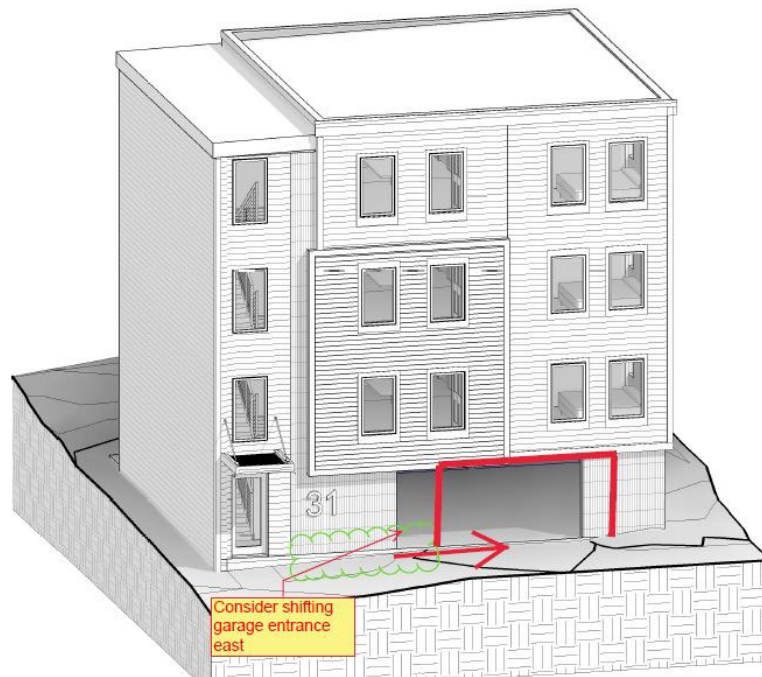
**STANDARD B-5 - Façade Articulation – Not Met**

The proposed façade is articulated by large bay window projection composed at the second and third floor front elevation with a dimension of 12" to receive credit as a design feature. The second articulation includes a recessed entry and canopy, applicant shall confirm that the recessed entry is a minimum 12" offset to receive credit as a design feature.

**STANDARD B-6 - Garages – Not Met**

**A garage entry is proposed at the street-facing façade integrated into the building form, therefore a garage door shall be required. The garage door width may be no more than 40% of the width of the building's overall façade. Staff recommends adjusting the location of the garage entry by shifting it slightly towards Boynton Street, which will allow for a more visible main entrance and landscaped area buffering the garage entrance and primary building entrance (shown below).**

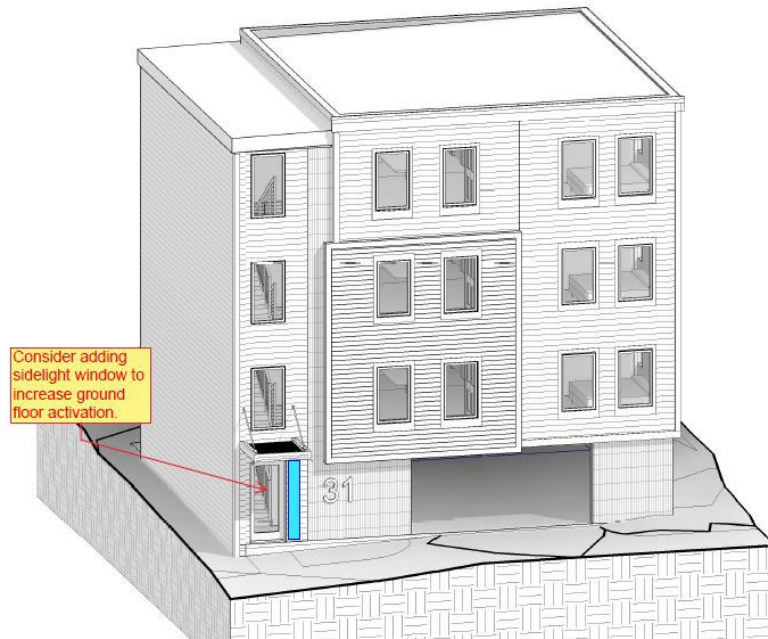




*PRINCIPLE C* - Orientation to the Street – The building façade shall reinforce a sense of the public realm of the sidewalk while providing a sense of transition into the private realm of the home. – **Not Met**

**STANDARD C-1 – Entrances – Not Met**

Main entrance is oriented toward the street and articulated with recessed entry and canopy. **Applicant shall indicate dimension of recession at main entrance doorway and shall integrate architectural lighting at entrance façade, within overhead canopy or similar to increase ground floor activation. Staff recommend that the applicant consider adding a sidelight window, parallel to the front door to increase ground floor activation and transparency (shown below – in blue).**



#### STANDARD C-2 - Visual Privacy

Not applicable as no occupancy of dwellings at ground level.

#### STANDARD C-3 - Transition Spaces – **Not Met**

The front setback proposed provides adequate transition spaces through recessed main entrance and allocation of landscape buffer with (2) trees to delineate sidewalk from building. **Applicant shall provide additional shrub planting in landscape buffer to establish a continuous transition space along the street facing building façade.**

**PRINCIPLE D - Proportion and Scale** – Building proportions must be harmonious and individual building elements shall be human scaled. -Met

#### STANDARD D-1 – Windows - Met

All windows are rectangular and vertically positioned with a proportional relationship to the overall massing of the building.

#### STANDARD D-2 – Fenestration – Met

Windows, doorways and garage entry are scaled appropriately and meet at least 12% area of fenestration of the total street facing façade area.

#### STANDARD D-3 - Porches

Porch standard does not apply.

**PRINCIPLE E – Balance** – The building façade elements must create a sense of balance by employing local or overall symmetry and by appropriate alignment of building forms, features and elements. - Met

#### STANDARD E-1 - Window and Door Height - Met

The majority of window and door head heights align along a common horizontal datum.

**STANDARD E-2 - Window and Door Alignment - Met**

The majority of windows and door stack to express a vertical alignment.

**STANDARD E-3 – Symmetricality - Met**

The primary window composition is symmetrical arranged at the living spaces facing the street.

**PRINCIPLE F – Articulation – The design of the building is articulated to create a visually interesting and well composed residential façade. – Not Met**

**STANDARD F-1 – Articulation – Met**

Surface articulation include detailed consistency on the living space façade through dimensional window trim, corner boards and cornice as well a minimal window trim at stair column that is visible from the public right of way.

**STANDARD F-2 - Window Types - Met**

Two window types and sizes are used on the street-facing façade.

**STANDARD F-3- Visual Cohesion – Not Met**

The proposed façade is composed of composite siding with a horizontal orientation of various colors and thin brick veneer at the base of the building along with a vertical expression at the stair column to delineate material type. **The architectural façade elevation does not accurately represent the proposed composite siding colors as described in the submitted elevations, City staff recommends the simple color palette visually shown to reduce the amount of finishes to correspond with the predominant character of the surrounding residential neighborhood.**

**STANDARD F-4- Delineation Between Floors - Met**

Delineation between floors is assembled by fenestration pattern set by window alignment at the street facing facade.

**STANDARD F-5 - Porches, etc. - Met**

Entryway is architecturally integrated into the overall design of the building and positioned at the corner of the building.

**STANDARD F-6 - Main Entries – Met**

The main pedestrian entrance faces Forest Street and is minimally recessed with an overhead canopy.

**STANDARD F-8 - Articulation – Not Met**

Articulation is incorporated through the façade projection at second – third floor, façade trim at windows, doors and corner boards, and pronounced cornice. **Applicant shall indicate dimension of projection offsets proposed to confirm minimal of 12” standard is met.**

**Principle G - Materials – Building facades shall utilize appropriate building materials that are harmonious with the character defining materials and architectural features of the neighborhood. - Not Met**

**STANDARD G-1 – Materials - Met**

Composite siding is proposed with a variation of colors and vertically stacked brick at the base that contributes and is compatible with the predominant character-defining architectural features of the neighborhood.

**STANDARD G-2 - Material and Façade Design – Not Met**

The selection of façade materials is appropriate as proposed. However, City staff recommends the simple color palette visually shown or to reduce the amount of color finishes to correspond with the predominant character of the surrounding residential neighborhood.

**STANDARD G-3 – Chimneys**

No chimneys are visible, standard not applicable.

**STANDARD G-4 - Window Types - Met**

The window types include only two types on the front façade. The predominant character in this context is vertical proportioned windows with one or two types visible from the street.

**STANDARD G-5 - Patios and Plazas**

No patios and/or plaza are proposed, standard not applicable.



189 Main Street, Suite 200  
Yarmouth, ME 04096

May 4, 2022

City of Portland  
389 Congress Street  
Portland, ME 04101

Re: 31 Forest Street – Proposed Building  
Major Site Plan Application

Dear Planning:

Trillium Engineering Group is providing this project narrative for the proposed building to be constructed at 31 Forest Street. This development proposed the addition of a new three-unit apartment building on a currently undeveloped 2,625 square foot parcel (Parcel ID 053 A011).

The existing site is currently undeveloped with three trees with grade generally sloping in a westerly direction. The proposed state shall feature a new 1,210± square foot, three-unit residential building with garage parking as illustrated on the attached site and architectural plans. Access to the building shall be provided via a new curb cut and driveway, while a portion of the parking shall extend beyond the existing building footprint. In total, this shall result in a net gain of 1,610 square feet of impervious area.

To combat the negative environmental effects of the increase in stormwater runoff, Trillium Engineering Group is proposing a new rain garden along the northernmost property line. This garden shall treat impervious runoff from the roof, while interior slab drains shall collect runoff from the exposed parking area. This drain shall then connect to the outlet drain from the rain garden before ultimately discharging into the adjacent public network. Please see the attached stormwater narrative for additional information.

Please see the plans, application, and below responses to the City of Portland Major Site Plan Application Checklist for further information.

*1. Project Description*

Response: A project description has been provided above.

*2. Completed checklist*

Response: A completed checklist has been provided, see attached documents.

*3. Evidence of Right, Title, and Interest*

Response: A deed to the property has been provided, see attached documents

*4. Evidence of State or Federal Approvals*

Response: This section is non-applicable, as the project will not require state or federal approval.

*5. Zoning Assessment*

Response: The zoning assessment table has been included in the application.

*6. Site Plan Standards Assessment*

Response: This project meets all the relevant standards outlined in Section 14.6 of the City of Portland Land Use Code. Due to the small nature of the work in question, this project will not have a notable effect on the surrounding transportation, public transit access, or environmental quality. This site meets the necessary off-street parking, public infrastructure, and site design requirements.

*7. Summary of existing and/or proposed easements or covenants*

Response: This section is non-applicable, as there are no known easements or covenants associated with this project.

*8. Waiver requests*

Response: Trillium Engineering Group is not requesting any waivers for this project.

*9. Evidence of financial and technical capacity*

Response: Letters of financial and technical capacity have been included in this application, see attached.

Transportation

Response: Vehicle access to the site shall be provided by installing a new curb cut as shown on Sheet C101. From there, cars shall park in designated spaces as shown on the architectural plans. Due to the small scope of this project, this development will not have a notable impact on the surrounding traffic pattern.

Environmental

Response: Site landscaping has been provided as shown on Sheet C101. Portland Water District regulations state that street trees are not permitted within 10' of new water lines. This only leaves room for (2) honeylocust street trees in front of the proposed site.

Due to the small size of this site, it is not feasible to preserve the existing on-site trees. To combat this, Trillium Engineering Group is proposing three new arborvitae trees along the rear property line and seven bayberry bushes around various parts of the building. Please see the attached Sheet C101 for additional landscaping information.

There are no significant natural features on this site. Please see the attached stormwater narrative for drainage information.

Public Infrastructure and Safety

Response: This project is consistent with the City's Master Plan. Trillium Engineering Group has spoken with George Carhart of the Portland Department of Public Works to confirm the location of the existing sewer main and to coordinate the proposed connection. Additionally, Mr. Carhart has also provided guidance with respect to the proposed stormwater drain connection.

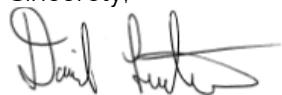
Trillium Engineering Group has reached out to the Portland Water District regarding a potential Ability to Serve letter and is still in the process of gaining approval.

Site Design

Response: Exterior lighting information has been included in the attached documents, and the location of the exterior lights have been shown on the architectural plans. All other portions of the site design checklist are not applicable.

Thank you for taking the time to review this. Should you have any further questions or require any additional information, please do not hesitate to ask.

Sincerely,



David Latham, P.E.  
Trillium Engineering Group

**CITY OF PORTLAND**  
**Planning & Urban Development Department**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>MAJOR SITE PLAN</b></p> <p><b>GENERAL DOCUMENT AND DRAWINGS CHECKLIST</b></p> <p>Please submit each document as a separate PDF file.</p> <p>Please confirm by electronically checking the boxes in the left-hand column.</p> <p><b>** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW **</b></p> <p style="color: red;">At the time of application submission, please contact the Department of Public Works regarding E-911 addressing for your project.</p> |                                  |                                                                                                                                                                                                                                        |
| <b>GENERAL APPLICATION DOCUMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                        |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Project Description</b> <ul style="list-style-type: none"> <li>Cover letter with detailed project description</li> </ul>                                                                                                            |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Completed Checklist</b> (this document)                                                                                                                                                                                             |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Evidence of Right, Title, and Interest</b> <ul style="list-style-type: none"> <li>Deeds, leases, or purchase and sales agreements</li> </ul>                                                                                        |
| Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input checked="" type="radio"/> | <b>Evidence of State or Federal Approvals</b> <ul style="list-style-type: none"> <li>Permits or letters of non-jurisdiction, if applicable</li> </ul>                                                                                  |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Zoning Assessment</b> (see <a href="#">Zoning Assessment Table</a> )<br>Summary of compliance with use and dimensional standards of the land use code                                                                               |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Site Plan Standards Assessment</b> (see Section 14.6 of the land use code) <ul style="list-style-type: none"> <li>Summary of project compliance with site plan standards of the land use code</li> </ul>                            |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Summary of Existing and/or Proposed Easements or Covenants, applicable.</b> <ul style="list-style-type: none"> <li>Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way</li> </ul> |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Waiver Requests</b> (see <a href="#">Waiver Table</a> ) <ul style="list-style-type: none"> <li>Written request for waiver describing request and compliance with applicable waiver standards</li> </ul>                             |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Financial Capability</b> <ul style="list-style-type: none"> <li>Letter or evidence from a financial institution or third party verifying financial capacity to undertake project</li> </ul>                                         |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NA                               | <b>Technical Capability</b> <ul style="list-style-type: none"> <li>Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects</li> </ul>                                                 |

## 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 <b>NA</b>  | <b>Impact on Surrounding Street Systems (14-14.6.1(A))</b> <ul style="list-style-type: none"> <li>Describe incremental volume of traffic impacts and mitigation measures. If needed</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Yes</b> NA  | <b>Access and Circulation (14-14.6.1(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Site access and internal circulation, including ADA access</li> <li>Drive-up features, if applicable</li> <li>Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable</li> <li>Sidewalks and condition along street frontages and internal walkways</li> <li>Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)</li> </ul> |
| Yes <b>NA</b>  | <b>Public Transit (14-14.6.1(C)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| <b>Yes</b> NA  | <b>Off-Street Parking (14-14.6.1(D)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code</li> <li>Curb cut separation and parking layout (Technical Manual, Section 1)</li> <li>Construction details for bicycle racks</li> <li>Management plan for snow storage and removal</li> </ul>                                                                                                             |
| Yes <b>NA</b>  | <b>Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable</b> <ul style="list-style-type: none"> <li>Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |



| ENVIRONMENTAL |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes           | NA | <b>Preservation of Significant Natural Features (14-14.6.2(A)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• High and moderate value waterfowl and wading habitat</li> <li>• Aquifers (for Casco Bay Islands)</li> <li>• Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)</li> <li>• Proposed preservation areas and protection measures</li> <li>• Documentation from environmental compliance consultants and determinations from applicable state and federal agencies</li> </ul> |
| Yes           | NA | <b>Landscape Preservation (14-14.6.2(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4)</li> <li>• Measures to protect existing vegetation during construction</li> </ul>                                                                                                                                                                                                                                                                |
| Yes           | NA | <b>Site Landscaping and Buffers (14-14.6.2(C))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Overall landscaping approach and consistency with standards</li> <li>• The use of screening and buffering of service areas and between non-residential and residential uses</li> <li>• Existing Heritage or Feature Trees on site and measures to preserve</li> <li>• Compliance with street tree requirements</li> </ul>                                                                                                                      |
| Yes           | NA | <b>Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Erosion and sedimentation control plan and measures</li> <li>• Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable</li> <li>• Subsurface sanitary sewage disposal and groundwater protection measures</li> </ul>                                                                                                                                |

| PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes                                        | NA | <b>Consistency with City Master Plans (14-14.6.3(A))</b> <ul style="list-style-type: none"> <li>Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable</li> </ul>                                                                                                                                                                                                                    |
| Yes                                        | NA | <b>Public Safety and Fire Prevention (14-14.6.3(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3)</li> <li>Emergency vehicle access</li> <li>Consistency with public safety standards (Technical Manual, Section 3)</li> </ul>                                                                        |
| Yes                                        | NA | <b>Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 &amp; 9)</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Electrical services, including providing underground services</li> <li>Existing and proposed connections for public utilities and required public utility upgrades</li> <li>Sewer line connections</li> </ul>                                                     |
| SITE DESIGN                                |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Yes                                        | NA | <b>Massing, Ventilations and Wind Impact (14-14.6.4(A))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable</li> <li>Bulk, location, or height impacts on adjoining structures</li> </ul>                                                                                                            |
| Yes                                        | NA | <b>Shadows (14-14.6.4(B)), if applicable</b> <ul style="list-style-type: none"> <li>Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)</li> </ul>                                                                                                                                                                                                                                                          |
| Yes                                        | NA | <b>Snow and Ice Loading (14-14.6.4(C))</b> <ul style="list-style-type: none"> <li>Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways</li> </ul>                                                                                                                                                                                                                                      |
| Yes                                        | NA | <b>View Corridors (14-14.6.4(D)), if applicable</b> <ul style="list-style-type: none"> <li>Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)</li> </ul>                                                                                                                                                                                                                                                            |
| Yes                                        | NA | <b>Historic Resources (14-14.6.4(E)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>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</li> <li>Compliance with standards for preservation and documentation of archaeological resources</li> </ul> |

|     |    |                                                                                                                                                                                                                                                                                                        |
|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes | NA | <b>Exterior Lighting (14-14.6.4(F))</b> <ul style="list-style-type: none"> <li>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</li> </ul>                     |
| Yes | NA | <b>Noise and Vibration (14-14.6.4(G))</b> <ul style="list-style-type: none"> <li>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</li> </ul>   |
| Yes | NA | <b>Signage and Wayfinding (14-14.6.4(H)), if applicable</b> <ul style="list-style-type: none"> <li>Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs</li> <li>Provide drawings of all commercial and directional signage on site</li> </ul> |
| Yes | NA | <b>Zone-Related Design Standards (14-14.6.4(I))</b> <ul style="list-style-type: none"> <li>Address any applicable design review standards by zone, including compliance with Design Manual</li> </ul>                                                                                                  |

## 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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Location of solid waste management receptacles</li> <li>• Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable</li> <li>• Location of proposed easements and rights-of-way, including dimensions</li> <li>• Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed</li> </ul> |
| <b>UTILITY PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ul style="list-style-type: none"> <li>• Proposed electrical infrastructure</li> <li>• Location, sizing and directional flows of all proposed sewer and stormwater infrastructure</li> <li>• Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site</li> <li>• Electric utility infrastructure</li> </ul>                                                                                               |
| <b>GRADING AND DRAINAGE PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>• Proposed grades</li> <li>• Proposed stormwater management measures meeting Technical Manual (Section 5) standards</li> <li>• Any proposed alteration of a watercourse or wetlands</li> <li>• Any groundwater protection measures</li> <li>• Proposed buffers and preservation measures for wetlands or significant natural features</li> </ul>                                                                |
| <b>LANDSCAPE PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <ul style="list-style-type: none"> <li>• Existing vegetation to be preserved and preservation measures</li> <li>• Proposed landscaping, screening, and street trees, including caliper widths for trees</li> <li>• Planting schedule, including street trees</li> </ul>                                                                                                                                                                                |
| <b>ARCHITECTURAL PLANS AND RENDERINGS including:</b>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <ul style="list-style-type: none"> <li>• Exterior building elevations, color renderings, illustrations of all sides</li> <li>• Axonometric and street-level views for structures greater than three stories in height</li> <li>• Provide context drawings, if applicable (Design Manual, page 1)</li> <li>• Floor plans</li> </ul>                                                                                                                     |
| <b>CONSTRUCTION MANAGEMENT PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ul style="list-style-type: none"> <li>• Specifics on traffic control, sidewalk sheds, and pedestrian rerouting</li> <li>• Include a drawing and written narrative</li> </ul>                                                                                                                                                                                                                                                                          |
| <b>OTHER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Details and cross-sections, as necessary</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |

DLN 1002140147747

**WARRANTY DEED**

KNOW ALL PERSONS BY THESE PRESENTS, that, **ALEX NG** and **JENNIFER CHADBURN**, of the City of Lexington, Commonwealth of Massachusetts, for consideration paid, grant to **31 FOREST LLC**, whose mailing address is 46 Turner Street, Portland, Maine 04101, with WARRANTY COVENANTS, the premises situated on or about 31 Forest Street, City of Portland and County of Cumberland and State of Maine, described on the Exhibit A attached hereto and made a part hereof.

Being the same premises conveyed to the within Grantors by Deed of Patrick Mulligan and William Jones, dated September 26, 2014, recorded in the Cumberland County Registry of Deeds in Book 31818, Page 149.

IN WITNESS WHEREOF, the said Alex Ng and Jennifer Chadburn have signed and sealed this instrument on June 7, 2021.

Witness

Alex Ng

Witness

Jennifer Chadburn

STATE OF Massachusetts  
COUNTY OF WindsorJune 7, 2021

Then personally appeared Alex Ng and Jennifer Chadburn and acknowledged the foregoing instrument to be their free act and deed.

Before me,

Notary Public/Attorney-at-Law



LAURIE POLAND  
NOTARY PUBLIC  
Commonwealth of Massachusetts  
My Commission Expires  
August 9, 2024

**EXHIBIT A**

A certain lot or parcel of land, together with the buildings and improvements thereon, situated on the easterly side of Forest Street in the City of Portland, County of Cumberland and State of Maine, known as 31-33 Forest Street in said City of Portland, and bounded and described as follows:

Beginning at a point on the easterly sideline of Forest Street in the said City of Portland, which point is located one hundred forty-three and five tenths (143.5) feet southerly along the easterly sideline of said Forest Street from the southerly sideline of Park Avenue formerly called Portland Street, thence easterly at right angles with the easterly sideline of said Forest Street, a distance of Fifty-three and fifty-seven hundredths (53.57) feet to land now or formerly of Mead; thence southerly by said Mead land to a point; thence westerly parallel to the first described bound, a distance of fifty-four (54) feet to the easterly sideline of said Forest Street; thence northerly by the easterly sideline of said Forest Street and at right angles to the last described bound, a distance of forty-nine and thirty-nine one-hundredths (49.39) feet to the point of beginning.

Containing 2,656.19 square feet more or less, and being shown as City of Portland Tax Map 53, Block A, Lot 11.

Portland, Maine



Yes. Life's good here.

Planning &amp; Urban Development Department

**ZONING ANALYSIS** Relevant Zone(s) R-6

**All Projects:**

|                           | Required | Proposed |
|---------------------------|----------|----------|
| Lot Size                  | 2,000    | 2,625    |
| Area Per Dwelling Unit    | 725      | 875      |
| Minimum Street Frontage   | 20'      | 49.39'   |
| Front Yard Minimum        | 4.45'    | 4.45'    |
| Front Yard Maximum        | --       | --       |
| Rear Yard                 | 10'      | 16.72'   |
| Yard Right                | 5'       | 5.91'    |
| Yard Left                 | 5        | 5.48'    |
| Side Street Setback       | --       | --       |
| Step Back                 | --       | --       |
| Maximum Lot Coverage      | 60%      | 45.98%   |
| Minimum Lot Coverage      | --       | --       |
| Maximum Height            | 45'      | 34.95'   |
| Open Space                | 20%      | 21.50%   |
| Maximum Impervious Area   | 60%      | 45.98%   |
| Pavement Setback          | 5'       | --       |
| Floor Area Ratio          | --       | --       |
| Off Street Parking Spaces | 2        | 3        |
| Loading Bays              | --       | --       |
| 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<br>Increase or<br>Decrease | Maximum<br>Allowable<br>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):    |                                  |                                    |          |



March 9, 2022

To Whom It May Concern:

This letter is to confirm that 31 Forest LLC has financing in place for the construction project located at 31 Forest Street in Portland, Maine.

The Bank has reviewed the financials provide by its Principal. The company has the financial capacity to finance the project as presented. Please feel free to contact me if you have any questions, or require additional information.

Regards,

A handwritten signature in blue ink, appearing to read "Todd Zukowski", is written over a light blue circular background.

Todd Zukowski  
Senior Vice President  
Commercial Lending  
(207) 588-8423





189 Main Street, Suite 200  
Yarmouth, ME 04096

March 7, 2022

To Whom It May Concern:

We hereby authorize

Trillium Engineering Group  
189 Main Street  
Yarmouth, ME 04096

As our agent to act on our behalf in all matter relating to all processes required in the proposed building work located at 31 Forest Street in Portland, Maine.

This certification commences on the date of signing and is valid for two years from March 7, 2022 to March 7, 2024.

This certificate will become null and void unless it is agreed between both parties to make an extension.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Latham', written over a horizontal line.

David Latham, P.E.  
Trillium Engineering Group

A handwritten signature in black ink, appearing to read 'Ray Chang', written over a horizontal line.

Signature of Owner  
Ray Chang

A handwritten signature in black ink, appearing to read 'David Latham', written over a horizontal line.

Signature of Agent  
David Latham, P.E.



189 Main Street, Suite 200  
Yarmouth, ME 04096

May 4, 2022

City of Portland  
389 Congress Street  
Portland, ME 04101

Re: Warren Mechanical  
Letter of Technical Capacity

Dear City of Portland:

The Applicant has assembled a team of qualified professionals for the design and permitting of the project. Each team member has extensive experience in the design and permitting of projects throughout the state of Maine. The consultant team consists of the following members:

Civil Engineer: David Latham, PE.  
Trillium Engineering Group  
189 Main Street  
Yarmouth, Maine 04096

Architect: Paul Lewandowski, AIA  
Paul Designs Projects  
142 High Street  
Portland, ME 04101

**David Latham**

---

**From:** David Latham  
**Sent:** Tuesday, April 5, 2022 11:30 AM  
**To:** AMaP MEANS  
**Subject:** Request For Ability to Serve - 31 Forest Street  
**Attachments:** 31 Forest Locus Map.pdf; 31 Forest Proposed Site Plan.pdf; 31 Forest PWD Ability to Serve.pdf; Peak Flow Based on Fixture Count Exist. Bldg.xls; 31 Forest Arch Plans.pdf

To Whom It May Concern:

On behalf of Trillium Engineering Group, I am pleased to submit the following request for ability to serve for a proposed development at 31 Forest Street in Portland, Maine. Please find the attached site plan, architectural plan, project narrative, locus map, and peak flow based on fixture count.

Thank you for taking the time to review this. Should you have any questions or require any additional information, please let me know.

Best,

-David

David Latham, P.E.  
Project Engineer  
Trillium Engineering Group  
189 Main Street Suite 200  
Yarmouth, ME 04096  
Office: 207 307 0872  
Mobile: 978 852 4593



[www.trilliumengineeringgroup.com](http://www.trilliumengineeringgroup.com)

STORMWATER MANAGEMENT REPORT  
PROPOSED THREE-UNIT DEVELOPMENT

31 FOREST STREET  
PORTLAND, MAINE

*May 4, 2022*

*PREPARED BY:*

*TRILLIUM ENGINEERING GROUP  
189 MAIN STREET  
YARMOUTH, ME 04096  
(207) 307-0872*

#### **A. Project Background:**

Trillium Engineering Group is proposing a new three-unit apartment building on a currently undeveloped 2,625 square foot parcel (Parcel ID 053 A011). The applicant is looking to break ground as soon as possible.

Access to the site is via Forest Street. The new building is to be served by public water, sewer, and underground electricity/telephone/cable. The parcel slopes in a general westerly direction and does not feature any rare or protected vegetation. The existing site takes some off-site runoff which flows onto the adjacent property, along with most of the on-site runoff, which eventually drains into the public catch basin located towards the intersection of Forest Street and Park Ave. There also exists a portion of the on-site runoff that drains directly onto Forest Street.

In the proposed state, the site shall be re-graded such that a smaller percentage of the on-site area drains towards the adjacent property. A new rain garden shall be installed to catch over 95% of the proposed on-site impervious area before discharging said runoff into the existing public network. Note that the catch basin network on Park Ave does not currently extend to this portion of Forest Street, so the drainage pipe shall be cut at the property line, join the proposed sewer line, and then connect to the existing sewer main. If and when the catch basin network extends to this part of Forest Street, the piping shall be re-worked such that the rain garden drains directly to the storm drain network. This design choice was made at the request of George Carhart of the Portland Public Works. A copy of the correspondence has been included in this application.

For additional information, see Sheet C102 and C103, Pre- and Post-Watershed Plans. It is anticipated that this projects site infrastructure will be constructed in 16 months.

#### **B. Existing Site Conditions**

The existing site is currently an undeveloped parcel with no protected natural resources. The topography of the site is shown at a one-foot contour interval with data provided by Owen Haskell. The grade follows a general westerly slope.

#### **C. Wetlands and Streams**

The site does not feature any wetlands, streams, or other protected resources.

#### **D. Soils**

All soils on site have been assigned to Hydrologic Soil Group "A", per the United States Web Soil Survey.

#### **E. Proposed Use**

The proposed development will call for (3) additional housing units with garage parking. A portion of the parking shall stick out beyond the building footprint. The runoff from this impervious area shall grade towards the interior slab where a drain shall collect it and discharge the runoff via the rain garden outlet pipe.

In the existing state, all off-site runoff and a sizable portion of the on-site runoff drains towards the adjacent property. The off-site flow shall not be changed in the proposed state, but the site shall be re-graded such that a smaller percentage of on-site runoff drains towards the adjacent property. By inspection, this will lead to a net decrease in stormwater runoff heading towards the adjacent property.

In total, this project will create a net increase of 1,679 square feet of impervious area. 1,607 square feet of said total (95.7%) shall be treated by the rain garden or connected to the rain garden outlet via the interior

slab drain. This impervious runoff shall discharge into the existing sewer main as described in Section A, Project Background, while the remainder of the on-site runoff shall drain towards the existing catch basin near Park Avenue.

The stormwater system has been designed in accordance with the latest version of the Maine DEP BMP's for stormwater.

## **F. Stormwater**

We have been authorized to perform a drainage analysis on the site that would meet the standards of the Maine Department of Environmental Protection and the City of Portland, Maine. I have reviewed the drainage characteristics of the site, which includes proposed driveways and buildings. The analysis required post construction stormwater flows to be substantially equal to or less than the existing stormwater flow rates.

We have used the SCS TR-20 (HydroCAD 10.00 stormwater model) method of computing stormwater runoff peak flow rates. This method accounts for soil types, existing land uses, topography, vegetative cover, and proposed land use for the parcel to be developed. The future conditions were analyzed using data for a design frequency of occurrence of 2/10/25 years. The Type III, 24-hour storm distribution rainfall has a 3.1, 4.6, and 5.8 inches/hour respectively has been used, and storm values have been provided by Appendix H of Chapter 500 of the State of Maine Stormwater Management Law. All supporting calculations and data are submitted with this report.

The existing and proposed site conditions were evaluated using information taken from the existing condition and proposed design plan of the area. Impervious, lawns/fields, and woods areas for each hydrologic soil condition were measured by HydroCAD in order to calculate a weighted curve number that typifies the drainage condition of the site.

### Pre-Condition Modeling

The pre-condition is modeled as it is currently found today. Note that only the watershed area from the rain garden has been included in the pre-condition modeling,

### Post-Condition Modeling

A rain garden has been designed such that 1,607 square feet of impervious area and 459 square feet of pervious surfaces will be treated and discharged into the existing sewer network. The site has also been re-graded such that there is less runoff draining onto the adjacent property. All on-site stormwater runoff that is not obtained by the rain garden will eventually drain into the existing catch basin located near Park Ave.

The rain garden will detain and discharge the flow without overtopping in the 2-, 10, and 25-year storm events. The garden is designed such that any and all excess runoff follows its natural path off-site and towards the off-site catch basin. The rain garden will typically revert to dry bottom conditions in between rain events.

Total Area Detained By Rain Garden = 1,635 square feet  
Impervious Area in the Existing Condition: 0 square feet  
Impervious Area in the Proposed Condition: 1,679 square feet  
Total Modeled Impervious Area Treated By Rain garden: 1,607 square feet  
Total Proposed Untreated Impervious Runoff: 0 acres



### Stormwater Model Summary – Rain Garden Watershed

CFS (Cubic Feet per Second = Rate)

Value based on flow entering Analysis Points (AP) 1 and 2

| Storm Event                    | 2-Yr (Pre) | 2-Yr (Post) | 10-Yr (Pre) | 10-Yr (Post) | 25-Yr (Pre) | 25-Yr (Post) |
|--------------------------------|------------|-------------|-------------|--------------|-------------|--------------|
| Adjacent Property <sup>A</sup> | 0.00       | 0.00        | 0.00        | 0.00         | 0.01        | 0.00         |
| Forest St Sewer <sup>B</sup>   | --         | 0.03        | --          | 0.12         | --          | 0.21         |
| Forest Street CB               | 0.00       | 0.00        | 0.00        | 0.00         | 0.00        | 0.01         |

<sup>A</sup>Note that off-site impervious flow is not included in flow rates. This portion of the analysis is strictly focused on the on-site flow.

<sup>B</sup>Note that the Forest Street sewer flow rates are only in relation to the stormwater flow. Septic flow rates from internal building use have not been calculated by Trillium Engineering Group.

Calculations for the 2-, 10-, and 25-year Pre- and Post-Drainage are included in the attached stormwater reports.

#### Evaluation of Results

As evidenced by the data above, all flow rates are left effectively unchanged in the proposed condition. Over 95% of the impervious stormwater runoff is treated on-site, while the remainder is detained and eventually treated by the City of Portland's public networks.

#### **G. Water Quantity and Quality**

Quantity: Peak flows have been reduced or left effectively unchanged in the 2-, 10-, and 25-year storm events. Because of this, we can assume the stormwater quantity will not lead to increased erosion rates.

Quality: Despite increasing the total amount of impervious area, the site will only see an increase of 71 square feet of untreated impervious area leaving the site. This runoff will not be untreated for long, as it quickly flows into the existing catch basin near Park Avenue. Because of this, we can assume that this project will not have an adverse impact on the stormwater quality leaving the site.

#### **H. Maintenance Plan for Rain gardens & Best Management Practices**

Site Inspection & Maintenance During Construction: Weekly inspections, as well as routine inspections following rainfalls, shall be conducted by the General Contractor of all temporary and permanent erosion control devices until final acceptance of the project (85% grass catch). Necessary repairs shall be made to correct undermining or deterioration.

Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned and repaired by the General Contractor as required. Disposal of all temporary erosion control devices shall be the responsibility of the General Contractor.

We recommend that the Owner hire a design engineer, or other qualified individual, to provide compliance inspections (during active construction) relative to the Stormwater and Erosion Control Plans. Such inspections should be at least weekly during construction.

Maintenance Agreement: The Contractor shall be responsible for short-term sedimentation maintenance and shall clean out all swales, structures and grass basins prior to turning project over to Owner. After project turnover, the Owner will be responsible for inspecting and maintaining all stormwater conveyances as directed in the Inspection and Maintenance Report attached in this submittal.

## Conclusion

We believe that this project will not have any adverse impacts on abutters, down gradient systems or adjacent resources. Moreover, this plan includes all appropriate measures to prevent negative impacts and to keep post development flows and impacts to the resources at a minimum using land grading, reductions in allowable disturbed area, erosion control practices and land use. It is important to note that proper erosion control and re-vegetation of disturbed areas is essential for the proper operation of the stormwater facilities. Maintenance of the yard areas, driveway, and careful attention to the cleanliness of the rain gardens, bioretention filter, and catch basin must be a top priority in order for the system to function properly. Please feel free to contact me if you have any questions concerning the calculations of stormwater from this project. Thank you for involving us on your project.

Sincerely yours,



David Latham, P.E.  
Trillium Engineering Group

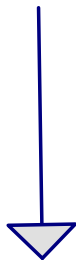
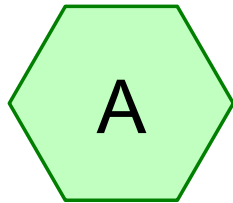
# **PROPOSED BUILDING**

## **Pre-Development Stormwater Analysis**

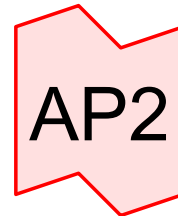
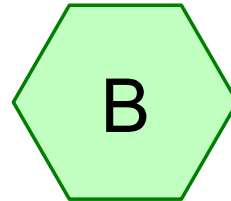
**31 Forest Street  
Portland, Maine 04102**

**Submitted:**

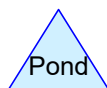
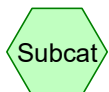
**May 4, 2022**



Adjacent Property



Forest St CB



**21-285 Pre**

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Page 2

**Rainfall Events Listing**

| Event# | Event Name  | Storm Type     | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|-------------|----------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2-yr Storm  | Type III 24-hr |       | Default | 24.00            | 1   | 3.10           | 2   |
| 2      | 10-yr Storm | Type III 24-hr |       | Default | 24.00            | 1   | 4.60           | 2   |
| 3      | 25-yr Storm | Type III 24-hr |       | Default | 24.00            | 1   | 5.80           | 2   |

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Page 3

**Area Listing (all nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 0.060           | 39        | >75% Grass cover, Good, HSG A (A, B)  |
| <b>0.060</b>    | <b>39</b> | <b>TOTAL AREA</b>                     |

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Page 4

**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.060           | HSG A         | A, B                    |
| 0.000           | HSG B         |                         |
| 0.000           | HSG C         |                         |
| 0.000           | HSG D         |                         |
| 0.000           | Other         |                         |
| <b>0.060</b>    |               | <b>TOTAL AREA</b>       |

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**Ground Covers (all nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-------------------------|
| 0.060            | 0.000            | 0.000            | 0.000            | 0.000            | 0.060            | >75% Grass cover, Good | A, B                    |
| <b>0.060</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.060</b>     | <b>TOTAL AREA</b>      |                         |



**21-285 Pre***Type III 24-hr 2-yr Storm Rainfall=3.10"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentA:**

Runoff Area=2,148 sf 0.00% Impervious Runoff Depth=0.00"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**SubcatchmentB:**

Runoff Area=477 sf 0.00% Impervious Runoff Depth=0.00"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Link AP1: Adjacent Property**

Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link AP2: Forest St CB**

Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"**  
**100.00% Pervious = 0.060 ac 0.00% Impervious = 0.000 ac**

**21-285 Pre**

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Type III 24-hr 2-yr Storm Rainfall=3.10"

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**Summary for Subcatchment A:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

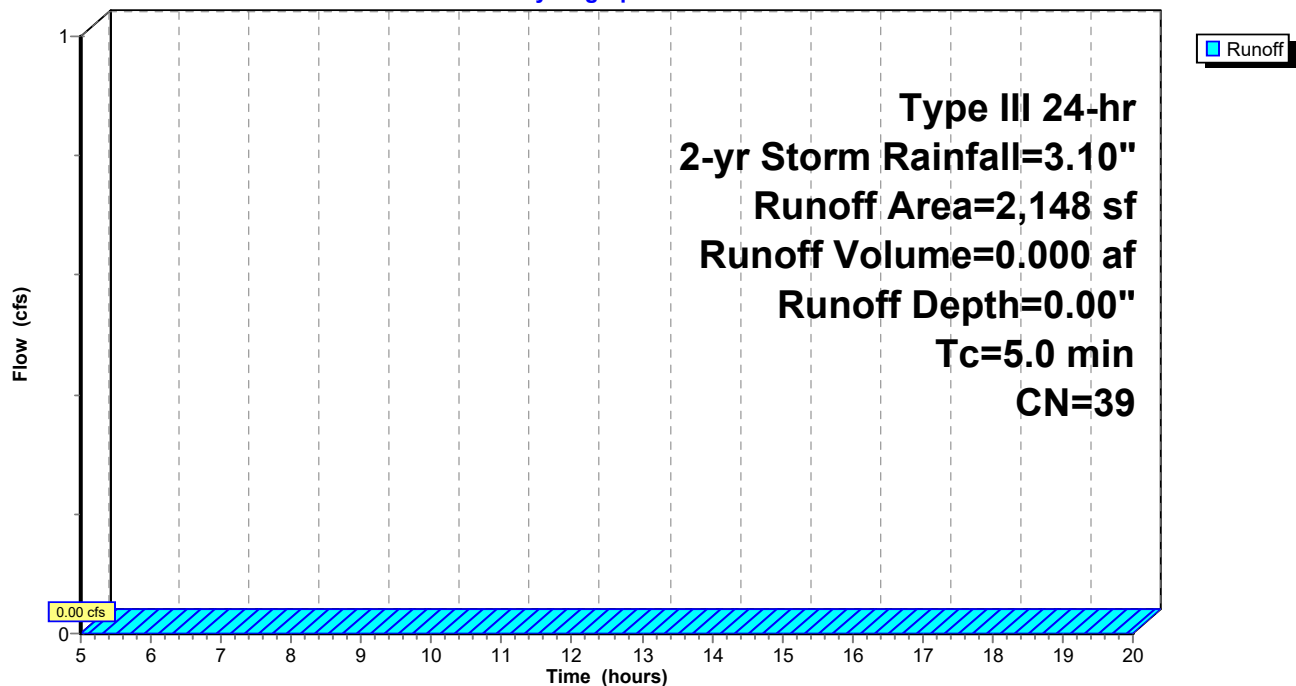
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 2,148     | 39 | >75% Grass cover, Good, HSG A |
| 2,148     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment A:**

Hydrograph



**Summary for Subcatchment B:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

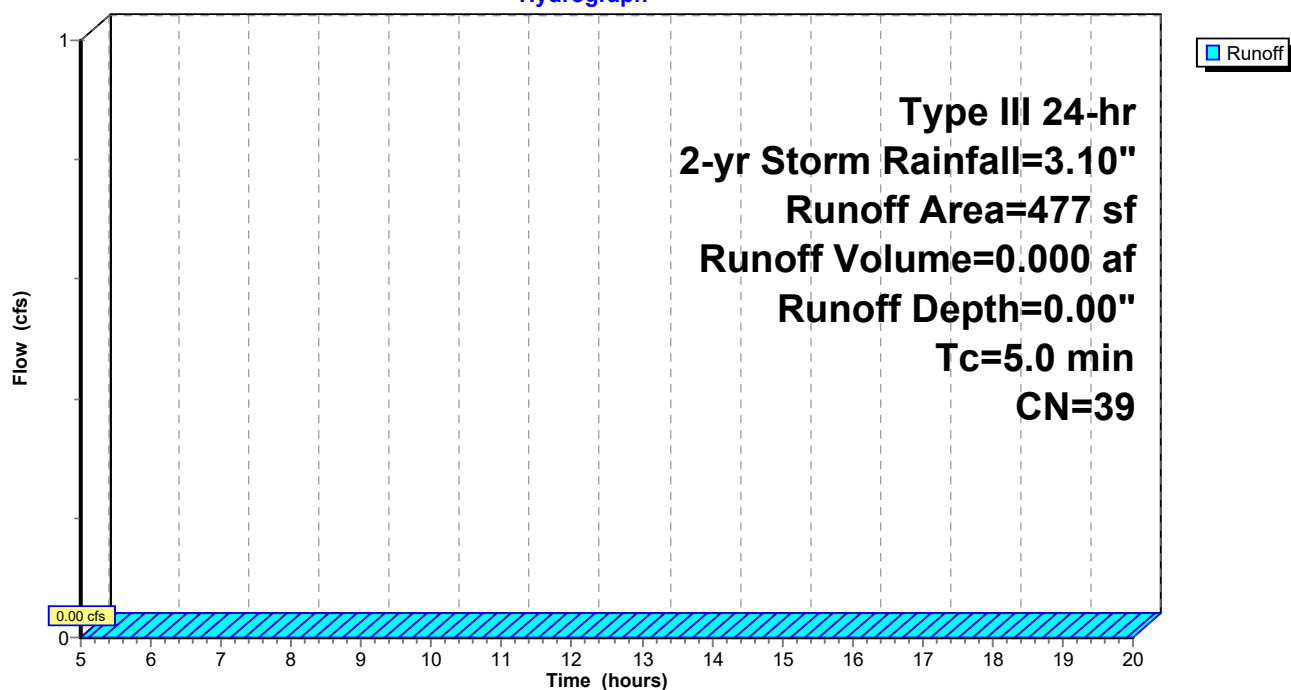
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 477       | 39 | >75% Grass cover, Good, HSG A |
| 477       |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment B:**

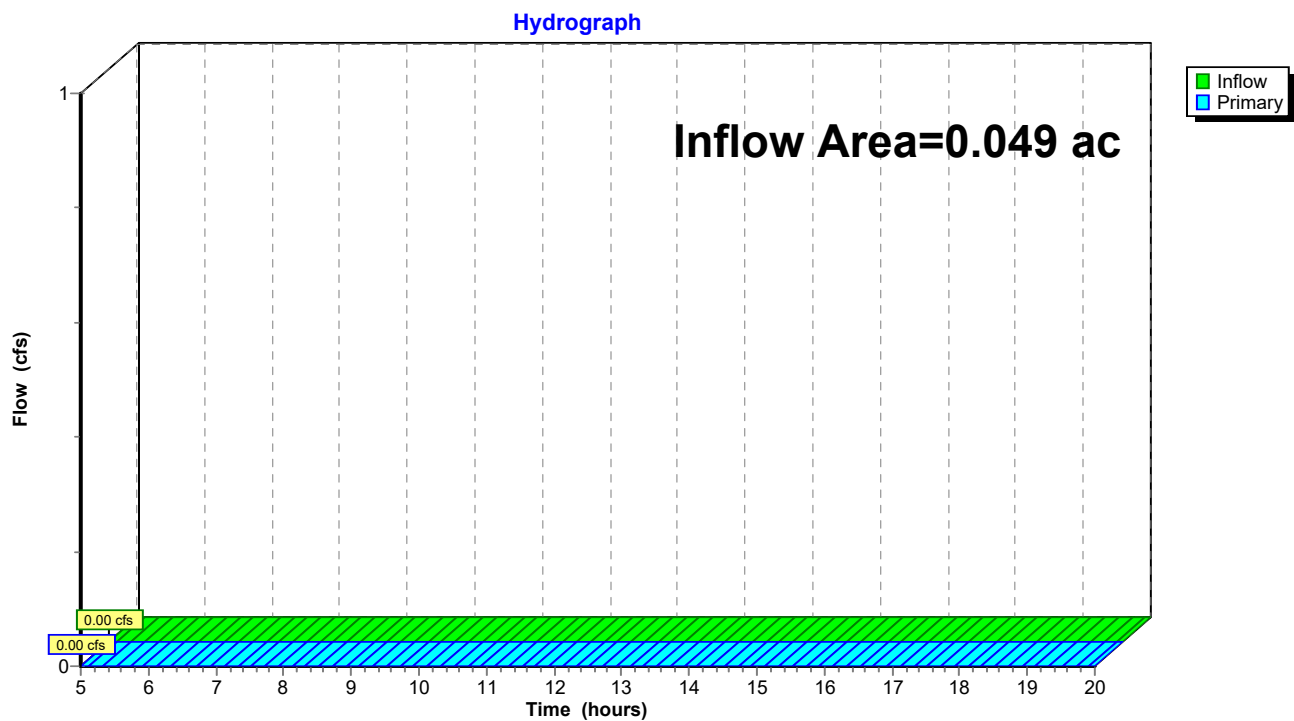
Hydrograph



**Summary for Link AP1: Adjacent Property**

Inflow Area = 0.049 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr Storm event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

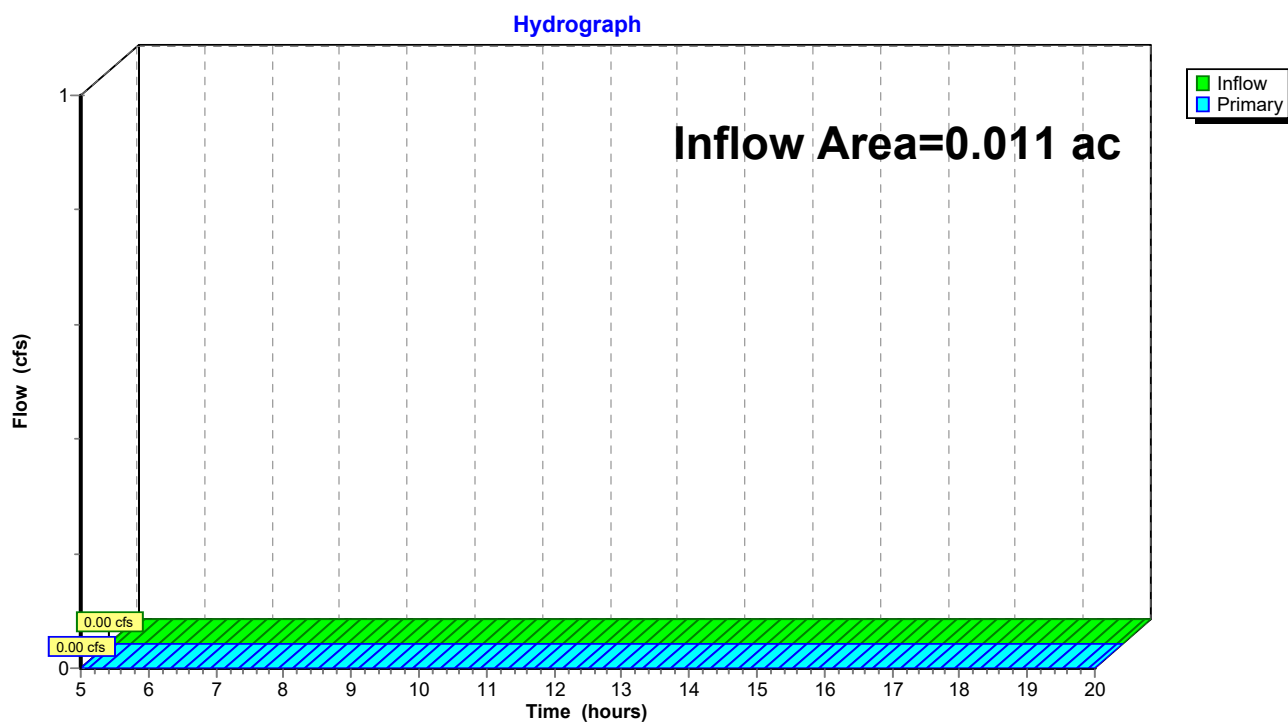
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent Property**

**Summary for Link AP2: Forest St CB**

Inflow Area = 0.011 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr Storm event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP2: Forest St CB**

**21-285 Pre***Type III 24-hr 10-yr Storm Rainfall=4.60"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentA:**

Runoff Area=2,148 sf 0.00% Impervious Runoff Depth>0.10"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**SubcatchmentB:**

Runoff Area=477 sf 0.00% Impervious Runoff Depth>0.10"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Link AP1: Adjacent Property**

Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link AP2: Forest St CB**

Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.10"**  
**100.00% Pervious = 0.060 ac 0.00% Impervious = 0.000 ac**

**Summary for Subcatchment A:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af, Depth&gt; 0.10"

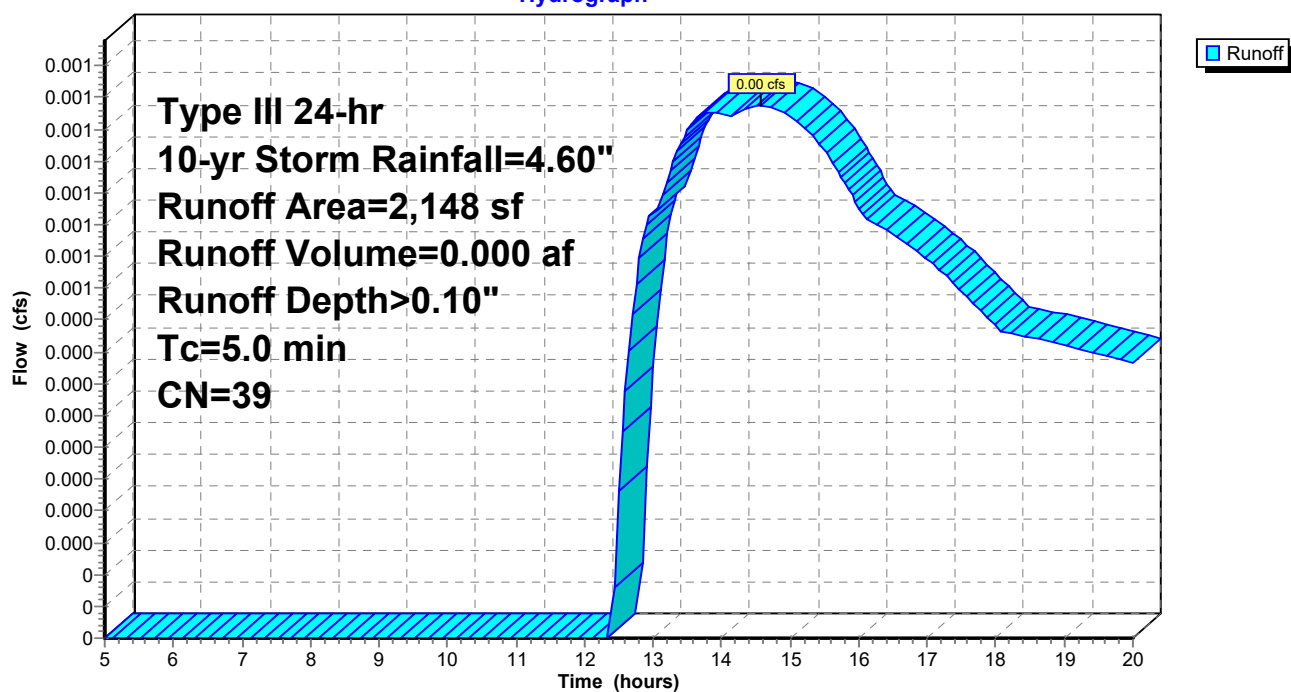
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 2,148     | 39 | >75% Grass cover, Good, HSG A |
| 2,148     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment A:**

## Hydrograph



**Summary for Subcatchment B:**

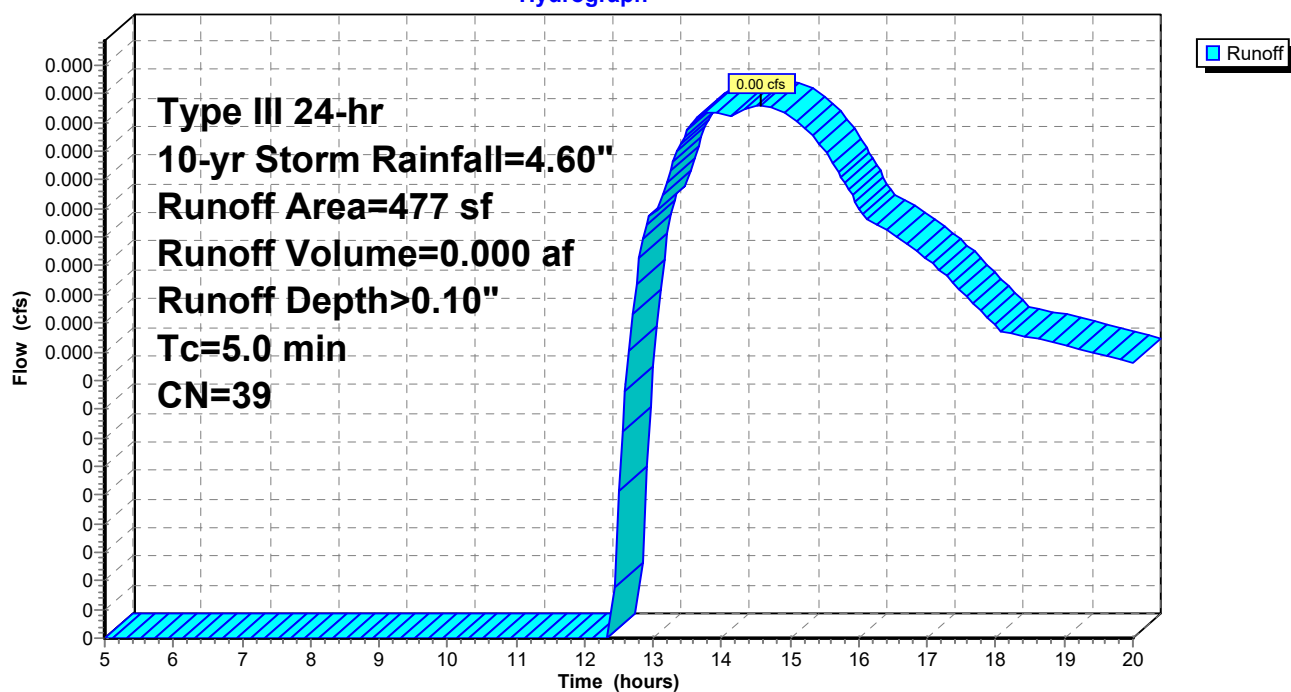
[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 477       | 39 | >75% Grass cover, Good, HSG A |
| 477       |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

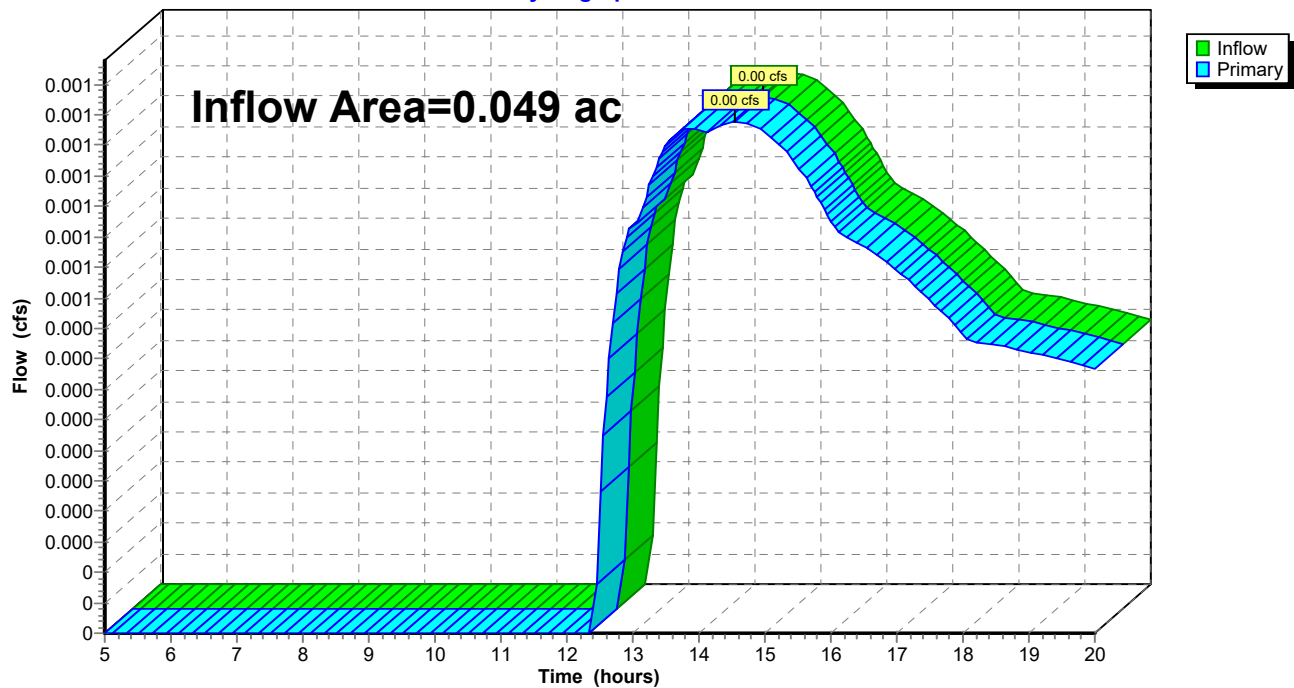
**Subcatchment B:****Hydrograph**



**Summary for Link AP1: Adjacent Property**

Inflow Area = 0.049 ac, 0.00% Impervious, Inflow Depth > 0.10" for 10-yr Storm event  
Inflow = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

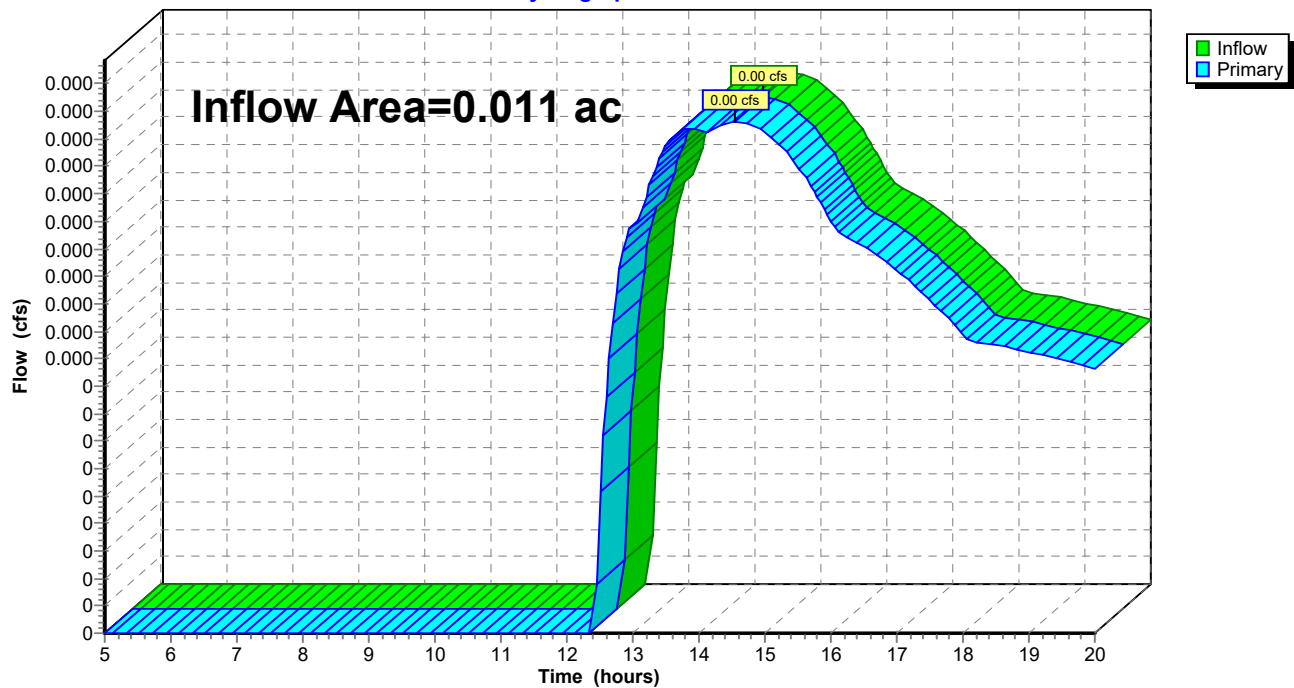
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent Property****Hydrograph**

**Summary for Link AP2: Forest St CB**

Inflow Area = 0.011 ac, 0.00% Impervious, Inflow Depth > 0.10" for 10-yr Storm event  
Inflow = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP2: Forest St CB****Hydrograph**

**21-285 Pre***Type III 24-hr 25-yr Storm Rainfall=5.80"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentA:**

Runoff Area=2,148 sf 0.00% Impervious Runoff Depth>0.32"  
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.001 af

**SubcatchmentB:**

Runoff Area=477 sf 0.00% Impervious Runoff Depth>0.32"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Link AP1: Adjacent Property**

Inflow=0.01 cfs 0.001 af  
Primary=0.01 cfs 0.001 af

**Link AP2: Forest St CB**

Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.002 af Average Runoff Depth = 0.32"**  
**100.00% Pervious = 0.060 ac 0.00% Impervious = 0.000 ac**

**Summary for Subcatchment A:**

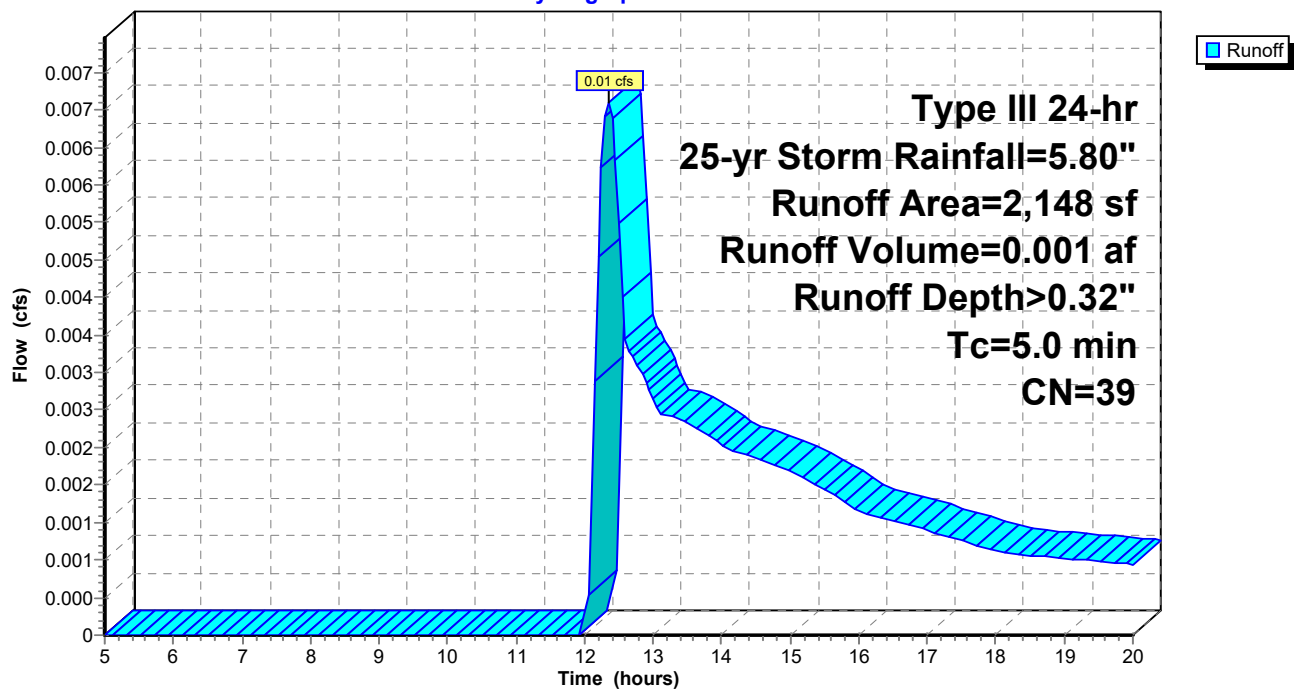
[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 25-yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 2,148     | 39 | >75% Grass cover, Good, HSG A |
| 2,148     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

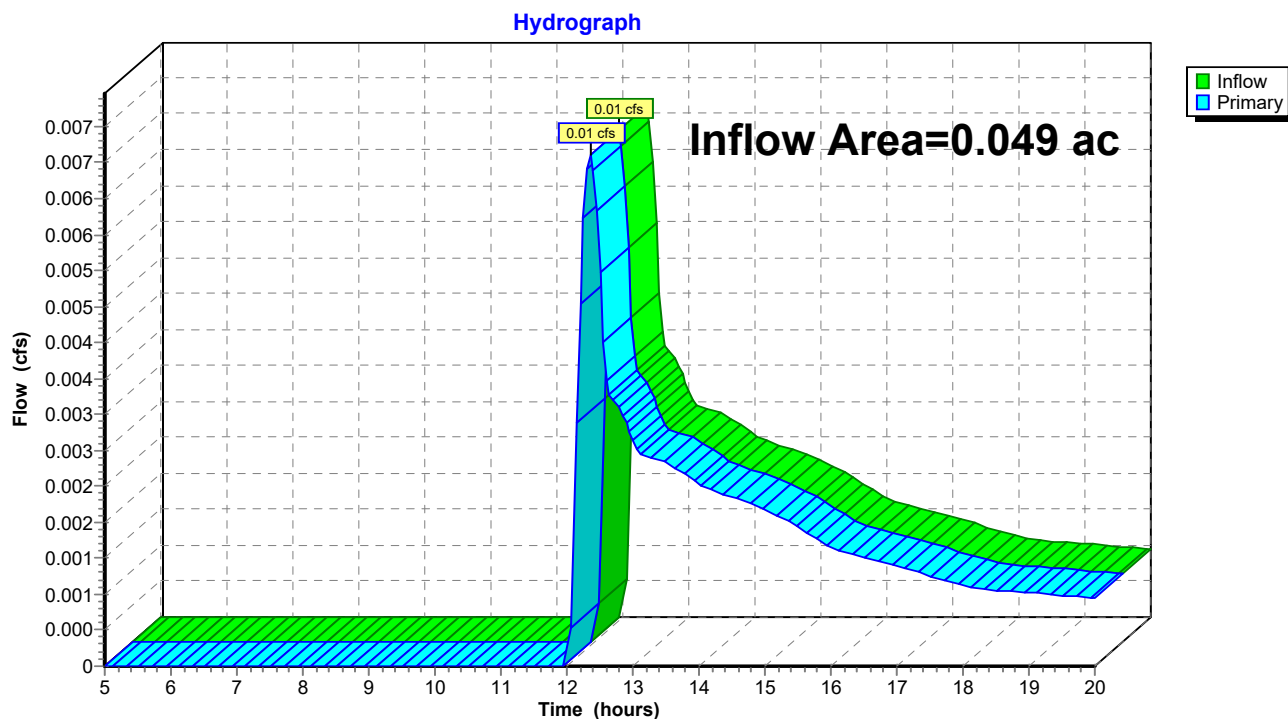
**Subcatchment A:****Hydrograph**



**Summary for Link AP1: Adjacent Property**

Inflow Area = 0.049 ac, 0.00% Impervious, Inflow Depth > 0.32" for 25-yr Storm event  
Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af  
Primary = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

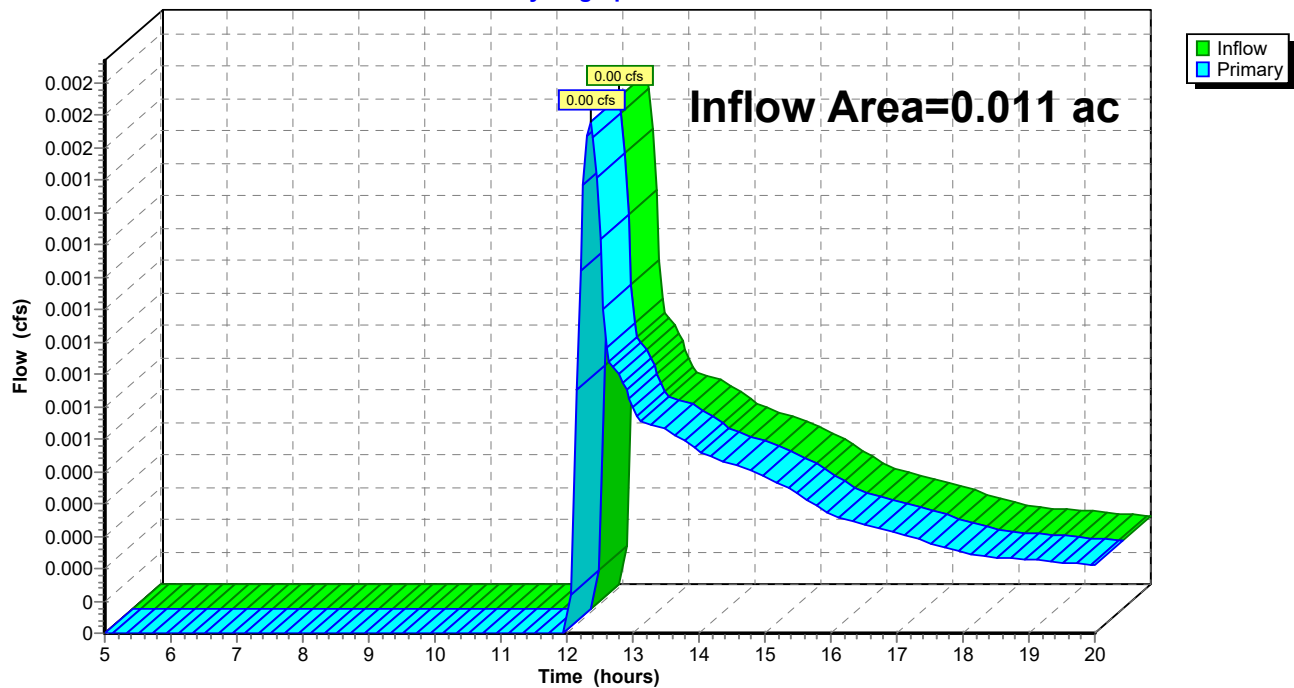
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent Property**

**Summary for Link AP2: Forest St CB**

Inflow Area = 0.011 ac, 0.00% Impervious, Inflow Depth > 0.32" for 25-yr Storm event  
Inflow = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP2: Forest St CB****Hydrograph**

# **PROPOSED SUBDIVISION**

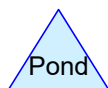
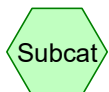
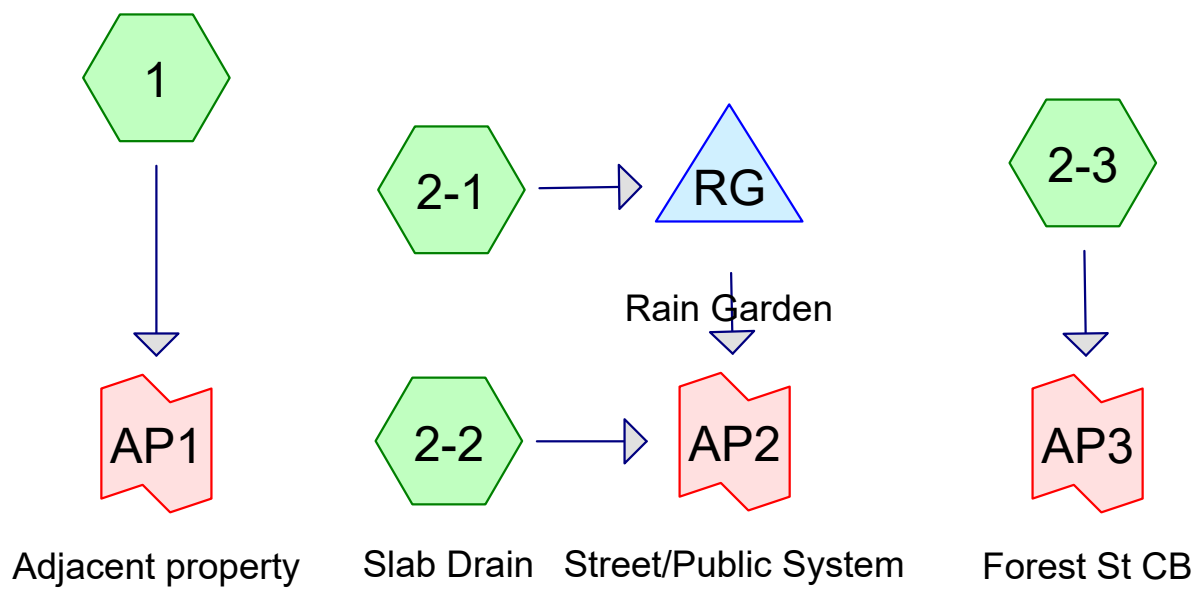
## **Post-Development Stormwater Analysis**

**31 Forest Street  
Portland, Maine 04102**

**Submitted:**

**May 4, 2022**





**Routing Diagram for 21-285 Post**  
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**21-285 Post**

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**Rainfall Events Listing**

| Event# | Event Name  | Storm Type     | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|-------------|----------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2-yr Storm  | Type III 24-hr |       | Default | 24.00            | 1   | 3.17           | 2   |
| 2      | 10-yr Storm | Type III 24-hr |       | Default | 24.00            | 1   | 4.72           | 2   |
| 3      | 25-yr Storm | Type III 24-hr |       | Default | 24.00            | 1   | 5.94           | 2   |

## 21-285 Post

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### Area Listing (all nodes)

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)       |
|-----------------|-----------|---------------------------------------------|
| 0.022           | 39        | >75% Grass cover, Good, HSG A (1, 2-1, 2-3) |
| 0.039           | 98        | Impervious (2-1, 2-2, 2-3)                  |
| <b>0.060</b>    | <b>77</b> | <b>TOTAL AREA</b>                           |

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**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.022           | HSG A         | 1, 2-1, 2-3             |
| 0.000           | HSG B         |                         |
| 0.000           | HSG C         |                         |
| 0.000           | HSG D         |                         |
| 0.039           | Other         | 2-1, 2-2, 2-3           |
| <b>0.060</b>    |               | <b>TOTAL AREA</b>       |

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**Ground Covers (all nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-------------------------|
| 0.022            | 0.000            | 0.000            | 0.000            | 0.000            | 0.022            | >75% Grass cover, Good | 1, 2-1,<br>2-3          |
| 0.000            | 0.000            | 0.000            | 0.000            | 0.039            | 0.039            | Impervious             | 2-1, 2-2,<br>2-3        |
| <b>0.022</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.039</b>     | <b>0.060</b>     | <b>TOTAL AREA</b>      |                         |

**21-285 Post***Type III 24-hr 2-yr Storm Rainfall=3.17"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1:** Runoff Area=167 sf 0.00% Impervious Runoff Depth=0.00"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment2-1:** Runoff Area=1,666 sf 72.45% Impervious Runoff Depth>1.40"  
Tc=5.0 min CN=82 Runoff=0.07 cfs 0.004 af

**Subcatchment2-2: Slab Drain** Runoff Area=401 sf 100.00% Impervious Runoff Depth>2.75"  
Tc=5.0 min CN=98 Runoff=0.03 cfs 0.002 af

**Subcatchment2-3:** Runoff Area=391 sf 18.16% Impervious Runoff Depth>0.10"  
Tc=5.0 min CN=50 Runoff=0.00 cfs 0.000 af

**Pond RG: Rain Garden** Peak Elev=30.25' Storage=83 cf Inflow=0.07 cfs 0.004 af  
Discarded=0.01 cfs 0.004 af Primary=0.01 cfs 0.000 af Outflow=0.01 cfs 0.004 af

**Link AP1: Adjacent property** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link AP2: Street/Public System** Inflow=0.03 cfs 0.002 af  
Primary=0.03 cfs 0.002 af

**Link AP3: Forest St CB** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.007 af Average Runoff Depth = 1.32"**  
**36.04% Pervious = 0.022 ac 63.96% Impervious = 0.039 ac**

**21-285 Post**

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Type III 24-hr 2-yr Storm Rainfall=3.17"

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**Summary for Subcatchment 1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

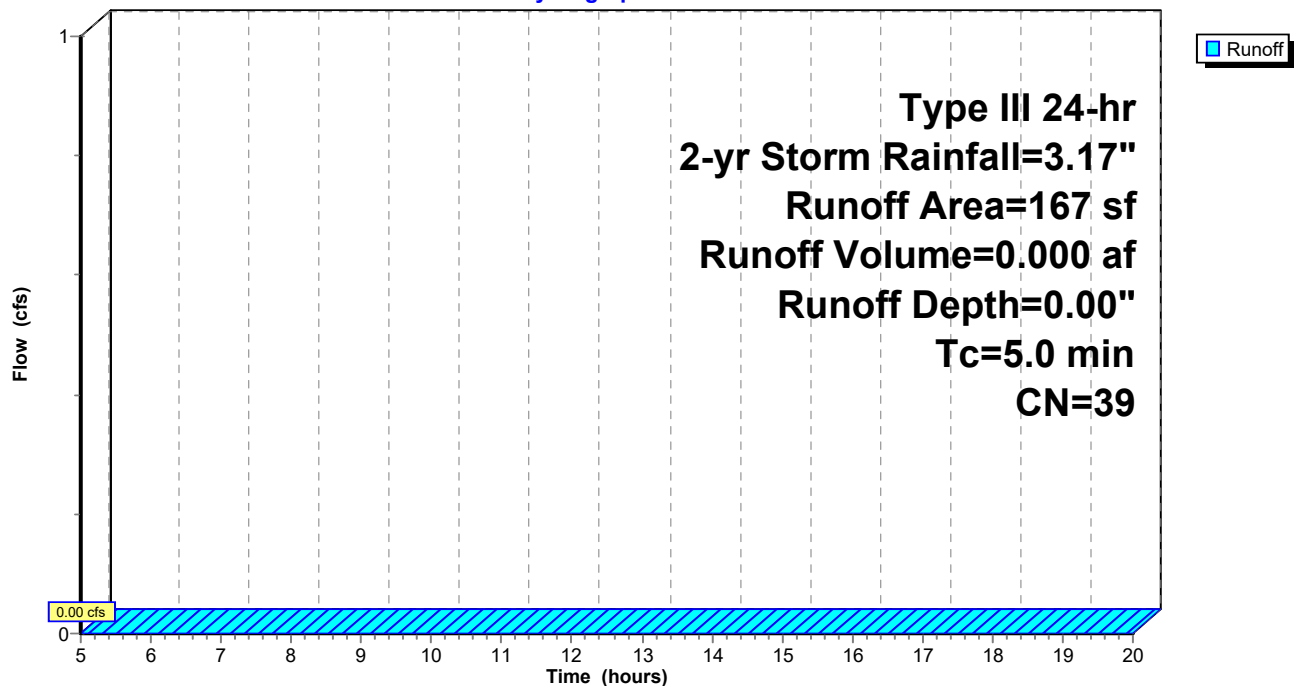
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.17"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 167       | 39 | >75% Grass cover, Good, HSG A |
| 167       |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 1:**

Hydrograph



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Type III 24-hr 2-yr Storm Rainfall=3.17"

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**Summary for Subcatchment 2-1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.004 af, Depth&gt; 1.40"

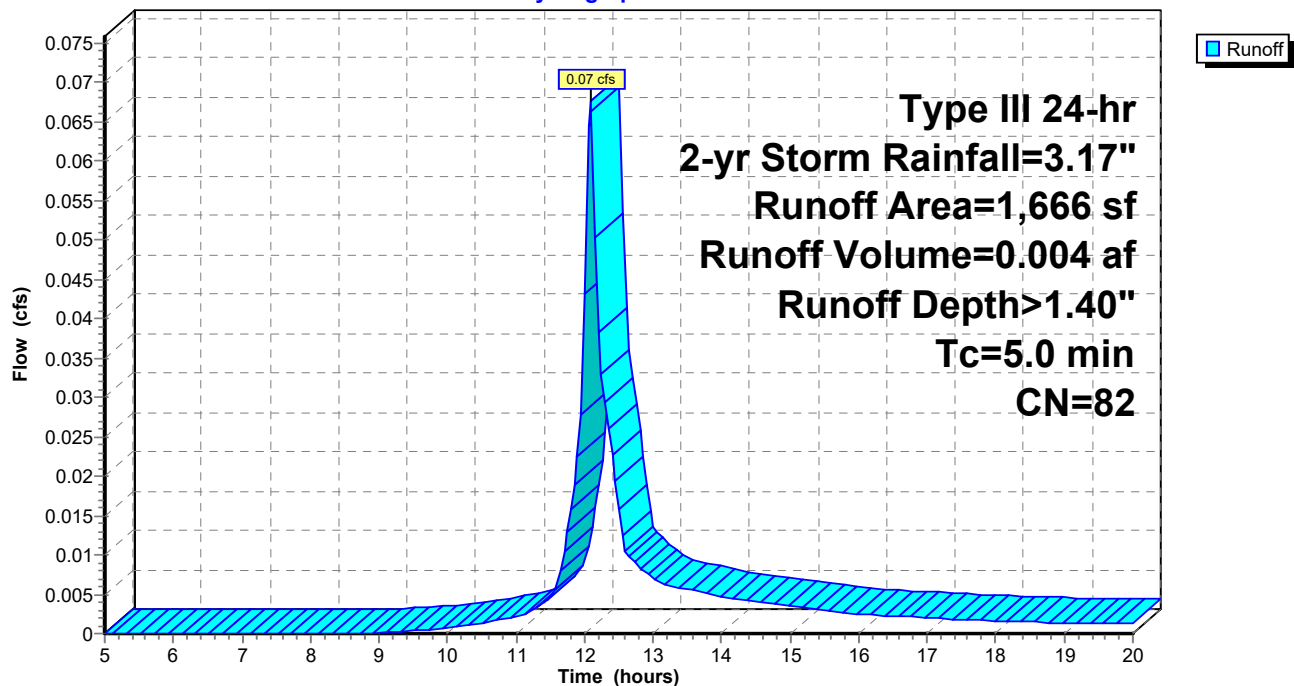
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.17"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 1,207     | 98 | Impervious                    |
|   | 459       | 39 | >75% Grass cover, Good, HSG A |
|   | 1,666     | 82 | Weighted Average              |
|   | 459       |    | 27.55% Pervious Area          |
|   | 1,207     |    | 72.45% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-1:**

Hydrograph





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Type III 24-hr 2-yr Storm Rainfall=3.17"

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**Summary for Subcatchment 2-2: Slab Drain**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af, Depth&gt; 2.75"

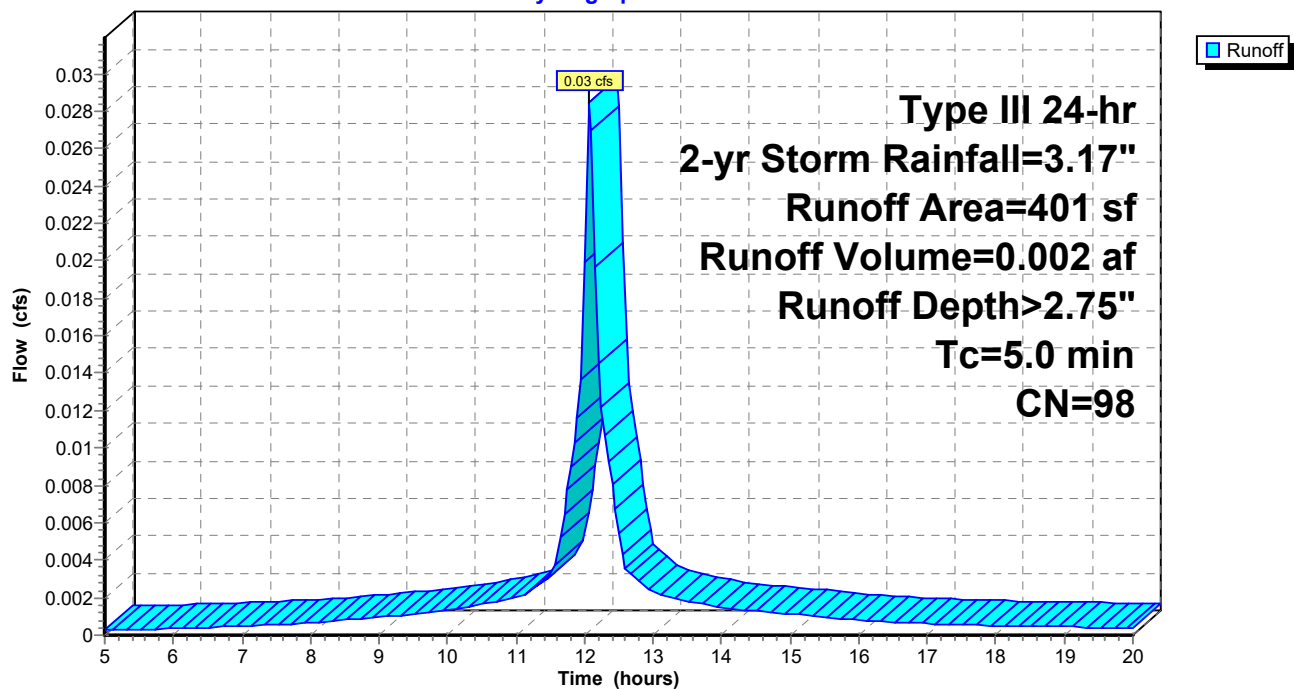
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.17"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 401       | 98 | Impervious              |
|   | 401       |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-2: Slab Drain**

Hydrograph



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Type III 24-hr 2-yr Storm Rainfall=3.17"

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**Summary for Subcatchment 2-3:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Depth&gt; 0.10"

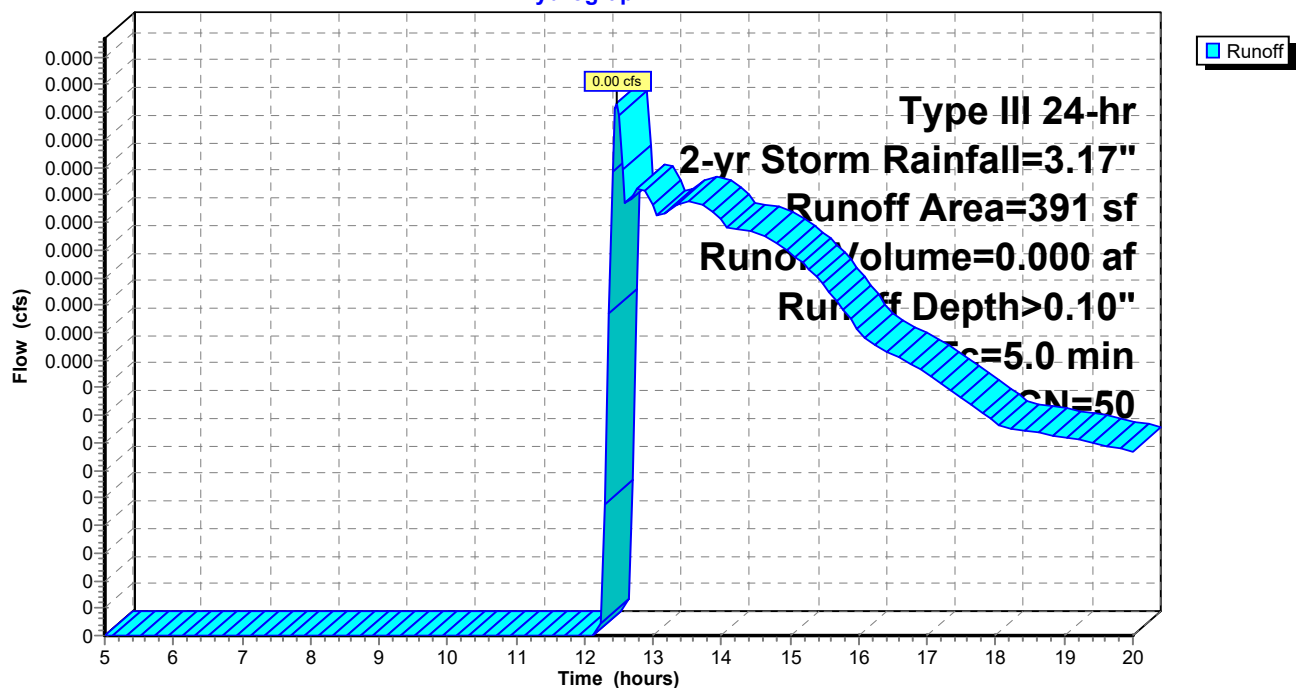
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 2-yr Storm Rainfall=3.17"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 71      | 98 | Impervious                    |
| 320       | 39 | >75% Grass cover, Good, HSG A |
| 391       | 50 | Weighted Average              |
| 320       |    | 81.84% Pervious Area          |
| 71        |    | 18.16% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2-3:**

Hydrograph



**21-285 Post**

Type III 24-hr 2-yr Storm Rainfall=3.17"

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**Summary for Pond RG: Rain Garden**

Inflow Area = 0.038 ac, 72.45% Impervious, Inflow Depth > 1.40" for 2-yr Storm event  
 Inflow = 0.07 cfs @ 12.08 hrs, Volume= 0.004 af  
 Outflow = 0.01 cfs @ 12.54 hrs, Volume= 0.004 af, Atten= 80%, Lag= 27.7 min  
 Discarded = 0.01 cfs @ 12.54 hrs, Volume= 0.004 af  
 Primary = 0.01 cfs @ 12.54 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 30.25' @ 12.54 hrs Surf.Area= 123 sf Storage= 83 cf

Plug-Flow detention time= 130.0 min calculated for 0.004 af (94% of inflow)

Center-of-Mass det. time= 107.9 min ( 906.1 - 798.2 )

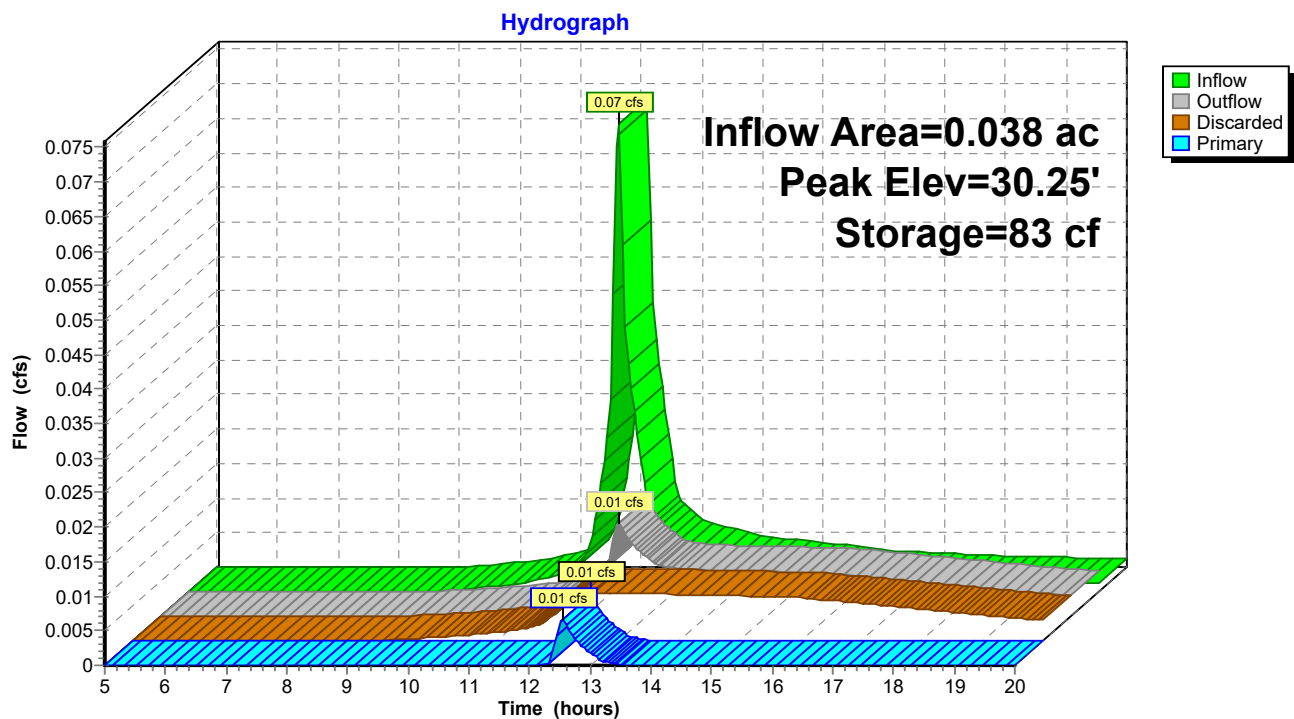
| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 29.02' | 116 cf        | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 29.02               | 0                    | 0                         | 0                         |
| 29.50               | 53                   | 13                        | 13                        |
| 30.00               | 112                  | 41                        | 54                        |
| 30.50               | 135                  | 62                        | 116                       |

| Device | Routing   | Invert | Outlet Devices                                                             |
|--------|-----------|--------|----------------------------------------------------------------------------|
| #1     | Discarded | 29.02' | <b>2.410 in/hr Exfiltration over Surface area</b>                          |
| #2     | Primary   | 30.20' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.01 cfs @ 12.54 hrs HW=30.25' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=0.01 cfs @ 12.54 hrs HW=30.25' (Free Discharge)↑ **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.73 fps)

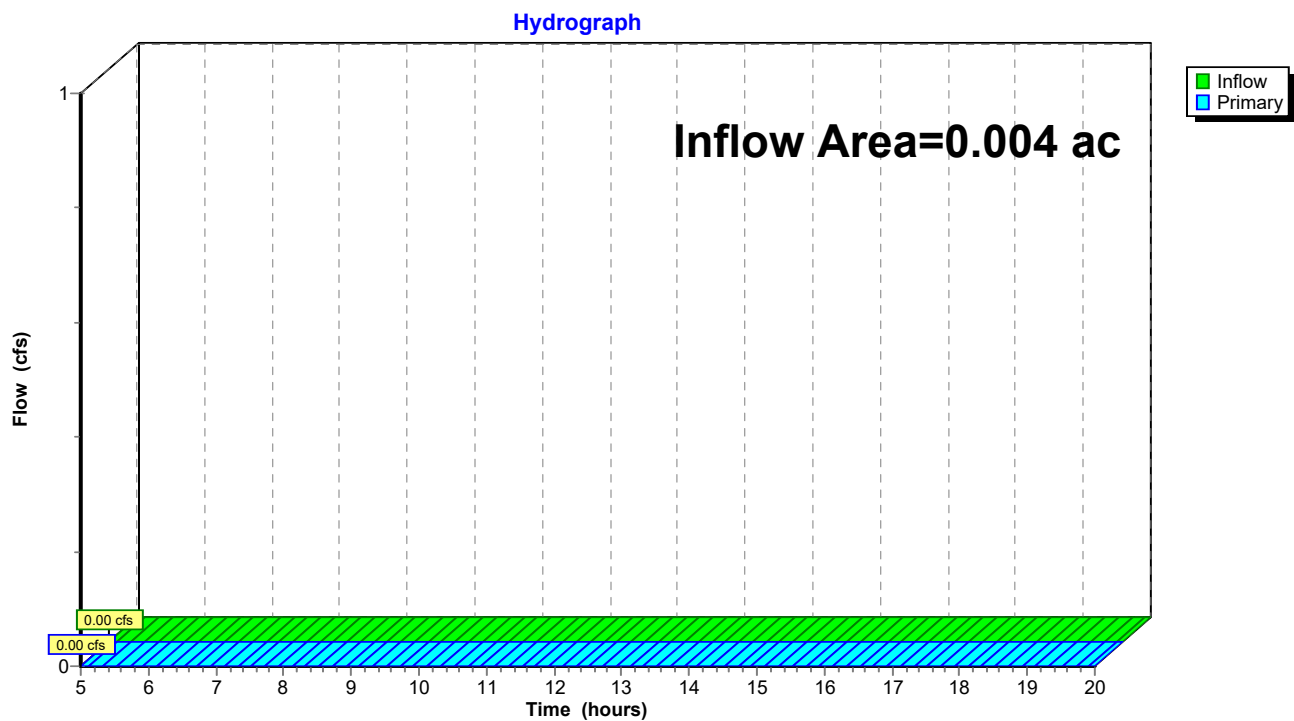
## Pond RG: Rain Garden



**Summary for Link AP1: Adjacent property**

Inflow Area = 0.004 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr Storm event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

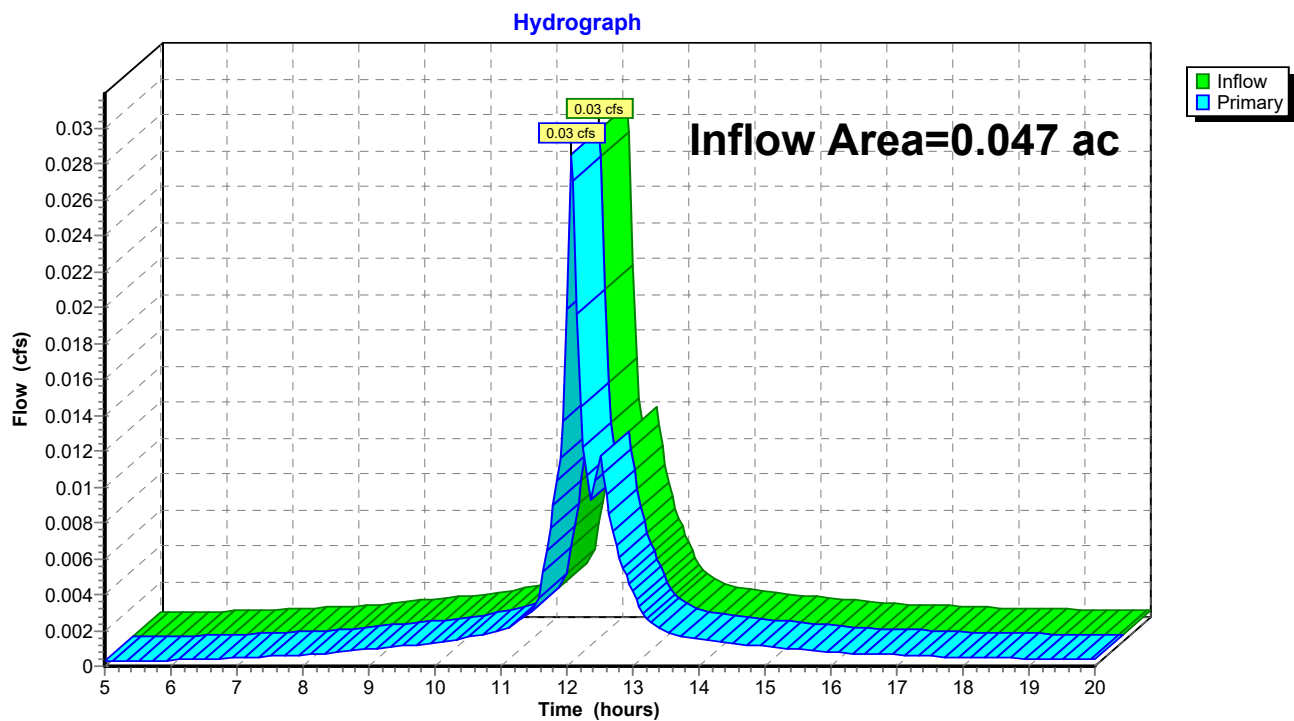
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent property**

**Summary for Link AP2: Street/Public System**

Inflow Area = 0.047 ac, 77.79% Impervious, Inflow Depth > 0.59" for 2-yr Storm event  
Inflow = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af  
Primary = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

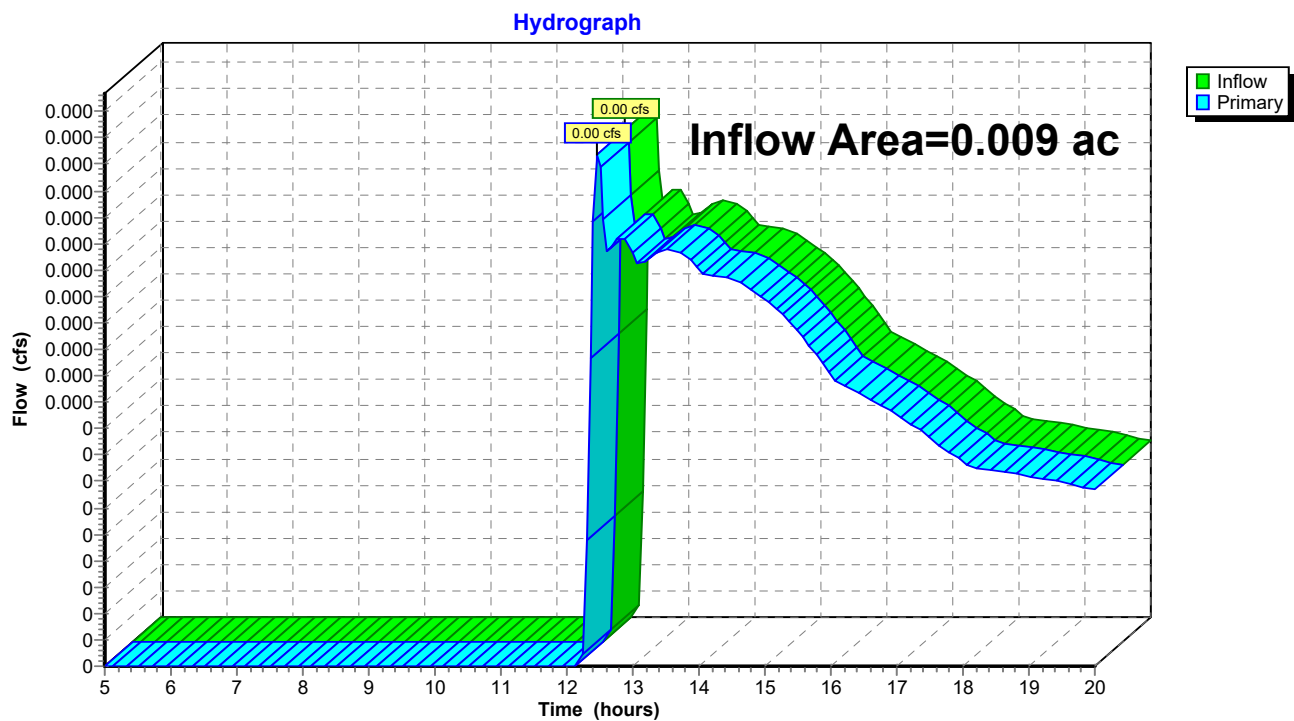
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP2: Street/Public System**

**Summary for Link AP3: Forest St CB**

Inflow Area = 0.009 ac, 18.16% Impervious, Inflow Depth > 0.10" for 2-yr Storm event  
Inflow = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP3: Forest St CB**

**21-285 Post***Type III 24-hr 10-yr Storm Rainfall=4.72"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1:** Runoff Area=167 sf 0.00% Impervious Runoff Depth>0.11"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment2-1:** Runoff Area=1,666 sf 72.45% Impervious Runoff Depth>2.65"  
Tc=5.0 min CN=82 Runoff=0.13 cfs 0.008 af

**Subcatchment2-2: Slab Drain** Runoff Area=401 sf 100.00% Impervious Runoff Depth>4.16"  
Tc=5.0 min CN=98 Runoff=0.04 cfs 0.003 af

**Subcatchment2-3:** Runoff Area=391 sf 18.16% Impervious Runoff Depth>0.50"  
Tc=5.0 min CN=50 Runoff=0.00 cfs 0.000 af

**Pond RG: Rain Garden** Peak Elev=30.38' Storage=100 cf Inflow=0.13 cfs 0.008 af  
Discarded=0.01 cfs 0.005 af Primary=0.09 cfs 0.003 af Outflow=0.10 cfs 0.008 af

**Link AP1: Adjacent property** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link AP2: Street/Public System** Inflow=0.12 cfs 0.006 af  
Primary=0.12 cfs 0.006 af

**Link AP3: Forest St CB** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.012 af Average Runoff Depth = 2.40"**  
**36.04% Pervious = 0.022 ac 63.96% Impervious = 0.039 ac**



**21-285 Post**

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Type III 24-hr 10-yr Storm Rainfall=4.72"

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**Summary for Subcatchment 1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.00 cfs @ 13.73 hrs, Volume= 0.000 af, Depth&gt; 0.11"

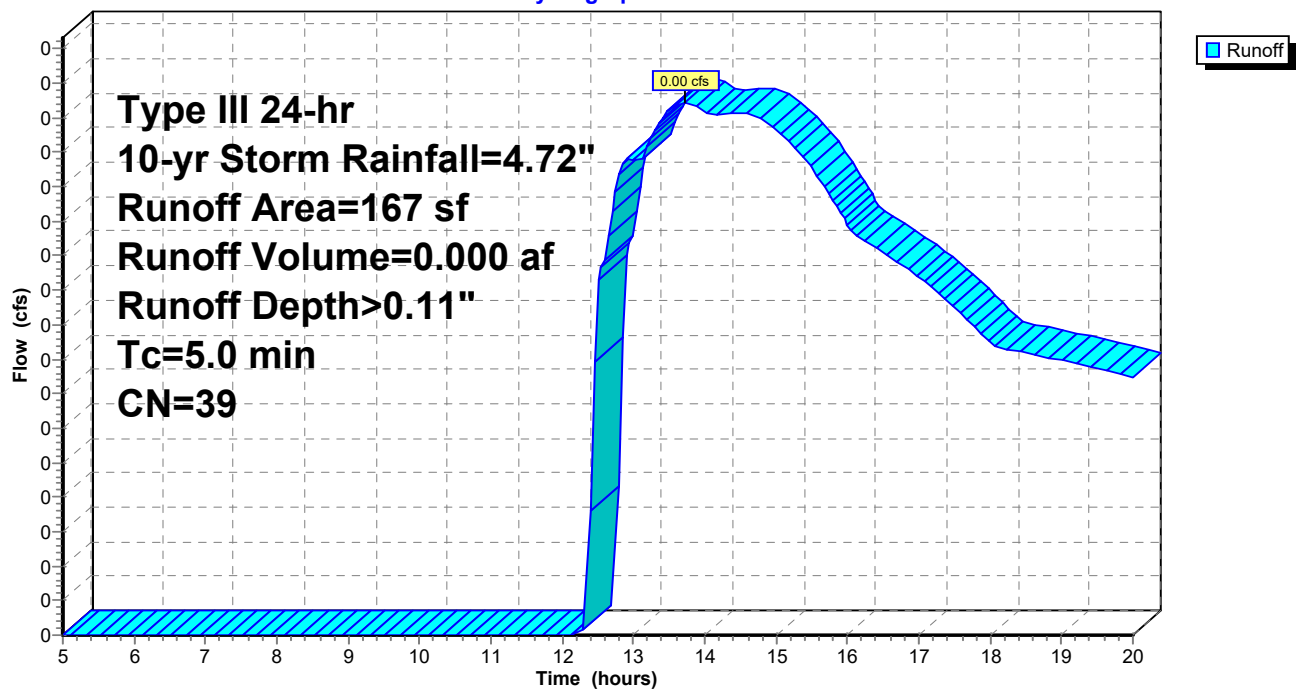
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.72"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 167       | 39 | >75% Grass cover, Good, HSG A |
| 167       |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 1:**

Hydrograph



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Type III 24-hr 10-yr Storm Rainfall=4.72"

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**Summary for Subcatchment 2-1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 0.008 af, Depth&gt; 2.65"

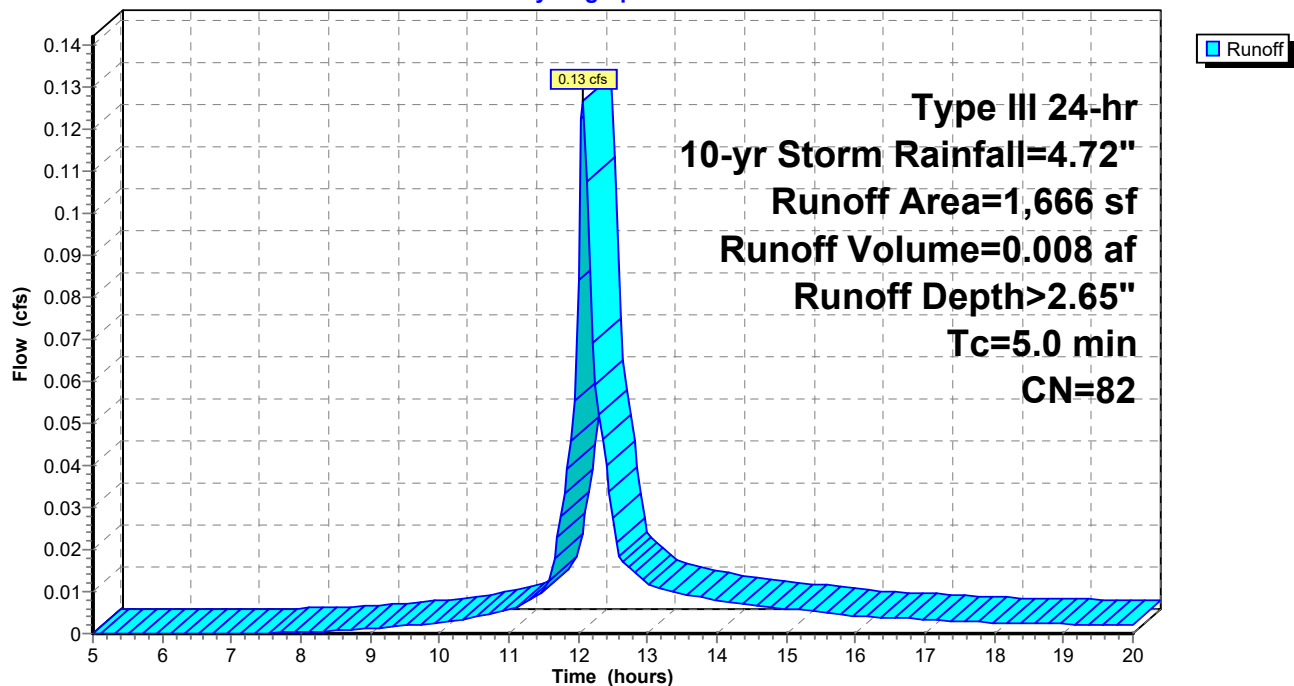
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.72"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 1,207     | 98 | Impervious                    |
|   | 459       | 39 | >75% Grass cover, Good, HSG A |
|   | 1,666     | 82 | Weighted Average              |
|   | 459       |    | 27.55% Pervious Area          |
|   | 1,207     |    | 72.45% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-1:**

Hydrograph



### Summary for Subcatchment 2-2: Slab Drain

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth> 4.16"

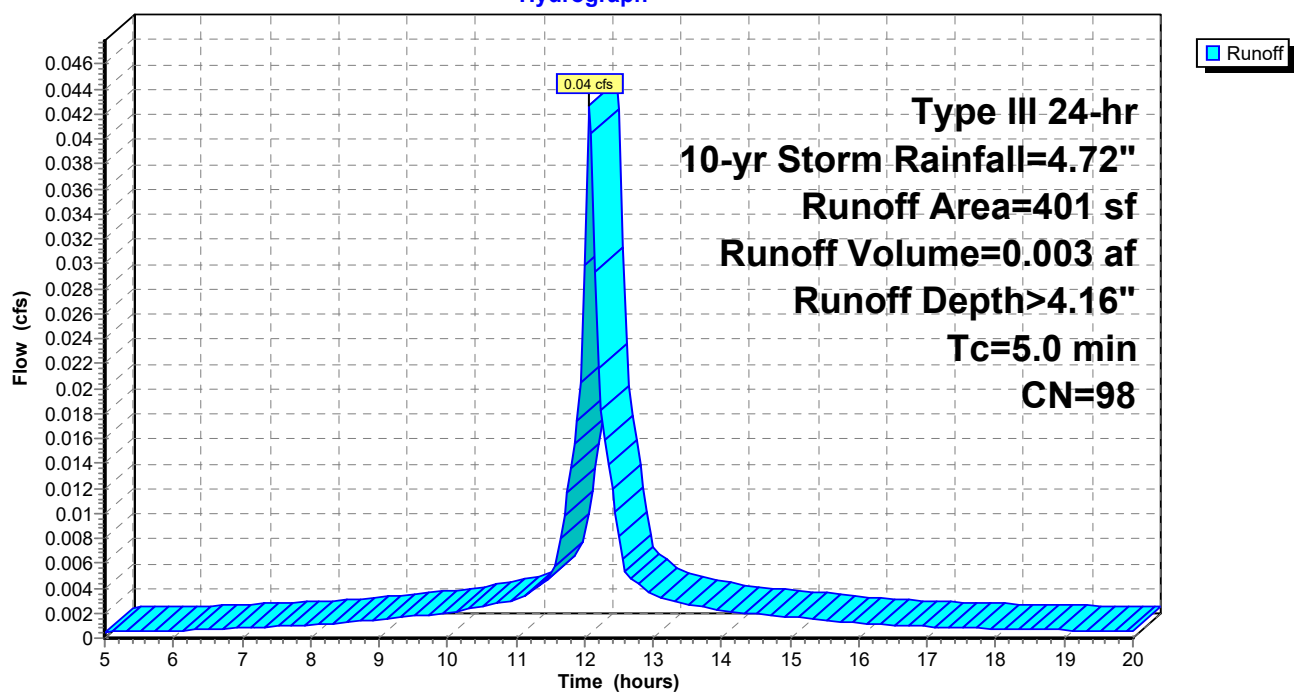
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.72"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 401       | 98 | Impervious              |
|   | 401       |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

### Subcatchment 2-2: Slab Drain

Hydrograph



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Type III 24-hr 10-yr Storm Rainfall=4.72"

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**Summary for Subcatchment 2-3:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.00 cfs @ 12.12 hrs, Volume= 0.000 af, Depth&gt; 0.50"

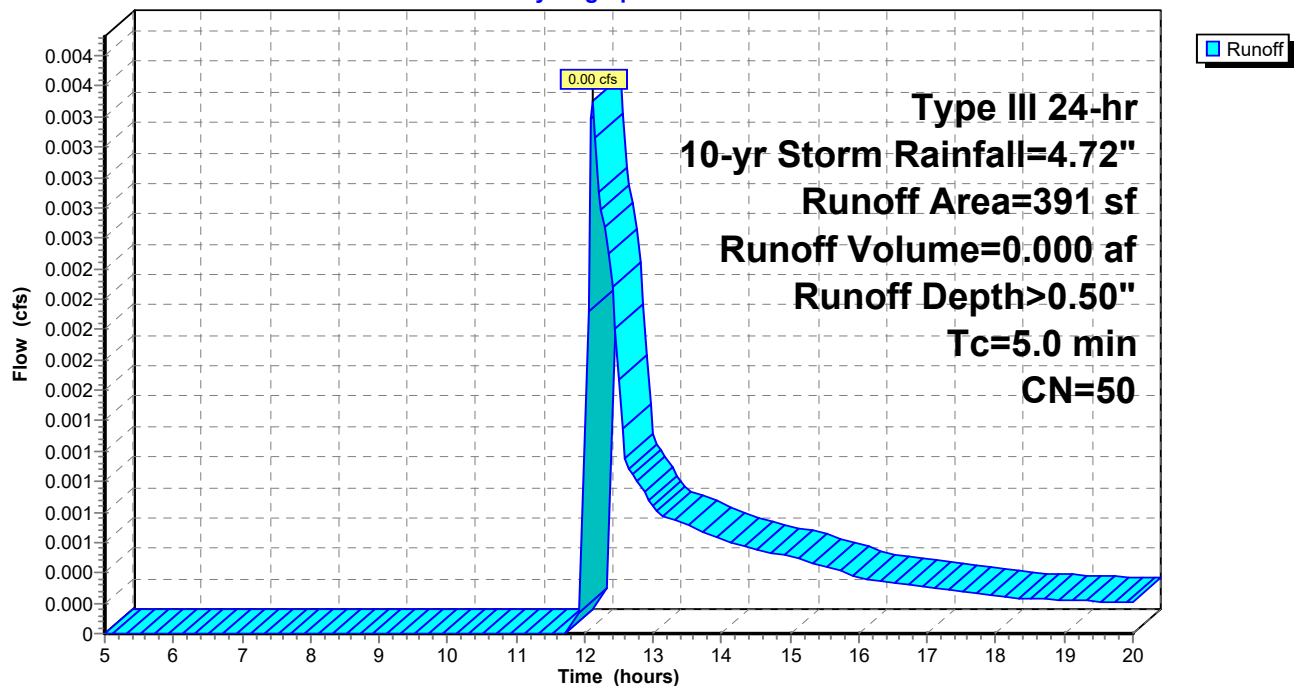
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 10-yr Storm Rainfall=4.72"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 71        | 98 | Impervious                    |
|   | 320       | 39 | >75% Grass cover, Good, HSG A |
|   | 391       | 50 | Weighted Average              |
|   | 320       |    | 81.84% Pervious Area          |
|   | 71        |    | 18.16% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2-3:**

Hydrograph



**21-285 Post**

Type III 24-hr 10-yr Storm Rainfall=4.72"

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**Summary for Pond RG: Rain Garden**

Inflow Area = 0.038 ac, 72.45% Impervious, Inflow Depth > 2.65" for 10-yr Storm event  
 Inflow = 0.13 cfs @ 12.08 hrs, Volume= 0.008 af  
 Outflow = 0.10 cfs @ 12.15 hrs, Volume= 0.008 af, Atten= 20%, Lag= 4.7 min  
 Discarded = 0.01 cfs @ 12.15 hrs, Volume= 0.005 af  
 Primary = 0.09 cfs @ 12.15 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 30.38' @ 12.15 hrs Surf.Area= 130 sf Storage= 100 cf

Plug-Flow detention time= 90.0 min calculated for 0.008 af (92% of inflow)  
 Center-of-Mass det. time= 63.5 min ( 847.2 - 783.7 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 29.02' | 116 cf        | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 29.02               | 0                    | 0                         | 0                         |
| 29.50               | 53                   | 13                        | 13                        |
| 30.00               | 112                  | 41                        | 54                        |
| 30.50               | 135                  | 62                        | 116                       |

| Device | Routing   | Invert | Outlet Devices                                                             |
|--------|-----------|--------|----------------------------------------------------------------------------|
| #1     | Discarded | 29.02' | <b>2.410 in/hr Exfiltration over Surface area</b>                          |
| #2     | Primary   | 30.20' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

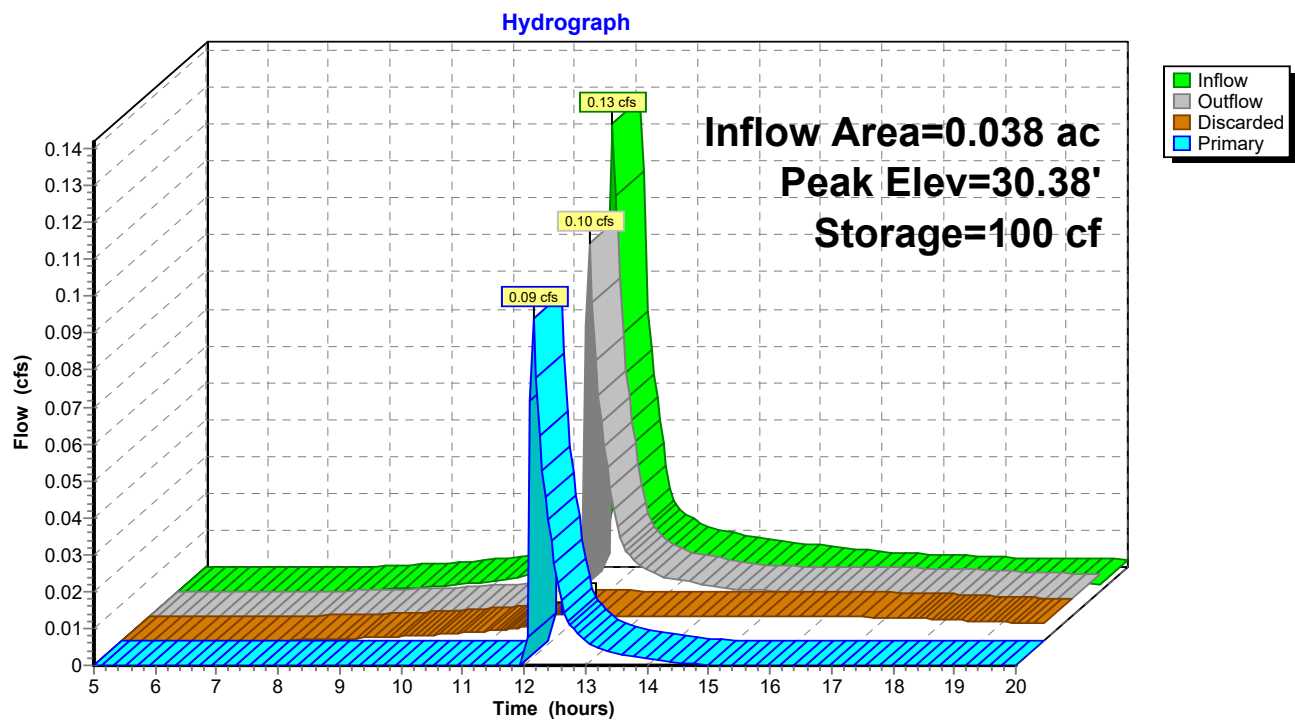
**Discarded OutFlow** Max=0.01 cfs @ 12.15 hrs HW=30.38' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.09 cfs @ 12.15 hrs HW=30.38' (Free Discharge)

↑ **2=Orifice/Grate** (Orifice Controls 0.09 cfs @ 1.45 fps)

## Pond RG: Rain Garden



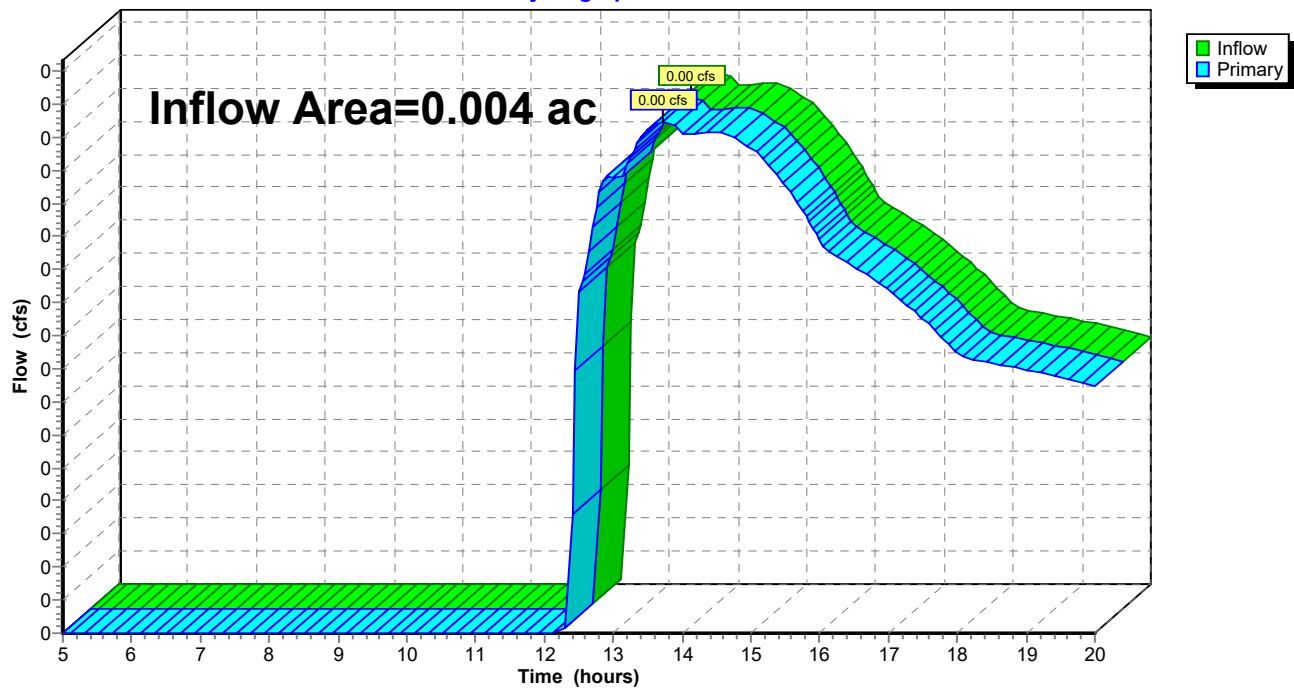
**Summary for Link AP1: Adjacent property**

Inflow Area = 0.004 ac, 0.00% Impervious, Inflow Depth > 0.11" for 10-yr Storm event  
Inflow = 0.00 cfs @ 13.73 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 13.73 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent property**

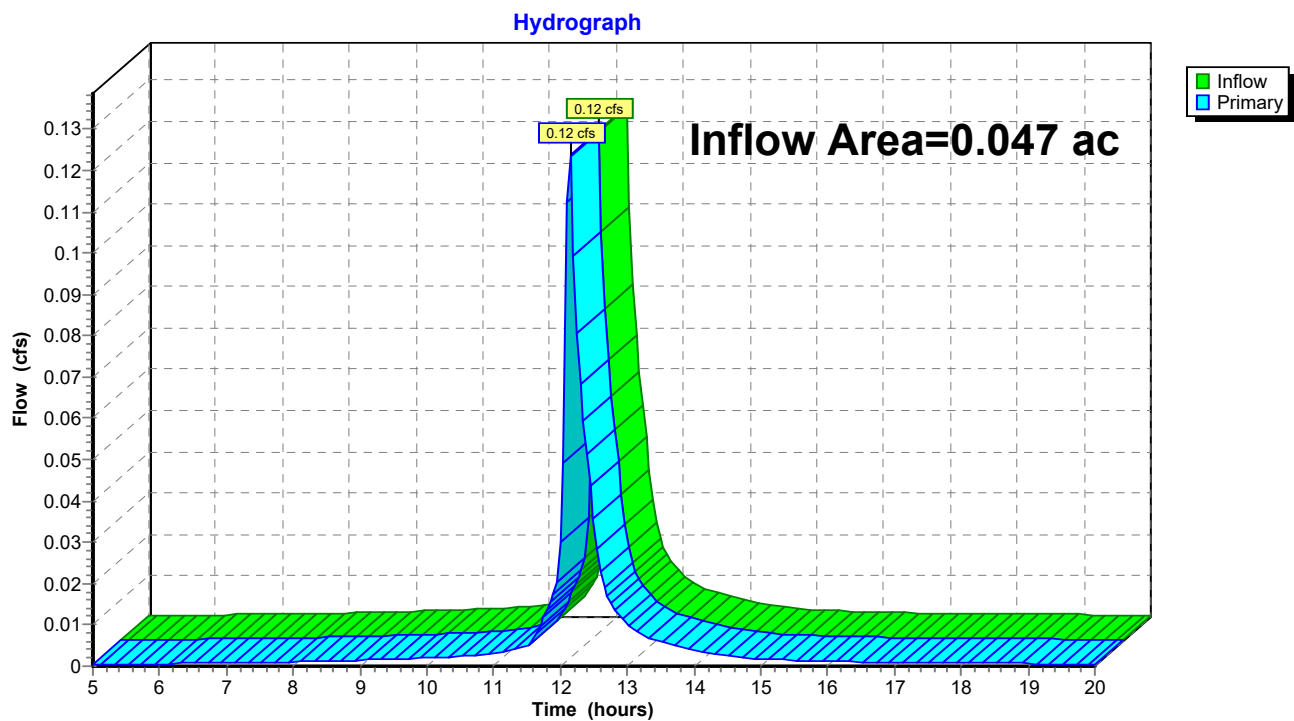
Hydrograph



**Summary for Link AP2: Street/Public System**

Inflow Area = 0.047 ac, 77.79% Impervious, Inflow Depth > 1.55" for 10-yr Storm event  
Inflow = 0.12 cfs @ 12.14 hrs, Volume= 0.006 af  
Primary = 0.12 cfs @ 12.14 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

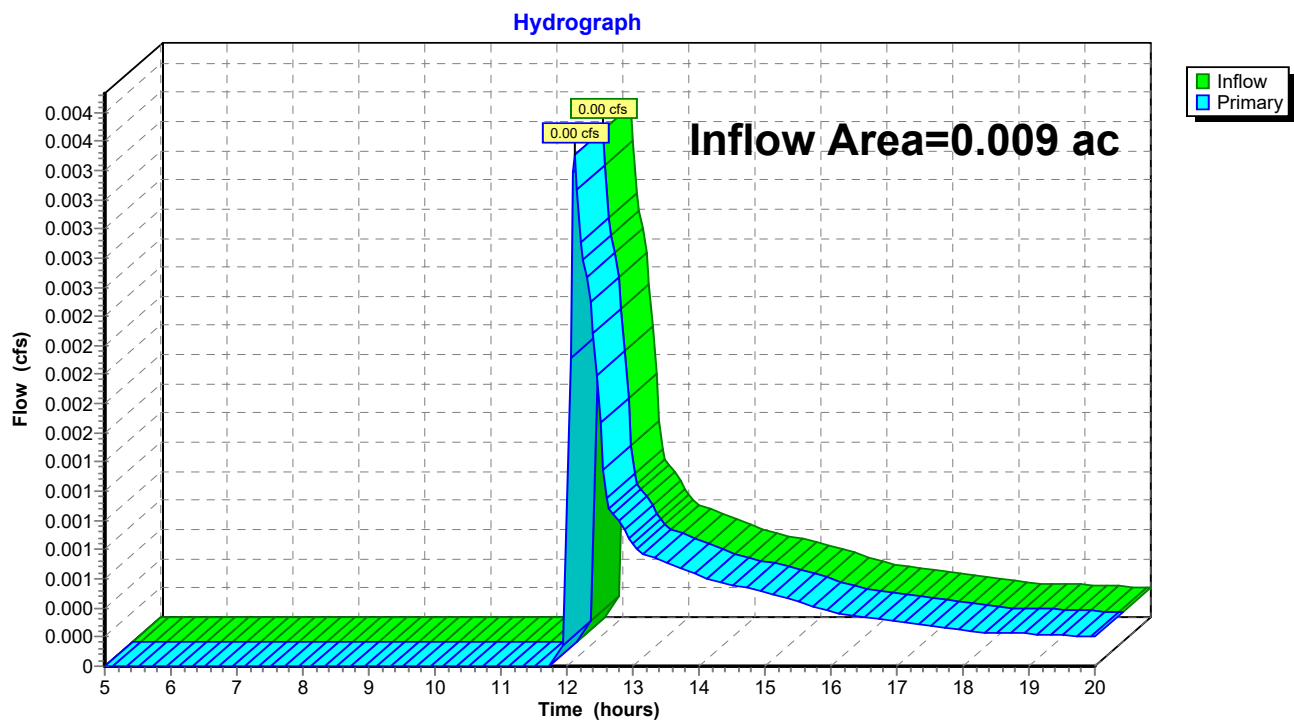
**Link AP2: Street/Public System**



**Summary for Link AP3: Forest St CB**

Inflow Area = 0.009 ac, 18.16% Impervious, Inflow Depth > 0.50" for 10-yr Storm event  
Inflow = 0.00 cfs @ 12.12 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 12.12 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP3: Forest St CB**

**21-285 Post***Type III 24-hr 25-yr Storm Rainfall=5.94"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1:** Runoff Area=167 sf 0.00% Impervious Runoff Depth>0.36"  
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment2-1:** Runoff Area=1,666 sf 72.45% Impervious Runoff Depth>3.69"  
Tc=5.0 min CN=82 Runoff=0.18 cfs 0.012 af

**Subcatchment2-2: Slab Drain** Runoff Area=401 sf 100.00% Impervious Runoff Depth>5.27"  
Tc=5.0 min CN=98 Runoff=0.05 cfs 0.004 af

**Subcatchment2-3:** Runoff Area=391 sf 18.16% Impervious Runoff Depth>0.99"  
Tc=5.0 min CN=50 Runoff=0.01 cfs 0.001 af

**Pond RG: Rain Garden** Peak Elev=30.44' Storage=108 cf Inflow=0.18 cfs 0.012 af  
Discarded=0.01 cfs 0.005 af Primary=0.16 cfs 0.006 af Outflow=0.16 cfs 0.011 af

**Link AP1: Adjacent property** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link AP2: Street/Public System** Inflow=0.21 cfs 0.010 af  
Primary=0.21 cfs 0.010 af

**Link AP3: Forest St CB** Inflow=0.01 cfs 0.001 af  
Primary=0.01 cfs 0.001 af

**Total Runoff Area = 0.060 ac Runoff Volume = 0.017 af Average Runoff Depth = 3.32"**  
**36.04% Pervious = 0.022 ac 63.96% Impervious = 0.039 ac**

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Type III 24-hr 25-yr Storm Rainfall=5.94"

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**Summary for Subcatchment 1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.00 cfs @ 12.33 hrs, Volume= 0.000 af, Depth&gt; 0.36"

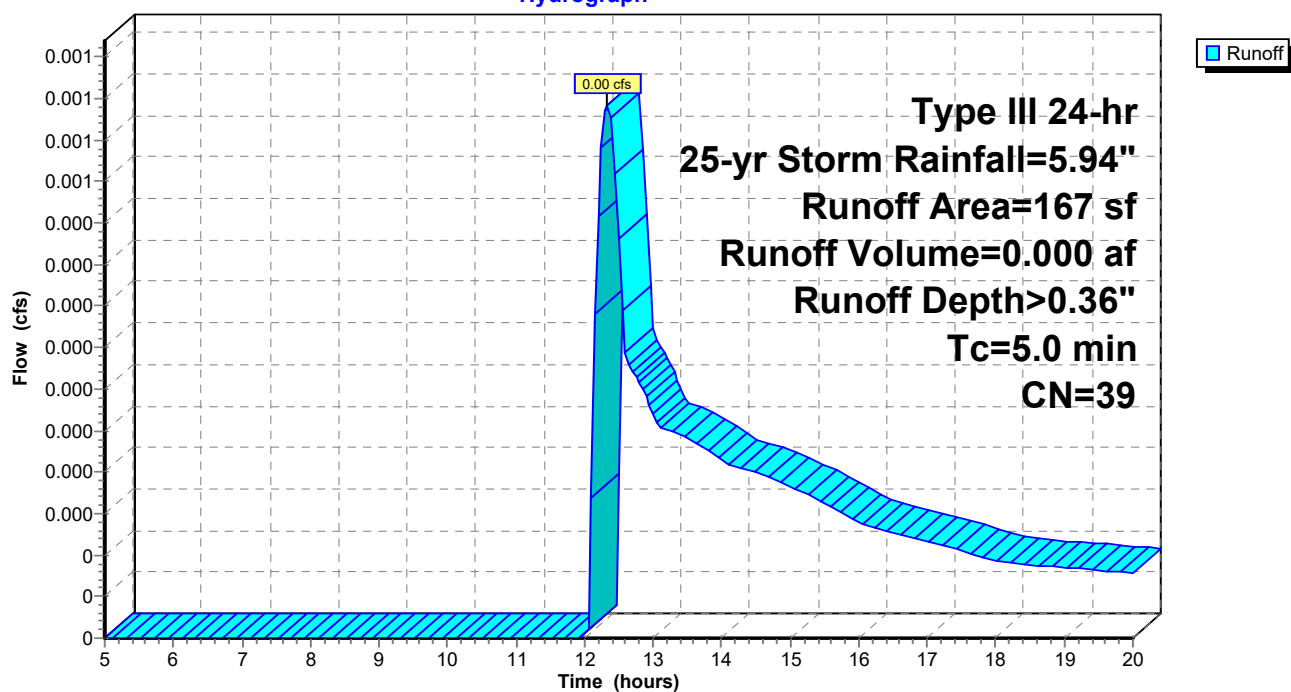
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 25-yr Storm Rainfall=5.94"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 167       | 39 | >75% Grass cover, Good, HSG A |
| 167       |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 1:**

Hydrograph



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Type III 24-hr 25-yr Storm Rainfall=5.94"

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**Summary for Subcatchment 2-1:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.012 af, Depth&gt; 3.69"

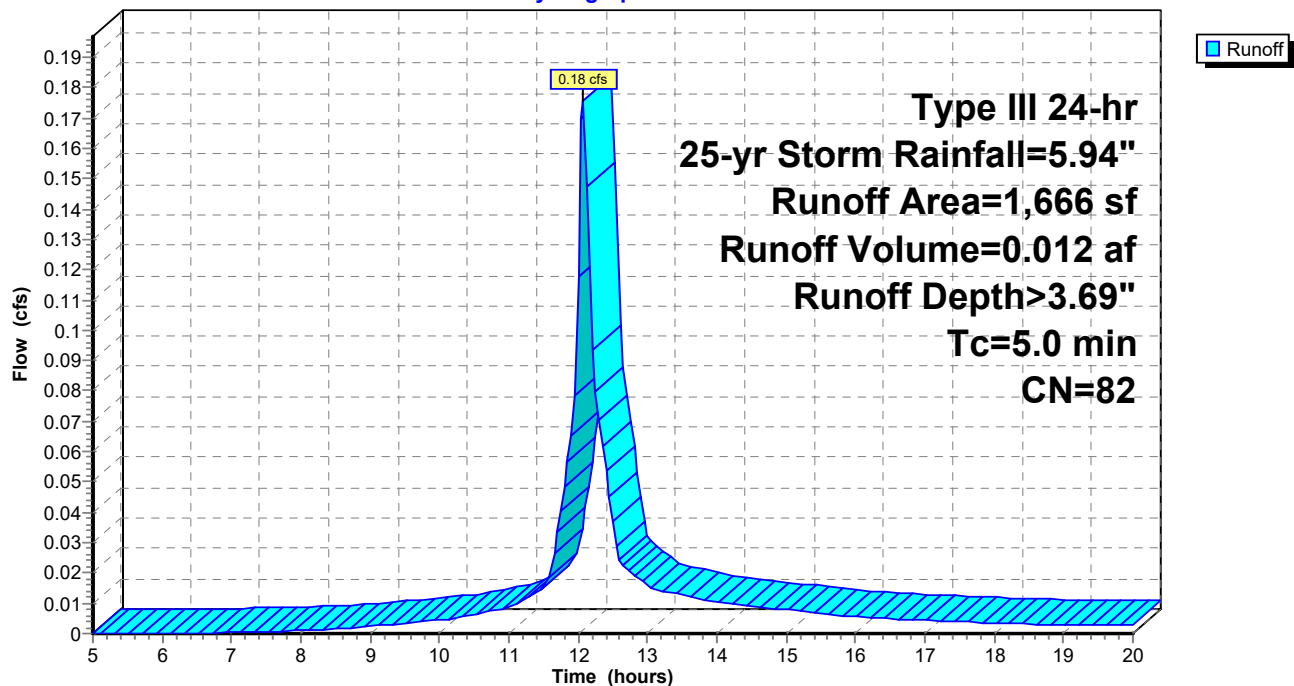
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 25-yr Storm Rainfall=5.94"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 1,207     | 98 | Impervious                    |
|   | 459       | 39 | >75% Grass cover, Good, HSG A |
|   | 1,666     | 82 | Weighted Average              |
|   | 459       |    | 27.55% Pervious Area          |
|   | 1,207     |    | 72.45% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-1:**

Hydrograph



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Type III 24-hr 25-yr Storm Rainfall=5.94"

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**Summary for Subcatchment 2-2: Slab Drain**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af, Depth&gt; 5.27"

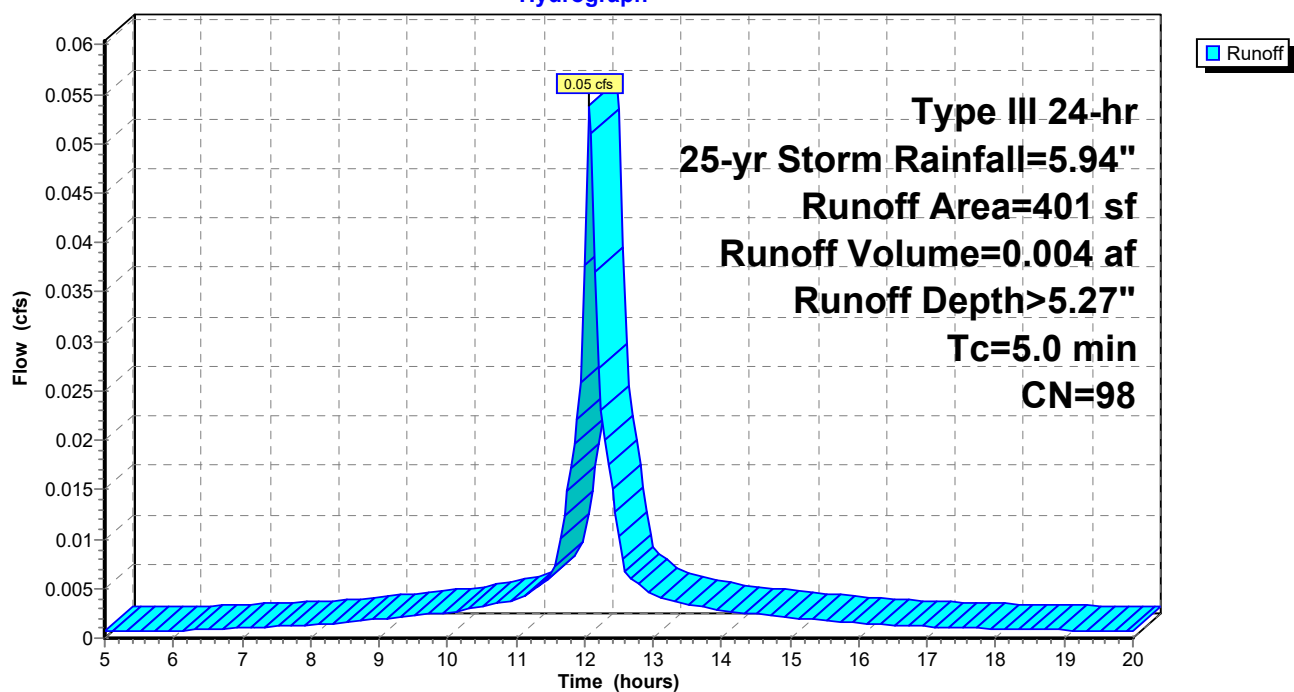
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 25-yr Storm Rainfall=5.94"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 401       | 98 | Impervious              |
|   | 401       |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-2: Slab Drain**

Hydrograph



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Type III 24-hr 25-yr Storm Rainfall=5.94"

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**Summary for Subcatchment 2-3:**[49] Hint:  $T_c < 2dt$  may require smaller  $dt$ 

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af, Depth&gt; 0.99"

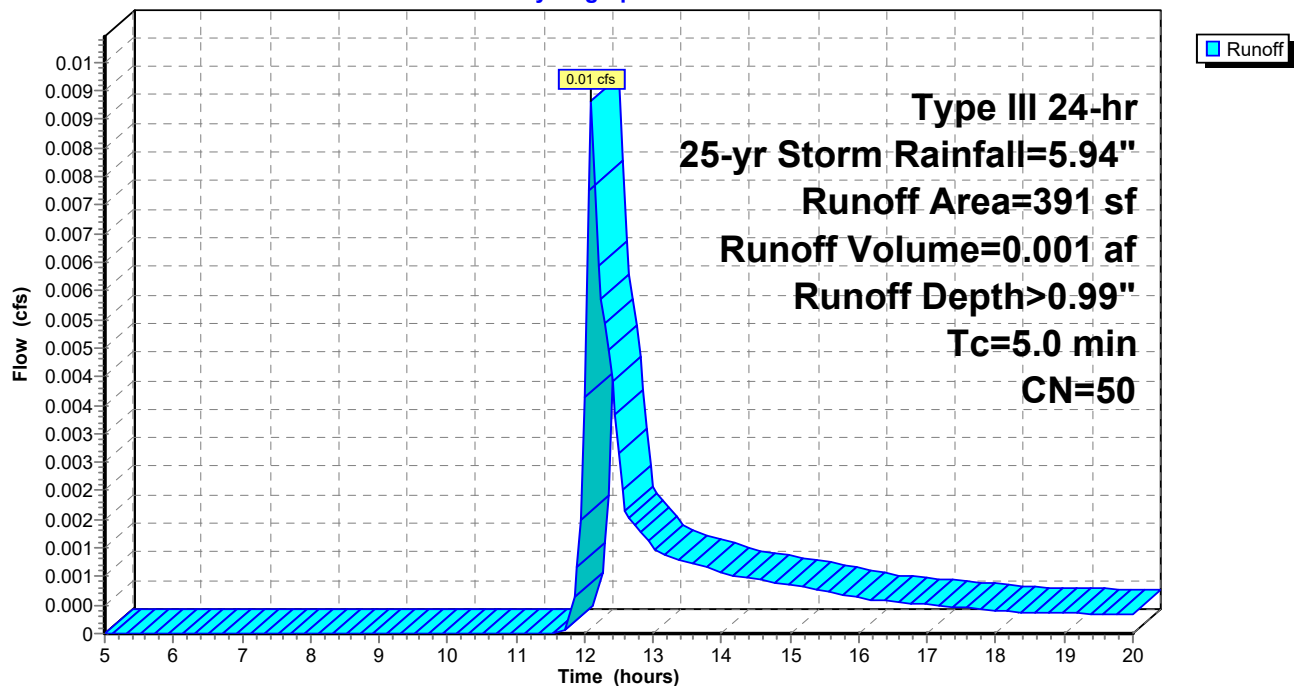
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs,  $dt=0.05$  hrs  
Type III 24-hr 25-yr Storm Rainfall=5.94"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 71        | 98 | Impervious                    |
|   | 320       | 39 | >75% Grass cover, Good, HSG A |
|   | 391       | 50 | Weighted Average              |
|   | 320       |    | 81.84% Pervious Area          |
|   | 71        |    | 18.16% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment 2-3:**

Hydrograph



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Type III 24-hr 25-yr Storm Rainfall=5.94"

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**Summary for Pond RG: Rain Garden**

Inflow Area = 0.038 ac, 72.45% Impervious, Inflow Depth > 3.69" for 25-yr Storm event  
 Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.012 af  
 Outflow = 0.16 cfs @ 12.11 hrs, Volume= 0.011 af, Atten= 6%, Lag= 2.2 min  
 Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.005 af  
 Primary = 0.16 cfs @ 12.11 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 30.44' @ 12.11 hrs Surf.Area= 132 sf Storage= 108 cf

Plug-Flow detention time= 72.3 min calculated for 0.011 af (92% of inflow)  
 Center-of-Mass det. time= 45.2 min ( 821.1 - 775.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 29.02' | 116 cf        | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 29.02               | 0                    | 0                         | 0                         |
| 29.50               | 53                   | 13                        | 13                        |
| 30.00               | 112                  | 41                        | 54                        |
| 30.50               | 135                  | 62                        | 116                       |

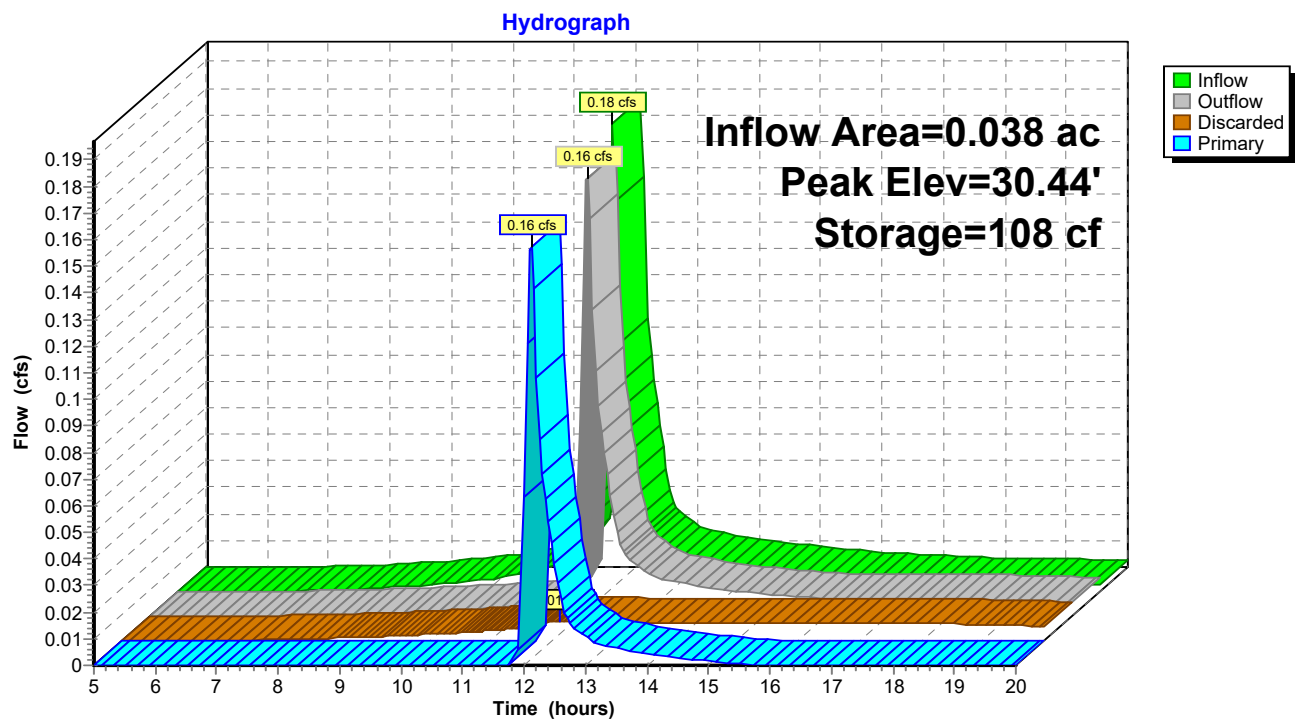
| Device | Routing   | Invert | Outlet Devices                                                             |
|--------|-----------|--------|----------------------------------------------------------------------------|
| #1     | Discarded | 29.02' | <b>2.410 in/hr Exfiltration over Surface area</b>                          |
| #2     | Primary   | 30.20' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.01 cfs @ 12.11 hrs HW=30.44' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.15 cfs @ 12.11 hrs HW=30.44' (Free Discharge)

↑ **2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.66 fps)

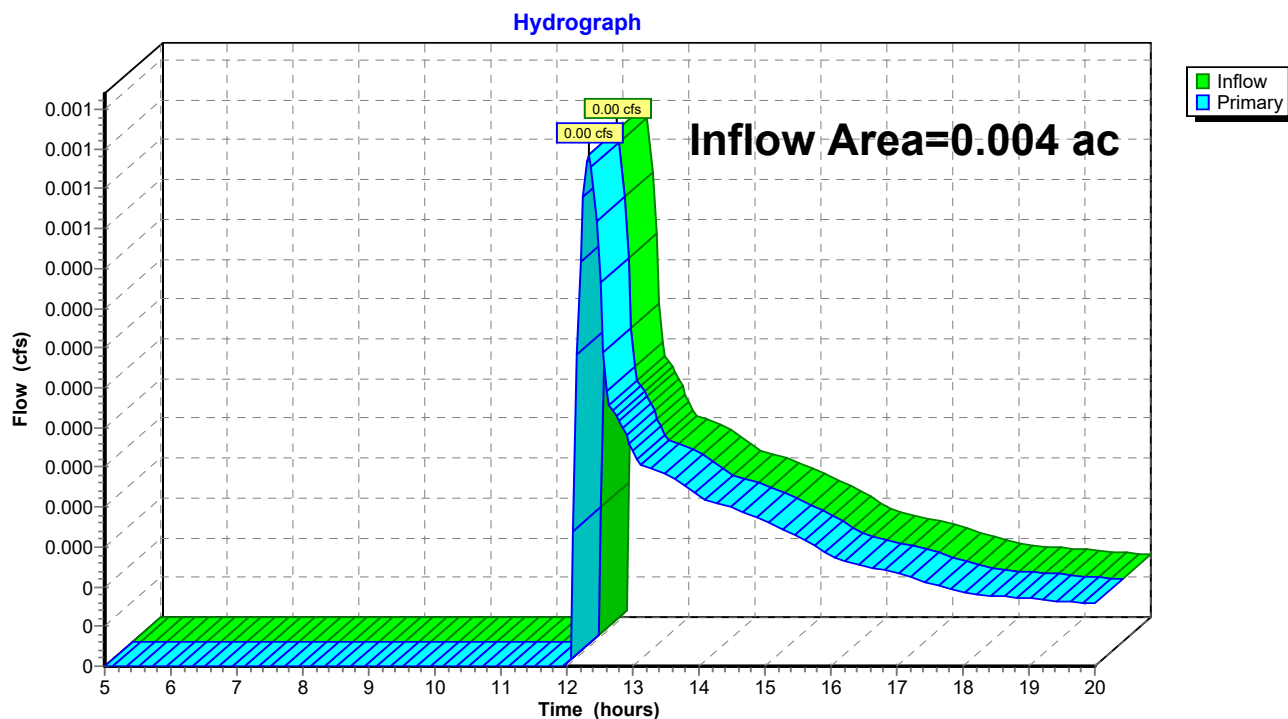
**Pond RG: Rain Garden**



**Summary for Link AP1: Adjacent property**

Inflow Area = 0.004 ac, 0.00% Impervious, Inflow Depth > 0.36" for 25-yr Storm event  
Inflow = 0.00 cfs @ 12.33 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 12.33 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

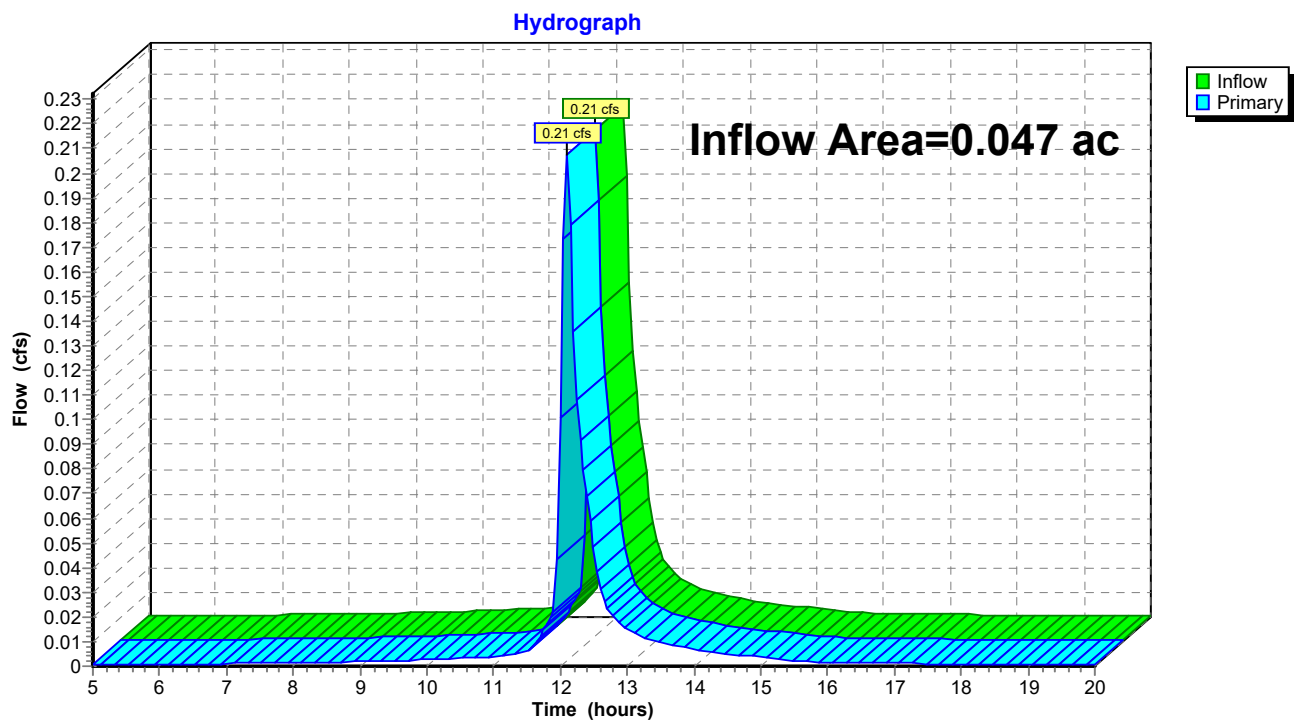
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP1: Adjacent property**

**Summary for Link AP2: Street/Public System**

Inflow Area = 0.047 ac, 77.79% Impervious, Inflow Depth > 2.42" for 25-yr Storm event  
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.010 af  
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

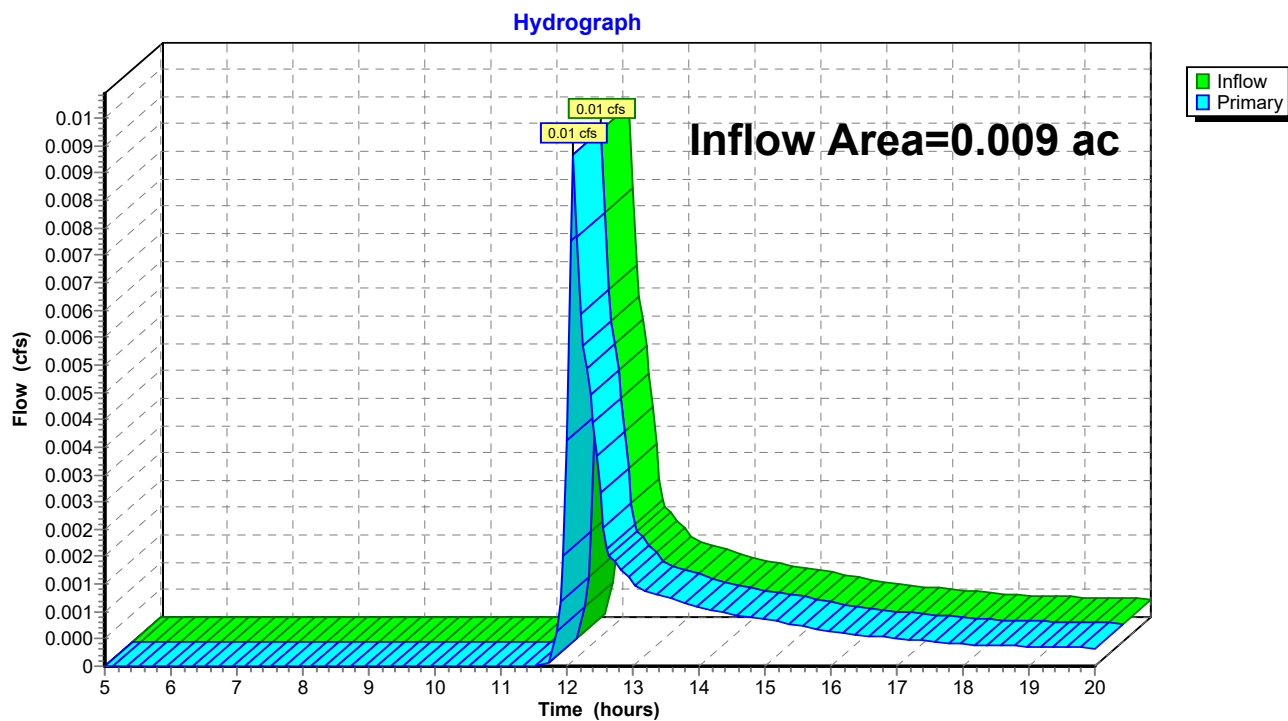
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP2: Street/Public System**

**Summary for Link AP3: Forest St CB**

Inflow Area = 0.009 ac, 18.16% Impervious, Inflow Depth > 0.99" for 25-yr Storm event  
Inflow = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af  
Primary = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Link AP3: Forest St CB**



## 4" ROUND DEEP DOWNLIGHT WILDLIFE FRIENDLY

### UNIVERSAL HOUSINGS WITH INTERCHANGEABLE TRIMS

Spectrum's Enduro 4" recessed round downlight series features a trim and variety of options for accent and general illumination.

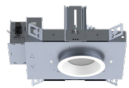
| LUMENS AND WATTAGE CHART |        |                            |                               |              |     |
|--------------------------|--------|----------------------------|-------------------------------|--------------|-----|
| PART NUMBER              | LUMENS | SOURCE LUMENS <sup>1</sup> | DELIVERED LUMENS <sup>2</sup> | SYSTEM WATTS | LPW |
| RDD4F                    | TA5L   | 500                        | 390                           | 16           | 25  |
| RDD4F                    | TD10L  | 1000                       | 803                           | 16           | 51  |

PROJECT:

TYPE:



### AVAILABLE HOUSING TYPES

**SR4MO** - New Construction

**SR4MR** - Remodel Construction


### FIXTURE HOUSING SPECIFICATION

| SERIES                            | LUMENS <sup>1</sup>                                            | DRIVER / DIMMING / VOLTAGE | OPTIONS                               | MOUNTING                                         |
|-----------------------------------|----------------------------------------------------------------|----------------------------|---------------------------------------|--------------------------------------------------|
| <b>SR4MO</b> New Construction     | <b>AMBER ONLY<sup>3</sup></b>                                  | <b>DO10</b> 1%, 0-10V      | <b>EB</b> Black Housing               | <b>H12<sup>6</sup></b> 12" - 24" Expandable Bars |
| <b>SR4MR</b> Remodel Construction | <b>TA5L</b> 500 Lm<br>Amber Only                               |                            | <b>PR<sup>5</sup></b> Consult Factory | <b>BH27</b> 27" Solid Bars                       |
|                                   | <b>DUAL CIRCUIT<sup>4</sup></b>                                | <b>DS2W</b> ELV/MLV, 120V  |                                       | <b>CB24</b> 24" C-Channel Bars                   |
|                                   | <b>TD10L</b> CIR 1 1000 Lm at 3000K<br>CIR 2 500 Lm Amber Only |                            |                                       |                                                  |

- Full Shielding.
- Die-cast aluminum trim with a wide variety of options.
- Deep regressed trim.
- Universal housing accepts all trim types, including N-Line trimless.
- 5 year warranty on fixture and electronics.
- Sustainable fixture.

### AVAILABLE TRIM / MODULE TYPES

RDD4F



### TRIM / MODULE SPECIFICATION

| TRIM                   | CCT                               | FINISH                             | FLANGE FINISH             | LENS <sup>9</sup>                               | OPTIONS                               |
|------------------------|-----------------------------------|------------------------------------|---------------------------|-------------------------------------------------|---------------------------------------|
| <b>RDD4F</b> Downlight | <b>AMBER ONLY<sup>3</sup></b>     | <b>MW<sup>7</sup></b> Matte White  | <b>WF</b> White Flange    | <b>SO<sup>10</sup></b> Micro Prism Solite™ Lens | <b>PR<sup>5</sup></b> Consult Factory |
|                        | <b>AMB</b> 500 Lm<br>Amber Only   | <b>MB</b> Matte Black              | <b>MF</b> Matching Flange | <b>GL</b> Clear Glass Lens                      |                                       |
|                        | <b>DUAL CIRCUIT<sup>4</sup></b>   | <b>PT</b> Platinum Silver          |                           | <b>FG</b> Frosted Glass Lens                    |                                       |
|                        | <b>30K</b> CIR 1 1000 Lm at 3000K | <b>BZ</b> Bronze                   |                           |                                                 |                                       |
|                        | CIR 2 500 Lm Amber Only           | <b>CH</b> Charcoal                 |                           |                                                 |                                       |
|                        |                                   | <b>OB</b> Oil Rubbed Bronze        |                           |                                                 |                                       |
|                        |                                   | <b>AS</b> Sapphire                 |                           |                                                 |                                       |
|                        |                                   | <b>AM</b> Malachite                |                           |                                                 |                                       |
|                        |                                   | <b>SN</b> Sun Gold                 |                           |                                                 |                                       |
|                        |                                   | <b>CO</b> Copper Metallic          |                           |                                                 |                                       |
|                        |                                   | <b>GH</b> Graphite                 |                           |                                                 |                                       |
|                        |                                   | <b>CC<sup>8</sup></b> Custom Color |                           |                                                 |                                       |

EXAMPLE: SR4MOTA5LDS2W1/H12/RDD4FAMBCHWFSO

EXAMPLE: SR4MOTD10LDS2W1/H12/RDD4F30KCHWFSO

**NOTES:**  
 1 Nominal Source Lumens 2 Nominal Delivered Lumens 3 Specify with TA Only 4 Specify with TD Only, TD/Dual Circuit Option Requires Dedicated on Site Controls by Others, Controls by Others Are Not to Allow Both Circuits to be Energized Simultaneously, Consult Factory for More Information 5 Contact Factory 6 Standard Bar Hangers 7 Standard Finish 8 Contact Factory for Special Finishes 9 Lens is Required 10 Standard Lens

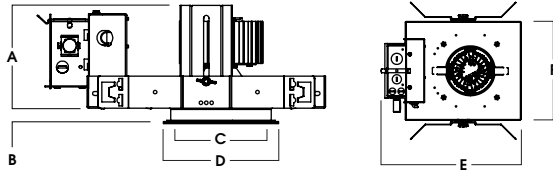
Dimensions and values shown are nominal. Spectrum Lighting continually works to improve products and reserves the right to make changes which may alter the performance or appearance of products.



## HOUSING DIMENSIONS

### SR4MO - NEW CONSTRUCTION

Non-IC rated, thermally protected frame-in kit for new construction. Non-IC designation requires insulation must be minimum of 3" from housing.



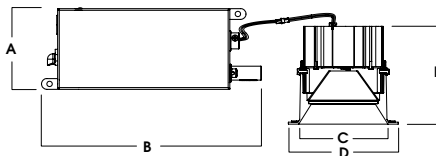
| A        | B       | C        | D        | E        | F        |
|----------|---------|----------|----------|----------|----------|
| 4.8      | .625    | 4.4      | 5.4      | 13.1     | 9.5      |
| 121.9 mm | 15.2 mm | 111.8 mm | 137.2 mm | 332.7 mm | 241.3 mm |

Fixture Weight: 7 lbs

Ceiling Cutout: Ø 5"

### SR4MR - REMODEL CONSTRUCTION

Non-IC rated frame-in kit for existing construction. Non-IC designation requires insulation must be minimum of 3" from housing.



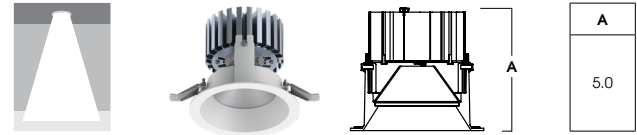
| A       | B        | C        | D        | E        |
|---------|----------|----------|----------|----------|
| 3.8     | 10.2     | 4.4      | 5.4      | 5.0      |
| 96.5 mm | 259.1 mm | 111.8 mm | 137.2 mm | 127.0 mm |

Fixture Weight: 5 lbs

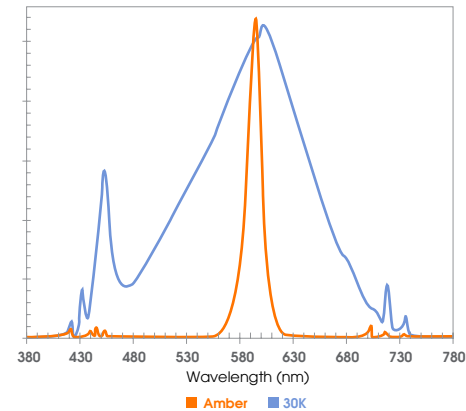
Ceiling Cutout: Ø 5"

## TRIM / MODULE DATA

### RDD4F - DOWNLIGHT MODULE



## SPECTRAL POWER DISTRIBUTION COMPARISON



## FEATURES

### FRAME-IN KIT

Precision Die-formed 20 gauge galvanized steel housing and integral junction box with (3) 5/8", (3) 7/8" and (2) 1 1/8" knockouts. Junction box capacity: 8 12AWG rated for 90 °C. Tool-less driver and junction box access for ease of maintenance. Post-loc trim retention springs for 5/8"-1" ceiling thickness.

### MOUNTING

A variety of mounting bars are available (excluding remodel). Ceiling materials must be rigid to support luminaire frame.

### TRIM

Self-flanged, one-piece, die-cast aluminum finished in a variety of powdercoat options. Designed for wet location. Specify finish and flange finish. For trimless options see N-Line.

### REMODEL

Features tethered power supply and junction box with sheathed wire.

### ELECTRONICS

Full shielding. Single circuit, amber only option is available. Amber LEDs are monochromatic, narrow spectral bandwidth that only emit long wavelengths >560 nm and <625 nm. Proprietary 2-circuit LED system: Circuit 1 is 3000K at 1000 lumens, Circuit 2 is Amber only at 500 lumens. 3000K white light is 3-step MacAdam Ellipse binning, with 80+ CRI.

### EMERGENCY

Contact Factory.

### COLOR VARIATION

Standard CRI (80) within 3-step MacAdam Ellipse.

### LISTINGS

ETL Certified to meet US and Canadian Standards. Manufactured and tested to UL standard No. 1598/8750. BAA compliant. Suitable for wet locations. International Dark-Sky Association approved fixture.

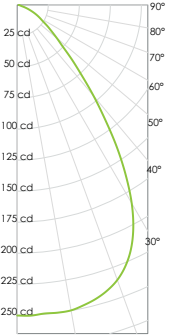
### WARRANTY

Fixtures, LEDs and drivers carry 5 year Spectrum warranty, as well as individual OEM warranty. Warranty is 5 years from date of manufacturing. LED system rated for operation in an ambient temperatures up to 25 °C.



# PHOTOMETRIC DATA - 4" ROUND DEEP DOWNLIGHT

SR4MOTA5 LE1 RDD4x AMB MWxSO

| CANDLEPOWER CURVE<br>TEST SP-00789_2                                                                                                                                                                              | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE |      |                     |                       | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                 |                |                 |                |                |       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|------|---------------------|-----------------------|--------------------------------------------------------------------------------------------------------|-----------------|----------------|-----------------|----------------|----------------|-------|--|
|                                                                                                                                  | 0.00°                              | 0° - 10°     | 24                                                                         | 6%   | Mounting Height AFF | FC at Center on Floor | Beam Diameter                                                                                          | FC at Beam Edge | Ceiling Height | Fixture Spacing | RCR 2          |                | RCR 4 |  |
|                                                                                                                                                                                                                   | 0.00° 250                          | 0° - 20°     | 93                                                                         | 24%  | 5.5 ' 8 fc          | 8.1 ' 4 fc            | 9' 6'                                                                                                  | 9' 6'           | 9' 6'          | 6'              | FC + W/Sq. Ft. | FC + W/Sq. Ft. |       |  |
|                                                                                                                                                                                                                   | 5.00° 250                          | 0° - 30°     | 194                                                                        | 50%  | 6.5 ' 6 fc          | 9.6 ' 3 fc            | 12' 8'                                                                                                 | 12' 8'          | 12' 8'         | 8'              | 6 0.37         | 11 0.54        |       |  |
|                                                                                                                                                                                                                   | 10.00° 250                         | 0° - 40°     | 285                                                                        | 73%  | 7.5 ' 4 fc          | 11.0 ' 2 fc           | 16' 12'                                                                                                | 16' 12'         | 16' 12'        | 12'             | 6 0.25         | 5 0.25         |       |  |
|                                                                                                                                                                                                                   | 15.00° 245                         | 0° - 60°     | 367                                                                        | 94%  | 8.5 ' 3 fc          | 12.5 ' 2 fc           |                                                                                                        |                 |                | 16'             | 2 0.09         | 3 0.12         |       |  |
|                                                                                                                                                                                                                   | 20.00° 236                         | 0° - 80°     | 388                                                                        | 100% | 10.0 ' 3 fc         | 14.7 ' 1 fc           |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 30.00° 184                         | 0° - 90°     | 390                                                                        | 100% | 12.0 ' 2 fc         | 17.6 ' 1 fc           |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 40.00° 96                          | Total        | 390                                                                        | 100% | 14.0 ' 1 fc         | 20.6 ' 1 fc           |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 50.00° 42                          |              |                                                                            |      | 16.0 ' 1 fc         | 23.5 ' 0 fc           |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 60.00° 21                          |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 70.00° 9                           |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 80.00° 2                           |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |
|                                                                                                                                                                                                                   | 90.00° 1                           |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |
| Delivered Illuminance Rating: (DIR) 24 FC per W/Sq. Ft. 20 FC per W/Sq. Ft.                                                                                                                                       |                                    |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |
| Recessed Mounting<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. -2.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. -2.5' x 2.50<br>Average Footcandles at 2.5' Above Floor |                                    |              |                                                                            |      |                     |                       |                                                                                                        |                 |                |                 |                |                |       |  |

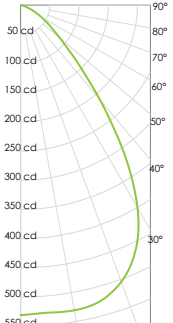
Delivered Lumens: 390  
Luminaire Watts: 15.8  
LER: 24.68

CP at 0deg (Nadir): 250  
CRI: N/A

Beam Angle: 74.9  
Spacing Ratio: 1.12

Lumen Multiplier: N/A  
CCT Multiplier: N/A

SR4MOTD 10LE1 RDD4x 30K MWxSO

| CANDLEPOWER CURVE<br>TEST SP-00790_2                                               | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE |      |                     |                       | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                 |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|------------------------------------------------------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|------|---------------------|-----------------------|--------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|------|---------------------|------|
|  | 0.00°                              | 0° - 10°     | 52                                                                         | 6%   | Mounting Height AFF | FC at Center on Floor | Beam Diameter                                                                                          | FC at Beam Edge | Ceiling Height                                                                                                                                                                                                      | Fixture Spacing | RCR 2               |      | RCR 4               |      |
|                                                                                    | 0.00° 531                          | 0° - 20°     | 199                                                                        | 25%  | 5.5'                | 18 fc                 | 8.2'                                                                                                   | 8 fc            | 9'                                                                                                                                                                                                                  | 6'              | 19                  | 0.38 | 23                  | 0.54 |
|                                                                                    | 5.00° 529                          | 0° - 30°     | 412                                                                        | 51%  | 6.5'                | 13 fc                 | 9.7'                                                                                                   | 6 fc            | 12'                                                                                                                                                                                                                 | 8'              | 13                  | 0.25 | 11                  | 0.25 |
|                                                                                    | 10.00° 531                         | 0° - 40°     | 604                                                                        | 75%  | 7.5'                | 9 fc                  | 11.2'                                                                                                  | 5 fc            | 16'                                                                                                                                                                                                                 | 12'             | 4                   | 0.09 | 5                   | 0.13 |
|                                                                                    | 15.00° 525                         | 0° - 60°     | 768                                                                        | 96%  | 8.5'                | 7 fc                  | 12.7'                                                                                                  | 4 fc            | Delivered Illuminance Rating: (DIR)                                                                                                                                                                                 |                 | 50 FC per W/Sq. Ft. |      | 42 FC per W/Sq. Ft. |      |
|                                                                                    | 20.00° 504                         | 0° - 80°     | 802                                                                        | 100% | 10.0'               | 5 fc                  | 15.0'                                                                                                  | 3 fc            | Recessed Mounting<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. -2.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. -2.5' x 2.50<br>* Average Footcandles at 2.5' Above Floor |                 |                     |      |                     |      |
|                                                                                    | 30.00° 400                         | 0° - 90°     | 803                                                                        | 100% | 12.0'               | 4 fc                  | 18.0'                                                                                                  | 2 fc            |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 40.00° 211                         | Total        | 803                                                                        | 100% | 14.0'               | 3 fc                  | 21.0'                                                                                                  | 1 fc            |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 50.00° 89                          |              |                                                                            |      | 16.0'               | 2 fc                  | 24.0'                                                                                                  | 1 fc            |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 60.00° 41                          |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 70.00° 14                          |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 80.00° 3                           |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |      |                     |      |
|                                                                                    | 90.00° 1                           |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |      |                     |      |

Delivered Lumens: 803  
Luminaire Watts: 15.9  
LER: 50.50

CP at 0deg (Nadir): 531  
CRI: 80

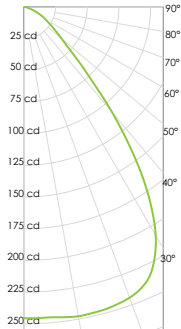
Beam Angle: 74.34  
Spacing Ratio: 1.13

Lumen Multiplier: only 10K available  
CCT Multiplier: only 30K available



# PHOTOMETRIC DATA - 4" ROUND DEEP DOWNLIGHT

SR4MOTA5 LE1 RDD4x AMB MWxGL

| CANDLEPOWER CURVE<br>TEST SP-00789_1                                              | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                     |                       |               |                 |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|-----------------------------------------------------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------|-----------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|-----------|---------------------|-----------|--|
|  | 0.00°                              | 0° - 10°     | 24                                                                         | 6%                                                                                                     | Mounting Height AFF | FC at Center on Floor | Beam Diameter | FC at Beam Edge | Ceiling Height                                                                                                                                                                                                    | Fixture Spacing | RCR 2               |           | RCR 4               |           |  |
|                                                                                   | 0.00° 246                          | 0° - 20°     | 94                                                                         | 24%                                                                                                    | 5.5' - 8 fc         | 8.8' - 4 fc           | 5.5' - 8 fc   | 8.8' - 4 fc     | 9'                                                                                                                                                                                                                | 6'              | FC *                | W/Sq. Ft. | FC *                | W/Sq. Ft. |  |
|                                                                                   | 5.00° 246                          | 0° - 30°     | 200                                                                        | 51%                                                                                                    | 6.5' - 6 fc         | 10.4' - 3 fc          | 6.5' - 6 fc   | 10.4' - 3 fc    | 12'                                                                                                                                                                                                               | 8'              | 6                   | 0.25      | 5                   | 0.25      |  |
|                                                                                   | 10.00° 248                         | 0° - 40°     | 300                                                                        | 76%                                                                                                    | 7.5' - 4 fc         | 11.9' - 2 fc          | 7.5' - 4 fc   | 11.9' - 2 fc    | 16'                                                                                                                                                                                                               | 12'             | 2                   | 0.09      | 3                   | 0.12      |  |
|                                                                                   | 15.00° 247                         | 0° - 60°     | 375                                                                        | 95%                                                                                                    | 8.5' - 3 fc         | 13.5' - 2 fc          | 8.5' - 3 fc   | 13.5' - 2 fc    | Delivered Illuminance Rating: (DIR)                                                                                                                                                                               |                 | 25 FC per W/Sq. Ft. |           | 21 FC per W/Sq. Ft. |           |  |
|                                                                                   | 20.00° 244                         | 0° - 80°     | 394                                                                        | 100%                                                                                                   | 10.0' - 2 fc        | 15.9' - 1 fc          | 10.0' - 2 fc  | 15.9' - 1 fc    |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 30.00° 208                         | 0° - 90°     | 396                                                                        | 100%                                                                                                   | 12.0' - 2 fc        | 19.1' - 1 fc          | 12.0' - 2 fc  | 19.1' - 1 fc    | Recessed Mounting<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. -2.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. -2.5' x 2.50<br>Average Footcandles at 2.5' Above Floor |                 |                     |           |                     |           |  |
|                                                                                   | 40.00° 108                         | Total        | 396                                                                        | 100%                                                                                                   | 14.0' - 1 fc        | 22.3' - 1 fc          | 14.0' - 1 fc  | 22.3' - 1 fc    |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 50.00° 39                          |              |                                                                            |                                                                                                        | 16.0' - 1 fc        | 25.5' - 0 fc          | 16.0' - 1 fc  | 25.5' - 0 fc    |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 60.00° 20                          |              |                                                                            |                                                                                                        |                     |                       |               |                 |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 70.00° 9                           |              |                                                                            |                                                                                                        |                     |                       |               |                 |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 80.00° 3                           |              |                                                                            |                                                                                                        |                     |                       |               |                 |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |
|                                                                                   | 90.00° 1                           |              |                                                                            |                                                                                                        |                     |                       |               |                 |                                                                                                                                                                                                                   |                 |                     |           |                     |           |  |

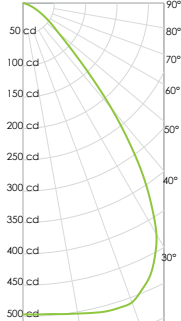
Delivered Lumens: **396**  
Luminaire Watts: **15.8**  
LER: **25.06**

CP at 0deg (Nadir): **246**  
CRI: **N/A**

Beam Angle: **77.08**  
Spacing Ratio: **1.21**

Lumen Multiplier: **N/A**  
CCT Multiplier: **N/A**

SR4MOTD 10LE1 RDD4x 30K MWxGL

| CANDLEPOWER CURVE<br>TEST SP-00790_1                                               | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE |      |                     |                       | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                 |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|------------------------------------------------------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|------|---------------------|-----------------------|--------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|-----------|---------------------|-----------|--|
|  | 0.00°                              | 0° - 10°     | 48                                                                         | 6%   | Mounting Height AFF | FC at Center on Floor | Beam Diameter                                                                                          | FC at Beam Edge | Ceiling Height                                                                                                                                                                                                      | Fixture Spacing | RCR 2               |           | RCR 4               |           |  |
|                                                                                    | 5.00°                              | 0° - 20°     | 192                                                                        | 24%  | 5.5' - 16 fc        | 8.7' - 8 fc           | 5.5' - 16 fc                                                                                           | 8.7' - 8 fc     | 9'                                                                                                                                                                                                                  | 6'              | FC +                | W/Sq. Ft. | FC +                | W/Sq. Ft. |  |
|                                                                                    | 10.00°                             | 0° - 30°     | 410                                                                        | 52%  | 6.5' - 12 fc        | 10.3' - 6 fc          | 6.5' - 12 fc                                                                                           | 10.3' - 6 fc    | 12'                                                                                                                                                                                                                 | 8'              | 12                  | 0.25      | 10                  | 0.25      |  |
|                                                                                    | 15.00°                             | 0° - 40°     | 613                                                                        | 78%  | 7.5' - 9 fc         | 11.9' - 4 fc          | 7.5' - 9 fc                                                                                            | 11.9' - 4 fc    | 16'                                                                                                                                                                                                                 | 12'             | 4                   | 0.09      | 5                   | 0.13      |  |
|                                                                                    | 20.00°                             | 0° - 60°     | 760                                                                        | 96%  | 8.5' - 7 fc         | 13.5' - 3 fc          | 8.5' - 7 fc                                                                                            | 13.5' - 3 fc    | Delivered Illuminance Rating: (DIR)                                                                                                                                                                                 |                 | 49 FC per W/Sq. Ft. |           | 41 FC per W/Sq. Ft. |           |  |
|                                                                                    | 30.00°                             | 0° - 80°     | 788                                                                        | 100% | 10.0' - 5 fc        | 15.9' - 2 fc          | 10.0' - 5 fc                                                                                           | 15.9' - 2 fc    |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|                                                                                    | 40.00°                             | 0° - 90°     | 790                                                                        | 100% | 12.0' - 3 fc        | 19.0' - 2 fc          | 12.0' - 3 fc                                                                                           | 19.0' - 2 fc    | Recessed Mounting<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. -2.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. -2.5' x 2.50<br>* Average Footcandles at 2.5' Above Floor |                 |                     |           |                     |           |  |
|                                                                                    | 50.00°                             | Total        | 790                                                                        | 100% | 14.0' - 3 fc        | 22.2' - 1 fc          | 14.0' - 3 fc                                                                                           | 22.2' - 1 fc    |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|                                                                                    | 60.00°                             |              |                                                                            |      | 16.0' - 2 fc        | 25.4' - 1 fc          | 16.0' - 2 fc                                                                                           | 25.4' - 1 fc    |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|                                                                                    | 70.00°                             |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|                                                                                    | 80.00°                             |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |
|                                                                                    | 90.00°                             |              |                                                                            |      |                     |                       |                                                                                                        |                 |                                                                                                                                                                                                                     |                 |                     |           |                     |           |  |

Delivered Lumens: **790**  
Luminaire Watts: **15.9**  
LER: **49.69**

CP at 0deg (Nadir): **496**  
CRI: **80**

Beam Angle: **76.84**  
Spacing Ratio: **1.21**

Lumen Multiplier: **only 10L available**  
CCT Multiplier: **only 30K available**



# PHOTOMETRIC DATA - 4" ROUND DEEP DOWNLIGHT

SR4MOTA 5LE1 RDD4x AMB MWxFG

| CANDLEPOWER CURVE<br>TEST SP-00789 | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                     |                       |               |                                     |                     |                 |                     |           |       |           |
|------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------|-----------------------|---------------|-------------------------------------|---------------------|-----------------|---------------------|-----------|-------|-----------|
|                                    | 0.00°                              | 0° - 10°     | 21                                                                         | 6%                                                                                                     | Mounting Height AFF | FC at Center on Floor | Beam Diameter | FC at Beam Edge                     | Ceiling Height      | Fixture Spacing | RCR 2               |           | RCR 4 |           |
|                                    | 0.00° 215                          | 0° - 20°     | 78                                                                         | 24%                                                                                                    | 5.5' - 7' 9"        | 7 fc                  | 7.9'          | 3 fc                                | 9'                  | 6'              | FC *                | W/Sq. Ft. | FC *  | W/Sq. Ft. |
|                                    | 5.00° 213                          | 0° - 30°     | 157                                                                        | 48%                                                                                                    | 6.5' - 5 fc         | 9.3'                  | 2 fc          | 12'                                 | 8'                  | 5               | 0.25                | 4         | 0.25  |           |
|                                    | 10.00° 209                         | 0° - 40°     | 229                                                                        | 70%                                                                                                    | 7.5' - 4 fc         | 10.7'                 | 2 fc          | 16'                                 | 12'                 | 3               | 0.12                | 2         | 0.12  |           |
|                                    | 15.00° 202                         | 0° - 60°     | 305                                                                        | 93%                                                                                                    | 8.5' - 3 fc         | 12.1'                 | 1 fc          | Delivered Illuminance Rating: (DIR) | 20 FC per W/Sq. Ft. |                 | 17 FC per W/Sq. Ft. |           |       |           |
|                                    | 20.00° 190                         | 0° - 80°     | 325                                                                        | 99%                                                                                                    | 10.0' - 2 fc        | 14.3'                 | 1 fc          |                                     |                     |                 |                     |           |       |           |
|                                    | 30.00° 145                         | 0° - 90°     | 326                                                                        | 100%                                                                                                   | 12.0' - 1 fc        | 17.1'                 | 1 fc          |                                     |                     |                 |                     |           |       |           |
|                                    | 40.00° 82                          | Total        | 326                                                                        | 100%                                                                                                   | 14.0' - 1 fc        | 20.0'                 | 1 fc          |                                     |                     |                 |                     |           |       |           |
|                                    | 50.00° 41                          |              |                                                                            |                                                                                                        | 16.0' - 1 fc        | 22.8'                 | 0 fc          |                                     |                     |                 |                     |           |       |           |
|                                    | 60.00° 21                          |              |                                                                            |                                                                                                        |                     |                       |               |                                     |                     |                 |                     |           |       |           |
|                                    | 70.00° 8                           |              |                                                                            |                                                                                                        |                     |                       |               |                                     |                     |                 |                     |           |       |           |
|                                    | 80.00° 2                           |              |                                                                            |                                                                                                        |                     |                       |               |                                     |                     |                 |                     |           |       |           |
|                                    | 90.00° 1                           |              |                                                                            |                                                                                                        |                     |                       |               |                                     |                     |                 |                     |           |       |           |

Delivered Lumens: 326

Luminaire Watts: 15.8

LER: 20.63

CP at 0deg (Nadir): 215

CRI: N/A, Amber Light

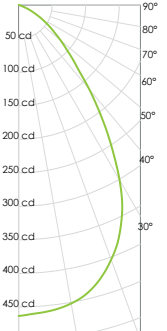
Beam Angle: 73.17

Spacing Ratio: 1.06

Lumen Multiplier: N/A

CCT Multiplier: N/A

SR4MOTD 10LE1 RDD4x 30K MWxFG

| CANDLEPOWER CURVE<br>TEST SP-00790                                                 | INTENSITY<br>CANDELA<br>0° AZIMUTH | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                           |                             |                  |                                           |                     |                    |                     |    |       |  |
|------------------------------------------------------------------------------------|------------------------------------|--------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------|------------------|-------------------------------------------|---------------------|--------------------|---------------------|----|-------|--|
|  | 0.00°                              | 0° - 10°     | 44                                                                         | 6%                                                                                                     | Mounting<br>Height<br>AFF | FC at<br>Center<br>on Floor | Beam<br>Diameter | FC at<br>Beam<br>Edge                     | Ceiling<br>Height   | Fixture<br>Spacing | RCR 2               |    | RCR 4 |  |
|                                                                                    | 0.00° 463                          | 0° - 20°     | 168                                                                        | 24%                                                                                                    | 5.5' - 15 fc              | 7.6'                        | 7 fc             | 9' - 6'                                   | 6'                  | 16                 | 0.38                | 19 | 0.54  |  |
|                                                                                    | 5.00° 459                          | 0° - 30°     | 338                                                                        | 49%                                                                                                    | 6.5' - 11 fc              | 8.9'                        | 5 fc             | 12' - 8'                                  | 8'                  | 11                 | 0.25                | 9  | 0.25  |  |
|                                                                                    | 10.00° 452                         | 0° - 40°     | 493                                                                        | 72%                                                                                                    | 7.5' - 8 fc               | 10.3'                       | 4 fc             | 16' - 12'                                 | 12'                 | 5                  | 0.13                | 4  | 0.13  |  |
|                                                                                    | 15.00° 434                         | 0° - 60°     | 651                                                                        | 95%                                                                                                    | 8.5' - 6 fc               | 11.7'                       | 3 fc             | Delivered<br>Illuminance<br>Rating: (DIR) | 42 FC per W/Sq. Ft. |                    | 35 FC per W/Sq. Ft. |    |       |  |
|                                                                                    | 20.00° 404                         | 0° - 80°     | 685                                                                        | 100%                                                                                                   | 10.0' - 5 fc              | 13.8'                       | 2 fc             |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 30.00° 301                         | 0° - 90°     | 687                                                                        | 100%                                                                                                   | 12.0' - 3 fc              | 16.5'                       | 2 fc             |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 40.00° 164                         | Total        | 687                                                                        | 100%                                                                                                   | 14.0' - 2 fc              | 19.3'                       | 1 fc             |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 50.00° 82                          |              |                                                                            |                                                                                                        | 16.0' - 2 fc              | 22.0'                       | 1 fc             |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 60.00° 38                          |              |                                                                            |                                                                                                        |                           |                             |                  |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 70.00° 10                          |              |                                                                            |                                                                                                        |                           |                             |                  |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 80.00° 2                           |              |                                                                            |                                                                                                        |                           |                             |                  |                                           |                     |                    |                     |    |       |  |
|                                                                                    | 90.00° 1                           |              |                                                                            |                                                                                                        |                           |                             |                  |                                           |                     |                    |                     |    |       |  |

Delivered Lumens: 687

Luminaire Watts: 15.9

LER: 43.21

CP at 0deg (Nadir): 463

CRI: 80

Beam Angle: 72.69

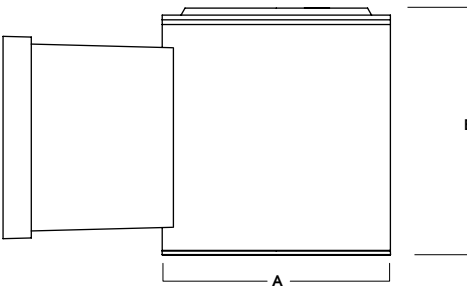
Spacing Ratio: 1.04

Lumen Multiplier: only 10L available

CCT Multiplier: only 30K available







| A               | B               |
|-----------------|-----------------|
| 6.1<br>154.9 mm | 6.6<br>167.6 mm |

## 6" ROUND DIRECT WILDLIFE FRIENDLY



### CW0606 - WALL MOUNT

#### APPLICATION

6" round x 6" high cylinder luminaire for general illumination. Meets Florida Fish and Wildlife Conservation Commission's Certified Wildlife Lighting. International Dark-Sky Association approved fixture.

#### FEATURES

Full shielding and option for Static Amber 560 NM or Dual Circuit 3000K 560 NM. Rugged design with a variety of options. Two stage optical system design delivers smooth general illumination.

#### FINISH

Durable powder-coat paint over aluminum fixture to resist corrosion.

#### ELECTRONICS

Single circuit, amber only option is available. Amber LEDs are monochromatic, narrow spectral bandwidth that only emit long wavelengths >560 nm and <625 nm. Proprietary 2-circuit LED system: Circuit 1 is 3000K at 1000 lumens, Circuit 2 is Amber only at 500 lumens. 3000K white light is 3-step MacAdam Ellipse binning, with 80+ CRI.

#### CONSTRUCTION

Extruded seamless aluminum fixture housing. Stainless steel hardware with galvanized steel brackets to resist corrosion. One piece reflector trim and finished to specification.

#### CODE COMPLIANCE

BAA compliant. ETL certified to meet US and Canadian standards. Suitable for wet locations. Manufactured and tested to UL standards No. 1598/8750.

| LUMENS / WATTAGE DATA |                            |                               |              |     |
|-----------------------|----------------------------|-------------------------------|--------------|-----|
| PART NUMBER           | SOURCE LUMENS <sup>1</sup> | DELIVERED LUMENS <sup>2</sup> | SYSTEM WATTS | LPW |
| CW0606TA5L            | 500                        | 305                           | 15           | 20  |
| CW0606TD10L           | 1000                       | 801                           | 16           | 50  |

| SERIES                    | LUMENS <sup>1</sup>                                         | CCT         | DRIVER / DIMMING <sup>4</sup> |                                         | TRIM           | MOUNTING                                                           | FINISH <sup>5</sup> |                      |                                 |
|---------------------------|-------------------------------------------------------------|-------------|-------------------------------|-----------------------------------------|----------------|--------------------------------------------------------------------|---------------------|----------------------|---------------------------------|
| CW0606                    | AMBER ONLY                                                  |             | DX<br>DS2W1                   | 1%, 0-10V, 120V/277V<br>ELV / MLV, 120V | LENS           |                                                                    | WALL MOUNT          |                      |                                 |
|                           | TA5L 500 Lm<br>Amber Only                                   | AMB >560 NM |                               |                                         | SO<br>GL<br>FG | Micro Prism Solite™ Lens<br>Clear Glass Lens<br>Frosted Glass Lens | WM                  | Wall Mount Extension | MW <sup>6</sup> Matte White     |
|                           |                                                             |             |                               |                                         |                |                                                                    |                     |                      | MB <sup>6</sup> Matte Black     |
|                           |                                                             |             |                               |                                         |                |                                                                    |                     |                      | PT <sup>6</sup> Platinum Silver |
|                           |                                                             |             |                               |                                         |                | CC Custom Color                                                    |                     |                      |                                 |
| DUAL CIRCUIT <sup>3</sup> |                                                             |             |                               |                                         |                |                                                                    |                     |                      |                                 |
| TD10L                     | CIR 1 1000 Lm<br>at 3000K<br><br>CIR 2 500 Lm<br>Amber Only | 30K         | 3000K                         |                                         |                | See Page 6<br>for Full Range of<br>Color Options<br>(83-90165)     |                     |                      |                                 |

EXAMPLE: CW0606TA5LAMBDX/GL/WM/MW

EXAMPLE: CW0606TD10L30KDX/GL/WM/MW

#### NOTES:

1 Nominal Source Lumens 2 Nominal Delivered Lumens at DX GL MW 3 TD/Dual Circuit Option Requires Dedicated on Site Controls by Others, Controls by Others Are Not to Allow Both Circuits to be Energized Simultaneously, Consult Factory for More Information 4 Contact Factory for Additional Options 5 See Color Page for More Options/Consult Factory for Special Finishes 6 Standard Finishes



PROJECT: \_\_\_\_\_  
TYPE: \_\_\_\_\_



Dimensions and values shown are nominal. Spectrum Lighting continually works to improve products and reserves the right to make changes which may alter the performance or appearance of products.

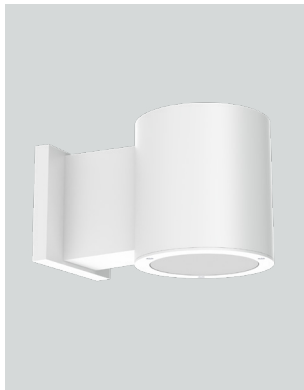
6" ROUND DIRECT

WILDLIFE FRIENDLY / FIXTURE OPTIONS



STANDARD FINISHES

MW  
MATTE WHITE



MB  
MATTE BLACK

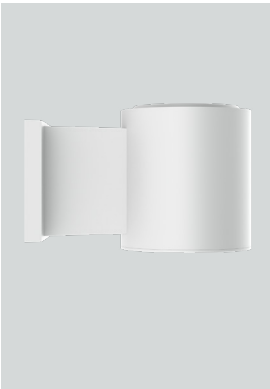


PT  
PLATINUM SILVER

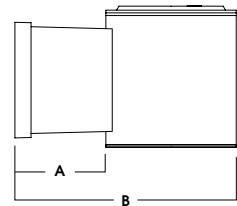


WALL MOUNT DETAIL

WM  
WALL MOUNT EXTENSION

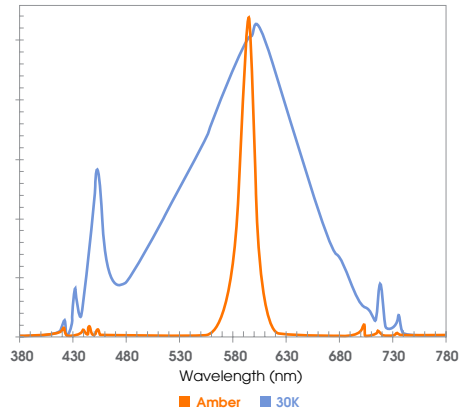


SIDE VIEW



| A               | B                |
|-----------------|------------------|
| 4.2<br>106.7 mm | 10.3<br>261.6 mm |

SPECTRAL POWER DISTRIBUTION COMPARISON



# 6" ROUND DIRECT

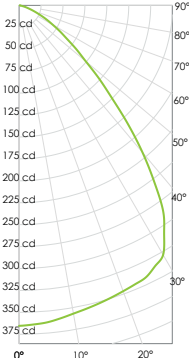
## WILDLIFE FRIENDLY / PHOTOMETRIC DATA



CW0606TA-05L-AMB-EX-SO-MW

| CANDLEPOWER CURVE | INTENSITY                                                    | ZONAL LUMENS                                     | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|-------------------|--------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|-------|--|-------|--|------|-----------|------|-----------|----|----|---|------|---|------|-----|----|---|------|---|------|-----|-----|---|------|---|
|                   | 0.00° 148                                                    | 0° - 10° 14 5%                                   | Mounting Height AFF                                                        | FC at Center on Floor                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 5.00° 147                                                    | 0° - 20° 54 19%                                  | Beam Diameter                                                              | FC at Beam Edge                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 10.00° 144                                                   | 0° - 30° 118 41%                                 | 6.50' 4 fc                                                                 | 12.1' 2 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 15.00° 141                                                   | 0° - 40° 190 66%                                 | 7.50' 3 fc                                                                 | 14.0' 1 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 20.00° 140                                                   | 0° - 60° 267 93%                                 | 8.50' 2 fc                                                                 | 15.8' 1 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 30.00° 134                                                   | 0° - 80° 286 99%                                 | 10.00' 1 fc                                                                | 18.6' 1 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 40.00° 91                                                    | 0° - 90° 287 100%                                | 12.00' 1 fc                                                                | 22.4' 0 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 50.00° 43                                                    | Total 288 100%                                   | 14.00' 1 fc                                                                | 26.1' 0 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 60.00° 21                                                    |                                                  | 16.00' 1 fc                                                                | 29.8' 0 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 70.00° 8                                                     |                                                  | 20.00' 0 fc                                                                | 37.3' 0 fc                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 80.00° 2                                                     |                                                  |                                                                            |                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | 90.00° 1                                                     |                                                  |                                                                            |                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   | Delivered Lumens: 288<br>Luminaire Watts: 15.3<br>LER: 18.82 | CP at 0deg (Nadir): 148<br>CRI: N/A, Amber Light | Beam Angle: 85.93<br>Spacing Ratio: 1.29                                   | Lumen Multiplier: N/A<br>CCT Multiplier: N/A                                                           | <table><tr><th rowspan="2">Ceiling Height</th><th rowspan="2">Fixture Spacing</th><th colspan="2">RCR 2</th><th colspan="2">RCR 4</th></tr><tr><th>FC +</th><th>W/Sq. Ft.</th><th>FC +</th><th>W/Sq. Ft.</th></tr><tr><td>9'</td><td>6'</td><td>6</td><td>0.32</td><td>5</td><td>0.32</td></tr><tr><td>12'</td><td>8'</td><td>4</td><td>0.21</td><td>2</td><td>0.14</td></tr><tr><td>16'</td><td>10'</td><td>3</td><td>0.14</td><td>2</td><td>0.14</td></tr></table> <div>Delivered Illuminance Rating: (DIR)<br/>18 FC per W/Sq. Ft. 15 FC per W/Sq. Ft.<br/>1' Suspension Length<br/>Square rooms used for multiple units:<br/>- RCR 2: Length &amp; Width = Ceiling Ht. - 3.5' x 5.00<br/>- RCR 4: Length &amp; Width = Ceiling Ht. - 3.5' x 2.50<br/>+ Average Footcandles at 2.5' Above Floor</div> | Ceiling Height | Fixture Spacing | RCR 2 |  | RCR 4 |  | FC + | W/Sq. Ft. | FC + | W/Sq. Ft. | 9' | 6' | 6 | 0.32 | 5 | 0.32 | 12' | 8' | 4 | 0.21 | 2 | 0.14 | 16' | 10' | 3 | 0.14 | 2 |
| Ceiling Height    | Fixture Spacing                                              | RCR 2                                            |                                                                            | RCR 4                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
|                   |                                                              | FC +                                             | W/Sq. Ft.                                                                  | FC +                                                                                                   | W/Sq. Ft.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
| 9'                | 6'                                                           | 6                                                | 0.32                                                                       | 5                                                                                                      | 0.32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
| 12'               | 8'                                                           | 4                                                | 0.21                                                                       | 2                                                                                                      | 0.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |
| 16'               | 10'                                                          | 3                                                | 0.14                                                                       | 2                                                                                                      | 0.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                 |       |  |       |  |      |           |      |           |    |    |   |      |   |      |     |    |   |      |   |      |     |     |   |      |   |

CW606TD-10L-30K-EX-SO-MW

| CANDLEPOWER CURVE                                                                   | INTENSITY                                        | ZONAL LUMENS                                           | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE               | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|-------|--|-------|--|------|-----------|------|-----------|----|----|----|------|----|------|-----|----|---|------|---|------|-----|-----|---|------|---|------|
|  | 0.00°                                            | 0° - 10° 35 5%                                         | Mounting Height AFF                                                                      | FC at Center on Floor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Beam Diameter  | FC at Beam Edge |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 0.00° 365                                        | 0° - 20° 134 20%                                       | 6.50 ' 9 fc                                                                              | 11.9 ' 4 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 5.00° 363                                        | 0° - 30° 291 43%                                       | 7.50 ' 6 fc                                                                              | 13.8 ' 3 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 10.00° 357                                       | 0° - 40° 466 68%                                       | 8.50 ' 5 fc                                                                              | 15.6 ' 2 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 15.00° 352                                       | 0° - 60° 645 94%                                       | 10.00 ' 4 fc                                                                             | 18.4 ' 2 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 20.00° 347                                       | 0° - 80° 682 100%                                      | 12.00 ' 3 fc                                                                             | 22.1 ' 1 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 30.00° 328                                       | 0° - 90° 683 100%                                      | 14.00 ' 2 fc                                                                             | 25.7 ' 1 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 40.00° 219                                       | Total 683 100%                                         | 16.00 ' 1 fc                                                                             | 29.4 ' 1 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 50.00° 99                                        |                                                        | 20.00 ' 1 fc                                                                             | 36.8 ' 0 fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 60.00° 45                                        |                                                        |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 70.00° 15                                        |                                                        |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 80.00° 3                                         |                                                        |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     | 90.00° 1                                         |                                                        |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
| Delivered Lumens: <b>683</b><br>Luminaire Watts: <b>15.9</b><br>LER: <b>42.96</b>   | CP at 0deg (Nadir): <b>365</b><br>CRI: <b>80</b> | Beam Angle: <b>85.18</b><br>Spacing Ratio: <b>1.27</b> | Lumen Multiplier: <b>only 10L available</b><br>CCT Multiplier: <b>only 30K available</b> | <table><tr><th rowspan="2">Ceiling Height</th><th rowspan="2">Fixture Spacing</th><th colspan="2">RCR 2</th><th colspan="2">RCR 4</th></tr><tr><th>FC +</th><th>W/Sq. Ft.</th><th>FC +</th><th>W/Sq. Ft.</th></tr><tr><td>9'</td><td>6'</td><td>22</td><td>0.53</td><td>11</td><td>0.34</td></tr><tr><td>12'</td><td>8'</td><td>9</td><td>0.22</td><td>5</td><td>0.14</td></tr><tr><td>16'</td><td>10'</td><td>6</td><td>0.15</td><td>5</td><td>0.15</td></tr></table> <div>Delivered Illuminance Rating: (DIR)<br/>41 FC per W/Sq. Ft. 34 FC per W/Sq. Ft.</div> <div>1' Suspension Length<br/>Square rooms used for multiple units:<br/>- RCR 2: Length &amp; Width = Ceiling Ht. - 3.5' x 5.00<br/>- RCR 4: Length &amp; Width = Ceiling Ht. - 3.5' x 2.50<br/>+ Average Footcandles at 2.5' Above Floor</div> | Ceiling Height | Fixture Spacing | RCR 2 |  | RCR 4 |  | FC + | W/Sq. Ft. | FC + | W/Sq. Ft. | 9' | 6' | 22 | 0.53 | 11 | 0.34 | 12' | 8' | 9 | 0.22 | 5 | 0.14 | 16' | 10' | 6 | 0.15 | 5 | 0.15 |
| Ceiling Height                                                                      | Fixture Spacing                                  | RCR 2                                                  |                                                                                          | RCR 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
|                                                                                     |                                                  | FC +                                                   | W/Sq. Ft.                                                                                | FC +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | W/Sq. Ft.      |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
| 9'                                                                                  | 6'                                               | 22                                                     | 0.53                                                                                     | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.34           |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
| 12'                                                                                 | 8'                                               | 9                                                      | 0.22                                                                                     | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.14           |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |
| 16'                                                                                 | 10'                                              | 6                                                      | 0.15                                                                                     | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.15           |                 |       |  |       |  |      |           |      |           |    |    |    |      |    |      |     |    |   |      |   |      |     |     |   |      |   |      |

# 6" ROUND DIRECT

## WILDLIFE FRIENDLY / PHOTOMETRIC DATA



CW0606TA-05L-AMB-EX-GL-MW

| CANDLEPOWER CURVE                                   | INTENSITY                                                    | ZONAL LUMENS        | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                                          |                 |                                              |       |  |           |  |
|-----------------------------------------------------|--------------------------------------------------------------|---------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------|----------------------------------------------|-------|--|-----------|--|
|                                                     | 0.00° 151                                                    | 0° - 10° 14 5%      | Mounting Height AFF                                                        | FC at Center on Floor                                                                                  | Beam Diameter                            | FC at Beam Edge |                                              |       |  |           |  |
|                                                     | 5.00° 149                                                    | 0° - 20° 54 18%     | 6.50' 4 fc                                                                 | 12.5' 2 fc                                                                                             | 7.50' 3 fc                               | 14.5' 1 fc      |                                              |       |  |           |  |
|                                                     | 10.00° 144                                                   | 0° - 30° 117 38%    | 8.50' 2 fc                                                                 | 16.4' 1 fc                                                                                             | 10.00' 2 fc                              | 19.3' 1 fc      |                                              |       |  |           |  |
|                                                     | 15.00° 139                                                   | 0° - 40° 191 63%    | 12.00' 1 fc                                                                | 23.1' 0 fc                                                                                             | 14.00' 1 fc                              | 27.0' 0 fc      |                                              |       |  |           |  |
|                                                     | 20.00° 137                                                   | 0° - 60° 275 90%    | 16.00' 1 fc                                                                | 30.9' 0 fc                                                                                             | 20.00' 0 fc                              | 38.6' 0 fc      |                                              |       |  |           |  |
|                                                     | 30.00° 133                                                   | 0° - 80° 303 99%    |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 40.00° 99                                                    | 0° - 90° 305 100%   |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 50.00° 46                                                    | Total 305 100%      |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 60.00° 26                                                    |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 70.00° 13                                                    |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 80.00° 4                                                     |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | 90.00° 0                                                     |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
|                                                     | Delivered Lumens: 305<br>Luminaire Watts: 15.3<br>LER: 19.93 |                     | CP at 0deg (Nadir): 151<br>CRI: N/A, Amber Light                           |                                                                                                        | Beam Angle: 87.92<br>Spacing Ratio: 1.27 |                 | Lumen Multiplier: N/A<br>CCT Multiplier: N/A |       |  |           |  |
|                                                     |                                                              |                     |                                                                            | Ceiling Height                                                                                         |                                          | Fixture Spacing |                                              | RCR 2 |  | RCR 4     |  |
|                                                     |                                                              |                     |                                                                            | FC +                                                                                                   |                                          | W/Sq. Ft.       |                                              | FC +  |  | W/Sq. Ft. |  |
| 9'                                                  |                                                              | 6'                  |                                                                            | 10                                                                                                     |                                          | 0.51            |                                              | 5     |  | 0.32      |  |
| 12'                                                 |                                                              | 8'                  |                                                                            | 4                                                                                                      |                                          | 0.21            |                                              | 2     |  | 0.14      |  |
| 16'                                                 |                                                              | 10'                 |                                                                            | 3                                                                                                      |                                          | 0.14            |                                              | 2     |  | 0.14      |  |
| Delivered Illuminance Rating: (DIR)                 |                                                              | 19 FC per W/Sq. Ft. |                                                                            | 15 FC per W/Sq. Ft.                                                                                    |                                          |                 |                                              |       |  |           |  |
| 1' Suspension Length                                |                                                              |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
| Square rooms used for multiple units:               |                                                              |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
| - RCR 2: Length & Width = Ceiling Ht. - 3.5' x 5.00 |                                                              |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
| - RCR 4: Length & Width = Ceiling Ht. - 3.5' x 2.50 |                                                              |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |
| + Average Footcandles at 2.5' Above Floor           |                                                              |                     |                                                                            |                                                                                                        |                                          |                 |                                              |       |  |           |  |

CW0606TD-10L-30K-EX-GL-MW

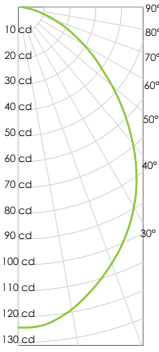
| CANDLEPOWER CURVE                                            | INTENSITY  | ZONAL LUMENS                          | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |               |                                                                            |  |       |  |           |  |
|--------------------------------------------------------------|------------|---------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------|--|-------|--|-----------|--|
|                                                              | 0.00°      | 0° - 10° 38 5%                        | Mounting Height AFF                                                        | FC at Center on Floor                                                                                  | Beam Diameter | FC at Beam Edge                                                            |  |       |  |           |  |
|                                                              | 0.00° 394  | 0° - 20° 143 18%                      | 6.50 ' 9 fc                                                                | 12.9 ' 4 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 5.00° 392  | 0° - 30° 309 39%                      | 7.50 ' 7 fc                                                                | 14.8 ' 3 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 10.00° 381 | 0° - 40° 507 63%                      | 8.50 ' 5 fc                                                                | 16.8 ' 2 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 15.00° 369 | 0° - 60° 733 92%                      | 10.00 ' 4 fc                                                               | 19.8 ' 2 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 20.00° 366 | 0° - 80° 798 100%                     | 12.00 ' 3 fc                                                               | 23.8 ' 1 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 30.00° 348 | 0° - 90° 801 100%                     | 14.00 ' 2 fc                                                               | 27.7 ' 1 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 40.00° 268 | Total 801 100%                        | 16.00 ' 2 fc                                                               | 31.7 ' 1 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 50.00° 124 |                                       | 20.00 ' 1 fc                                                               | 39.6 ' 0 fc                                                                                            |               |                                                                            |  |       |  |           |  |
|                                                              | 60.00° 65  |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
|                                                              | 70.00° 31  |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
|                                                              | 80.00° 6   |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
|                                                              | 90.00° 1   |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
| Delivered Lumens: 801<br>Luminaire Watts: 15.9<br>LER: 50.38 |            | CP at 0deg (Nadir): 394<br>CRI: 80    |                                                                            | Beam Angle: 89.41<br>Spacing Ratio: 1.3                                                                |               | Lumen Multiplier: only 10L available<br>CCT Multiplier: only 30K available |  |       |  |           |  |
|                                                              |            |                                       |                                                                            | Ceiling Height                                                                                         |               | Fixture Spacing                                                            |  | RCR 2 |  | RCR 4     |  |
|                                                              |            |                                       |                                                                            | FC +                                                                                                   |               | W/Sq. Ft.                                                                  |  | FC +  |  | W/Sq. Ft. |  |
| 9'                                                           |            | 6'                                    |                                                                            | 16                                                                                                     |               | 0.34                                                                       |  | 13    |  | 0.34      |  |
| 12'                                                          |            | 8'                                    |                                                                            | 11                                                                                                     |               | 0.22                                                                       |  | 5     |  | 0.14      |  |
| 16'                                                          |            | 10'                                   |                                                                            | 7                                                                                                      |               | 0.15                                                                       |  | 6     |  | 0.15      |  |
| Delivered Illuminance Rating: (DIR)                          |            | 48 FC per W/Sq. Ft.                   |                                                                            | 39 FC per W/Sq. Ft.                                                                                    |               |                                                                            |  |       |  |           |  |
| 1' Suspension Length                                         |            | Square rooms used for multiple units: |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
| - RCR 2: Length & Width = Ceiling Ht. - 3.5' x 5.00          |            |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
| - RCR 4: Length & Width = Ceiling Ht. - 3.5' x 2.50          |            |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |
| + Average Footcandles at 2.5' Above Floor                    |            |                                       |                                                                            |                                                                                                        |               |                                                                            |  |       |  |           |  |

# 6" ROUND DIRECT

## WILDLIFE FRIENDLY / PHOTOMETRIC DATA



CW606TA-05L-AMB-EX-FG-MW

| CANDLEPOWER CURVE                                                                 | INTENSITY  | ZONAL LUMENS      | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|-----------------------------------------------------------------------------------|------------|-------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|-----------------|---------------------|--|-------|--|--|--|
|  | 0.00° 124  | 0° - 10° 12 5%    | Mounting Height AFF                                                        | FC at Center on Floor                                                                                  | Beam Diameter                                                                                                                                                                                                            | FC at Beam Edge | Ceiling Height      | Fixture Spacing | RCR 2               |  | RCR 4 |  |  |  |
|                                                                                   | 5.00° 123  | 0° - 20° 43 17%   | 6.50 ' 3 fc                                                                | 12.2 ' 1 fc                                                                                            | 9' 6'                                                                                                                                                                                                                    | 8 0.51          | 4 0.32              |                 |                     |  |       |  |  |  |
|                                                                                   | 10.00° 119 | 0° - 30° 89 35%   | 7.50 ' 2 fc                                                                | 14.0 ' 1 fc                                                                                            | 12' 8'                                                                                                                                                                                                                   | 3 0.21          | 4 0.30              |                 |                     |  |       |  |  |  |
|                                                                                   | 15.00° 113 | 0° - 40° 138 55%  | 8.50 ' 2 fc                                                                | 15.9 ' 1 fc                                                                                            | 16' 10'                                                                                                                                                                                                                  | 2 0.14          | 2 0.14              |                 |                     |  |       |  |  |  |
|                                                                                   | 20.00° 106 | 0° - 60° 217 86%  | 10.00 ' 1 fc                                                               | 18.7 ' 1 fc                                                                                            | Delivered Illuminance Rating: (DIR)                                                                                                                                                                                      |                 | 15 FC per W/Sq. Ft. |                 | 12 FC per W/Sq. Ft. |  |       |  |  |  |
|                                                                                   | 30.00° 90  | 0° - 80° 249 99%  | 12.00 ' 1 fc                                                               | 22.5 ' 0 fc                                                                                            |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 40.00° 69  | 0° - 90° 252 100% | 14.00 ' 1 fc                                                               | 26.2 ' 0 fc                                                                                            | 1' Suspension Length<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. - 3.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. - 3.5' x 2.50<br>+ Average Footcandles at 2.5' Above Floor |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 50.00° 47  | Total 253 100%    | 16.00 ' 0 fc                                                               | 30.0 ' 0 fc                                                                                            |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 60.00° 29  |                   | 20.00 ' 0 fc                                                               | 37.5 ' 0 fc                                                                                            |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 70.00° 15  |                   |                                                                            |                                                                                                        |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 80.00° 5   |                   |                                                                            |                                                                                                        |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |
|                                                                                   | 90.00° 2   |                   |                                                                            |                                                                                                        |                                                                                                                                                                                                                          |                 |                     |                 |                     |  |       |  |  |  |

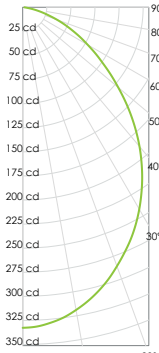
Delivered Lumens: 253  
Luminaire Watts: 15.3  
LER: 16.54

CP at 0deg (Nadir): 124  
CRI: N/A, Amber Light

Beam Angle: 86.25  
Spacing Ratio: 1.09

Lumen Multiplier: N/A  
CCT Multiplier: N/A

CW606TD-10L-30K-EX-FG-MW

| CANDLEPOWER CURVE                                                                   | INTENSITY  | ZONAL LUMENS | SINGLE UNIT: PERFORMANCE<br>INITIAL FOOTCANDLES<br>BASED ON IES BEAM ANGLE | MULTIPLE UNITS: PERFORMANCE<br>80/50/20% REFLECTANCES<br>INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT |                        |                          |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|-------------------------------------------------------------------------------------|------------|--------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|--------------------|---------------------|--|-------|--|--|--|
|  | 0.00°      | 0° - 10°     | 32                                                                         | 5%                                                                                                     | Mounting Height<br>AFF | FC at Center<br>on Floor | Beam<br>Diameter                                                                                                                                                                                                         | FC at Beam<br>Edge | Ceiling<br>Height   | Fixture<br>Spacing | RCR 2               |  | RCR 4 |  |  |  |
|                                                                                     | 0.00° 333  | 0° - 20°     | 117                                                                        | 17%                                                                                                    | 6.50 ' 8 fc            | 12.5 ' 4 fc              | 9' 6' 21                                                                                                                                                                                                                 | 0.53               | 11                  | 0.34               |                     |  |       |  |  |  |
|                                                                                     | 5.00° 329  | 0° - 30°     | 239                                                                        | 36%                                                                                                    | 7.50 ' 6 fc            | 14.4 ' 3 fc              | 12' 8' 9                                                                                                                                                                                                                 | 0.22               | 10                  | 0.32               |                     |  |       |  |  |  |
|                                                                                     | 10.00° 319 | 0° - 40°     | 374                                                                        | 56%                                                                                                    | 8.50 ' 5 fc            | 16.3 ' 2 fc              | 16' 10' 6                                                                                                                                                                                                                | 0.15               | 5                   | 0.15               |                     |  |       |  |  |  |
|                                                                                     | 15.00° 305 | 0° - 60°     | 588                                                                        | 87%                                                                                                    | 10.00 ' 3 fc           | 19.2 ' 1 fc              | Delivered<br>Illuminance<br>Rating: (DIR)                                                                                                                                                                                |                    | 39 FC per W/Sq. Ft. |                    | 32 FC per W/Sq. Ft. |  |       |  |  |  |
|                                                                                     | 20.00° 286 | 0° - 80°     | 668                                                                        | 99%                                                                                                    | 12.00 ' 2 fc           | 23.0 ' 1 fc              |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 30.00° 242 | 0° - 90°     | 672                                                                        | 100%                                                                                                   | 14.00 ' 2 fc           | 26.9 ' 1 fc              | 1' Suspension Length<br>Square rooms used for multiple units:<br>- RCR 2: Length & Width = Ceiling Ht. - 3.5' x 5.00<br>- RCR 4: Length & Width = Ceiling Ht. - 3.5' x 2.50<br>+ Average Footcandles at 2.5' Above Floor |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 40.00° 189 | Total        | 672                                                                        | 100%                                                                                                   | 16.00 ' 1 fc           | 30.7 ' 1 fc              |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 50.00° 129 |              |                                                                            |                                                                                                        | 20.00 ' 1 fc           | 38.4 ' 0 fc              |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 60.00° 78  |              |                                                                            |                                                                                                        |                        |                          |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 70.00° 38  |              |                                                                            |                                                                                                        |                        |                          |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 80.00° 10  |              |                                                                            |                                                                                                        |                        |                          |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |
|                                                                                     | 90.00° 2   |              |                                                                            |                                                                                                        |                        |                          |                                                                                                                                                                                                                          |                    |                     |                    |                     |  |       |  |  |  |

Delivered Lumens: 672  
Luminaire Watts: 15.9  
LER: 42.26

CP at 0deg (Nadir): 333  
CRI: 80

Beam Angle: 87.62  
Spacing Ratio: 1.1

Lumen Multiplier: only 10L available  
CCT Multiplier: only 30K available

# COLOR OPTIONS - POWDER COAT PAINT FINISHES

NOTE: NO PRINTED IMAGE CAN EQUAL THE EXACT COLOR OF FINISH ON METAL.  
SEE INDIVIDUAL SPECIFICATION SHEETS OR CONSULT FACTORY FOR ADDITIONAL INFORMATION.



## STANDARD CORD / STEM / CANOPY FINISHES

| FIXTURE COLOR               | STANDARD CORD COLOR | STANDARD CANOPY / STEM COLOR |
|-----------------------------|---------------------|------------------------------|
| Matte White, Textured White | Matte White         | Matte White                  |
| Gloss White                 | Matte White         | Gloss White                  |
| Matte Black, Textured Black | Matte Black         | Matte Black                  |
| All Others                  | Matte Black         | Same Color as Fixture        |
| Custom Color                | Contact Factory     | Contact Factory              |

## PAINT TIMES

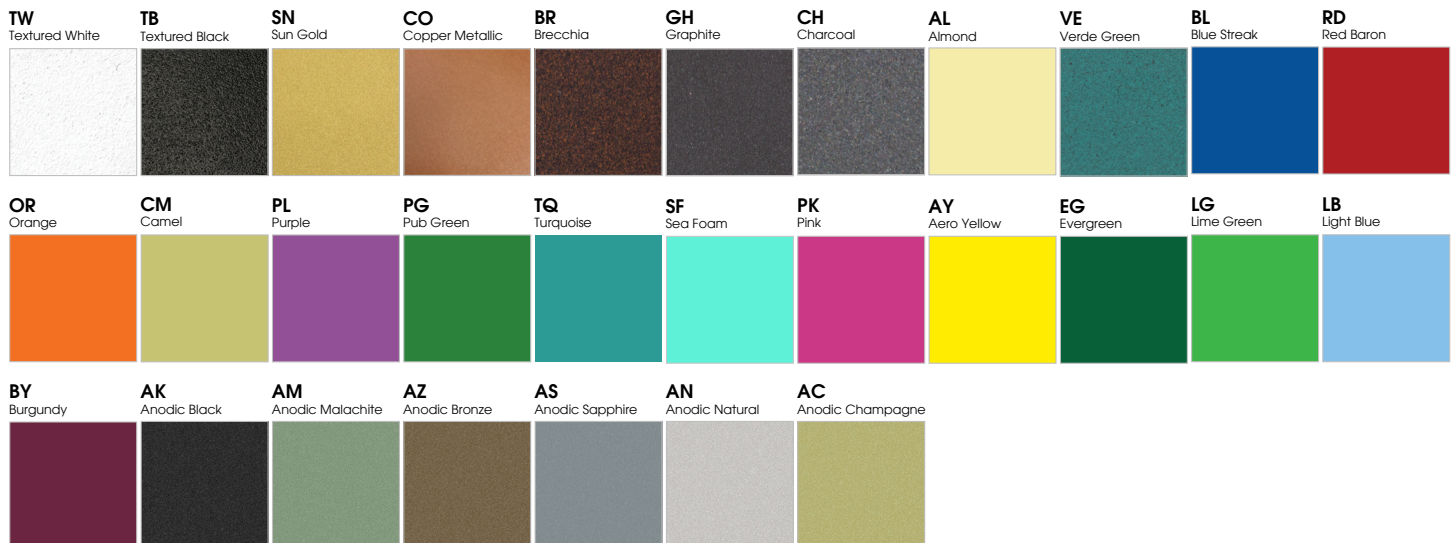
| TIER                       | COST            | AVERAGE PAINT TIME* |
|----------------------------|-----------------|---------------------|
| Tier 1 - Standard Finishes | \$              | ①                   |
| Tier 2 - Typical Finishes  | \$\$            | ①①                  |
| Custom Color               | Contact Factory | Contact Factory     |

\*CONTACT FACTORY FOR SPECIFIC PRODUCT LEAD TIMES

## TIER 1 - STANDARD FINISHES



## TIER 2 - TYPICAL FINISHES



## CUSTOM COLOR FINISHES

CONTACT FACTORY

CC  
Custom Color



\*UNAVAILABLE FOR WET LOCATION

May 4, 2022

City of Portland  
389 Congress Street  
Portland, ME 04101

Re: 31 Forest Street – Proposed Building  
Construction Management Plan Narrative

Dear Planning:

The following narrative provides an overview of the construction management principles that Trillium Engineering Group and the contractor have identified to minimize impacts from construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

#### **Development Review of Construction Management Plan**

Trillium Engineering Group has submitted a Construction Management Plan that provides a comprehensive logistics and safety program for the construction project. Minimizing impacts to areas surrounding the building shall be primary considerations to the process.

The following details define the intended approach to the successful management of the project construction and the construction management plan will address the general conditions contained below.

#### **Performance Guarantees, Inspection Fees, Pre-Construction Meetings, and Permits**

Prior to scheduling a pre-construction meeting and the issuance of any city required permits, Trillium Engineering Group and the contractor shall meet all of the requirements contained in Section 14-530: Development Review Fees and Post Approval Requirements and 14-542: General Requirements and Enforcement of Portland's Land Use Code. Since this is a Level III Site Plan Application with under 50,00 square feet of proposed work, the fee shall be \$2,750, per Section 14-530.

No other permits will be required for this project.

#### **Construction Administration and Communication**

Trillium Engineering Group and the contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances, and special permits applicable to this project. The Construction Manager will work closely with the adjacent abutters, businesses and all parties informed, as far in advance as possible, of schedule work, particularly work anticipated to cause significant noise, vibrations, or dust. The final construction management plan shall provide the following:

1. Contact Person and contact information for the contractor and who is available 24 hours.
2. Construction Signage posted on the site with contact information for contractor.
3. Describe any additional communication strategies.
4. All construction site signage is temporary and shall be removed at project completion.

**Construction Schedule**

Mobilization – September 2022  
Initial Sitework – October/November 2022  
Construction – December 2022 – June 2023  
Final Closeout – July 2023

**Security and Public Safety**

See Construction Management Plan for depiction of all proposed fencing or other barriers and access gates (with Knox locking devices) separating pedestrian and vehicle circulation from the construction site. All work done on the existing building shall comply with NFPA 1 Chapter 16, *Safeguarding Construction, Alteration, and Demolition Operations*.

**Construction Permitting and Traffic Control Plans**

Trillium Engineering Group is proposing a small amount of work in the Forest Street right-of-way to install a new 4" fire service line and 6" sewer/stormwater line. On Sheet C104, "Construction Management Plan," Trillium Engineering Group has added a note instructing the contractor to coordinate with the City and shift traffic during road construction.

**Site Management and Controls**

The final Construction Management Plan will address maintaining the site in a safe condition and includes the following:

1. Trash and debris will be removed as required by the contractor. The on-site staging area will allow for plenty of trash and debris storage prior to removal.
2. Street cleaning and damage controls will be performed as required by contractor.
3. Dust controls complying with Portland's requirements under Section 25-129 on Noise, dust, and debris shall be followed.
4. Contractor will comply with Portland's requirements under Section 25-129
5. Snow removal per Section 25-173.

**Erosion Control and Preservation of Trees**

Erosion control shall be performed by the contractor as depicted on Sheets C104, C200 and C300. This project does not propose any preservation of trees as explained in the project narrative submitted to the Planning Board.

**Construction Staging Area**

Due to the small dimensions of the site, material staging shall be performed in phases. To begin, the contractor shall pour the garage slab and wait for it to cure. Once it is at full strength, the contractor shall order and store materials on the slab as required. Because this is a smaller project, the contractor shall not require large vehicles or machines during construction, and all lifts and other relevant construction tools shall be able to fit on-site without affecting the boundaries established by the construction fencing. Also note that the proposed plantings are to be installed following the completion of the building, so the landscaping shall not pose an issue with on-site staging.

There will not be a need for off-site delivery truck holding areas. All other staging areas shall be laid out as shown on Sheet C102, "Construction Management Plan".



**Parking During Construction**

Workers will utilize the nearby street parking during construction. The site itself will not have any residential demand until the project is completed.

**Dewatering Plan**

Trillium Engineering Group is not anticipating groundwater to be an issue during construction.

**Special Measures as Necessary**

This section does not apply, as construction is not anticipated to take over a long period as defined by the General Construction Management Template.

Thank you for taking the time to review this. Should you have any further questions or require any additional information, please do not hesitate to ask.

Sincerely,



David Latham, P.E.  
Trillium Engineering Group



July 20, 2022

To Whom This May Concern,

CMP Customer Chia Ray Chang, with a property at 31 Forest St. in Portland, Maine 04101 (Notification 10300902818) has completed the required Site Evaluation and we have approved the Overhead Service Installation for this property. Overhead Service is the preferred method for this property and the project.

Sincerely,

Cory Osborne

New Service Coordinator

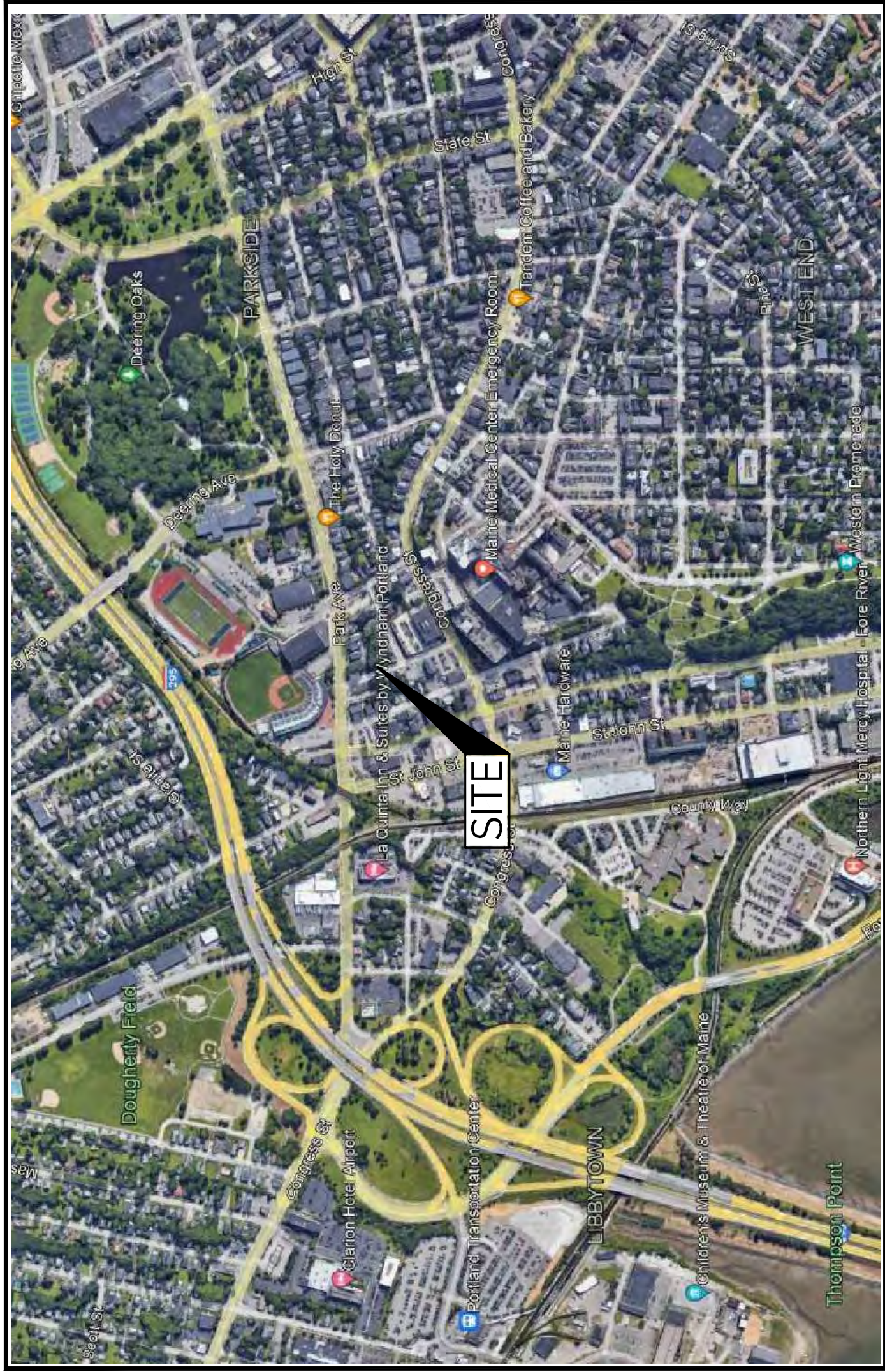
1-800-750-4000



# 31 FOREST STREET

PORTLAND, ME 04102

MAY 4, 2022



LOCUS MAP

---

NOT TO SCALE

# DRAWING LIST

- |      |                                  |
|------|----------------------------------|
| C100 | EXISTING SITE PLAN               |
| C101 | PROPOSED GRADING & DRAINAGE PLAN |
| C102 | PRE-DEVELOPMENT WATERSHED PLAN   |
| C103 | POST-DEVELOPMENT WATERSHED PLAN  |
| C104 | CONSTRUCTION MANAGEMENT PLAN     |
| C200 | SITE DETAILS                     |
| C300 | EROSION CONTROL DETAILS          |

OWNER:

RAY CHANG  
26 OXFORD STREET  
PORTLAND, ME 04101

CONSULTANTS:

PAUL DESIGNS PROJECTS  
142 HIGH STREET  
PORTLAND, ME 04101

TRILLIUM ENGINEERING GROUP  
189 MAIN STREET  
YARMOUTH, ME 04096

## COVER SHEET

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 21-285   |

| No. | Description          | D.R.<br>C/KD | B.Y<br>BY | D.L<br>ED | Date     |
|-----|----------------------|--------------|-----------|-----------|----------|
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
|     |                      |              |           |           |          |
| A   | SITE PLAN SUBMISSION |              |           |           | 05-04-22 |

SHEET TITLE:

## COVER SHEET

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 21-285   |





LOCATION MAP N.T.S.

## LEGEND

|      |                        |         |                        |
|------|------------------------|---------|------------------------|
| ●    | IRON PIPE OR ROD FOUND | —X—X—   | FENCE                  |
| ■    | MONUMENT FOUND         | =====   | CURB                   |
| ○    | UTILITY POLE           | —OHW—   | OVERHEAD WIRES         |
| ○    | MANHOLE                | —W—     | WATER LINE             |
| ⊗ EM | ELECTRIC METER         | —G—     | GAS LINE               |
| —T—  | SIGN                   | —SS—    | SANITARY SEWER         |
| ⊗    | VALVE OR SHUTOFF       | —30—    | 1" CONTOUR             |
| ○    | DECIDUOUS TREE         | IPF/IRF | IRON PIPE OR ROD FOUND |
| ●    | BORING                 | N/F     | NOW OR FORMERLY        |
|      |                        | 000/000 | DEED BOOK / PAGE       |

## PLAN REFERENCES

1. "PLAN OF MEAD & BANKS PROPERTY, PORTLAND, ME" RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 10, PAGE 135.
2. "PLAN OF LAND IN PORTLAND, MAINE MADE FOR STEFFIAN, STEFFIAN & BRADLEY" JAN. 22, 1970 BY OWEN HASKELL, INC.
3. "PLAN OF LAND IN PORTLAND, MAINE, PARK AVENUE, FOR MEDICAL SERVICES FEDERAL CREDIT UNION" OCT. 28, 1983, REVISED DEC. 11, 1983 BY OWEN HASKELL, INC.
4. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHARLES P. WERNIG, 244 PARK AVENUE, PORTLAND, MAINE, RE-SURVEY PARCELS NO. 13, 14, 15 & 16 (STANDARD BOUNDARY SURVEY)" SEPT. 1, 1993 BY ROBERT J. CYR RECORDED IN PLAN BOOK 193, PAGE 251.
5. "CONDOMINIUM PLAN "260 PARK AVENUE CONDOMINIUM" 260 PARK AVENUE, PORTLAND, MAINE MADE FOR WILLIAM D. VAIL" MARCH 28, 2002 BY OWEN HASKELL, INC.
6. "CONGRESS STREET MEDICAL BUILDING CONDOMINIUM PLAN MADE FOR MAINE MEDICAL CENTER, 22 BRAMHALL STREET, PORTLAND, MAINE" JAN. 16, 1996, REVISED THROUGH MARCH 29, 2000 BY TITOMB ASSOCIATES RECORDED IN PLAN BOOK 200, PAGE 158.

## GENERAL NOTES

1. OWNER OF RECORD: 31 FOREST LLC  
TAX MAP 53 BLOCK A LOT 11  
C.C.R.D. BOOK 38297 PAGE 95
2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATES  
NAD83. CITY POINTS USED:  
  
L730-6-12 SB249-4-5  
N:299213.46 N:299758.53  
E:2923447.38 E:2923693.42
3. ELEVATIONS ARE BASED ON CITY DATUM. MONUMENT AT  
WESTERLY CORNER OF FOREST STREET AND CONGRESS STREET  
ELEVATION=52.03' PER PLAN REFERENCE 6.
4. PROPERTY IS LOCATED IN CITY OF PORTLAND RESIDENTIAL  
R6 ZONE
5. REAR PROPERTY LINE ESTABLISHED BY PLAN REFERENCE 1.  
DEEDS CALL FOR LAND OF MEAD.

## CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

ELLEN C. BREWER, PLS #2367

DATE \_\_\_\_\_

# Boundary & Topographic Survey

## At

31 Forest Street, Portland, Maine  
Made for  
DB9 Ventures, LLC  
146 Pleasant Street, Lexington, MA 02421



**OWEN HASKELL, INC.**  
PROFESSIONAL LAND SURVEYORS

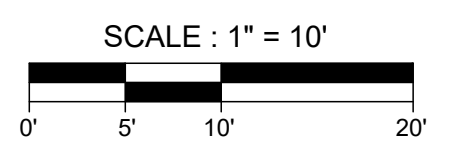
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

|                    |                     |                    |
|--------------------|---------------------|--------------------|
| DRAWN BY: RS / JLW | DATE: JULY 15, 2021 | JOB NO. 2021-149 P |
|--------------------|---------------------|--------------------|

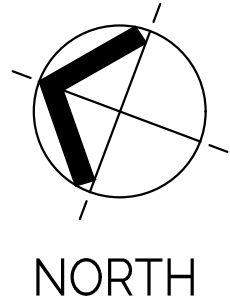
|                 |                 |             |
|-----------------|-----------------|-------------|
| CHECKED BY: ECB | SCALE: 1" = 10' | DRWG. NO. 1 |
|-----------------|-----------------|-------------|

### 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 AND DEPTH ALTHOUGH THE SURVEYOR ATTEMPTS THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEY HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DISGATE 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.







CLIENT:  
31 FOREST, LLC

46 TURNER STREET  
PORTLAND, ME 04101

PRELIMINARY  
NOT FOR CONSTRUCTION

31 FOREST STREET  
PORTLAND  
MAINE

PROPOSED BUILDING

| ISSUED | DESCRIPTION          | DR | CHKD BY | DATE     |
|--------|----------------------|----|---------|----------|
|        |                      |    |         |          |
|        | SITE PLAN SUBMISSION | DL | ED      | 05-04-22 |
| No.    | A                    |    |         |          |

SHEET TITLE:

PROPOSED SITE  
LAYOUT PLAN

DESIGNED: DL  
DRAWN: DL  
DATE: 05-04-22  
PROJECT NUMBER: 21-285

C101-S

| ZONE: R-6             | REQUIRED           | PROPOSED |
|-----------------------|--------------------|----------|
| MIN. FRONTAGE         | 20'                | 49.39'   |
| MIN. LOT SIZE         | 2,000 SF           | 2,625 SF |
| FRONT SETBACK         | 4.45' <sup>A</sup> | 4.45'    |
| SIDE SETBACK          | 5' <sup>B</sup>    | 5.48'    |
| REAR SETBACK          | 10'                | 16.72'   |
| MAX. LOT COVERAGE     | 60%                | 45.98%   |
| LANDSCAPED OPEN SPACE | 20%                | 21.50%   |

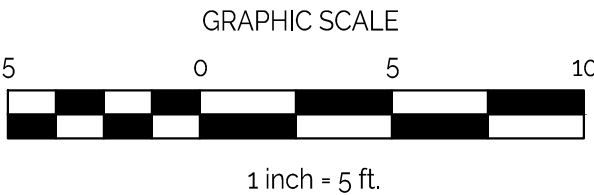
<sup>A</sup>CODE ALLOWS FOR A FRONT SETBACK EQUAL TO THE AVERAGE DEPTH OF ADJACENT FRONT YARDS IN THIS ZONE.

<sup>B</sup>SIDE SETBACK CAN BE REDUCED TO 0' ON ONE SIDE AS LONG AS THERE IS A COMBINED 10' OR MORE OF SIDE YARD

| IMPERVIOUS AREA TABLE      |                         |                         |
|----------------------------|-------------------------|-------------------------|
| TYPE OF COVER              | EXISTING IMP. AREA (SF) | PROPOSED IMP. AREA (SF) |
| BUILDING                   | 0                       | 1,207                   |
| PAVEMENT/CONCRETE          | 0                       | 472                     |
| TOTAL                      | 0                       | 1,679                   |
| CHANGE FROM EXISTING (+/-) |                         | 1,679                   |
| PERCENT CHANGE (+/-)       |                         | 63.96%                  |

| PLANTING SCHEDULE                      |              |          |
|----------------------------------------|--------------|----------|
| TYPE                                   | SIZE         | QUANTITY |
| MYRICA PENNSYLVANICA/NORTHERN BAYBERRY | #5           | 7        |
| HONEYLOCUST                            | 2-2.5" CAL.  | 2        |
| ARBORVITAE/WIDE CEDAR                  | 5'-6" HEIGHT | 3        |

| LEGEND   |                            |          |
|----------|----------------------------|----------|
| EXISTING | DESCRIPTION                | PROPOSED |
| ---      | LOT SETBACKS               | ---      |
| ---      | PROPERTY LINE              | ---      |
| ---      | EDGE OF ROAD/TRAVELLED WAY | ---      |
| ---      | CONTOUR                    | ---      |
| ---      | SPOT GRADE                 | ---      |
| ---      | GAS SHUT-OFF               | ---      |
| ---      | UTILITY POLE               | ---      |
| ---      | OVERHEAD ELECTRICAL        | ---      |
| ---      | UNDERGROUND ELECTRICAL     | ---      |
| ---      | FIRE HYDRANT               | ---      |
| ---      | WATER LINE                 | ---      |
| ---      | WATER GATE                 | ---      |
| ---      | SEWER MANHOLE              | ---      |
| ---      | DRAINAGE MANHOLE           | ---      |
| ---      | CATCH BASIN                | ---      |
| ---      | UNDERDRAIN/STORMDRAIN      | ---      |
| ---      | UNDERDRAIN                 | ---      |
| ---      | SILT FENCE                 | ---      |
| ---      | GRADING AND FLOW DIRECTION | ---      |
| ---      | STORMWATER BOUNDARY        | ---      |
| ---      | STORMWATER FLOW (Tq)       | ---      |
| ---      | FACE OF LEDGE OUTCROP      | ---      |
| ---      | BIRCH                      | ---      |
| ---      | MAPLE                      | ---      |



SCALE: 1" = 5'-0"

PROPOSED SITE LAYOUT PLAN



[illegible]

31 FOREST, LLC

PRELIMINARY  
NOT FOR CONSTRUCTION

31 FOREST STREET  
PORTLAND  
PROPOSED BUILDING

[illegible]

ISSUED

SHEET TITLE:

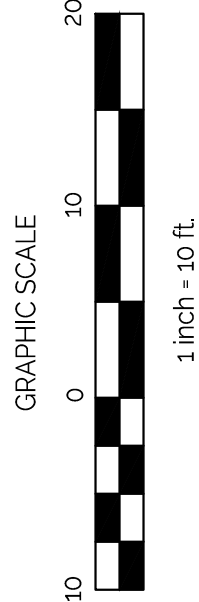
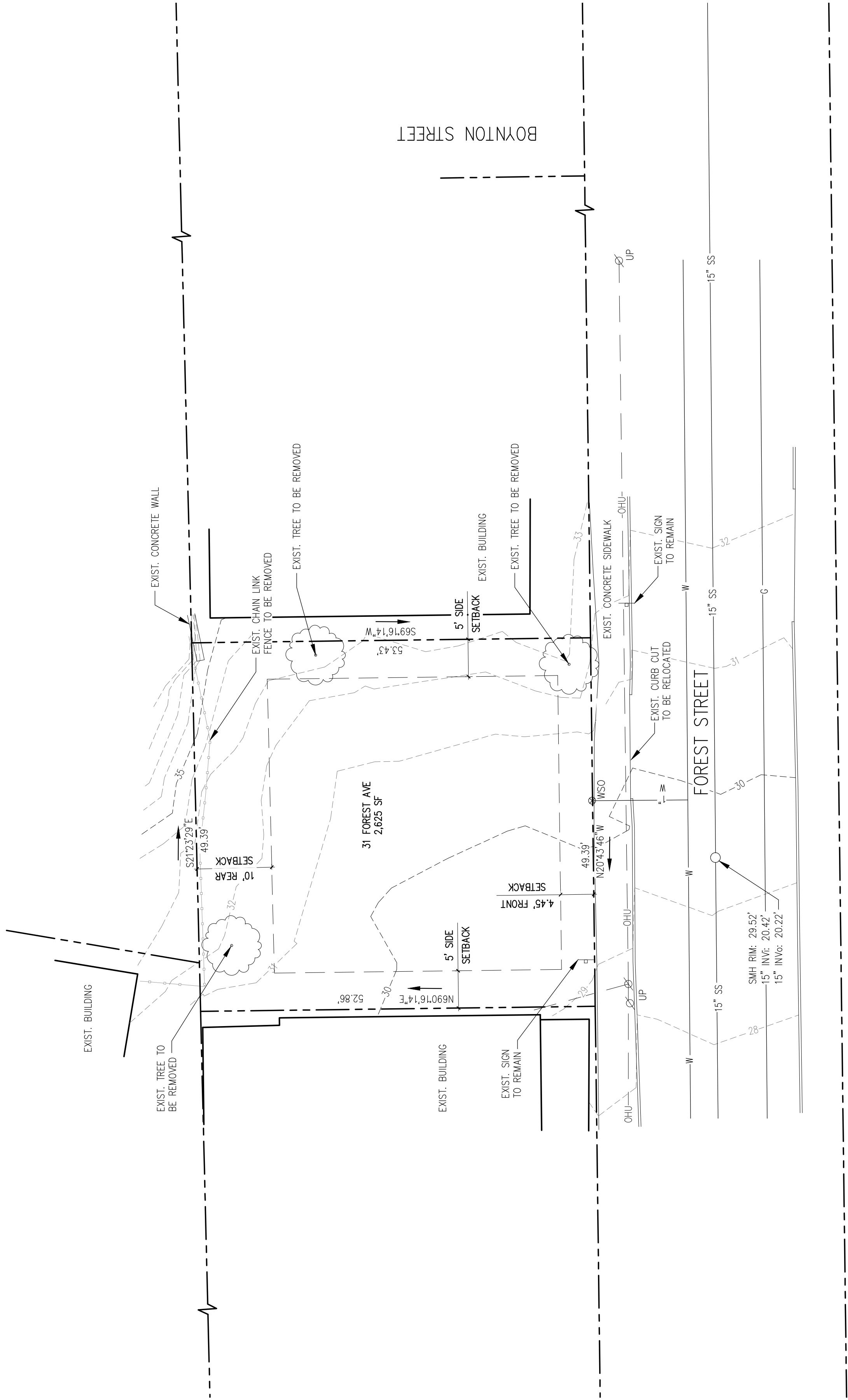
# EXISTING SITE PLAN

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 21-285   |

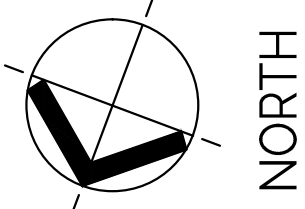
C100

## EXISTING SITE PLAN

**SCALE: 1" = 10'-0"**







|                       |          |
|-----------------------|----------|
| ZONE: R-6             |          |
| REQUIRED              | PROPOSED |
| MIN. FRONTAGE         | 20'      |
| MIN. LOT SIZE         | 49,39'   |
| FRONT SETBACK         | 2,000 SF |
| SIDE SETBACK          | 4.45'    |
| REAR SETBACK          | 5'       |
| MAX. LOT COVERAGE     | 16.72    |
| LANDSCAPED OPEN SPACE | 20%      |
| LANDSCAPED OPEN SPACE | 45.98%   |
| LANDSCAPED OPEN SPACE | 21.50%   |

\*CODE ALLOWS FOR A FRONT SETBACK EQUAL TO THE AVERAGE DEPTH OF ADJACENT FRONT YARDS IN THIS ZONE.

%SIDE SETBACK CAN BE REDUCED TO 0' ON ONE SIDE AS LONG AS THERE IS A COMBINED 10' OR MORE OF SIDE YARD

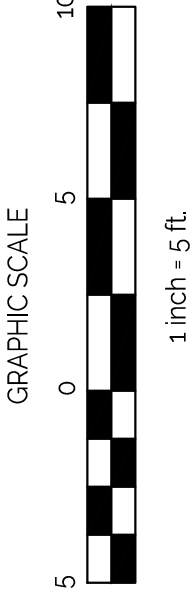
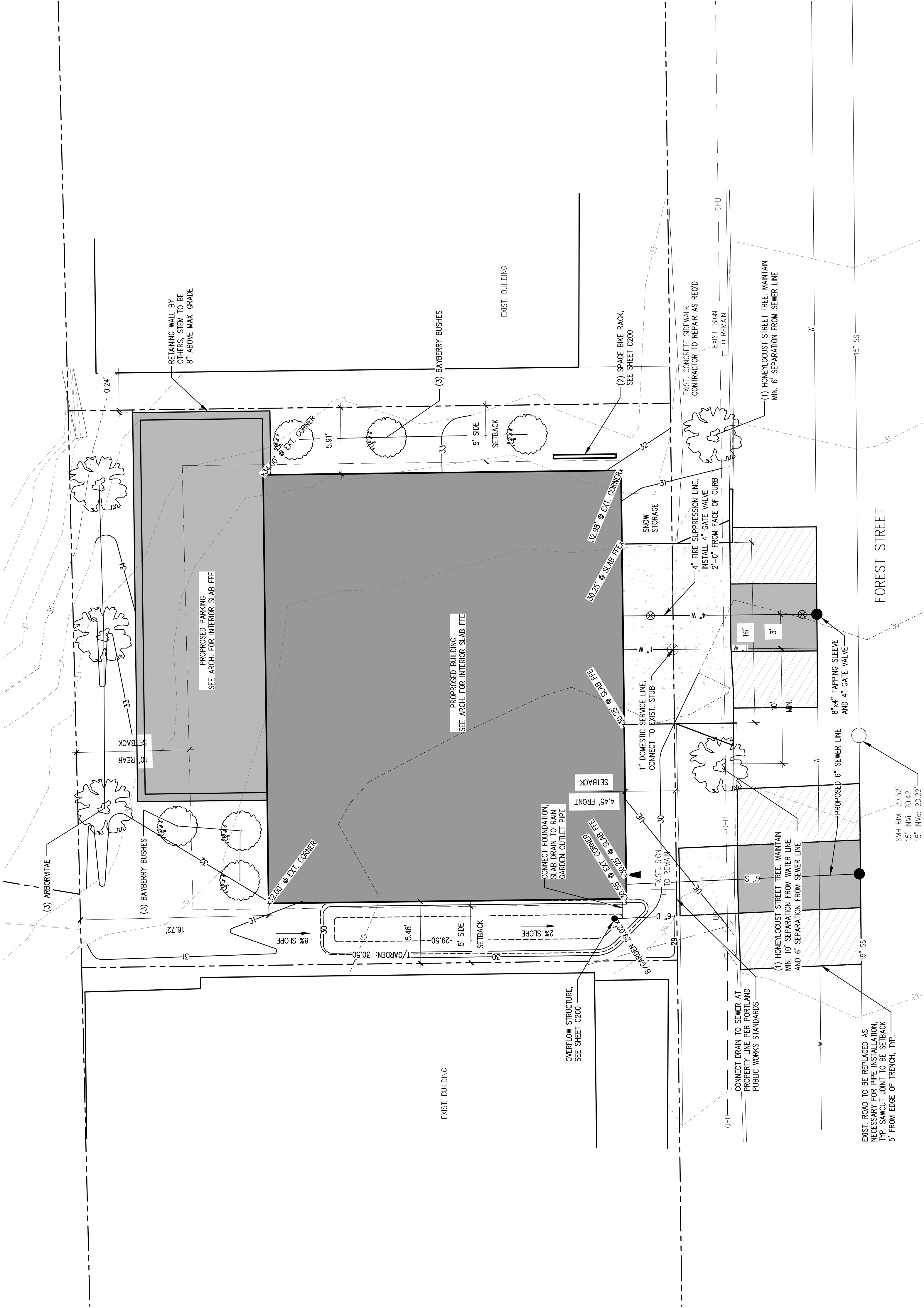


TRILLIUM  
ENGINEERING GROUP  
180 MAIN STREET SUITE 200  
YARMOUTH, ME 04096

CLIENT:  
**31 FOREST, LLC**  
46 TURNER STREET  
PORTLAND, ME 04101

| IMPERVIOUS AREA TABLE      |                         |                         |                         |
|----------------------------|-------------------------|-------------------------|-------------------------|
| TYPE OF COVER              | EXISTING IMP. AREA (SF) | PROPOSED IMP. AREA (SF) | PROPOSED IMP. AREA (SF) |
| BUILDING                   | 0                       | 0                       | 1,207                   |
| PAVEMENT/CONCRETE          | 0                       | 0                       | 472                     |
| TOTAL                      | 0                       | 0                       | 1,679                   |
| CHANGE FROM EXISTING (+/-) |                         |                         | 1,679                   |
| PERCENT CHANGE (+/-)       |                         |                         | 63.96%                  |

| PLANTING SCHEDULE                     |              |          |
|---------------------------------------|--------------|----------|
| TYPE                                  | SIZE         | QUANTITY |
| MYRICA PENSYLVANICA/NORTHERN BAYBERRY | #5           | 7        |
| HONEYLOCUST                           | 2-2.5" CAL.  | 2        |
| ARBORVITAE/WIDE CEDAR                 | 5'-6" HEIGHT | 3        |



PROPOSED GRADING & DRAINAGE PLAN

SCALE: 1" = 5'-0"

31 FOREST STREET  
PORTLAND  
MAINE

PROPOSED BUILDING

|             |                      |
|-------------|----------------------|
| NO.         | A                    |
| DESCRIPTION | SITE PLAN SUBMISSION |
| DR.         | DL                   |
| BY.         | ED                   |
| DATE        | 05-04-22             |

ISSUED

SHEET TITLE:  
**PROPOSED  
GRADING AND  
DRAINAGE PLAN**

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 24-585   |

C101





- WATERSHED NOTES:
1. ALL SOILS ARE ARE HYDROLOGIC SOIL GROUP "A", PER THE UNITED STATES WEB SOIL SURVEY (WSS).
  2. ALL TIME OF CONCENTRATION VALUES NOT SHOWN HAVE BEEN ASSIGNED A MINIMUM 5 MINUTE VALUE.



CLIENT:  
31 FOREST, LLC  
46 TURNER STREET  
PORTLAND, ME 04101

PRELIMINARY  
NOT FOR CONSTRUCTION

31 FOREST STREET  
PORTLAND  
MAINE

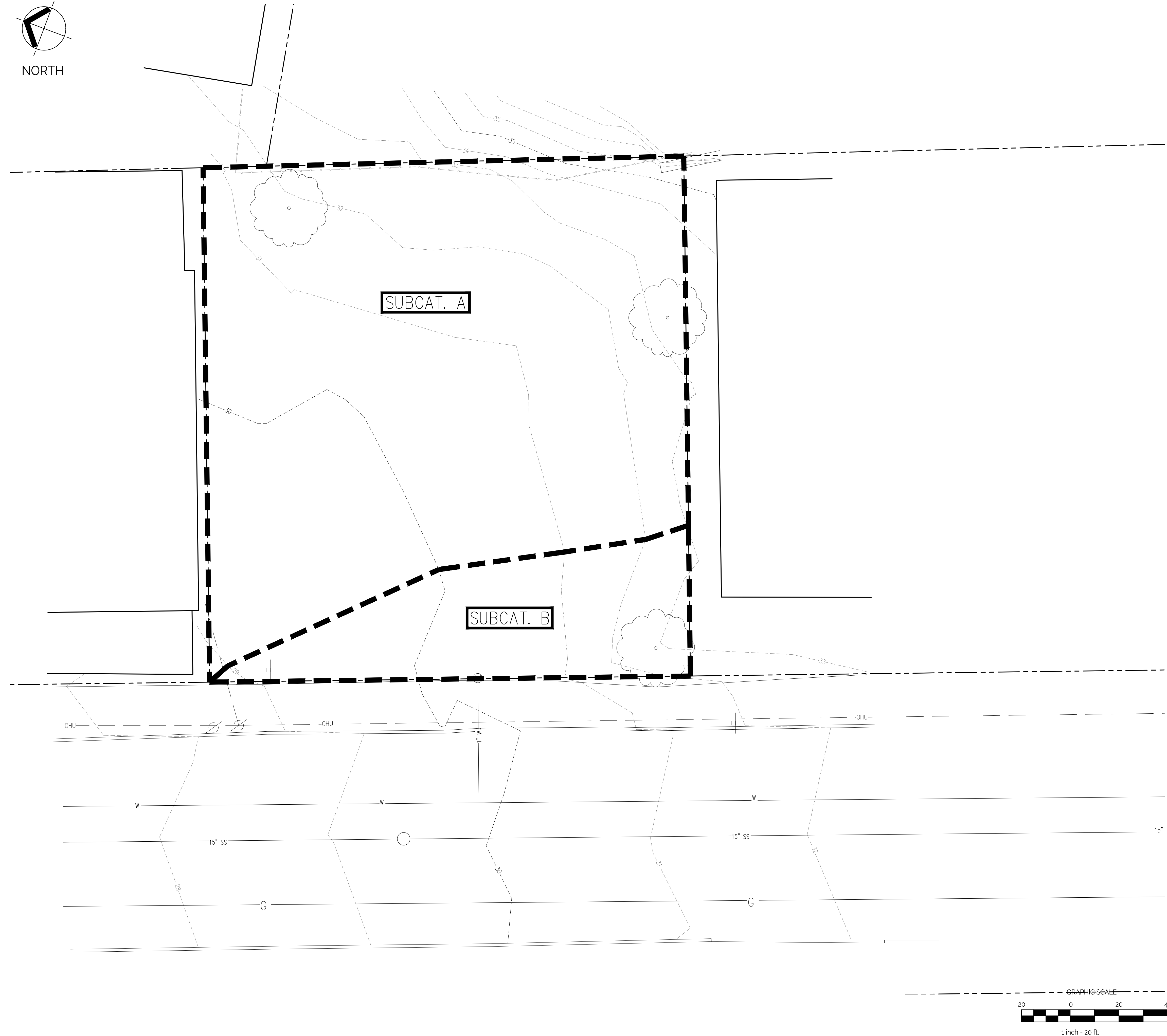
[illegible]

SHEET TITLE:

PRE-DEVELOPMENT  
WATERSHED PLAN

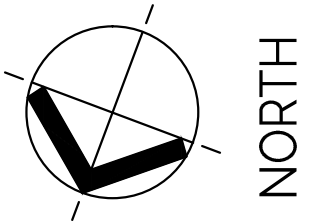
|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 21-285   |

C102



## PRE-DEVELOPMENT WATERSHED PLAN





NORTH

WATERSHED NOTES:

1. ALL HYDROLOGIC SOIL INFORMATION HAS BEEN PROVIDED BY THE UNITED STATES WEB SOIL SURVEY (NSSL) AND HAS BEEN DELINEATED AS SHOWN ON PLAN.
2. ALL TIME OF CONCENTRATION VALUES NOT SHOWN HAVE BEEN ASSIGNED A MINIMUM 5 MINUTE VALUE.



CLIENT:

31 FOREST, LLC

46 TURNER STREET  
PORTLAND, ME 04101

PRELIMINARY  
NOT FOR CONSTRUCTION

MAINE

31 FOREST STREET  
PORTLAND  
PROPOSED BUILDING

|                      |     |          |
|----------------------|-----|----------|
| DR                   | CKD | DATE     |
| BY                   | BY  |          |
| ED                   | ED  | 05-04-22 |
| ISSUED               |     |          |
| DESCRIPTION          |     |          |
| SITE PLAN SUBMISSION |     |          |
| A                    |     |          |

SHEET TITLE:

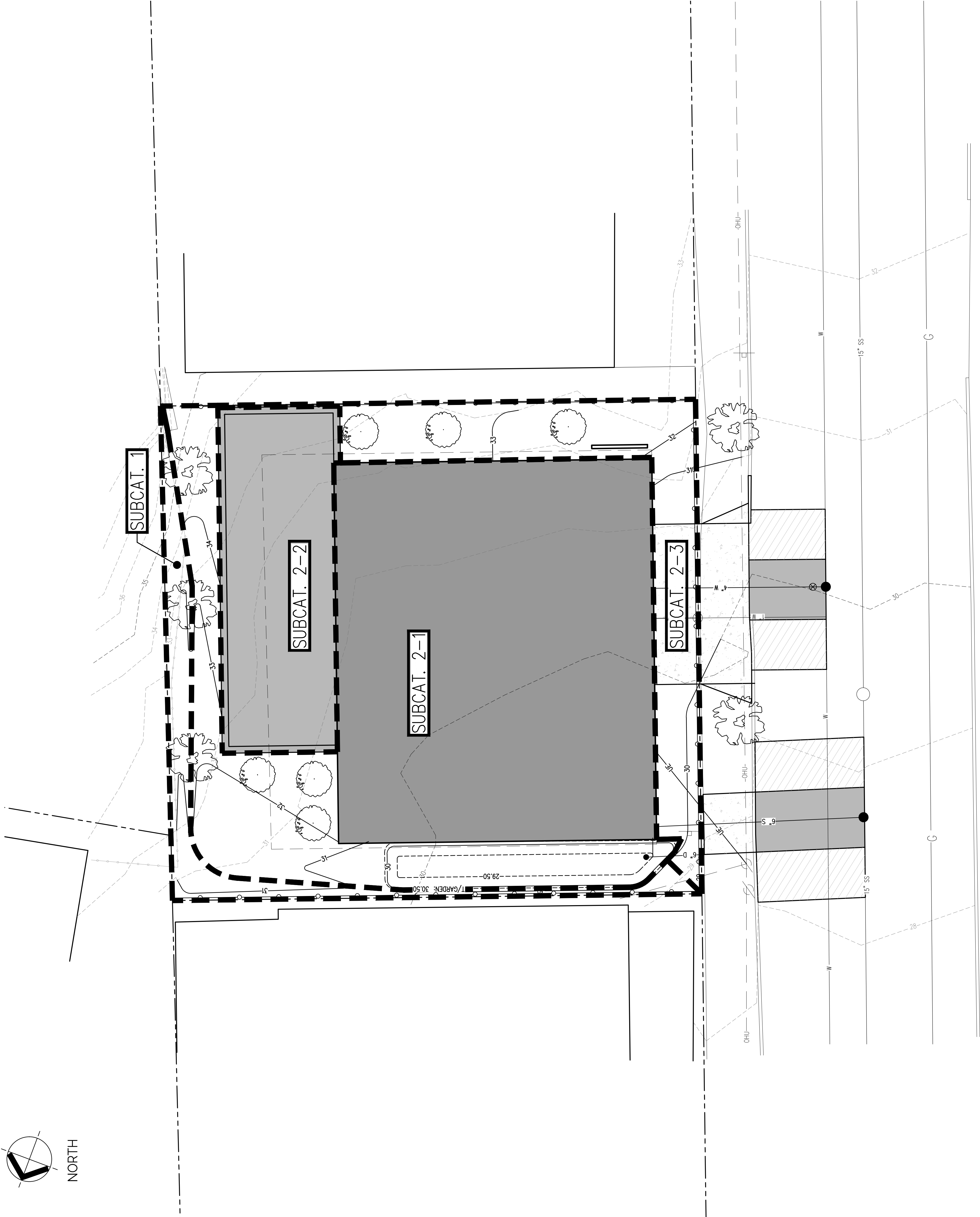
POST-DEVELOPMENT  
WATERSHED PLAN

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 24-385   |

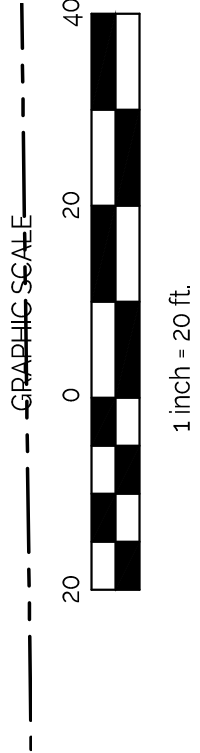
C103

POST-DEVELOPMENT WATERSHED PLAN

SCALE: 1" = 20'-0"



| LEGEND                     |                |
|----------------------------|----------------|
| EXISTING                   | PROPOSED       |
| LOT STRIPES                | ---            |
| PROPERTY LINE              | ---            |
| EDGE OF ROAD/TRAVELLED WAY | ---            |
| CONTOUR                    | ---            |
| 327.60 x 327.6             | 327.60 x 327.6 |
| SPOT GRADE                 | ---            |
| GAS SHUT-OFF               | ---            |
| UTILITY POLE               | ---            |
| OVERHEAD ELECTRICAL        | ---            |
| UNDERGROUND ELECTRICAL     | ---            |
| FIRE HYDRANT               | ---            |
| WATER LINE                 | ---            |
| SEWER LINE                 | ---            |
| SEWER MANHOLE              | ---            |
| DRAINAGE MANHOLE           | ---            |
| CATCH BASIN                | ---            |
| UNDERDRAIN/STORMDRAIN      | ---            |
| UNDERDRAIN                 | ---            |
| SILT FENCE                 | ---            |
| GRAVING AND FLOW DIRECTION | ---            |
| STORMWATER BOUNDARY        | ---            |
| STORMWATER FLOW (10)       | ---            |
| FACE OF LEASE OUTCROP      | ---            |
| BIRCH                      | ---            |
| MAPLE                      | ---            |







PRELIMINARY  
NOT FOR CONSTRUCTION

MAINE

31 FOREST STREET  
PORTLAND  
PROPOSED BUILDING

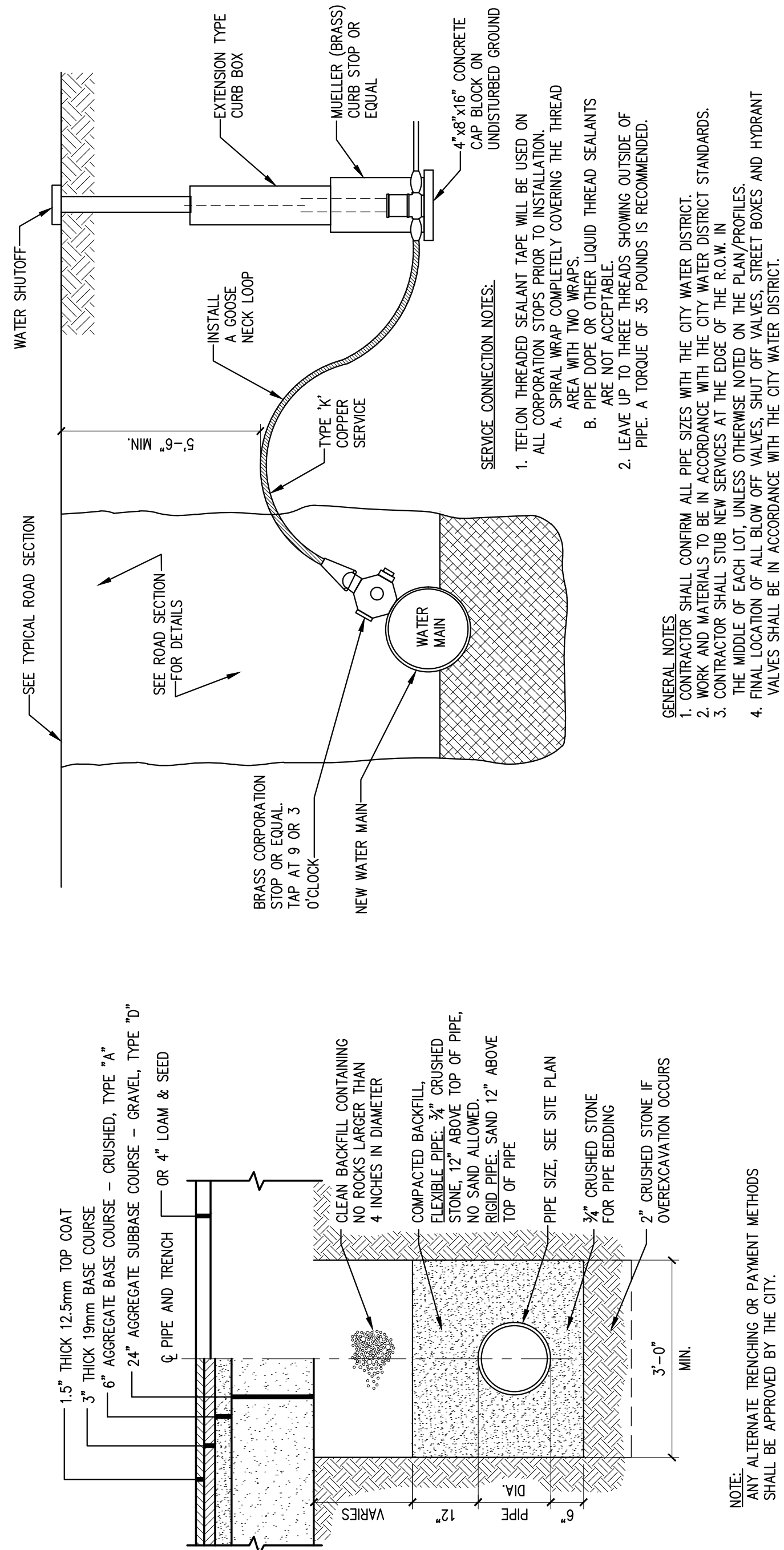
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SHEET TITLE:

## SITE DETAILS

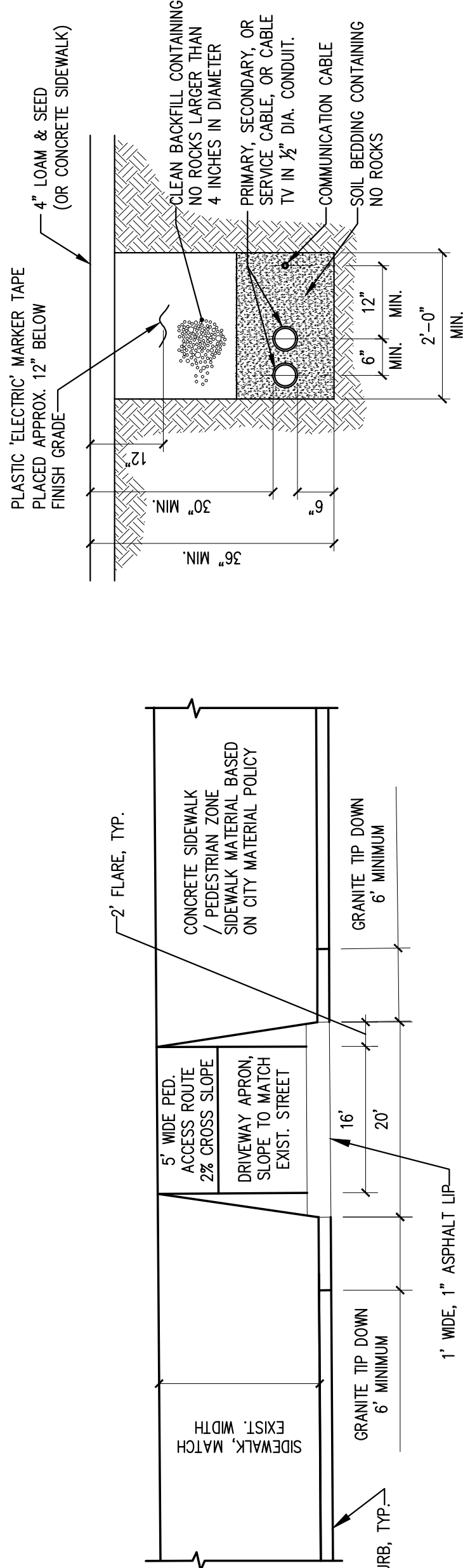
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| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 21-285   |

C200



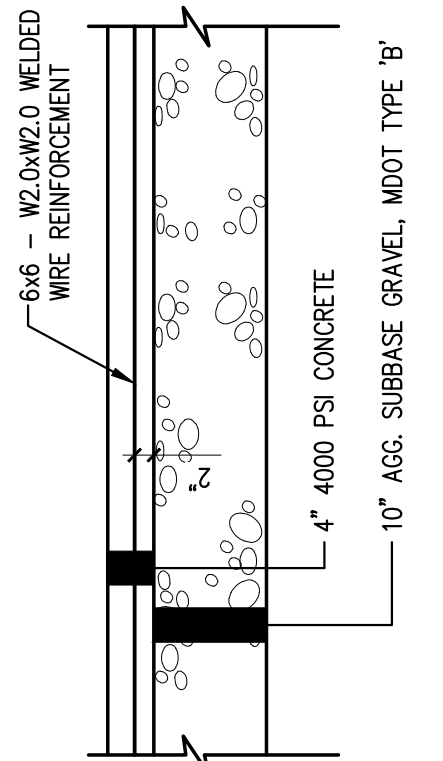
## TYPICAL PIPE TRENCH DETAIL

SCALE: NTS



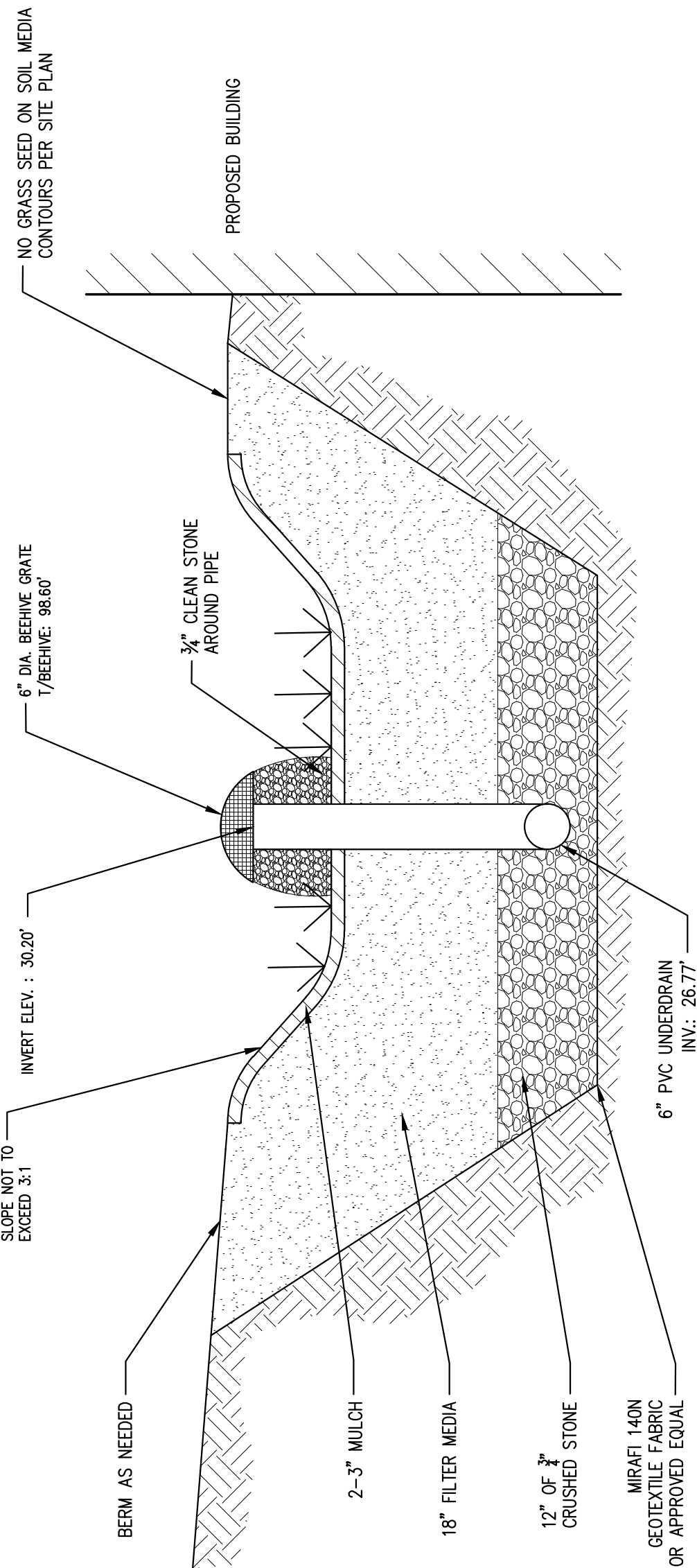
## TYP. CONCRETE DRIVE DETAIL

SCALE: NTS



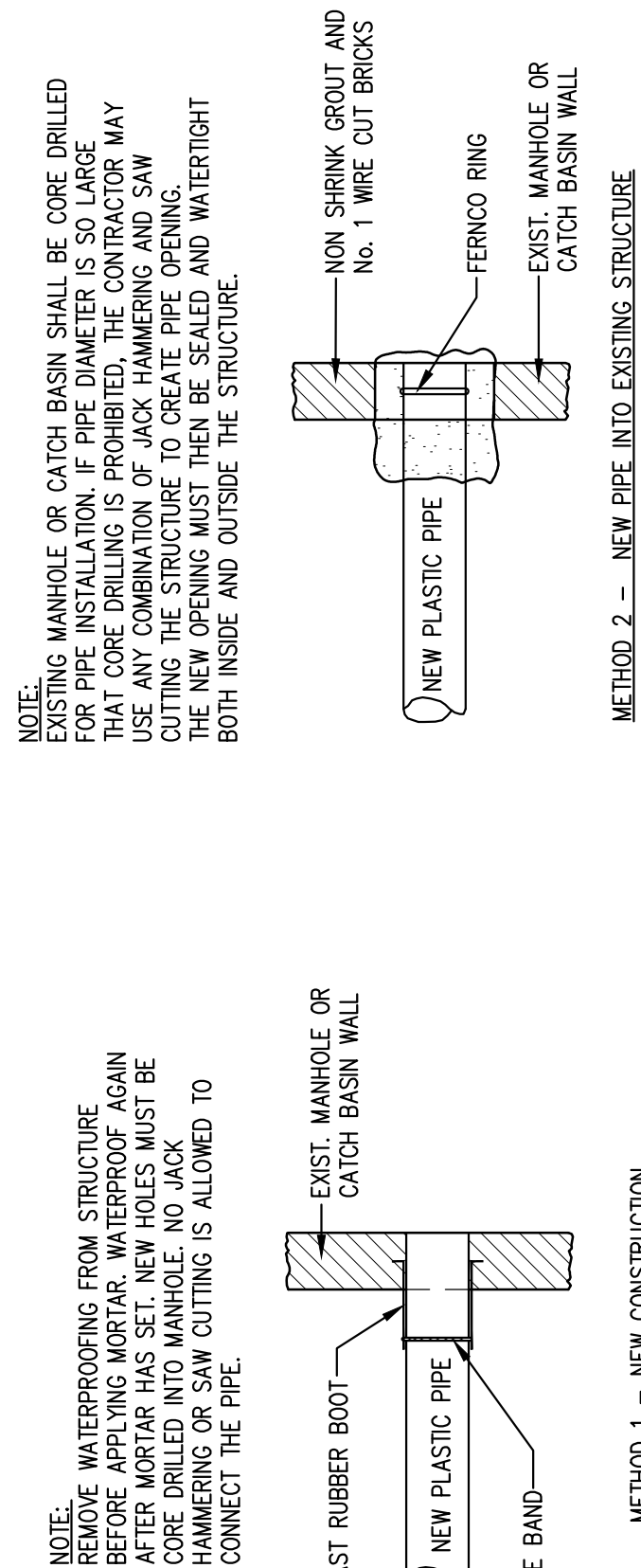
TYP. CONCRETE SIDEWALK DETAIL

SCALE: NTS



## RAIN GARDEN SECTION

SCALE: NTS



## TYPICAL SEWER CONNECTION DETAILS

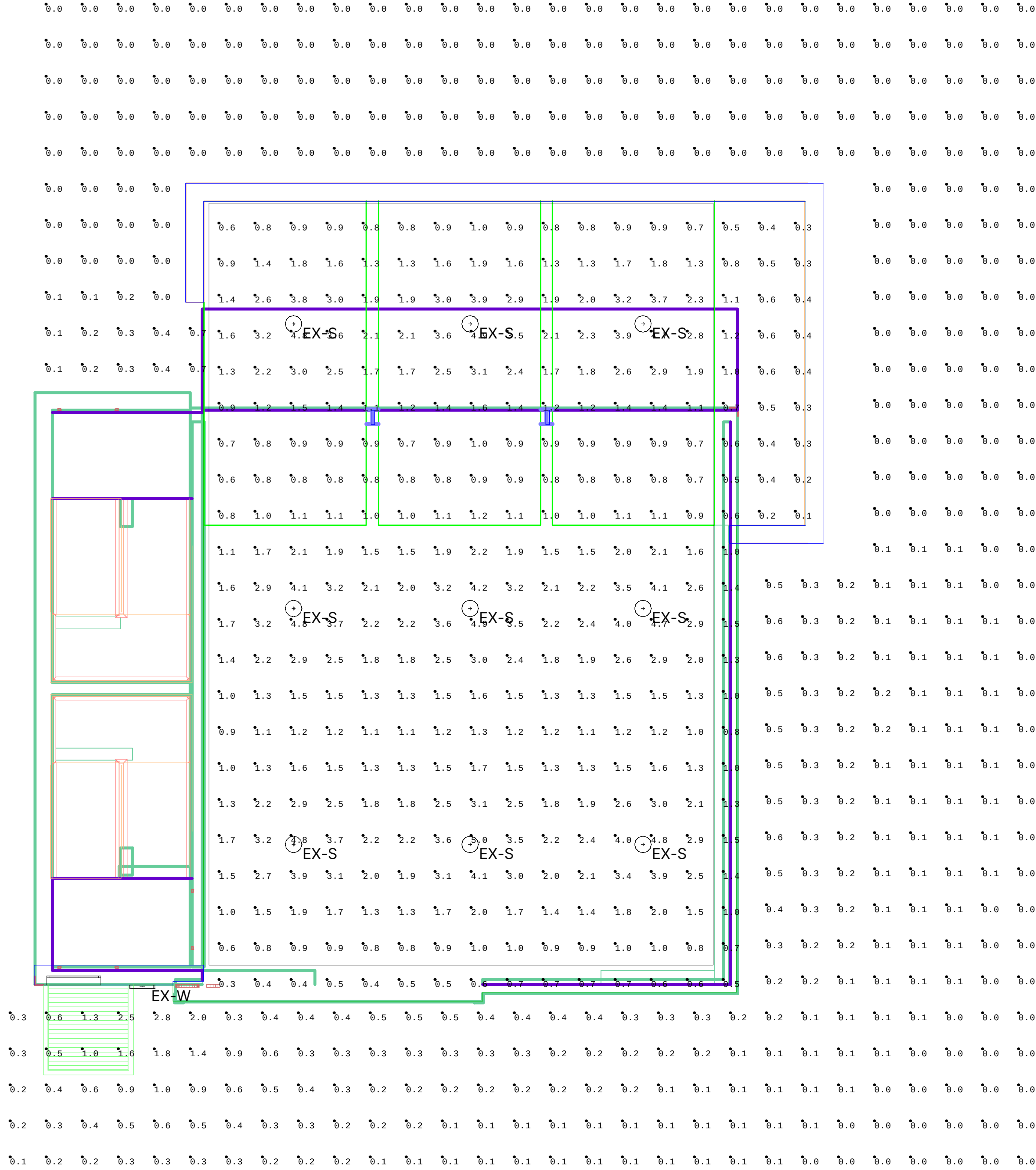
**SCALE: NTS**







| Luminaire Schedule                                                                |     |       |              |                 |             |
|-----------------------------------------------------------------------------------|-----|-------|--------------|-----------------|-------------|
| Symbol                                                                            | Qty | Label | Manufacturer | Description     | Arrangement |
|  | 9   | EX-S  | Bega         | 33534_K3_XX     | SINGLE      |
|  | 1   | EX-W  | Kuzco        | Maro EW25707-BK | SINGLE      |



Parking Area

Illuminance (Fc)  
Average = 1.88  
Maximum = 5.0  
Minimum = 0.6  
Avg/Min Ratio = 3.13  
Max/Min Ratio = 8.33

Ground Floor



44 Sixth Road  
Woburn, MA 01801  
C: 207-219-1716  
E: mcorrao@illuminate.com

|           |  |  |  |  |
|-----------|--|--|--|--|
| Comments  |  |  |  |  |
|           |  |  |  |  |
|           |  |  |  |  |
|           |  |  |  |  |
| Date      |  |  |  |  |
| #         |  |  |  |  |
| Revisions |  |  |  |  |

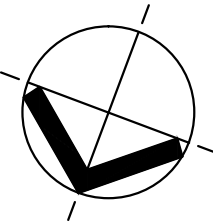
Drawn By: MC  
Checked By: MC  
Date: 8/22/2022

Scale: 1" = 4'

31 Forest St  
Portland, Maine  
Exterior Photometric

Page 1 of 1





NORTH

CLIENT:

31 FOREST, LLC

46 TURNER STREET  
PORTLAND, ME 04101

PRELIMINARY  
NOT FOR CONSTRUCTION

MAINE

31 FOREST STREET  
PORTLAND  
PROPOSED BUILDING

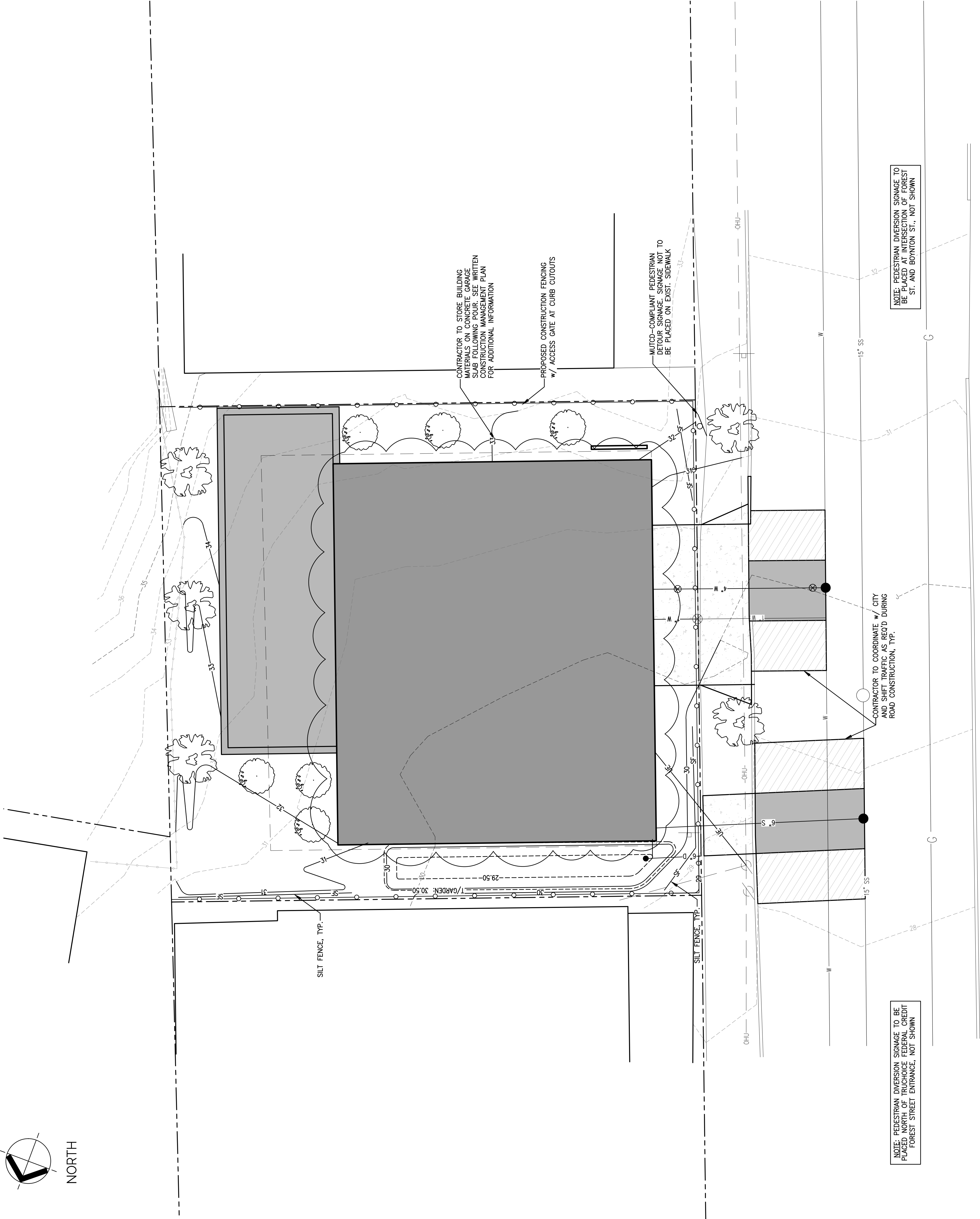
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| DR                   | CKD | DATE     |
| BY                   | BY  |          |
| ED                   | ED  | 05-04-22 |
| ISSUED               |     |          |
| DESCRIPTION          |     |          |
| SITE PLAN SUBMISSION |     |          |

SHEET TITLE:

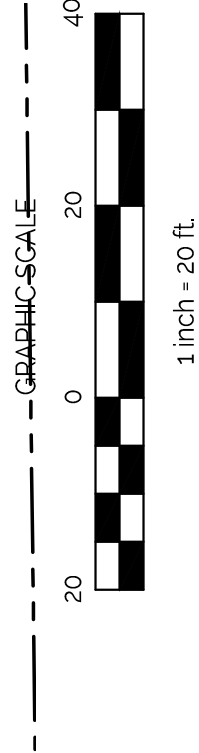
CONSTRUCTION  
MANAGEMENT PLAN

|                 |          |
|-----------------|----------|
| DESIGNED:       | DL       |
| DRAWN:          | DL       |
| DATE:           | 05-04-22 |
| PROJECT NUMBER: | 24-585   |

C104

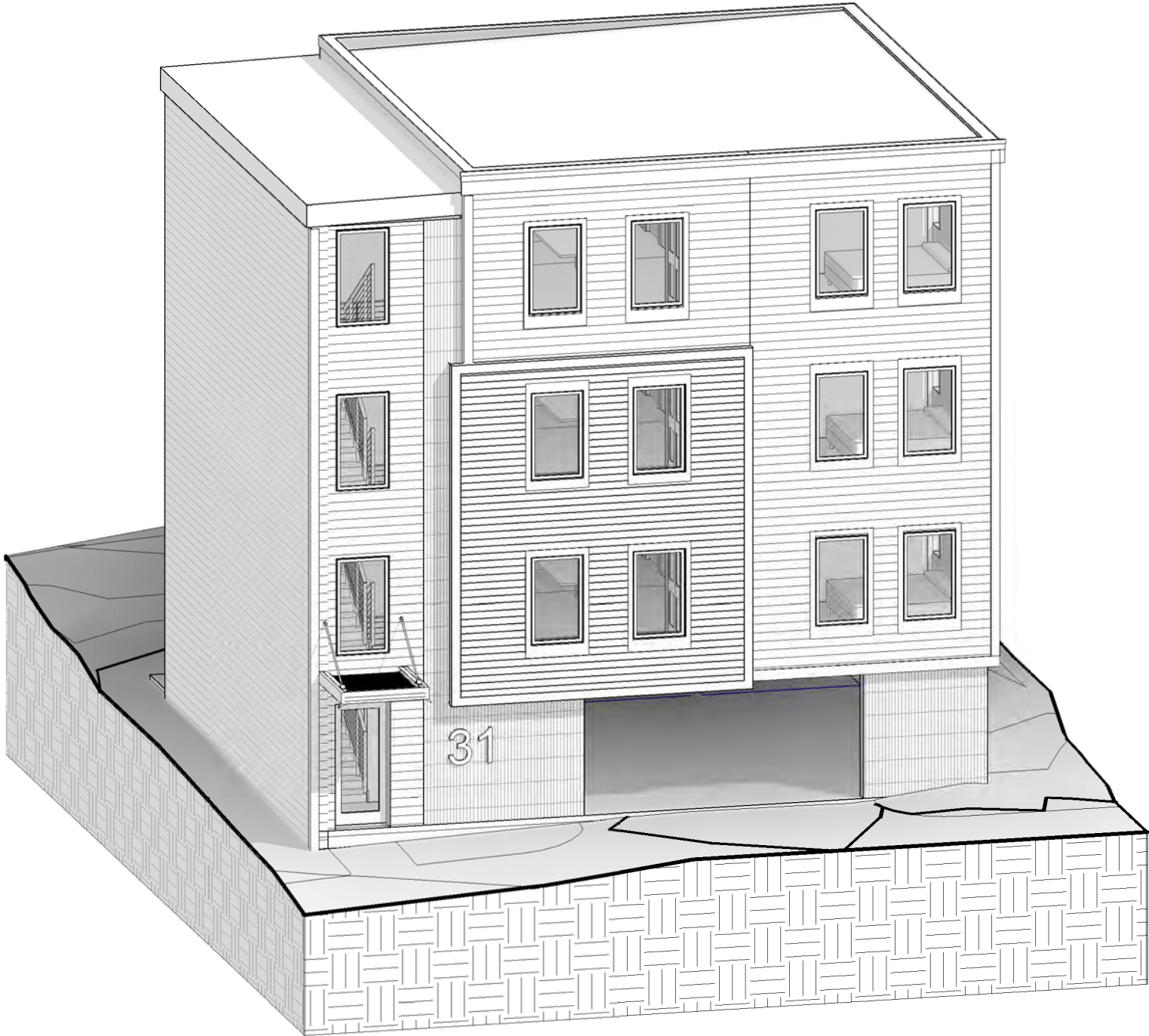


| EXISTING       | DESCRIPTION                | PROPOSED       |
|----------------|----------------------------|----------------|
| ---            | LOT SETBACKS               | ---            |
| ---            | PROPERTY LINE              | ---            |
| ---            | EDGE OF ROAD/TRAVELLED WAY | ---            |
| ---            | CONTOUR                    | ---            |
| 327.60 x 327.6 | SPOT GRADE                 | 327.60 x 327.6 |
| ---            | GAS SHUT-OFF               | ---            |
| ---            | UTILITY POLE               | ---            |
| ---            | OVERHEAD ELECTRICAL        | ---            |
| ---            | UNDERGROUND ELECTRICAL     | ---            |
| ---            | FIRE HYDRANT               | ---            |
| ---            | WATER GATE                 | ---            |
| ---            | SEWER LINE                 | ---            |
| ---            | SEWER MANHOLE              | ---            |
| ---            | DRAINAGE MANHOLE           | ---            |
| ---            | CATCH BASIN                | ---            |
| ---            | UNDERDRAIN/STORMDRAIN      | ---            |
| ---            | SILT FENCE                 | ---            |
| ---            | GRADING AND FLOW DIRECTION | ---            |
| ---            | STORMWATER BOUNDARY        | ---            |
| ---            | STORMWATER FLOW (10)       | ---            |
| ---            | FACE OF LEASE OUTSTOP      | ---            |
| ---            | BRUSH                      | ---            |
| ---            | MAPLE                      | ---            |





| Sheet List   |                               |
|--------------|-------------------------------|
| Sheet Number | Sheet Name                    |
| A000         | Cover                         |
| A001         | General Information           |
| A002         | Codes                         |
| A100         | Plans                         |
| A101         | Upper Level Plans             |
| A102         | Roof Plan                     |
| A200         | Facade Elevation              |
| A201         | Elevations                    |
| A202         | 3D Views                      |
| A300         | Sections                      |
| A400         | Enlarged Plan - Bathroom Typ. |
| A401         | Enlarged Plans - Kitchen Typ. |
| A600         | Schedules                     |



31 Forest St.  
Portland, ME 04101

Concept

1 Cover 3D

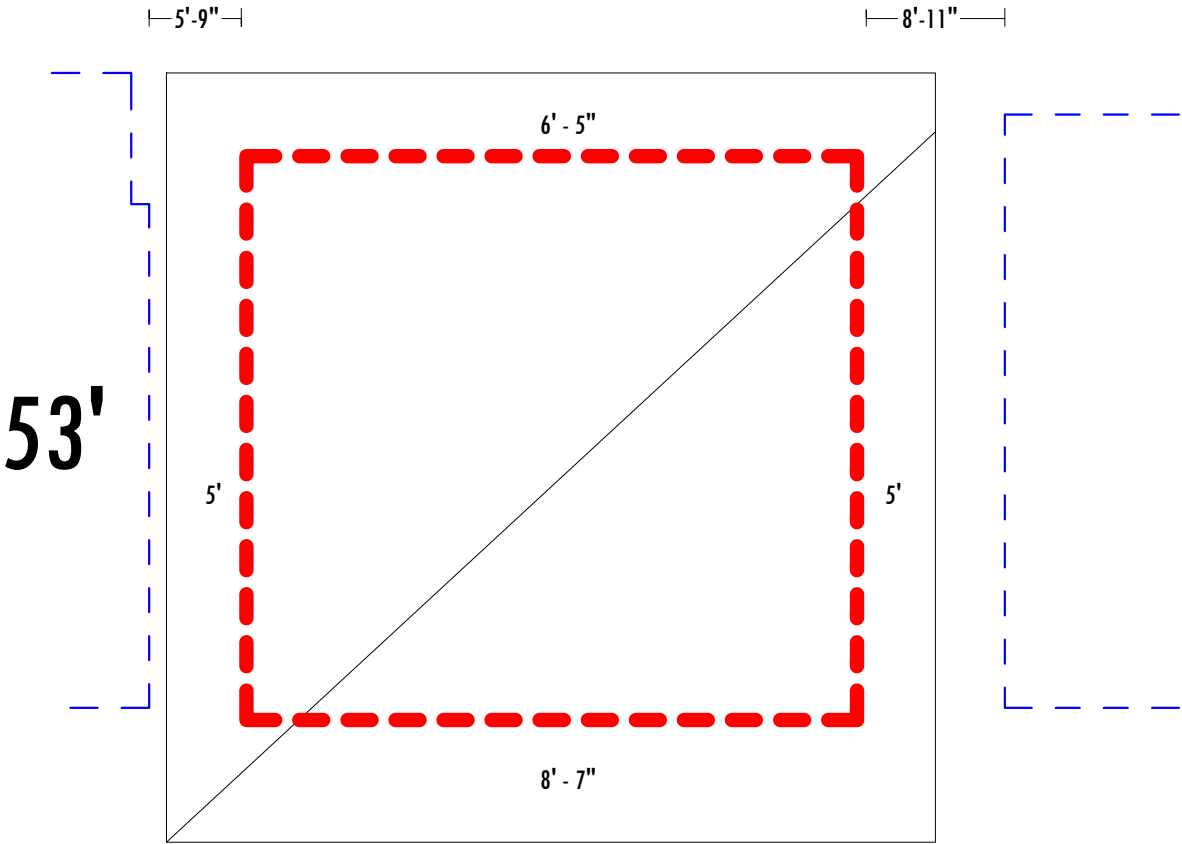


General Information

Scale

8.23.2022

|                                                   | R-6 <sup>6-7</sup>  | R-6a <sup>13</sup>        |
|---------------------------------------------------|---------------------|---------------------------|
| Governmental                                      |                     |                           |
| Hospital                                          | 2 ac.               |                           |
| Intermediate or long-term, extended care facility | 1 ac. <sup>8</sup>  |                           |
| Lodging house                                     | 2,000 SF            |                           |
| Multiplex                                         |                     |                           |
| Place of assembly                                 | <10,000 SF          | 10,000 SF                 |
| Post-secondary school                             | >10,000 SF          | 15,000 SF                 |
| Elementary, middle, and secondary school          | 2,000 SF            | 30,000 SF                 |
| Raising of animals                                |                     |                           |
| Residential                                       | 2,000 SF            | 4 ac.                     |
| All other uses                                    | 2,000 SF            |                           |
| Lot area per dwelling unit (min.)                 | 725 SF              |                           |
| Lot area per rooming unit (min.)                  | 250 SF <sup>9</sup> |                           |
| Lot area per multiplex unit (min.)                |                     |                           |
| Lot area per SNIDU <sup>1</sup> (min.)            |                     |                           |
| Street frontage (min.)                            | 20 ft.              |                           |
| Lot width (min.)                                  | 20 ft.              |                           |
| Front setback (min.)                              | 5 ft.               |                           |
| Rear setback (min.)                               | 10 ft.              |                           |
| Detached accessory (< 250 SF footprint)           | 5 ft.               |                           |
| <1.5 stories to 1.5 stories                       |                     | <45 ft. in height: 10 ft. |
| 2 stories                                         |                     |                           |
| 2.5 stories                                       | 5 ft. <sup>10</sup> |                           |
| Detached accessory (< 250 SF footprint)           |                     | >45 ft. in height: 15 ft. |
| On side street (min.)                             | None                |                           |



NOTE: Building setbacks adjusted to align with current existing context

Lot = 2597SF  
Max. Buildable Area = 1482SF  
 $1482/2597 = .57$  or 57%  
Allowed Lot Coverage for R6 = 60%

**BUILDING INFORMATION AND ALLOWABLE BUILDING HEIGHTS AND AREA**  
(IBC Chapter 5, Table 504.4, 506.2)(NFPA)

Construction Date 2022  
Building Height 4 Stories  
Total Area 3,690 sf  
Building height 35' (new)

Allowable Building area (per IBC 2015, NFPA101)

|                                         |                  |
|-----------------------------------------|------------------|
| Construction Type (existing)            | <b>TYPE 5B-S</b> |
| Occupancy Classification (existing)     | <b>R-2</b>       |
| Sprinkler System -                      | <b>YES</b>       |
| Allowable Building Height (TABLE 504.3) | <b>65 feet</b>   |
| Allowable No. of Stories (TABLE 504.4)  | <b>4</b>         |
| Allowable Building Area (TABLE 506.2)   | <b>UL</b>        |

**FIRE RESISTIVE RATINGS** (IBC Table 601), (NFPA Table A.8.2.1.1)

|                                            |         |
|--------------------------------------------|---------|
| Structural Frame                           | 0 hour  |
| Bearing Walls, Exterior and Interior       | 0 hours |
| Non-Bearing Walls and partitions, interior | 0 hours |
| Non-Bearing Walls and partitions, exterior | 0 hours |
| Floor Construction and Secondary Members   | 0 hours |
| Roof Construction and Secondary Members    | 0 hours |

Occupancy Load (IBC Table 310.5)  
Residential R-6

**CODE SUMMARY**

**APPLICABLE CODES**

Maine State Building Codes

2015 International Residential Building Code (IRC) - as amended by State Building Code  
2015 International Energy Conservation Code (IECC)  
2015 International Plumbing Code  
2017 International Electrical Code

**Fire/Life Safety**

2015 NFPA v.101 - as amended by State Fire Code

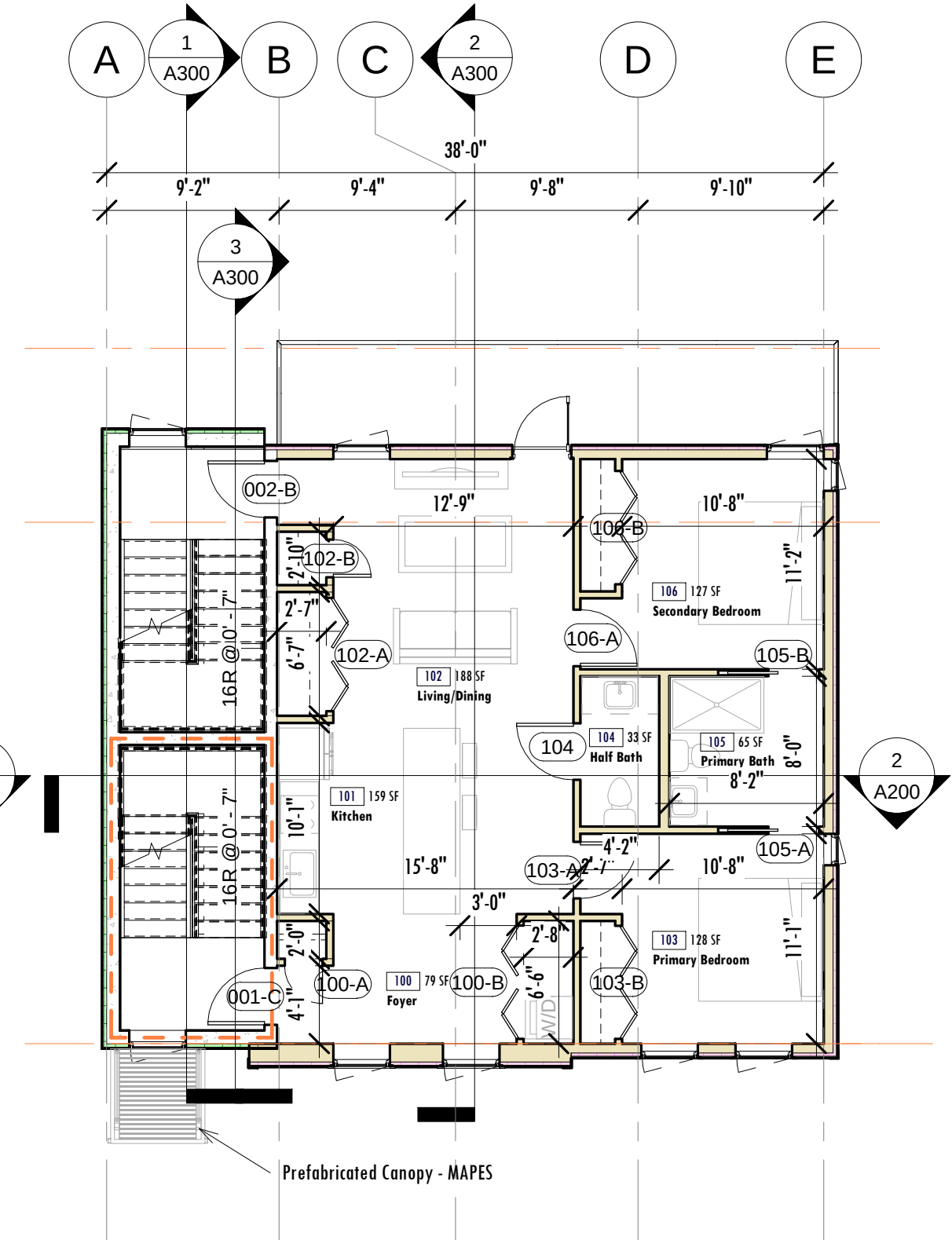
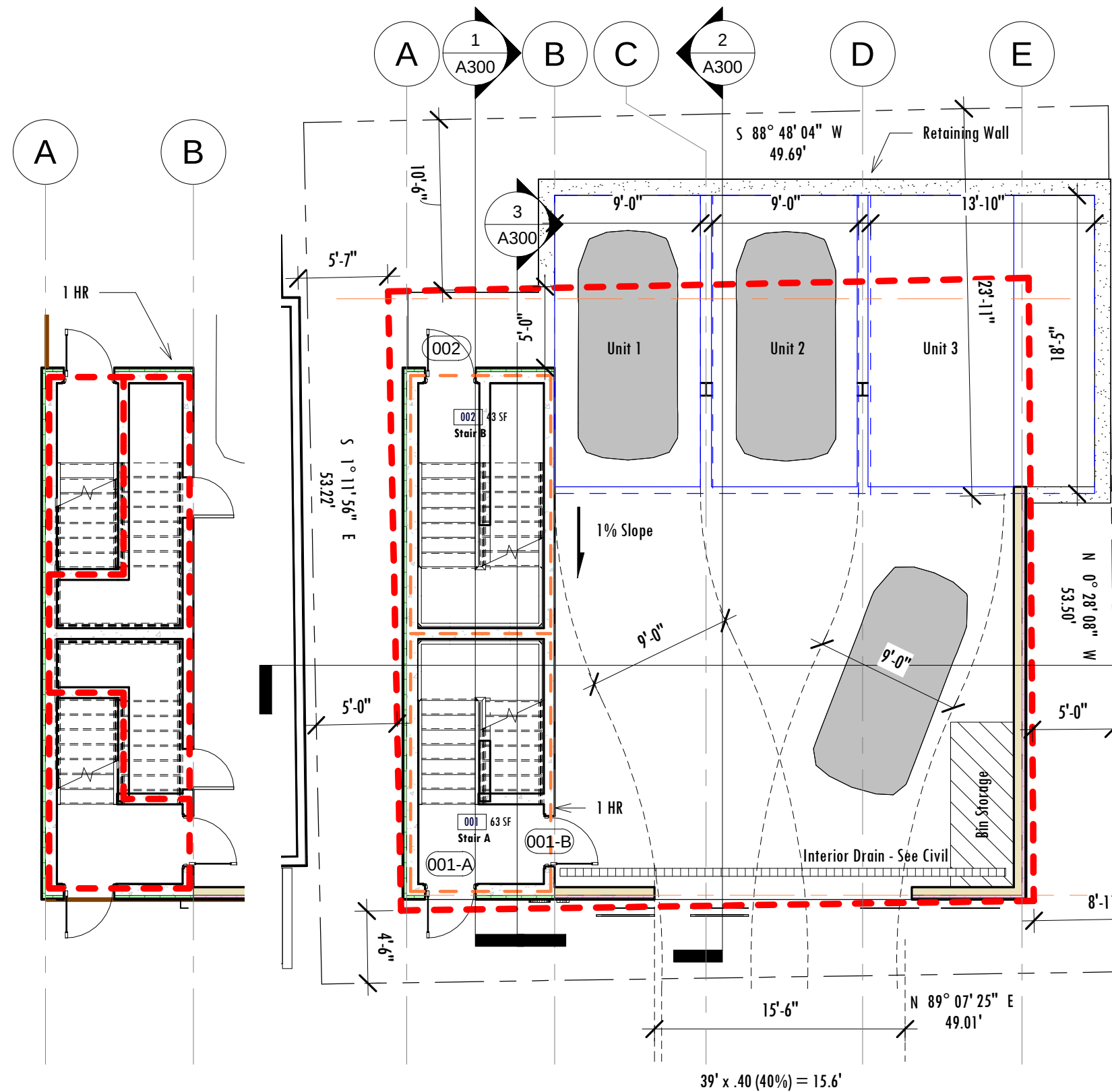
**OCCUPANCY CLASSIFICATION** (IBC Sec 302.1.8, 310.1)

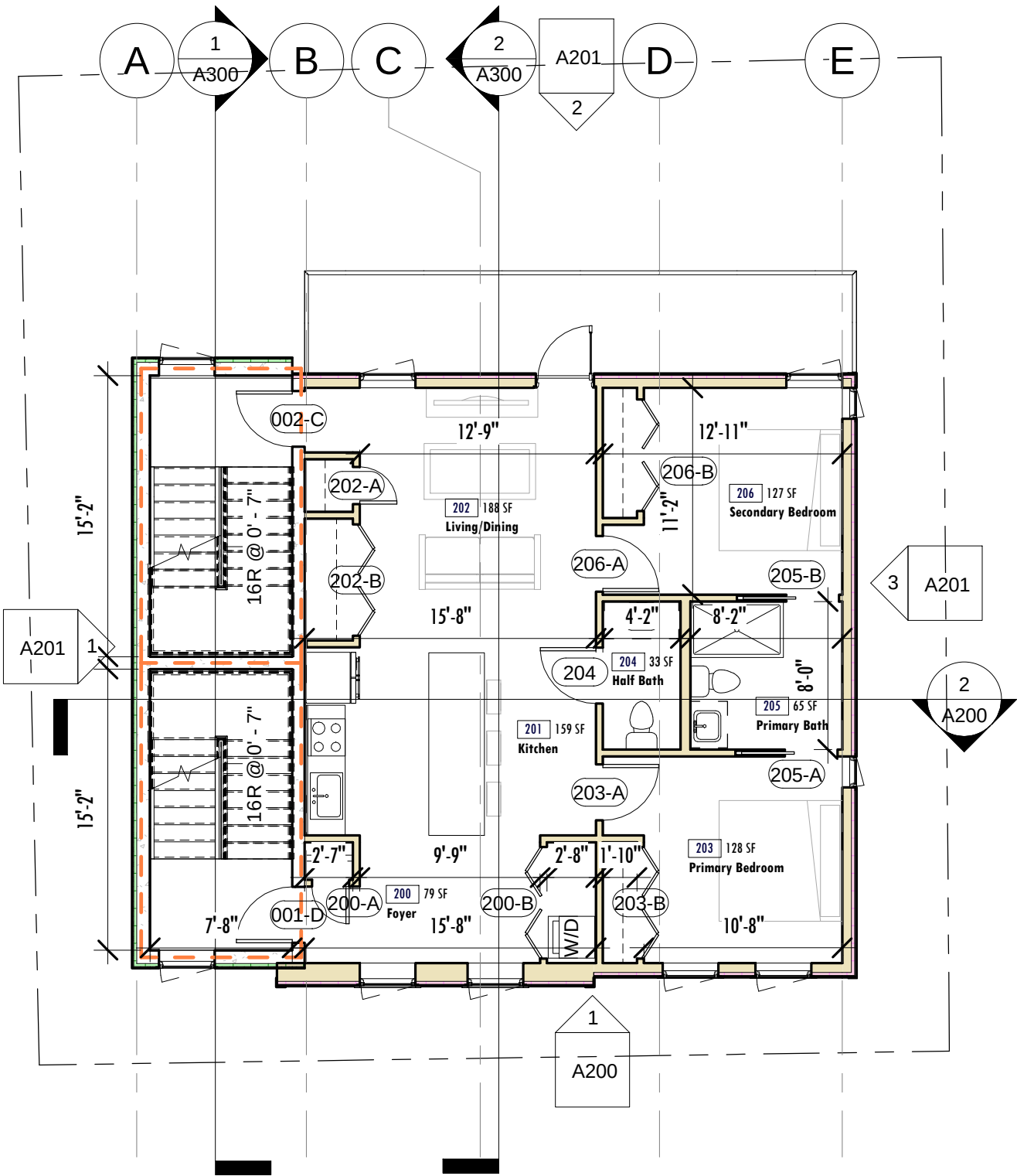
Residential **R-2** Multi-Family Housing

**WIND LOAD**

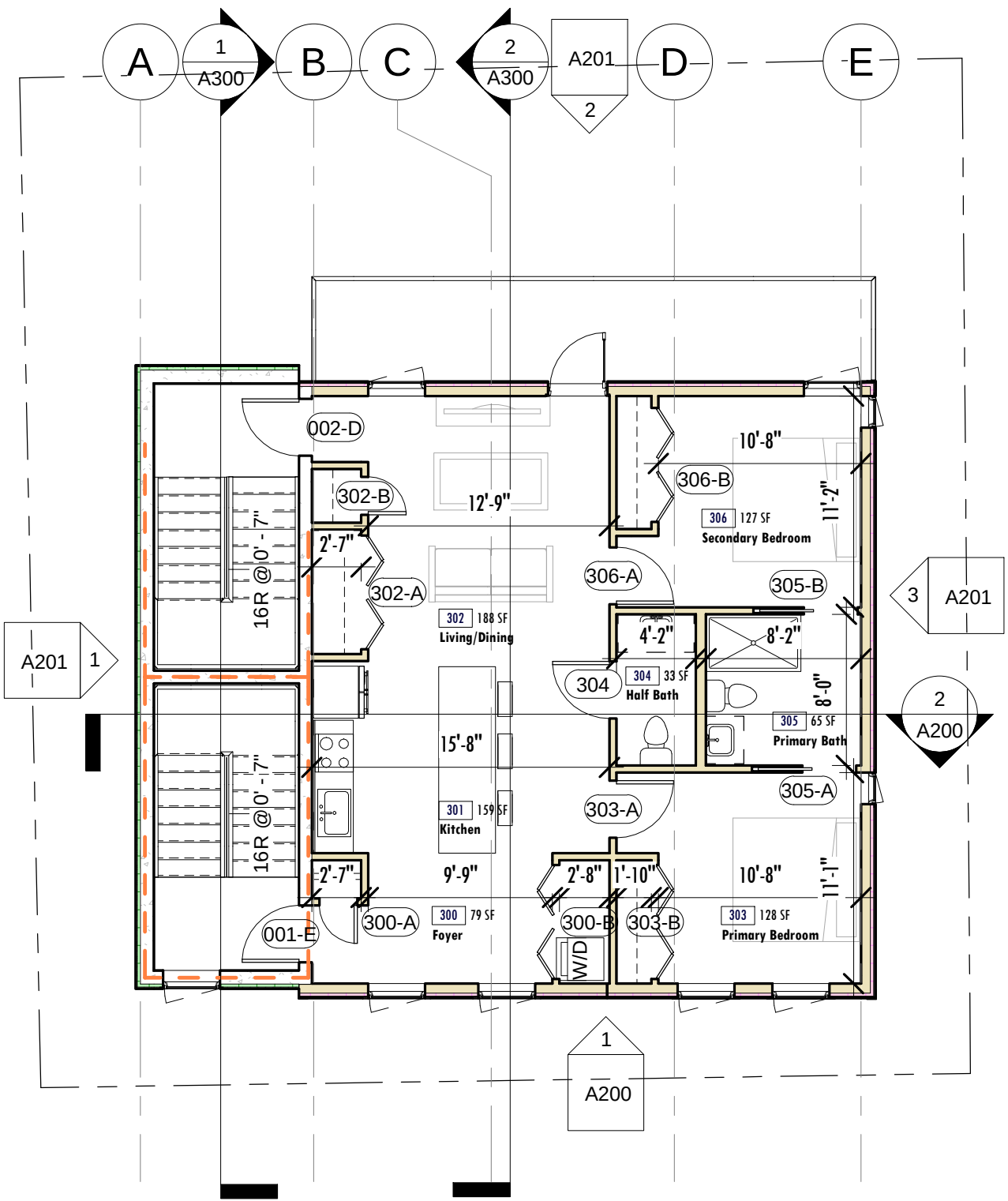
Exposure C  
Special Wind Region



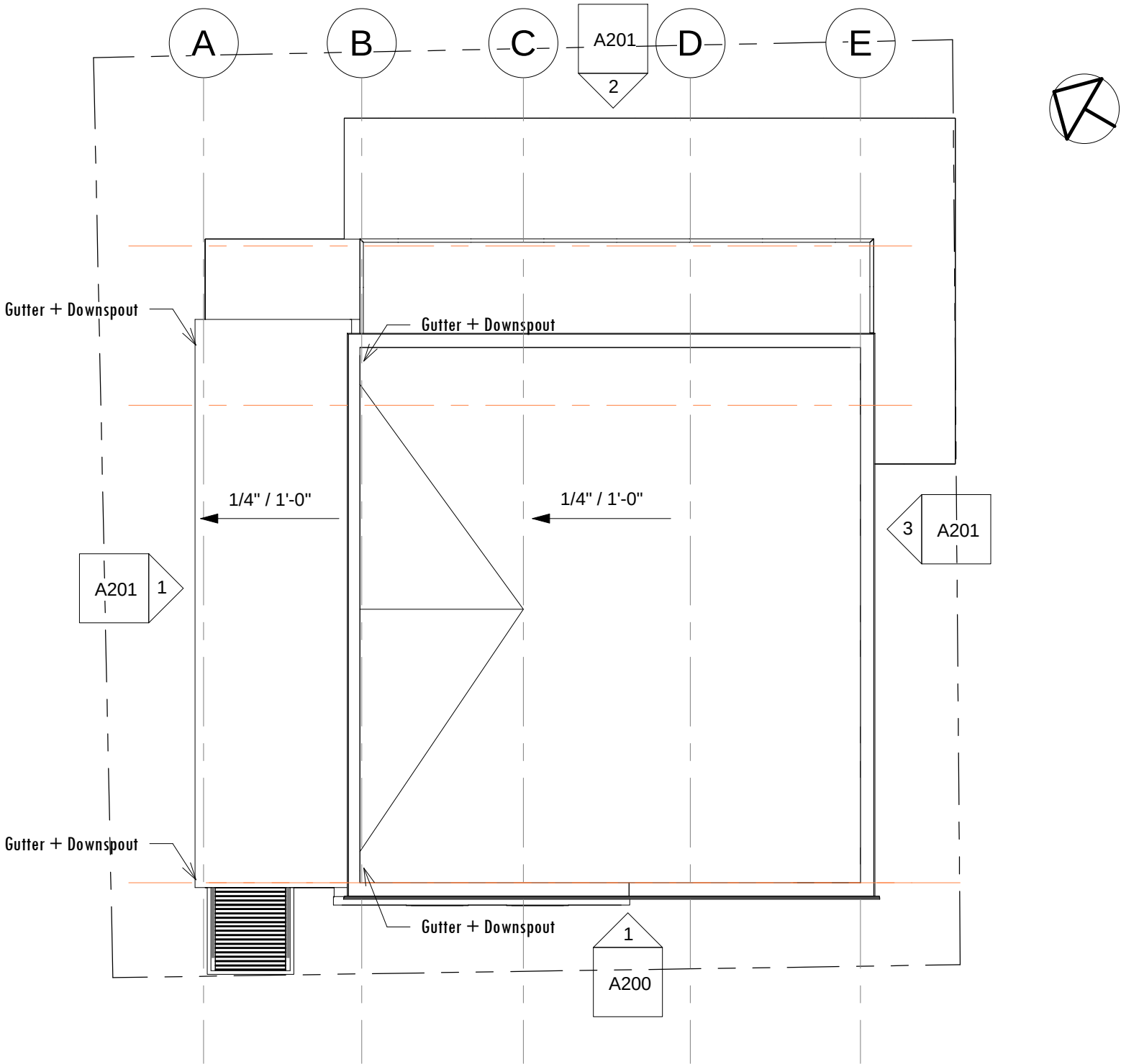


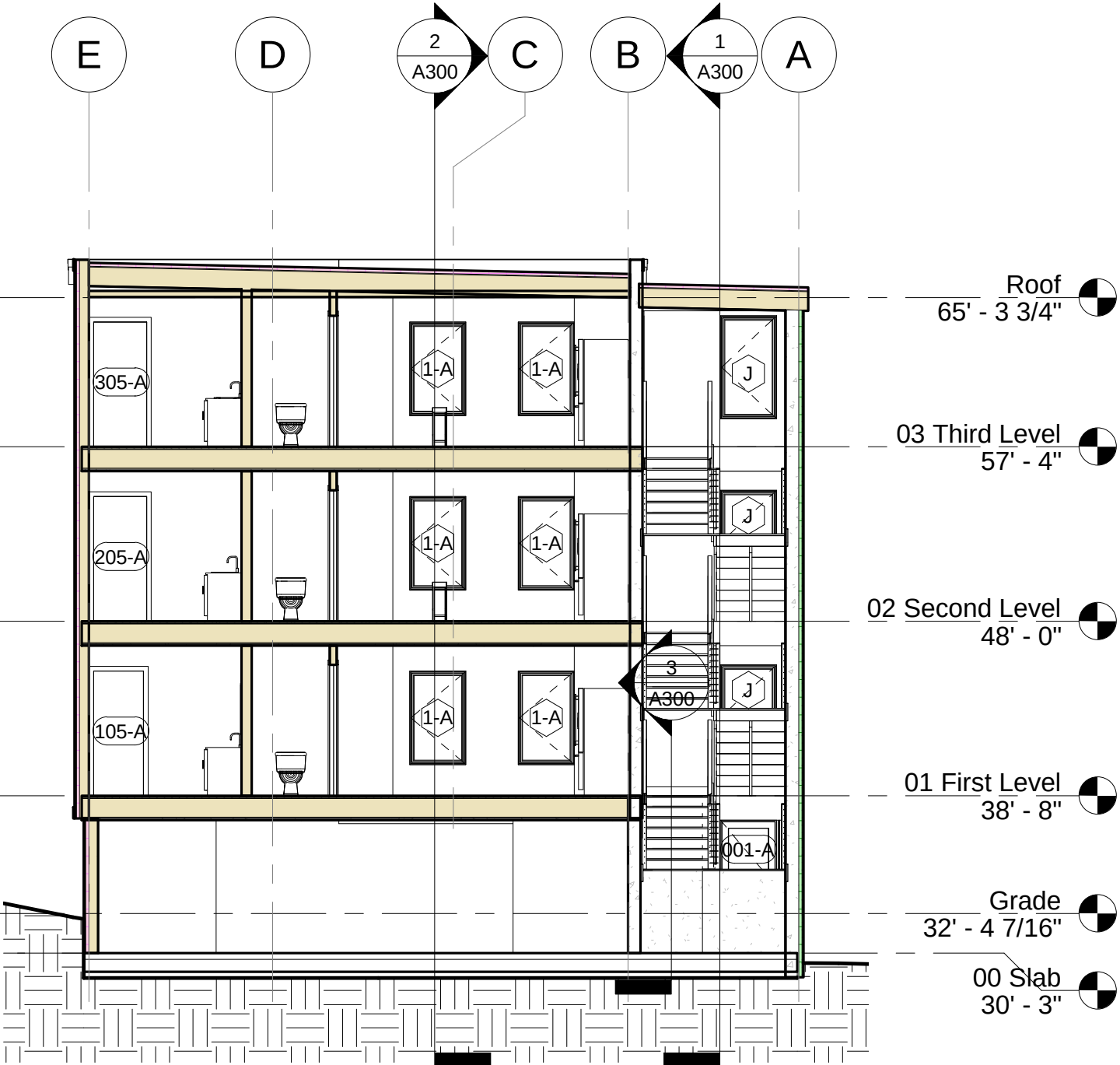


1 02 Second Level - Presentation  
1/8" = 1'-0"



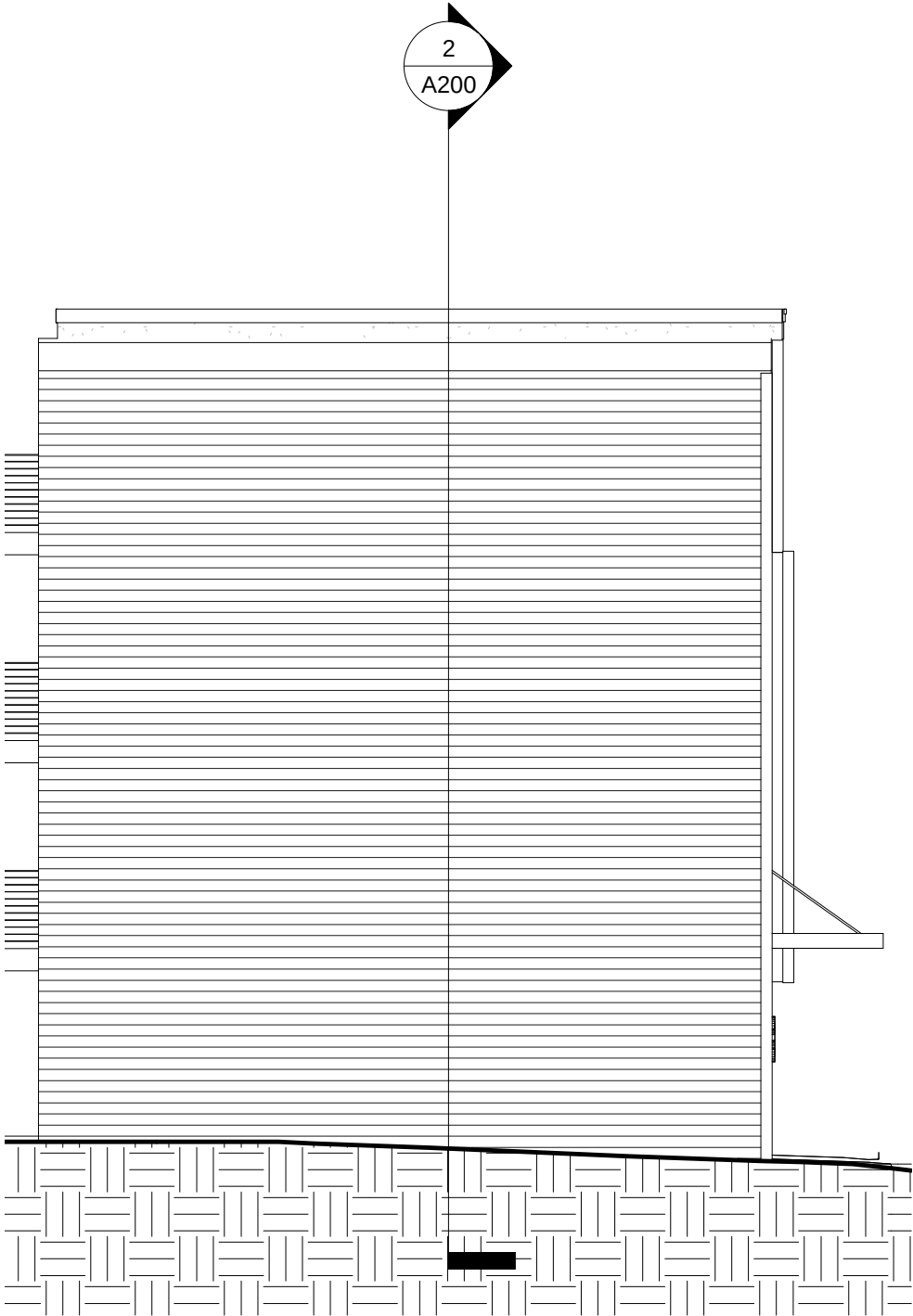
2 03 Third Level - Presentation  
1/8" = 1'-0"



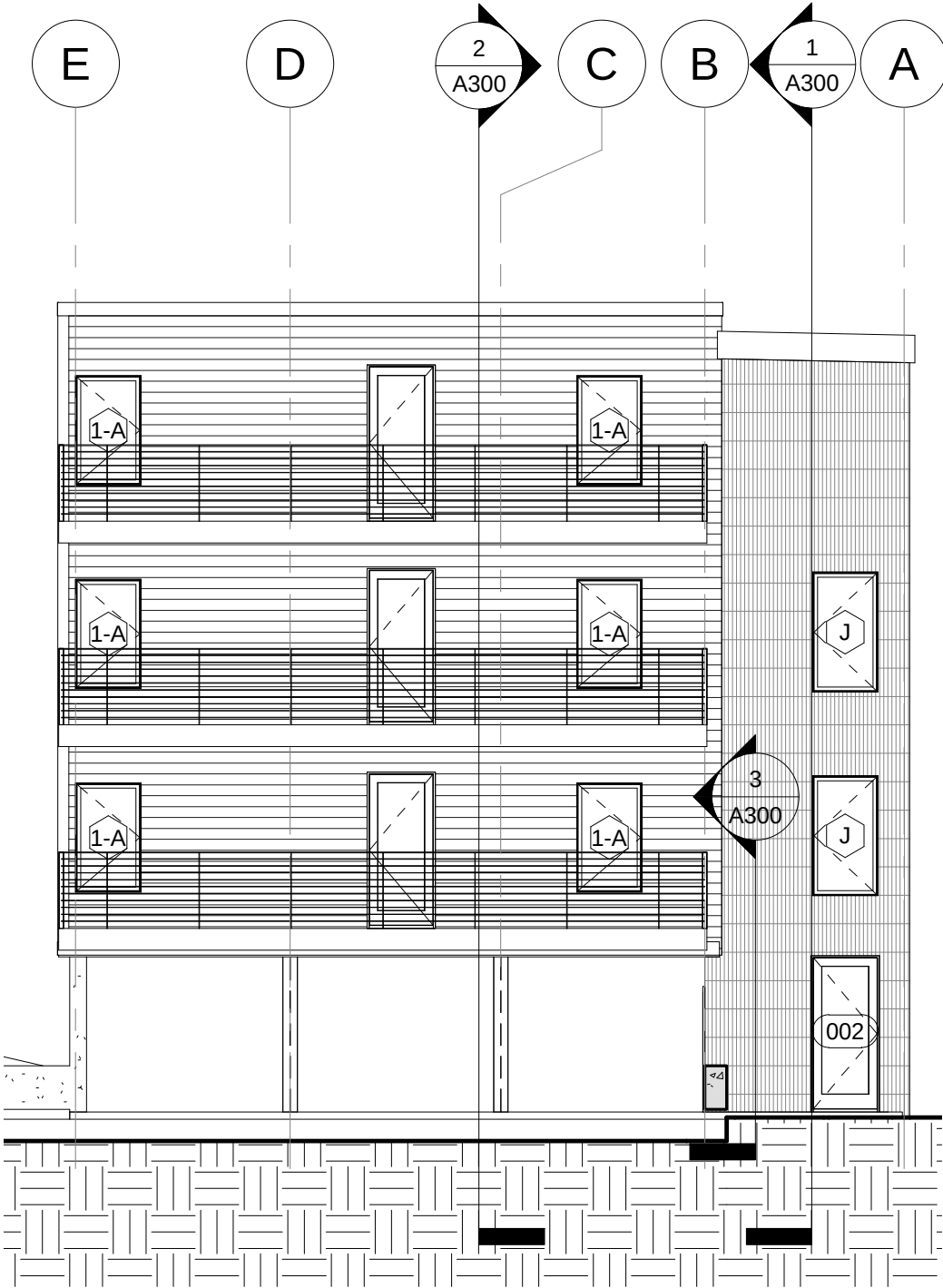


1 Elevation - South  
1/8" = 1'-0"

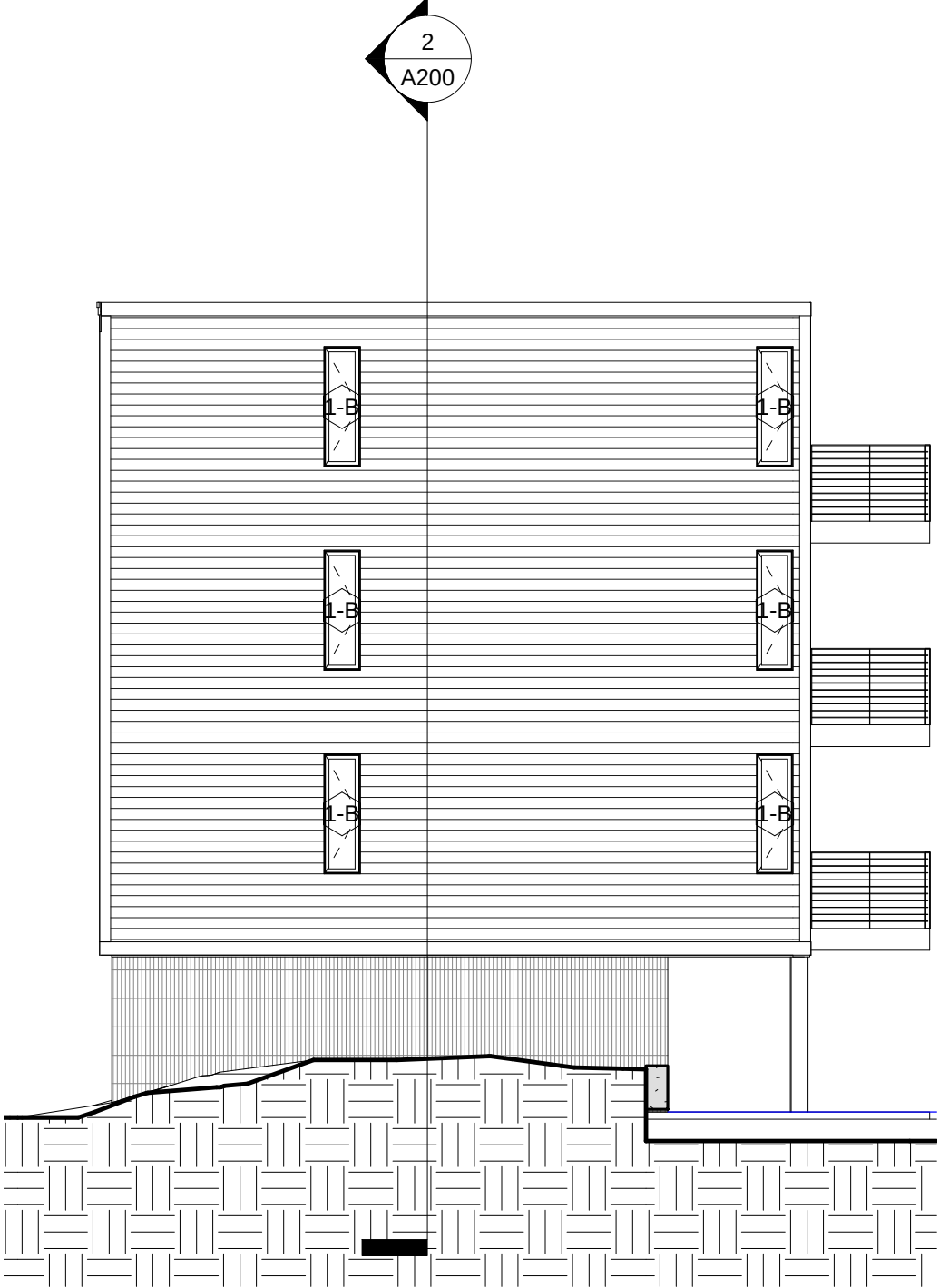
2 Section - Transverse  
1/8" = 1'-0"



1 Elevation - West  
1/8" = 1'-0"



2 Elevation - North  
1/8" = 1'-0"



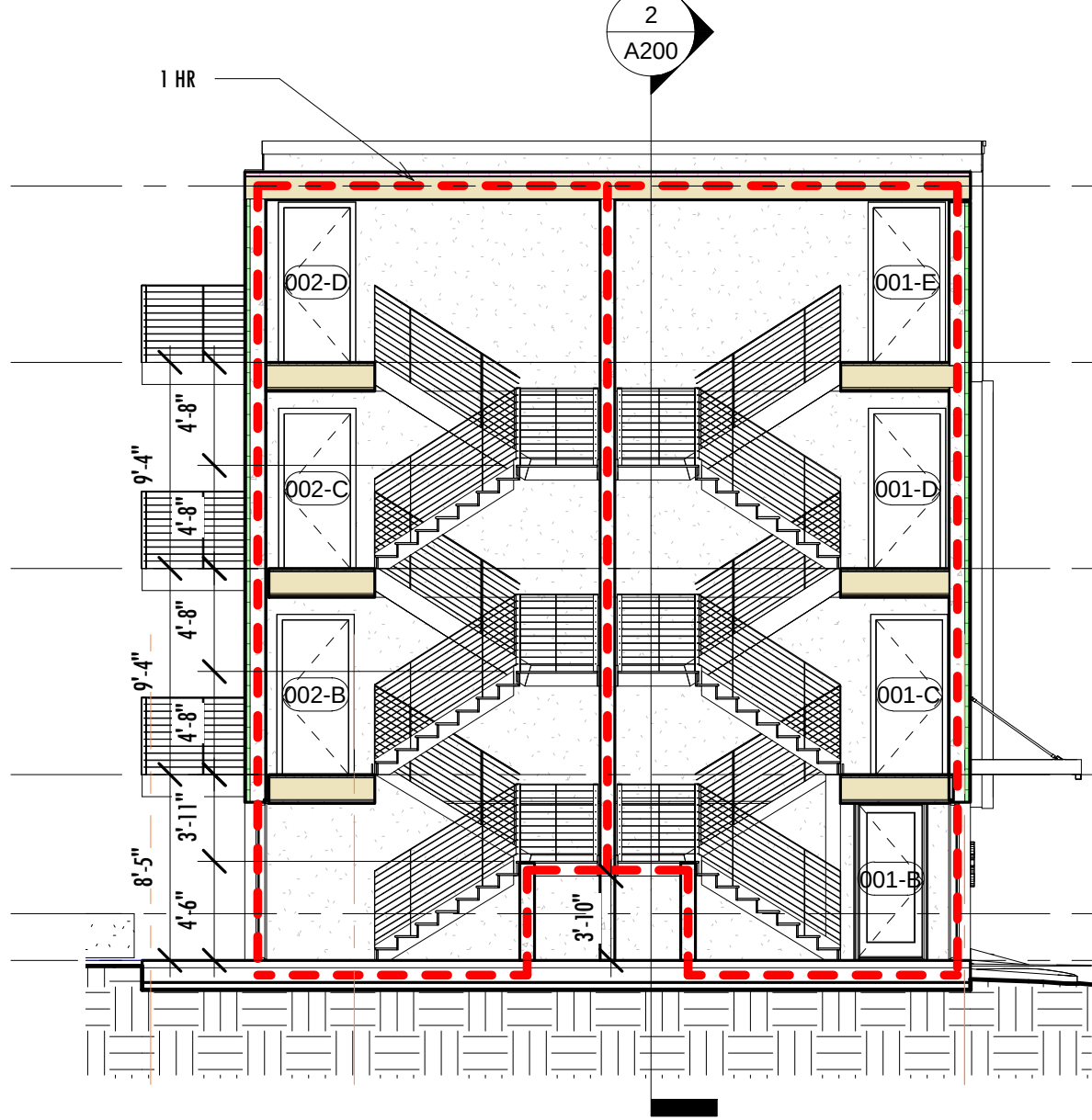
3 Elevation - East  
1/8" = 1'-0"



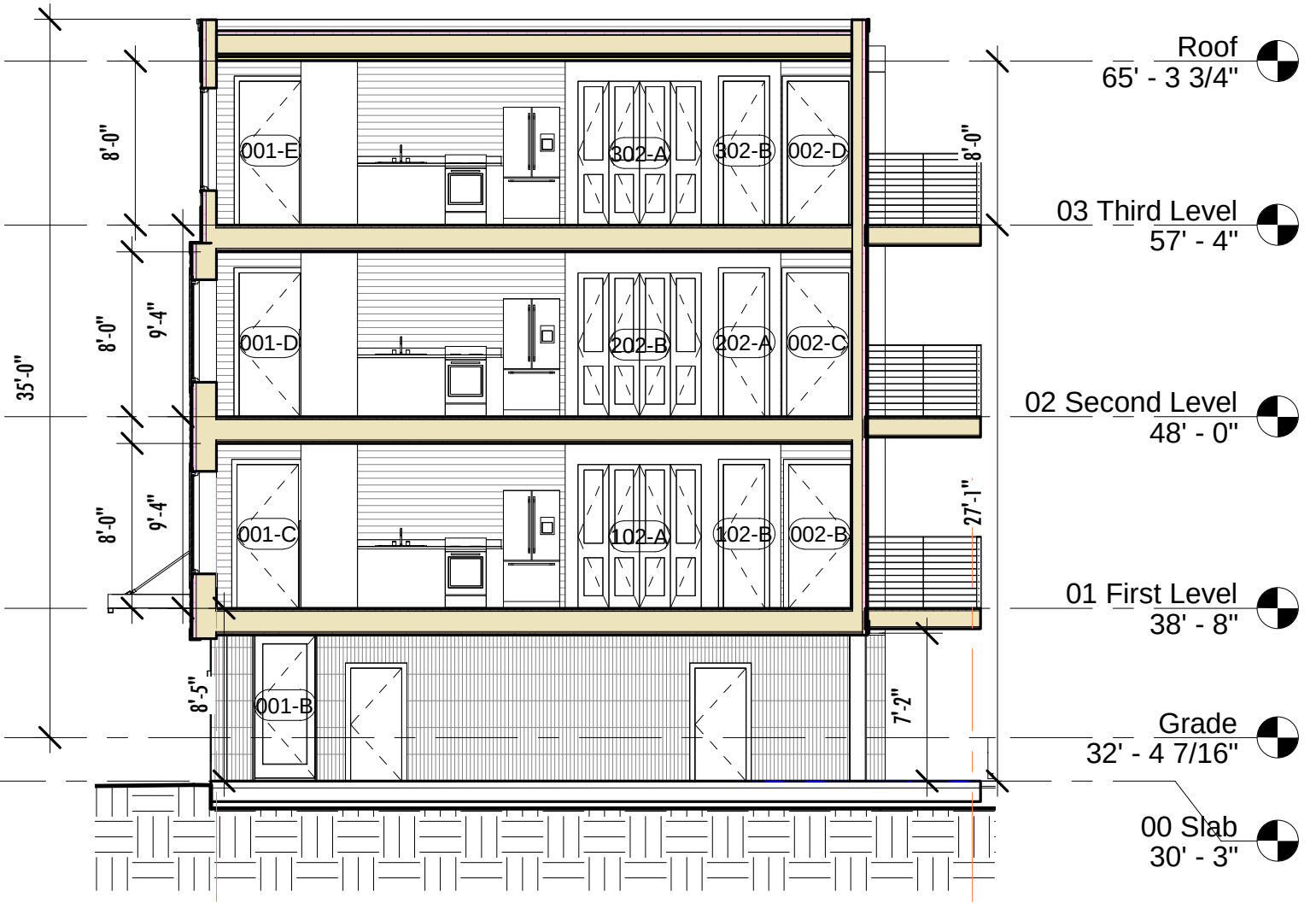


1 3D View 1

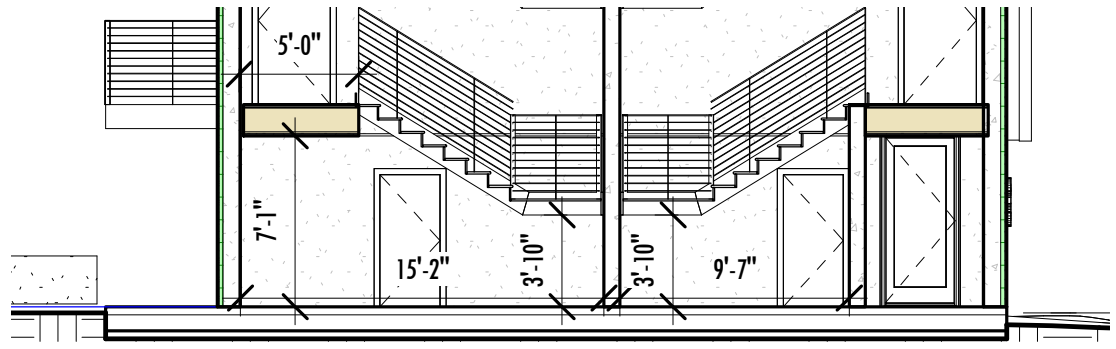
2 3D View 2



① Section - Stair Tower  
1/8" = 1'-0"

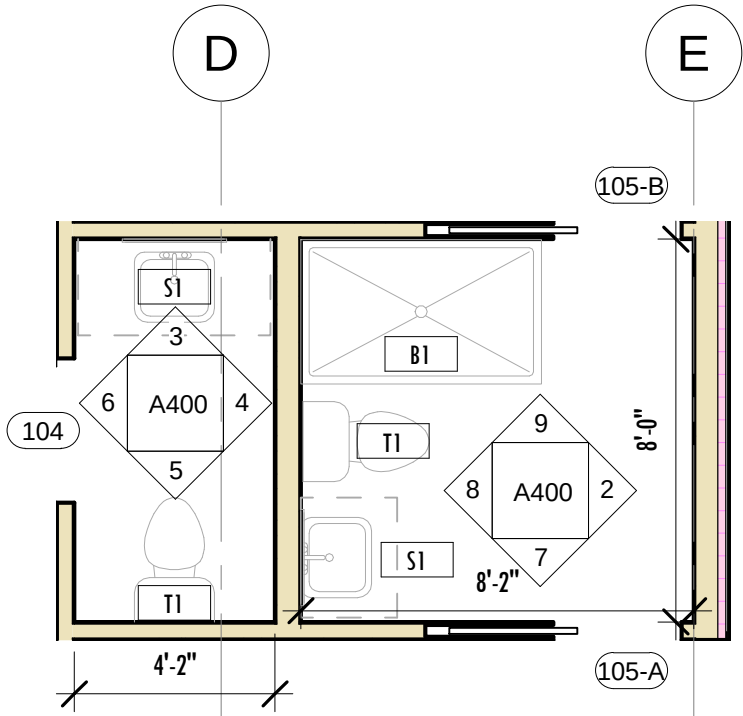


② Section - Longitudinal  
1/8" = 1'-0"

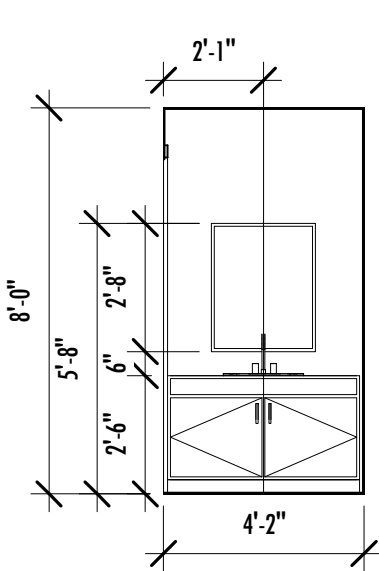


③ Section - Mechanical Crawlspace  
1/8" = 1'-0"

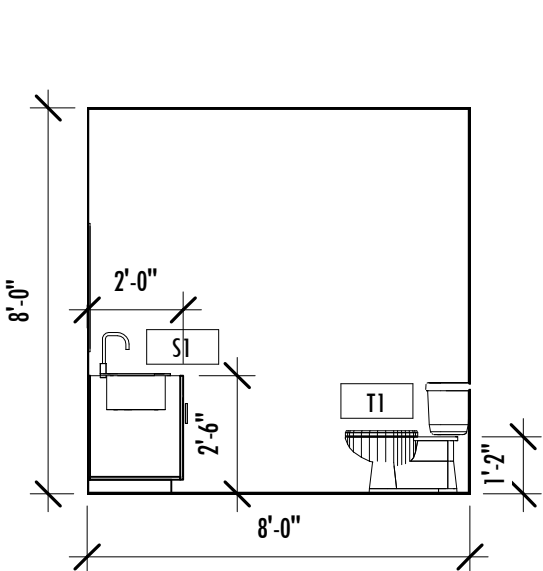




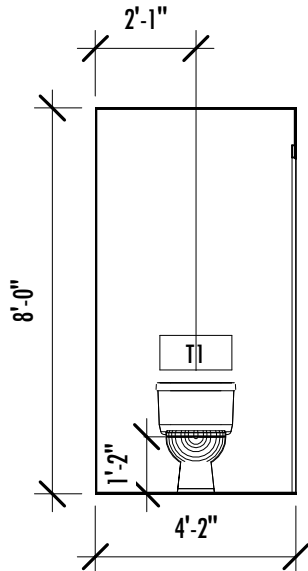
1 Enlarged Plan - Bathrooms Typ.  
1/4" = 1'-0"



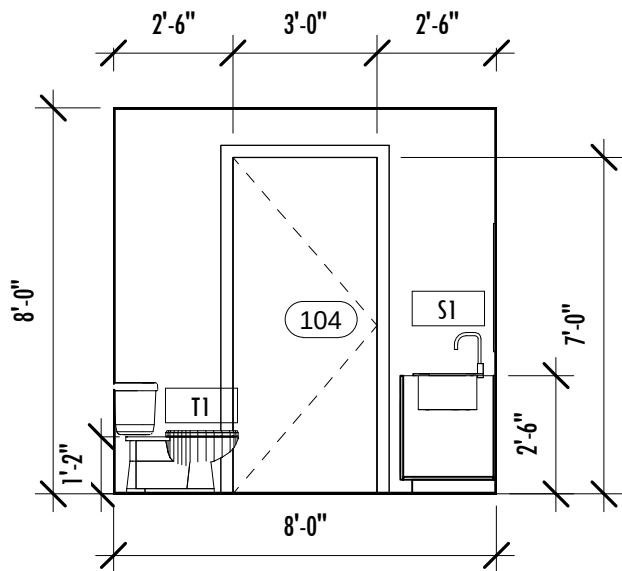
3 Elevation - Powder Room - A  
1/4" = 1'-0"



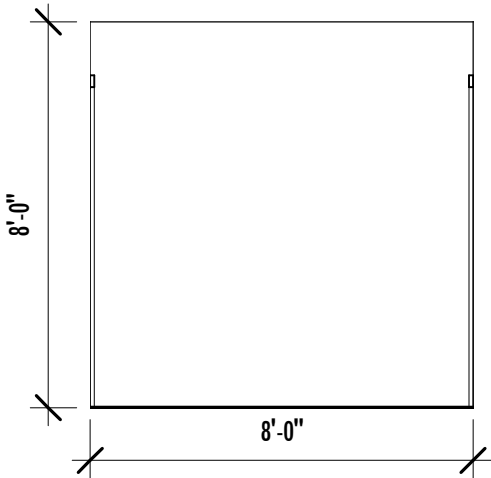
4 Elevation - Powder Room - B  
1/4" = 1'-0"



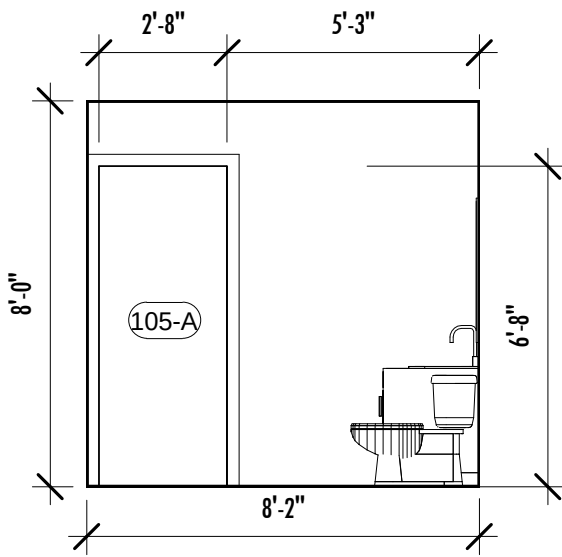
5 Elevation - Powder Room C  
1/4" = 1'-0"



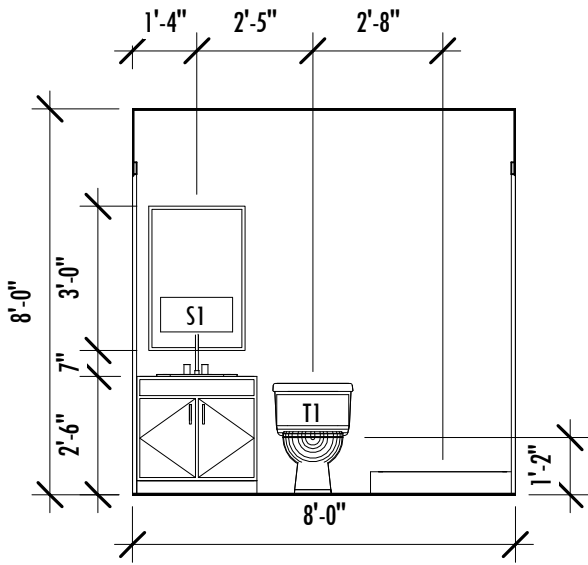
6 Elevation - Powder Room D  
1/4" = 1'-0"



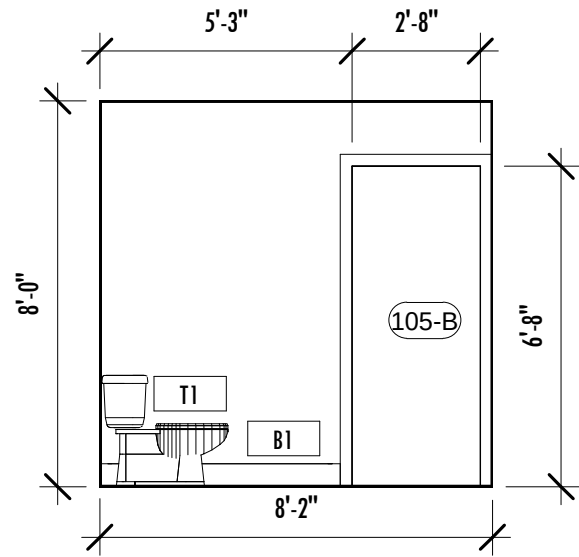
2 Elevation - Primary Bath - A  
1/4" = 1'-0"



7 Elevation - Primary Bath - B  
1/4" = 1'-0"



8 Elevation - Primary Bath - C  
1/4" = 1'-0"



9 Elevation - Primary Bath - D  
1/4" = 1'-0"



| Window Schedule |       |               |        |         |         |             |          |
|-----------------|-------|---------------|--------|---------|---------|-------------|----------|
| Type Mark       | Count | Type Comments | Model  | Height  | Width   | Sill Height | Comments |
| 1-A             | 18    |               |        | 5' - 0" | 3' - 0" | 1' - 8"     |          |
| 1-B             | 6     |               | MCACRK | 5' - 6" | 1' - 4" | 2' - 6"     |          |
| J               | 5     | Casement      |        | 5' - 6" | 3' - 0" | 1' - 6"     |          |

| Room Finish Schedule |                   |        |                |               |             |            |             |          |
|----------------------|-------------------|--------|----------------|---------------|-------------|------------|-------------|----------|
| Num.                 | Name              | Area   | Ceiling Height | Ceiling Mat'l | Floor Mat'l | Base Mat'l | Wall Finish | Comments |
| 100                  | Foyer             | 79 SF  |                |               |             |            |             |          |
| 101                  | Kitchen           | 159 SF |                |               |             |            |             |          |
| 102                  | Living/Dining     | 188 SF |                |               |             |            |             |          |
| 103                  | Primary Bedroom   | 128 SF |                |               |             |            |             |          |
| 104                  | Half Bath         | 33 SF  |                |               |             |            |             |          |
| 105                  | Primary Bath      | 65 SF  |                |               |             |            |             |          |
| 106                  | Secondary Bedroom | 127 SF |                |               |             |            |             |          |
| 200                  | Foyer             | 79 SF  |                |               |             |            |             |          |
| 201                  | Kitchen           | 159 SF |                |               |             |            |             |          |
| 202                  | Living/Dining     | 188 SF |                |               |             |            |             |          |
| 203                  | Primary Bedroom   | 128 SF |                |               |             |            |             |          |
| 204                  | Half Bath         | 33 SF  |                |               |             |            |             |          |
| 205                  | Primary Bath      | 65 SF  |                |               |             |            |             |          |
| 206                  | Secondary Bedroom | 127 SF |                |               |             |            |             |          |
| 300                  | Foyer             | 79 SF  |                |               |             |            |             |          |
| 301                  | Kitchen           | 159 SF |                |               |             |            |             |          |
| 302                  | Living/Dining     | 188 SF |                |               |             |            |             |          |
| 303                  | Primary Bedroom   | 128 SF |                |               |             |            |             |          |
| 304                  | Half Bath         | 33 SF  |                |               |             |            |             |          |
| 305                  | Primary Bath      | 65 SF  |                |               |             |            |             |          |
| 306                  | Secondary Bedroom | 127 SF |                |               |             |            |             |          |

| Plumbing Fixture Schedule |       |                               |               |       |          |
|---------------------------|-------|-------------------------------|---------------|-------|----------|
| Type Mark                 | Count | Description                   | Type Comments | Color | Comments |
| B1                        | 3     | Shower Base                   |               |       |          |
| S1                        | 6     | Vanity Sink                   |               |       |          |
| S2                        | 3     | Kitchen Sink                  |               |       |          |
| T1                        | 6     | Floor Mouth Flush Tank Toilet |               |       |          |

Preble Street Teen Emergency Shelter  
343 Cumberland Avenue  
Conditional Use  
CU-002134-2022  
Preble Street, Applicant

|                             |                         |                     |                    |
|-----------------------------|-------------------------|---------------------|--------------------|
| <b>Submitted to:</b>        | Portland Planning Board | <b>Prepared By:</b> | Charles Tetelman   |
| <b>Public Hearing Date:</b> | September 27, 2022      | <b>Date:</b>        | September 23, 2022 |

## I. INTRODUCTION

Preble Street has applied for a Conditional Use Application and a Minor Site Plan Application (change of use) to convert the existing teen center located at 343 Cumberland Avenue into a 24-bed emergency shelter for teens. The proposed applications would facilitate the reconfiguration of the building's interior to provide medical services, office space for caseworkers and support staff, and facilities related to the operation of an emergency shelter including laundry, bathroom, and beds. The proposed emergency shelter is located in the B-3 Downtown Business Zone.

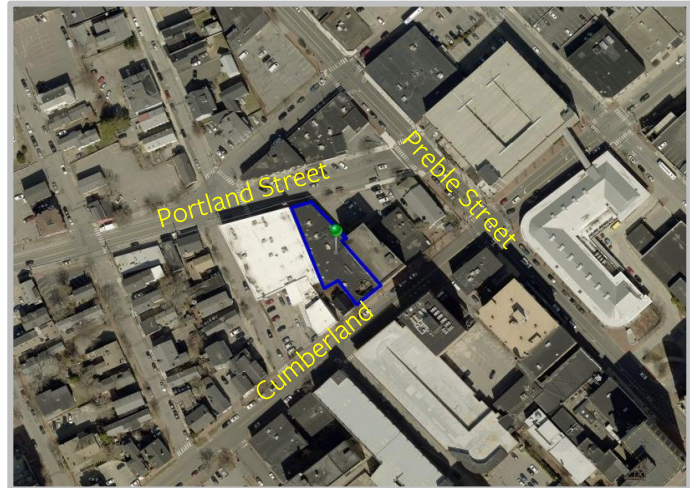


Figure 1: 343 Cumberland Avenue Aerial View

The proposed use as an Emergency Shelter within the B-3 zone requires a Conditional Use permit, reviewed by the Planning Board (Chapter 14 Section 6.5.1) for compliance with the Conditional Use standards including Chapter 14 Section 6.5.2 (General Conditional Use Standards) and Chapter 14 Section 6.5.6.B (Supplemental Use-Specific Conditional Use Standards for Emergency Shelters). Pursuant to site plan review thresholds, the Minor Site Plan application is under review by the Planning staff.

The Planning and Urban Development Department mailed 109 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the September 17 and September 20, 2022 editions of the *Portland Press Herald*.

The Planning Board held a workshop on September 13, 2022.

**Applicant:** Preble Street  
**Applicant Representative:** Donna Larson Kane, AICP (LK Planning)

## II. REQUIRED REVIEWS

| <b>Review</b>                                              | <b>Applicable Standards</b>                                   |
|------------------------------------------------------------|---------------------------------------------------------------|
| <i>General Conditional Use Standards</i>                   | <i>Chapter 14, 6.5.2 General Conditional Use</i>              |
| <i>Supplemental Use-Specific Conditional Use Standards</i> | <i>Chapter 14, 6.5.6.B Emergency Shelters Conditional Use</i> |

### III. PROJECT DATA

|                 |                       |
|-----------------|-----------------------|
| Existing Zoning | B-3 Downtown Business |
| Property Size   | 11,136 square feet    |
| Existing Use    | 12-Hour Teen Center   |
| Proposed Use    | Emergency Shelter     |

|                         | <i>Existing</i>    | <i>Proposed</i>    | <i>Net Change</i> |
|-------------------------|--------------------|--------------------|-------------------|
| Building Footprint      | 11,136 square feet | 11,136 square feet | 0                 |
| Building Floor Area     | 11,136 square feet | 11,136 square feet | 0                 |
| Impervious Surface Area | 98.8%              | 98.8%              | 0                 |
| Bicycle Parking Spaces  | 0                  | 7                  | +7                |

### IV. BACKGROUND

Preble Street is a private, non-profit organization currently operating a Resource Center and 40-bed Emergency Shelter (5 Portland Street), three housing facilities (52 Frederic Street, 190 Valley Street, and 72 Bishop Street), a teen center (343 Cumberland Avenue), a teen emergency overnight shelter (38 Preble Street), and the Learning Collaborative in collaboration with Maine Medical Center (20 Portland Street). Additionally, Preble Street provides a variety of resources and services including rapid re-housing, veteran housing services, street outreach, anti-trafficking services, health services, and emergency food programs. According to the applicant the Preble Street Teen Center at 343 Cumberland Avenue serves as the primary location for services for homeless and runaway youth in Portland. The Teen Center provides immediate needs including clothing, nutritious meals, and crisis intervention as well as other critical services that promote growth, safety, stability, and independence. Currently, the Teen Center is open 8am to 8pm every day. Preble Street also operates the Joe Kreisler Teen Shelter (Emergency Shelter) at 38 Preble Street that provides homeless and runaway youth similar services to the Teen Center but also provides overnight shelter and is open 8pm to 8am every day.



Figure 2: 343 Cumberland Avenue Street View (Preble Street Teen Center)



On November 30, 2011, the Planning Board unanimously approved a Conditional Use Application (#2011-323) for the Joe Kreisler Teen Shelter at 38 Preble Street. On January 5, 2021, the Planning Board unanimously approved a Conditional Use Application (CU-001231-2020) to convert the Resource Center at 5 Portland Street into a 40-bed Emergency Shelter.

In 2017, the Portland City Council expanded zones where emergency shelters were permitted as conditional uses, as well as adopting new, expanded conditional use standards ([Order 252-16/17](#)) Passage: 8-o (Duson absent). The conditional use standards included new operational controls, such as requirements for a management plan, basic design guidelines related to facility and site layout, and access requirements for public transportation.

## V. EXISTING CONDITIONS AND SURROUNDING AREA

The proposed Preble Street Teen Emergency Shelter is located at 343 Cumberland Avenue, which is currently operating as the Teen Center. The building is two stories in height, with a first floor entrance at 20 Portland Street (Learning Collaborative) and a second floor entrance along Cumberland Avenue (Teen Resource Center). The site is located within the B-3 Downtown Business zone in the Bayside neighborhood and is surrounded by a mix of residential, commercial, and institutional uses. The Preble Street Resource Center, currently undergoing renovations to convert to a 40-bed Emergency Shelter, is at the corner of Portland Street and Preble Street. Portland High School is located at 284 Cumberland Avenue approximately three blocks east from the proposed teen shelter and the Portland Public Library located at 5 Monument Square is approximately two blocks south.

343 Cumberland Avenue is in close proximity to three primary METRO transit hubs. Approximately two blocks to the east is the METRO Pulse at Elm Street, one block to the south is the Monument Square stop, and a few blocks to the southwest is a transfer point at the corner of Forest Avenue and Congress Street. Between these three nearby transit hubs, nearly all the METRO Routes are accessible. Additionally, the proposed Emergency Shelter is near the head of the Bayside Trail which connects into the Back Cove Trail and the Eastern Promenade Trail providing access to the shelter for pedestrians or bicyclists.

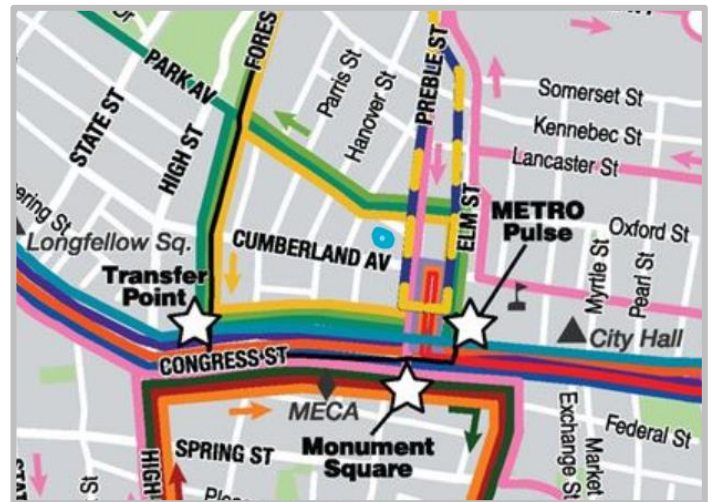


Figure 3: Transit Map (source: GP Metro)

## VI. PROPOSED DEVELOPMENT

Preble Street has submitted a Conditional Use Application alongside a Minor Site Plan Application to convert the existing Teen Center at 343 Cumberland Avenue into a 24-bed Emergency Shelter for teens. Currently, the Joe Kreisler Teen Shelter at 38 Preble Street and the Teen Center at 343 Cumberland Avenue serve youth experiencing homelessness between the ages of 12-20. The Teen Center provides services twelve hours per day but clients seeking shelter need to exit the facility and walk to the Teen Shelter across the street in the evening. Preble Street seeks to consolidate both facilities under one roof at 343 Cumberland Avenue. These applications would facilitate the renovation of the upper level (7,981 square

feet) of the two story building. The Emergency Shelter will operate exclusively on the second floor of the building and the existing Learning Collaborative on the first floor (entrance located at 20 Portland Street) will not be impacted or altered.

The frontage along Cumberland Avenue will serve as the sole entrance for the Emergency Shelter. There are minimal changes to the Cumberland Avenue building exterior which include a new illuminated sign, decorative wall sconces, new security cameras, new light fixtures, a card reader for badge access, and one-way privacy film on the windows (Plan 3). The applicant has submitted a photometric plan (Plan 2) demonstrating the exterior lighting changes in the courtyard and along the Cumberland Avenue exterior. In the courtyard (731 square feet), the applicant is proposing a combination of mounted wall fixtures and flexible lights mounted to the desks and planters. Additionally, three dark sky compliant fixtures and two decorative wall sconces are proposed to be installed on the exterior entrance along Cumberland Avenue. There are no proposed changes to the exterior of the building facing Portland Street.

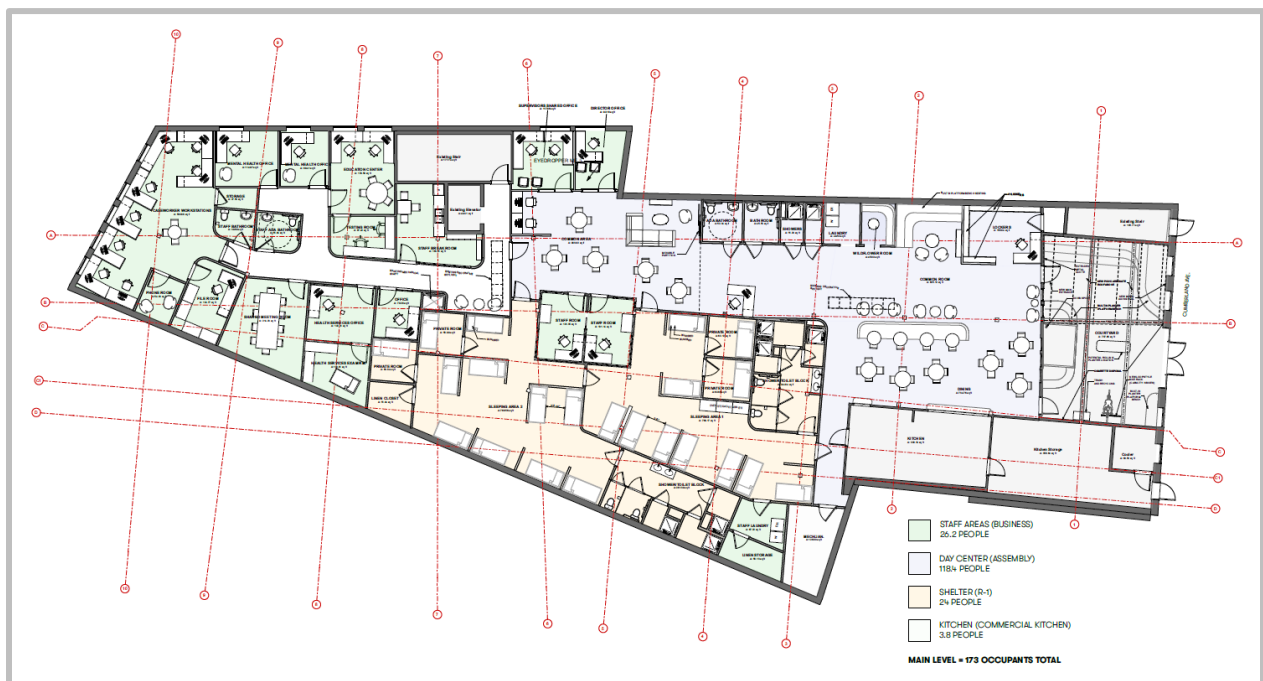


Figure 4: Proposed Floor Plan (Plan 5)

The interior renovations will convert the existing Teen Center into a 24-bed Emergency Shelter for teens. The sleeping areas are shown in yellow on the floor plan (Plan 5). There will be four beds in small private rooms, two bunk beds, and sixteen single beds across two sleeping areas separated by half-walls that are approximately 42 inches (similar height to approved shelter at 5 Portland Street) to provide privacy and clear sight lines for security purposes (Plan 7). Each sleeping area has a bathroom that contains two sinks, two toilets, and three showers.

The proposed Teen Emergency Shelter includes a kitchen, kitchen storage, a cooler, and a dining area as well as common areas separate from the sleeping areas. The dining and common space areas are shown in blue on the floor plan. The common areas include dedicated dining and lounging areas, two bathrooms, two showers, laundry, and lockers. Additionally, Preble Street is proposing a renovated 731 square foot courtyard space (Plan 9) that will be screened from Cumberland Avenue by a brick wall. The courtyard



currently has an existing soffit in the roof providing fresh air. The courtyard will be utilized as an outdoor private space for gatherings as well as storage for seven bicycles.

Areas shown in green on the floor plan will be staff offices. The updated office space will be used for Emergency Shelter support staff and caseworkers. The floor plan depicts the rooms and includes services such as health service office and exam rooms, staff offices and bathrooms, caseworker workstations, meeting spaces, mental health offices, and an education center and testing room. Staff will also have a staff-only laundry and storage space adjacent to the sleeping areas.

## **VII. PREVIOUS WORKSHOP**

The Planning Board held a workshop on September 13, 2022. The Board discussed the proposed conditional use application and the conversation focused on the management plan, building layout and design, smoking policy in the court yard, and outreach to the Bayside Neighborhood Association. After public comments on the proposal, the Planning Board asked the applicant to provide additional materials including a first floor building plan (Plan 10), updating the Bayside Neighborhood Association meetings language in the Management Plan to require 75% attendance at all meetings, and details for the materiality of the courtyard. The applicant has provided updated materials as part of their Planning Board Public Hearing submissions.

## **VIII. RIGHT, TITLE, & INTEREST**

The applicant has submitted a recorded deed dated January 2, 2002 granting ownership of the parcel at 343 Cumberland Avenue to Preble Street, formerly the Preble Street Resource Center. (Attachment E).

## **IX. FINANCIAL & TECHNICAL CAPACITY**

The applicant has submitted a document noting that the renovations and exterior changes are expected to cost between \$2,000,000 and \$2,500,000. Preble Street is committed to funding the entire project cost if necessary following a \$14,000,000 Capital Campaign. However, the financing for the project may include contributions from public funding sources including the Maine state Housing Authority (Attachment F).

Preble Street has been working with Kaplan Thompson Architects and LK Planning as applicant representatives for this project. The document provided states both firms have many years of combined experience designing and permitting projects in Portland (Attachment F).

## **X. ZONING ANALYSIS**

The proposed Teen Emergency Shelter is a conditional use in the B-3 zone. The Planning Board serves as the review authority for all conditional use applications in the B-3 zone according to Chapter 14 Section 6.5.1.A.

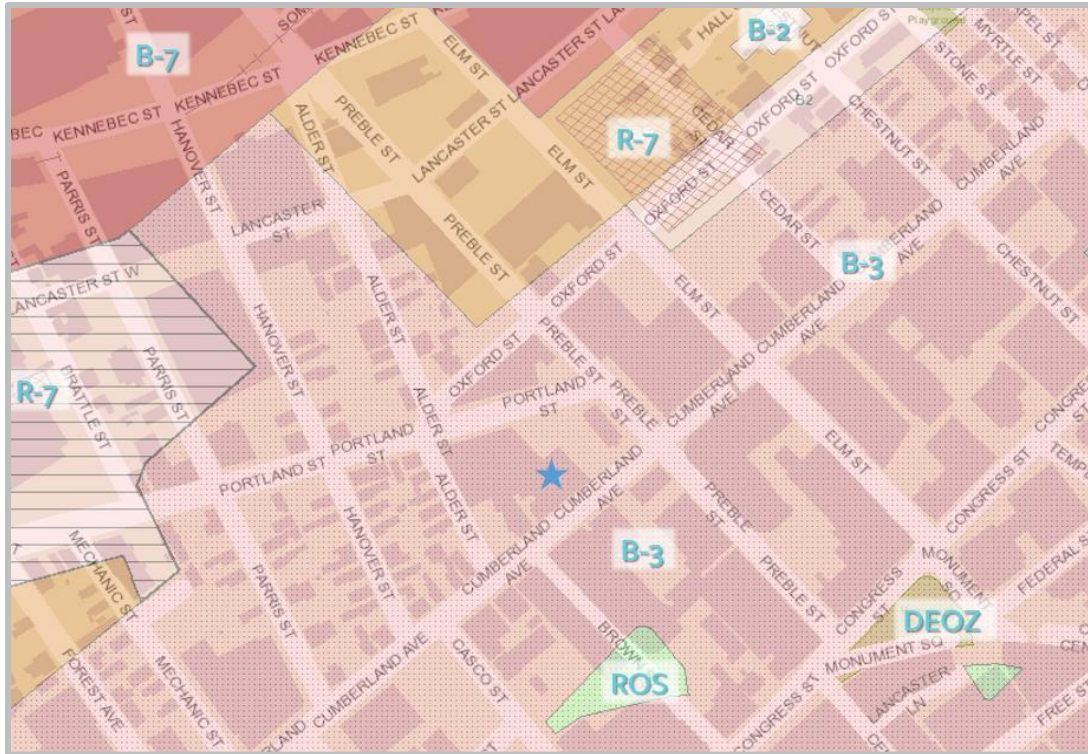


Figure 5: Zoning Context

Additionally, the building is required to meet all of the B-3 dimensional requirements listed in Chapter 14 Table 7-E *Mixed-Use Zone Dimensional Standards* as shown below:

|                           | Required      | Proposed                                                |
|---------------------------|---------------|---------------------------------------------------------|
| Lot Size (minimum)        | None          | 11,135 sq. ft.                                          |
| Street Frontage (minimum) | 15 ft.        | 57.33 ft. (Cumberland Ave.)<br>35.06 ft. (Portland St.) |
| Front Yard (maximum)      | 5 ft.         | 0 ft.                                                   |
| Impervious Area (maximum) | None          | 98.8%                                                   |
| Off Street Parking        | None Required | 0                                                       |
| Bicycle                   | None Required | 7                                                       |

## XI. CONDITIONAL USE STANDARDS

This project has been reviewed by staff for conformance with the relevant review standards of Portland's Land Use Code Chapter 14, Section 6.5.2 General Conditional Use Standards and Chapter 14, Section 6.5.6.B Conditional Use Use-Specific Standards for Emergency Shelters. Staff comments are below:

### 1. General Conditional Use Standards (6.5.2)

- 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.

Preble Street will be converting the Teen Center at 343 Cumberland Avenue into the proposed Teen Emergency Shelter. The existing structure provides 24-beds and services for clients. There are minimal alterations to the Cumberland Avenue exterior as most renovations would be occurring

within the interior of the building. Preble Street is proposing limited work on the courtyard to open up the roof and provide more green space. As proposed, there are no additions or expansions to the building or pavement.

The proposed Teen Emergency Shelter has no new parking spaces proposed. As a change of use in the B-3 zone according to Chapter 14 Table 19-B: *Categorical Exceptions to Off-Street Parking Minimums*, no off-street parking is required. Furthermore, multiple METRO bus stops are located within a ¼ mile radius of the site. The courtyard area contains a bicycle rack with space for up to seven bicycles for clients. The City's third-party traffic engineer reviewed the proposal and noted that the use is not expected to create a substantial increase in traffic or impact circulation in the surrounding neighborhood. Although Preble Street is consolidating two facilities, the increase in pedestrians and traffic to 343 Cumberland Avenue is not substantially greater than other surrounding uses.

Currently, Preble Street operates the two separate teen facilities; the Teen Center (343 Cumberland Avenue) is open 8am to 8pm and the existing Teen Shelter (38 Preble Street) is open 8pm to 8am. The proposed consolidated Teen Emergency Shelter will operate 24-hours seven days per week (24/7) with onsite staff, on-call support services, and clinical support.

Staff Finding: As the project consolidates two existing, proximate facilities, there is no net increase in trips, and therefore no impacts to vehicle traffic or circulation in the area. The applicant is providing bicycle storage to meet the demand of the Teen Emergency Shelter. Parking is not required and no additional parking is proposed as part of this application.

**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.**

The Management Plan explains the duties of staff members, equipped with a two-way radio for safety and emergency use, will walk the exterior perimeter of the building monitoring loiterers and picking up trash along the sidewalks. Staff will conduct this exterior walk of the building each shift in addition to the regular monitoring of external video surveillance. Preble Street is proposing two cameras monitoring the Cumberland Avenue frontage and a third camera for the entrance along Portland Street.

The photometric plan (Plan 2) shows dark sky compliant fixtures on the exterior of the building limiting lighting beyond the exterior of the building. The courtyard lighting is not expected to impact the surrounding area as the area is enclosed by walls.

According to the applicant, the Preble Street Facilities team conduct daily trash pickup near all of the Preble Street properties and the surrounding streets. The facilities include 343 Cumberland Avenue, 5 Portland Street, 38 Portland Street, and 55 Portland Street on both sides of the streets.

The Management Plan states that loitering of non-clients in the proximity of the proposed Emergency Shelter will not be permitted and that disruptive and unsafe behavior is prohibited. The exterior staff sweeps will be the initial warning for those loitering, excessively loud, or creating an unsafe or dangerous environment. The Management Plan indicates that continued disruptive behavior will lead to restrictions from a specific area. Any further obstruction, refusal to leave, or dangerous behavior will lead to Preble Street staff notifying the Portland Police of trespassing.

Preble Street will follow up with the Police Department to ensure that individuals do not continue to trespass in the area surrounding the proposed Teen Emergency Shelter.

Staff Finding: The Management Plan highlights approaches to reduce loitering, safety, and trash in the vicinity of the site. The building will be redeveloped with most of the renovations occurring on the interior of the building. Noise, glare, dust, and sewage will not pose any issues to the surrounding buildings. The Management Plan includes staff maintenance and security sweeps that will reduce litter. The proposed lighting scheme is dark sky compliant and will reduce excessive light to adjacent areas while also providing enough lighting for safety.

**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.**

The B-3 zone allows a variety of uses including residential, institutional, and commercial including multi-family dwellings, offices, retail, restaurants, bars, theaters, elementary through high schools, and spaces for artists and creators. Surrounding uses within 500 feet of the proposed Teen Emergency Shelter include:

- Portland Public Schools Office
- Preble Street Resource Center
- Four Restaurants
- Retail Stores
- Employment Services
- Single Family Homes
- Multi-Family Homes
- Parking Garages
- Office Buildings
- Youth & Family Outreach

The proposed facility will be renovating the existing Teen Shelter space and will not have a substantial impact on the exterior of the building, maintaining the existing street context along Cumberland Avenue and Portland Street. The City's Urban Designer reviewed the proposal and determined that the exterior alterations were minimal and did not impact or alter the building's form or appearance.

The Management Plan describes that the Teen Emergency Shelter will provide three meals per day. Food will be delivered to the shelter two days per week from the Preble Street Food Security Hub in South Portland and stored on-site. Trash will be stored adjacent to the kitchen with access to the outside so that trash collectors can get to it while keeping the facility secure.

Staff Finding: The Teen Emergency Shelter consolidates two existing facilities in the Bayside neighborhood. Trash will be picked up via an entrance along Cumberland Avenue. The Management Plan notes food and other necessities will be loaded from Cumberland Avenue a few times a week. With a mix of uses in the surrounding area, the proposed Teen Emergency Shelter will operate in a similar fashion to other businesses in the surrounding area. The Management Plan

includes safety and cleanliness standards that will limit the impact of the shelter on the surrounding neighborhood.

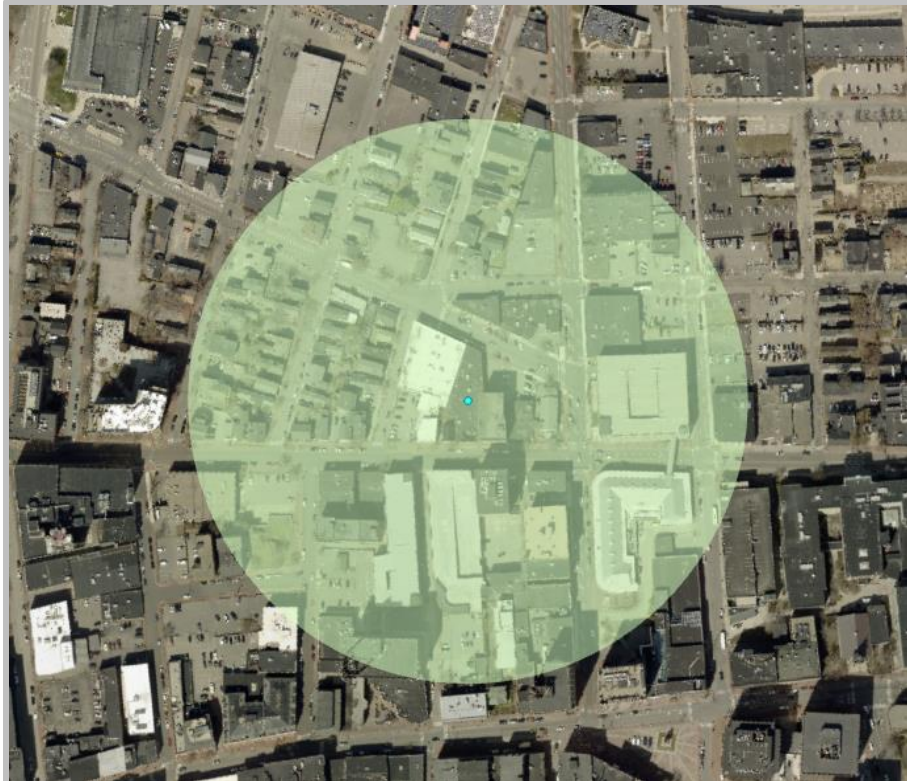


Figure 6: Locations within 500 ft. of Site

**D. The proposed use will meet any additional zone or use-specific standards identified in Table 6-A to 6-F and Subsections 6.5.6 and 6.5.7.**

The Supplemental Use-Specific Conditional Use Standards for Emergency Shelters (6.5.6.B) are discussed in the following section.

**2. Emergency Shelter Supplemental Use-Specific Conditional Use Standards (6.5.6.B)**

*The applicant has provided documentation speaking to the Emergency Shelter Supplemental Use-Specific Conditional Use Standards (Attachment H).*

**1. The facility shall provide adequate space for conducting security searches and other assessments.**

The Emergency Shelter will have office space dedicated for client intake, appointments, and other supervision sessions. Sections IV and VI of the Management Plan speak to client intake and safety. Preble Street has indicated that no searches of personal belongings will be conducted unless staff have reason to believe someone may be in possession of a weapon or intend to inflict harm.

Staff Finding: The layout of the site has a defined space for client intake and security searches if deemed necessary. Located at the courtyard entrance to the facility, Preble Street staff have an

intake desk to intake clients as they enter the building. The Main Entrance is labeled on the Floor Plan (Plan 5). Further procedures are outlined in the Management Plan. With a defined entrance and staffing area to intake clients and conduct a security search, the facility will have 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.**

The applicant has provided Interior Safety Sightlines (Plan 7) that show staff areas nearby both sleeping areas. The sleeping areas are designed with half walls providing privacy and clear sight lines. The half walls are 42 inches tall and are the same height as the shelter approved at 5 Portland Street. There are two private rooms in each sleeping area. The Interior Safety Sightlines shows doors with large windows to allow for clear sightlines into the rooms. The common space and dining areas are open and provide ample supervision when staff are in the area. Section III of the Management Plan describes access restrictions and interior circulation of staff and clients.

Staff Finding: The proposed Interior Safety Sightlines rendering demonstrates adequate sight lines to sleeping areas. The 42 inch tall half walls provide privacy and allow for clear sight lines into the sleeping areas. The private rooms in each sleeping area have doors with large window panes. The Planning Board noted at the workshop that the private rooms balance the need for private spaces for certain clients and meeting the sight line standards. The common areas of the facility are mixed in with centralized staff operations.

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.**

In accordance with Chapter 14 Section 6.5.6.B Supplemental use-specific conditional use standards for Emergency Shelters, Preble Street submitted a management plan (Attachment N) discussing 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. Preble Street's management plan for the Teen Emergency Shelter consists of eleven sections describing in detail the operation and management of the site. The Management Plan is referenced throughout this memo.

Section II of the Management Plan discusses the staffing and management responsibilities of the proposed Teen Emergency Shelter. The shelter staff consists of a Program Director, Supervisors, Caseworkers, Housing Support Workers, Team Leaders, and Program Administrators. Exhibit 1 of the Management Plan shows staffing across three shifts consisting of coverage from 22 staff members. The existing staff and services will be consolidated and provide 24/7 onsite coverage. Exhibit 1 of the Management Plan shows the weekly staff coverage schedule broken down into shifts. Staff responsibilities also included monitoring the exterior of the property for safety and trash as well as monitoring security cameras. The plan also includes a variety of professional trainings to be offered for staff.

Section III and Section IV highlights client access, assessment, and intake at the facility. Clients enter the facility through the courtyard on Cumberland Avenue where staff complete intake procedures. The courtyard has a dual door system that controls access, provides area for security assessments,



and safety and security to the facility. Preble Street staff will have to unlock the Cumberland Avenue doors to allow individuals into the courtyard and facility. The entrance on Portland Street will continue to be utilized for the existing services, teen emergency shelter staff entrance, and emergency egress for the entire building. The access to the bottom floor of the building is in the staff-only area where clients receive services provided by staff.

Section V and VI describe the on-site surveillance and safety measures taken on site. The proposed Teen Emergency Shelter will continue to have two surveillance cameras on Cumberland Avenue and Preble Street will be installing a third camera outside of the Portland Street entrance. The facility has been designed with open space and clear sightlines which allows staff to maintain a safe environment. Additionally, the management plan mentions how staff are trained to monitor the interior and exterior of the building as well as the courtyard while conducting duties related to their role. In addition to being designed for safety of clients and staff, the plan highlights safety protocols and procedures utilized on site. Professional staff will be trained in a variety of emergency and safety procedures including but not limited to CPR, First Aid, overdose response, crisis intervention, and de-escalation. The Teen Emergency Shelter will coordinate with the Portland Police Department, Portland Fire Department, and other public safety departments (City and State) as well as crisis responders and health professionals.

Section VII of the management plan discusses neighborhood concerns and how Preble Street approaches community feedback, engagement, and safety. Preble Street maintains responsibility for all of their clients at the community center and has a clear 'Rules and Expectations' agreement to reinforce the expectations. As discussed in other sections of this memo, Preble Street staff will monitor the exterior premises for cleanliness and safety and have established protocols to work with repeated offences. Preble Street staff will attend no less than 75% of Bayside Neighborhood Association meetings in a given year and will provide contact information and respond to neighborhood questions or concerns. Attendance at the meetings will commence once the Certificate of Occupancy has been issued for the Teen Emergency Shelter. Section VIII also mentions the protocols for client behavior and noise levels.

Sections IX, X, and XI provide an overview of the transportation options near the facility, onsite and offsite social services, and monitoring reports. Preble Street will coordinate with the City of Portland's Health and Human Services Department and Police Department to submit any required reports on a regular basis if needed. Preble Street is also required to submit regular reports to funding sources including United Way, State of Maine, and Maine State Housing Authority.

Staff Finding: The Management Plan addresses all of the required topics within this standard. City Staff have reviewed the Management Plan against this standard. Additionally, Portland Health and Human Services, Portland Police Department, and Portland Life Safety reviewers have reviewed the management plan (Attachment 2). The Police Department and Life Safety have no concerns with the proposal or management plan. Health and Human Services found the Management Plan complete but provided two recommendations: 1) Amending sections I and X to state that Portland Public Health will 'support and provide medical services' rather than 'operate' and 2) specifying a percentage of scheduled Bayside Neighborhood Association meetings that staff will attend. The applicant has included these changes in the most recent Management Plan version.



4. An outdoor area for guest use shall be provided on-site with adequate screening to protect privacy of guests.

The courtyard (731 square feet) on the Cumberland Avenue portion of the building will serve as the outdoor area for clients of the Teen Emergency Shelter. According to the applicant the space will only be utilized by staff and clients and is screened from the street with a brick wall. A portion of the roof has been removed to allow for open-air. The courtyard contains seating, raised garden beds, and a five-loop bicycle rack that will store seven bicycles. The courtyard will also serve as a secure entrance to the facility.

Staff Finding: The proposed courtyard has adequate screening to provide privacy along the Cumberland Avenue portion of the building. The courtyard can only be accessed with staff supervision. The courtyard meets this standard.

## XII. PUBLIC COMMENT

As of the writing of this report, two public comments have been submitted to the Planning & Urban Development Department (PC 1 and PC 2).

At the September 13, 2022 Workshop, public comments discussed adding bed limits to the shelter, adding a percentage for Bayside Neighborhood Association meeting attendance, clarification on the future use of the Preble Street building at 38 Preble Street (currently the Teen Emergency Shelter), impacts on the Bayside neighborhood, and materiality of the courtyard.

## XIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning staff recommends that the Planning Board finds the proposed 343 Cumberland Avenue conditional use application (CU-002134-2022) for an Emergency Shelter meets the applicable standards of Portland's Land Use Code.

## XIV. PROPOSED MOTIONS FOR BOARD TO CONSIDER

### A. CONDITIONAL USE

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on September 27, 2022, for application CU-002134-2022, relevant to Portland's Conditional Use Standards and other regulations, and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] the proposed conditional use in conformance with the Land Use Code subject to the following conditions of approval:

### MONITORING CONDITIONS OF APPROVAL:

1. The maximum number of persons staying at the shelter at any one time shall be no more than 24.
2. Following issuance of a Certificate of Occupancy for the Teen Emergency Shelter at 343 Cumberland Avenue, the applicant shall attend no less than 75% of the monthly Bayside Neighborhood Association meetings per year, and a record of attendance and topics discussed shall be included in the quarterly monitoring report.
3. The Emergency Shelter conditional use shall be limited to the second floor of the building located at 343 Cumberland Avenue.
4. The applicant shall submit monitoring reports that include the full contents identified for the monitoring reports in Section XI of the approved management plan for 343 Cumberland Avenue to

the City of Portland Department of Health and Human Services and the City of Portland Police Department on a quarterly basis and publicly post the required monitoring reports on Preble Street's website.

## **XV. ATTACHMENTS**

### **APPLICANT SUBMITTAL**

- A. Cover Letter and Project Description
- B. Checklist – Minor
- C. Agent Authorization
- D. Conditional Use Checklist
- E. Right, Title, and Interest
- F. Financial and Technical Capacity Narrative
- G. Zoning-Assessment
- H. Use Standards
- I. Design and Operation
- J. Access and Circulation
- K. ADA Narrative
- L. Landscaping
- M. Traffic Impacts
- N. Management Plan

### **PLANS**

- Plan 1. Site Plan
- Plan 2. Photometric Plan
- Plan 3. Front Elevation
- Plan 4. Floor Plan – Security
- Plan 5. Floor Plan – Main
- Plan 6. Floor Plan – Isometric 3D-View
- Plan 7. Floor Plan – Interior Safety Sightlines
- Plan 8. Floor Plan – Courtyard
- Plan 9. Courtyard Ceiling Plan
- Plan 10. Lower Level Plan

### **MEMO ATTACHMENTS**

- 1. Cumberland Ave. 343 (Staff Preliminary Comments)

### **PUBLIC COMMENTS**

- PC 1. Michael d'Hemecourt 9-2-22
- PC 2. George Rheault 9-12-2022



**Review Criteria:**

- Conditional Use Supplemental Use-Specific Conditional Use Standards (Chapter 14 6.5.6.B Emergency Shelters)
- Planning Board Review Authority for Conditional Use Application in B-3 Zone
- CU Performance Standards:
  - Downtown Urban Design Guidelines (CU All Development in B-3 Zone 6.8.1)
  - Noise Standards (CU in B-3 6.8.9)
- Article 14 Site Plan Review Standards (Chapter 14 14.6)

**GENERAL**

- A detailed construction management plan submittal should be added as a condition of approval once construction sequencing scenario has been finalized by the applicant for review and approval by DPW and development review coordinator prior to the pre-construction meeting. The construction management plan should provide more detail on contractor parking, sidewalk and parking disruptions and material delivery schedules.
- Please provide updated elevations to determine if exterior changes would require a design review.

**ZONING**

- Please provide documentation (similar to the Site Plan Standards Assessment) that speaks to the General conditional use standards and Supplemental use-specific conditional use standards for Emergency Shelters (Chapter 14 6.5.6.B).

**TRANSPORTATION**

- Will the bike rack, with capacity for storing 6 bikes, be enough to support the shelter? With 24 beds, services, and staff, would more bike parking be needed?
- City Traffic Consultant concurs with the analysis and the project is not expected to have any impact to traffic mobility or safety.
- The applicant should consider exterior bicycle racks given expected usage. City Transportation Program Manager Bruce Hyman should provide specific direction on bicycle rack details and recommendations.

**LANDSCAPING**

- Please provide additional information regarding plantings, layout, and operation of courtyard on site.

**City of Portland | Health & Human Services Department**Kristen Dow, *Director***To:** City of Portland Planning Board**From:** Kristen Dow, Director of Health & Human Services**Date:** September 9, 2022**Re:** HHS Staff Assessment of Preble Street's Teen Shelter Management Plan

At the request of the Planning Department, staff of the Health & Human Services Department have reviewed the submitted management plan for Preble Street's Teen Shelter and Center (Joe's Place). The plan is well thought out and covers both services and design of the facility in great detail. After reviewing the document, a meeting was held between myself and Preble Street staff to address questions and recommendations. The primary recommendations of the HHS department are as follows:

- In sections I and X, instead of stating that Portland Public Health will "operate" the Teen Health Clinic, change the wording to "Portland Public Health and Greater Portland Health will support and provide medical services". In recent months, through partnerships between Preble Street, Greater Portland Health and Portland Public Health, there has been a system created to ensure that unsheltered teens in Portland have access to both a medical and dental home. We do believe that the clinic space is still needed so that medical services can be provided on site.
- Section VII. Neighborhood Concerns states that "staff promote community-building in the neighborhood through staff and client participation in neighborhood clean ups and regular staff attendance at the Bayside Neighborhood Association (BNA) meetings." We suggest specifying a percentage of scheduled BNA meetings that staff will commit to attending.

Preble Street staff were receptive to the recommendations of HHS and it is my understanding that the changes will be reflected in the management plan. In HHS, we are thankful for the work of the Teen Shelter staff and for all that they are doing to protect unsheltered youth in our community.

June 6, 2022

Planning Division  
City of Portland, Maine  
389 Congress Street, 4<sup>th</sup> Floor  
Portland, ME 04101



Subject: Preble Street Emergency Teen Shelter  
343 Cumberland Avenue, Parcel ID 033 K004001  
Conditional Use and Minor Site Plan  
Change of Use <20,000sf

To Whom It May Concern,

Preble Street is pleased to submit this application and supporting documentation for the change of use at 343 Cumberland Avenue. This project reconfigures the inside of the building to combine the existing 12-hour teen center with a 24-bed, teen shelter. The teen shelter is currently 500 feet away at 38 Preble Street. Consolidating the two facilities under one roof will significantly improve the delivery of services and the clients' experience.

The building, constructed in 1908, covers the entire 11,136 sf parcel and is in the B-3 District. The property is in a mixed-use neighborhood with a combination of parking garages, offices, restaurants, a public school, social services providers, and a variety of medium and high-density residential buildings.

The building at 343 Cumberland Avenue is two stories. The lower level of the building is accessed from Portland Street. This project will not change the configuration or use of the lower level of the building. This application is for the 7,981 sf of the upper level of the building.

The project includes interior renovations for:

1. Updated office space for caseworkers and other support staff.
2. Updated teen center space that includes tables and chairs, bathrooms and showers, lockers for securing personal belongings, laundry facilities, and staff offices.
3. New 24-bed teen shelter: four beds in small private rooms, two bunk beds, 16 single beds, bathroom blocks with toilets and showers, and staff offices. Half-walls separate the beds to offer some privacy while also providing security and clear sight lines.
4. Updated outdoor courtyard: the courtyard will be slightly smaller than its current size. The enclosure is thoroughly screened from Cumberland Ave. by the original brick wall of the building. An existing soffit in the roof provides fresh air. The courtyard

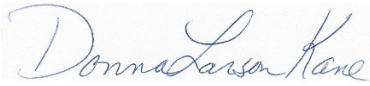
**LK Planning, LLC, 30 Spear Ave., South Portland, ME 04106**  
**(207) 767-4688, admin@lkplanningmaine.com**

offers an outdoor but private space to gather and get fresh air and a safe space for bicycle storage. Improvements to the courtyard include: 6 bike racks, relocation of garden beds, a new main entrance on the inside wall of the courtyard, and new benches with attached planters.

5. An existing kitchen will remain in its current location and configuration. Three meals per day will continue to be prepared in the kitchen.

We look forward to working with you and the Planning Staff to review this project. Please feel free to contact me to discuss any questions or concerns regarding the attached application materials.

Sincerely,

A handwritten signature in blue ink that reads "Donna L. Kane". The signature is written in a cursive, flowing style.

Donna L Kane, AICP  
Community Planner

**CITY OF PORTLAND**  
**Planning & Urban Development Department**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>MINOR SITE PLAN</b></p> <p><b>GENERAL DOCUMENT AND DRAWINGS CHECKLIST</b></p> <p>Please submit each document as a separate PDF file.<br/> Please confirm by electronically checking the boxes in the left-hand column.</p> <p><b>** PLEASE FILL OUT AND UPLOAD SEPARATELY THE ZONING ASSESSMENT TABLE<br/> AND WAIVER TABLE AS NOTED BELOW **</b></p> <p style="color: red;">At the time of application submission, please contact the Department of Public Works regarding E-911<br/> addressing for your project.</p> |    |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>GENERAL APPLICATION DOCUMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Project Description</b> <ul style="list-style-type: none"> <li>Cover letter with detailed project description</li> </ul>                                                                                                                                                                                                                                                                                           |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Completed Checklist</b> (this document)                                                                                                                                                                                                                                                                                                                                                                            |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Evidence of Right, Title and Interest</b> <ul style="list-style-type: none"> <li>Deeds, leases, or purchase and sales agreements</li> </ul>                                                                                                                                                                                                                                                                        |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Evidence of State or Federal Approvals</b> <ul style="list-style-type: none"> <li>Permits or letters of non-jurisdiction, if applicable</li> </ul>                                                                                                                                                                                                                                                                 |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Zoning Assessment</b> (see <a href="#">Zoning Assessment Table</a> ) <ul style="list-style-type: none"> <li>Summary of compliance with use and dimensional standards of the land use code</li> </ul>                                                                                                                                                                                                               |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Site Plan Standards Assessment</b> (see Article 14.6 of the land use code) <ul style="list-style-type: none"> <li>Summary of project compliance with site plan standards of the land use code</li> </ul>                                                                                                                                                                                                           |
| <input type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NA | <b>Summary of Existing and/or Proposed Easements or Covenants, if applicable</b> <ul style="list-style-type: none"> <li>Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way</li> </ul>                                                                                                                                                                              |
| <input type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NA | <b>Waiver Requests</b> (see <a href="#">Waiver Table</a> ) <ul style="list-style-type: none"> <li>Written request for waiver describing request and compliance with waiver standards</li> </ul>                                                                                                                                                                                                                       |
| <input checked="" type="radio"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA | <b>Evidence of Financial and Technical Capacity*</b> <ul style="list-style-type: none"> <li>Letter or evidence from a financial institution or third party verifying financial capacity to undertake project</li> <li>Evidence of the project team's technical capacity to undertake project</li> </ul> <p style="color: red;">*NOTE: Not required for Minor Residential and Low Impact Site Development projects</p> |



| <p style="text-align: center;"><b>MINOR SITE PLAN</b></p> <p style="text-align: center;"><b>STANDARDS AND SUBMISSION CHECKLIST</b></p> <p style="text-align: center;">Provide assessment of compliance with standards and include supplemental documentation, as applicable.<br/>Please submit each document as a separate PDF file.</p> |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION                                                                                                                                                                                                                                                                                                                           |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Yes                                                                                                                                                                                                                                                                                                                                      | NA | <p><b>Impact on Surrounding Street Systems (14-14.6.1(A))</b></p> <ul style="list-style-type: none"> <li>Describe incremental volume of traffic impacts and mitigation measures. If needed</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Yes                                                                                                                                                                                                                                                                                                                                      | NA | <p><b>Access and Circulation (14-14.6.1(B))</b></p> <p>Identify and describe the following:</p> <ul style="list-style-type: none"> <li>Site access and internal circulation, including ADA access</li> <li>Drive-up features, if applicable</li> <li>Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable</li> <li>Sidewalks and condition along street frontages and internal walkways</li> <li>Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)</li> </ul> |
| Yes                                                                                                                                                                                                                                                                                                                                      | NA | <p><b>Public Transit (14-14.6.1(C)), if applicable</b></p> <p>Identify and describe the following:</p> <ul style="list-style-type: none"> <li>Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| Yes                                                                                                                                                                                                                                                                                                                                      | NA | <p><b>Off-Street Parking (14-14.6.1(D)), if applicable</b></p> <p>Identify and describe the following:</p> <ul style="list-style-type: none"> <li>Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code</li> <li>Curb cut separation and parking layout (Technical Manual, Section 1)</li> <li>Construction details for bicycle racks</li> <li>Management plan for snow storage and removal</li> </ul>                                                                                                             |
| Yes                                                                                                                                                                                                                                                                                                                                      | NA | <p><b>Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable</b></p> <ul style="list-style-type: none"> <li>Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       |

| ENVIRONMENTAL |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes <b>NA</b> | <b>Preservation of Significant Natural Features (14-14.6.2(A)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• High and moderate value waterfowl and wading habitat</li> <li>• Aquifers (for Casco Bay Islands)</li> <li>• Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)</li> <li>• Proposed preservation areas and protection measures</li> <li>• Documentation from environmental compliance consultants and determinations from applicable state and federal agencies</li> </ul>            |
| Yes <b>NA</b> | <b>Landscape Preservation (14-14.6.2(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4)</li> <li>• Measures to protect existing vegetation during construction</li> </ul>                                                                                                                                                                                                                                                                           |
| <b>Yes</b> NA | <b>Site Landscaping and Buffers (14-14.6.2(C))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Overall landscaping approach and consistency with standards</li> <li>• The use of screening and buffering of service areas and between non-residential and residential uses</li> <li>• Existing Heritage or Feature Trees on site and measures to preserve</li> <li>• Compliance with street tree requirements</li> </ul>                                                                                                                                 |
| Yes <b>NA</b> | <b>Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))</b> <ul style="list-style-type: none"> <li>• Provide stormwater management plan in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general, and flooding standards, as applicable</li> <li>• Provide erosion control plan and measures</li> <li>• Provide evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable</li> <li>• Describe subsurface sanitary sewage disposal and groundwater protection</li> </ul> |

| PUBLIC INFRASTRUCTURE AND SAFETY |    |                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes                              | NA | <b>Consistency with City Master Plans (14-14.6.3(A))</b> <ul style="list-style-type: none"> <li>Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable</li> </ul>                                                                                                                                                                |
| Yes                              | NA | <b>Public Safety and Fire Prevention (14-14.6.3(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3)</li> <li>Emergency vehicle access</li> <li>Consistency with public safety standards (Technical Manual, Section 3)</li> </ul>                    |
| Yes                              | NA | <b>Availability and Adequacy of Public Utilities (14-14.6.3(D)) (Technical Manual, Sections 2 &amp; 9)</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Electrical services, including providing underground services</li> <li>Existing and proposed connections for public utilities and required public utility upgrades</li> <li>Sewer line connections</li> </ul> |
| SITE DESIGN                      |    |                                                                                                                                                                                                                                                                                                                                                                                                         |
| Yes                              | NA | <b>Massing, Ventilations and Wind Impact (14-14.6.4(A))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable</li> <li>Bulk, location, or height impacts on adjoining structures</li> </ul>                                                        |
| Yes                              | NA | <b>Shadows (14-14.6.4(B)), if applicable</b> <ul style="list-style-type: none"> <li>Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)</li> </ul>                                                                                                                                                                                                      |
| Yes                              | NA | <b>Snow and Ice Loading (14-14.6.4(C))</b> <ul style="list-style-type: none"> <li>Describe building design to prevent snow and ice from loading or falling onto adjacent properties or public ways</li> </ul>                                                                                                                                                                                           |
| Yes                              | NA | <b>View Corridors (14-14.6.4(D)), if applicable</b> <ul style="list-style-type: none"> <li>Describe any protection of designated view corridors (Portland Design Manual, Appen. 1)</li> </ul>                                                                                                                                                                                                           |
| Yes                              | NA | <b>Historic Resources (14-14.6.4(E)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>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</li> </ul>                                               |

|     |    |                                                                                                                                                                                                                                                                                                        |
|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |    | <ul style="list-style-type: none"> <li>Compliance with standards for preservation and documentation of archaeological resources</li> </ul>                                                                                                                                                             |
| Yes | NA | <b>Exterior Lighting (14-14.6.4(F))</b> <ul style="list-style-type: none"> <li>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</li> </ul>                     |
| Yes | NA | <b>Noise and Vibration (14-14.6.4(G))</b> <ul style="list-style-type: none"> <li>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</li> </ul>   |
| Yes | NA | <b>Signage and Wayfinding (14-14.6.4(H)), if applicable</b> <ul style="list-style-type: none"> <li>Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs</li> <li>Provide drawings of all commercial and directional signage on site</li> </ul> |
| Yes | NA | <b>Zone-Related Design Standards (14-14.6.4(I))</b> <ul style="list-style-type: none"> <li>Address any applicable design review standards by zone, including compliance with Design Manual</li> </ul>                                                                                                  |

## MINOR SITE PLAN DRAWINGS CHECKLIST

Please upload the following DRAWINGS with the listed details into e-Plan.

**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:

- Location, area, and limits of the proposed site disturbance or alteration, including any proposed pier, dock, or wharf reconstruction
- Proposed structures, including floor area and finish floor elevation and distance from the property line
- Proposed paved areas, including parking spaces and dimensions if applicable
- Location of proposed utilities
- Proposed protection measures for watercourses, wetlands, or other significant natural features
- Proposed grades and contours
- Erosion control plan
- Proposed landscaping, screening, and proposed street trees, including existing vegetation to be preserved
- Proposed stormwater management controls

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Proposed curb and sidewalk (show any proposed geometric modifications, if applicable)</li> <li>Engineered specifications and cross-sections for proposed driveways, sidewalks and paved areas, if applicable</li> <li>Location, dimensions and ownership of proposed easements, public or private rights-of-way</li> <li>Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed</li> </ul> <p><b>*NOTE: Minor Residential and Low-Impact Site Development projects may optionally submit the drawings below, but are not required to do so; all other Minor Site Plan applications should include the below drawings in their submission.</b></p> |
| <b>UTILITY PLAN* including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Proposed electrical infrastructure</li> <li>Location, sizing and directional flows of all proposed sewer and stormwater infrastructure</li> <li>Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site</li> <li>Electric utility infrastructure</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>GRADING AND DRAINAGE PLAN* including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>Proposed grades</li> <li>Proposed stormwater management measures meeting Technical Manual (Section 5) standards</li> <li>Any proposed alteration of a watercourse or wetlands</li> <li>Any groundwater protection measures</li> <li>Proposed buffers and preservation measures for wetlands or significant natural features</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>LANDSCAPE PLAN* including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <ul style="list-style-type: none"> <li>Existing vegetation to be preserved and preservation measures</li> <li>Proposed landscaping, screening, and street trees, including caliper widths for trees</li> <li>Planting schedule, including street trees</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ARCHITECTURAL PLANS AND RENDERINGS* including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>Exterior building elevations, color renderings, illustrations of all sides</li> <li>Axonometric and street-level views for structures greater than three stories in height</li> <li>Provide context drawings, if applicable (Design Manual, page 1)</li> <li>Floor plans</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>CONSTRUCTION MANAGEMENT PLAN* including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Specifics on traffic control, sidewalk sheds, and pedestrian rerouting</li> <li>Include a drawing and written narrative</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>OTHER*</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>Details and cross-sections, as necessary</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## AGENT AUTHORIZATION

|                                              |                                                |                                                                                                      |            |         |
|----------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------|------------|---------|
| <b>APPLICANT/<br/>OWNER</b>                  | <b>Name</b>                                    | Preble Street, Teen Shelter                                                                          |            |         |
| <b>PROPERTY<br/>DESCRIPTION</b>              | <b>Physical<br/>Address</b>                    | 343 Cumberland Ave, Portland                                                                         | <b>Map</b> | 033     |
|                                              |                                                |                                                                                                      | <b>Lot</b> | K004001 |
| <b>APPLICANT'S<br/>AGENT<br/>INFORMATION</b> | <b>Name</b>                                    | Donna Larson Kane, AICP                                                                              |            |         |
|                                              | <b>Business Name &amp;<br/>Mailing Address</b> | LK Planning<br>30 Spear Ave<br>South Portland, ME 04106<br>admin@lkplanningmaine.com<br>207 767-4688 |            |         |

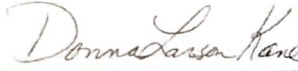
  
 APPLICANT SIGNATURE  
  
 PLEASE TYPE OR PRINT NAME HERE

DATE 5/5/2022

CO APPLICANT SIGNATURE (If applicable)

DATE

PLEASE TYPE OR PRINT NAME HERE

  
 APPLICANT'S AGENT SIGNATURE  
 Donna Larson Kane, AICP  
 PLEASE TYPE OR PRINT NAME HERE

March 8, 2022  
 DATE

***Said agent is also authorized to represent the applicant with the City of Portland as necessary to permit the proposed development.***



**CITY OF PORTLAND**  
**Planning & Urban Development Department**

**CONDITIONAL USE – PLANNING BOARD REVIEW  
SUBMISSION CHECKLIST**

Please submit each document as a separate PDF file.  
Please confirm by electronically checking the boxes in the left-hand column.

Conditional uses are listed in the land use code for each zone. The applicant must address the general standards as well as any use- or zone-based conditional use standards contained in Article 6.5 of the land use code in the written application.

**GENERAL APPLICATION DOCUMENTS**

|                                     |     |                                                                                                                                                |
|-------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | N/A | <b>Project Description</b> <ul style="list-style-type: none"> <li>Cover letter with detailed project description</li> </ul>                    |
| <input checked="" type="checkbox"/> | N/A | <b>Completed Checklist – Conditional Use</b> (this document)                                                                                   |
| <input checked="" type="checkbox"/> | N/A | <b>Evidence of Right, Title and Interest</b> <ul style="list-style-type: none"> <li>Deeds, leases, or purchase and sales agreements</li> </ul> |

**CONDITIONAL USE STANDARDS AND CRITERIA**

|                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | N/A                                 | <b>Traffic</b> <ul style="list-style-type: none"> <li>Demonstrate that the volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the zone.</li> </ul>                                                                                                                                |
| Yes                                 | <input checked="" type="checkbox"/> | <b>Environmental Impacts</b> <ul style="list-style-type: none"> <li>Demonstrate that the proposed use will not create any unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.</li> </ul>                                                                                                                                                                                                 |
| <input checked="" type="checkbox"/> | N/A                                 | <b>Design and Operation</b> <ul style="list-style-type: none"> <li>Demonstrate that 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.</li> </ul> |
| <input checked="" type="checkbox"/> | N/A                                 | <b>Use- and Zone-Specific Criteria</b> <ul style="list-style-type: none"> <li>Address any use- or zone-specific standards in Sections 6.5.6 and 6.5.7 of the land use code.</li> </ul>                                                                                                                                                                                                                                                                                   |

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RE 17166PG035

## KNOW ALL MEN BY THESE PRESENTS.

THAT, CASCO PAPER BOX REALTY ASSOCIATES, a partnership organized and existing under the laws of the State of Maine and having a place of business at 136 Oakhurst Road, Cape Elizabeth, County of Cumberland, State of Maine in consideration of One Dollar (\$1.00) and other good and valuable consideration paid by PREBLE STREET RESOURCE CENTER, a Corporation organized and existing under the laws of the State of Maine and whose mailing address is 252 Oxford Street, Portland Maine 04101, the receipt and adequacy whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said Preble Street Resource Center, its successors and assigns, to its own use and behoof forever, the following described real estate:

A certain lot or parcel of land with the building thereon situated in Portland, County of Cumberland and State of Maine, on the north-westerly side of Cumberland Avenue, and bounded and described as follows:

Beginning at the southwest corner of land formerly of Major Sweetsir, more recently by the Jewish Community Center of Portland; thence running northwest by said Community Center's land about one hundred (100) feet to a stake; thence northeast about twelve (12) feet to a passageway in front of land formerly of John Dain, and now or formerly of Dorothy S. Hillman; thence northwesterly by said passageway about eighty-six (86) feet to Portland Street; thence by said Portland Street westerly about thirty-four (34) feet to land formerly of Samuel Hazelton, and now or formerly of the Portland Nash Holding Corporation; thence south by said Portland Nash Holding Corporation's land about one hundred fifty (150) feet to land now or formerly of William D. Bryant, Trustee; thence by said Bryant's land northeast about twenty-six (26) feet to a stake; thence by said Bryant's land southeast fifty-three (53) feet, more or less, to Cumberland Avenue; thence by said Cumberland Avenue northeast about fifty-seven (57) feet to the point of beginning.

The Grantor herein also conveys any and all rights which the Grantor may have in said passageway running in a southeasterly direction from said Portland Street and adjoining the above-described premises for a part of their length on their northeast side.

Meaning and intending to convey and hereby conveying the same premises conveyed to the Grantor herein by Maine Air Conditioning Company by deed dated April 6, 1979 and recorded in the Cumberland County Registry of Deeds in Book 4402, Page 235.

MAINE REAL ESTATE TAX PAID

AND said Grantor Corporation does covenant with the said Grantee, its successors and assigns, that it is lawfully seized in fee of the premises, that they are free of all encumbrances; that Grantor partnership has good right to sell and convey the same to the said Grantee to hold as aforesaid, and that it and its successors shall and will WARRANT AND DEFEND the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said CASCO PAPER BOX REALTY ASSOCIATES, as Grantor, has caused this instrument to be sealed and signed in its partnership name by Laures T. Perkins, its General Partner, duly authorized, this     day of January, 2002.

SIGNED, SEALED and DELIVERED  
in the presence of,

*D. Perkins*

*Casco Paper Box Realty Associates*

By *Laures T. Perkins*  
Laures T. Perkins  
Its General Partner

STATE OF MAINE  
CUMBERLAND, ss.

January 2, 2002

Personally appeared the above-named Laures T. Perkins, General Partner of said Grantor partnership as aforesaid, and acknowledged the foregoing instrument to be her free act and deed in her said capacity, and the free act and deed of said partnership.

Before me,

*Gary D. Vogel*  
Notary Public/Attorney-at-Law  
Print: GARY D. VOGEL

EXCLIENTS\CASCOPAP deed - 12-18-01.doc

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RECORDED REGISTRY OF DEEDS

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CUMBERLAND COUNTY

*John B O'Brien*

**Joe's Place  
Preble Street Teen Shelter and Center**

**Evidence of Financial and Technical Capacity**

The estimated cost of the project is \$2 - \$2.5M.

The details of funding for the project have not been firmly established. Preble Street recently completed a \$14 million Capital Campaign. Discussion of public funding sources, such as the Maine State Housing Authority is ongoing. Therefore, the financing for the project is expected to be a combination of public and private funds. However, Preble Street is committed to funding the entire project cost if necessary.

Preble Street engaged Kaplan Thompson Architects to design the project, and LK Planning to coordinate permitting with the city. Both firms have many years of experience designing and permitting projects.


**ZONING ANALYSIS**      Relevant Zone(s) B-3
**All Projects: Joe's Place - Preble Street Teen Shelter and Center**

|                           | Required                   | Proposed                                            |
|---------------------------|----------------------------|-----------------------------------------------------|
| Lot Size                  | 10,000 sf                  | 11,135 sf                                           |
| Area Per Dwelling Unit    | 435 sf                     | N/A                                                 |
| Minimum Street Frontage   | 15 ft                      | 57.33 ft Cumberland Ave<br>35.06 ft Portland Street |
| Front Yard Minimum        |                            |                                                     |
| Front Yard Maximum        | 5 ft                       | at property line on Cumberland Ave and Portland St. |
| Rear Yard                 | 20 ft                      | N/A                                                 |
| Yard Right                |                            |                                                     |
| Yard Left                 |                            |                                                     |
| Side Street Setback       | 10 ft                      |                                                     |
| Step Back                 |                            |                                                     |
| Maximum Lot Coverage      | N/A not over 125 ft height | 11,001 sf                                           |
| Minimum Lot Coverage      |                            |                                                     |
| Maximum Height            |                            |                                                     |
| Open Space                |                            |                                                     |
| Maximum Impervious Area   | 80%                        | 98.8%                                               |
| Pavement Setback          |                            |                                                     |
| Floor Area Ratio          | none                       |                                                     |
| Off Street Parking Spaces |                            | 0                                                   |
| Loading Bays              |                            |                                                     |
| Other 1                   |                            |                                                     |
| Other 2                   |                            |                                                     |
| Other 3                   |                            |                                                     |

**USE STANDARDS**  
**Joe's Place**  
**Preble Street's Teen Shelter and Center**

**B. Emergency shelters**

1. The facility shall provide adequate space for conducting security searches and other assessments.

*Office space on the Portland Street side of the building has office space for client intake, case work appointments, and supervision sessions. No searches of personal belongings are conducted unless staff has reason to believe that someone may have weapons that could be used to inflict harm on guests or staff. COVID assessments will be conducted daily until that threat subsides. See Sections IV. Client Intake Office and Social Work Appointment Rooms and Food Programs and Sec. VI. Safety of the Management Plan for more details.*

2. The facility shall be designed with a centralized shelter operations office on each level providing sight lines to sleeping areas.

*The facility is designed with half walls to provide some privacy while also providing staff with clear sight lines to protect the safety of guests. So that staff has clear sight lines, the staff area is somewhat centrally located and has many glass panels. See the Interior Safety Sightlines Floorplan for visibility details and Section III. Client Access, Assessments and Access Restrictions of the Management Plan.*

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.

*Preble Street is committed to being a good neighbor. Clients are given a set of reasonable expectations regarding their behavior, and staff enforce those expectations as needed. Preble Street also will facilitate neighborhood meetings as needed and they will participate in the Bayside Neighborhood Association, the Cumberland County Crisis Response Team and the Portland Police Dept. Community Policing program. For more details, see Sec. V. On-Site Surveillance, Sec. VII – Neighborhood Concerns of the Management Plan and the Security Floor Plan for the location of cameras.*

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.

*Combining the teen center and the teen shelter will provide all-day shelter for guests. The facility has excellent access to public transit and seen in the chart below.*

| Transit stop/hub                                | Distance from 343 Cumberland Ave. | Transit routes available                                                           |
|-------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------|
| <b>METRO Pulse at Elm St.</b>                   | 825'                              | METRO Rts- 2, 4, 5, 7, 8, Husky                                                    |
| <b>Monument Square</b>                          | 900'                              | METRO Rts – 1, 8, 9B, 7 Breez<br>South Portland Rts – 21, 24A, 24B<br>ZOOM express |
| <b>Post Office<br/>(Portland St/Forest Ave)</b> | 1,060'                            | METRO Rt - 5                                                                       |
| <b>Library<br/>Congress/Casco Sts</b>           | 790'                              | METRO Rt 1, 9A                                                                     |

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.

*A variety of services are provided on-site. Three collaborative partners have offices in the facility providing medical services, employment and vocational training, substance abuse counselling, and mental health services. See Program Use Changes and Sec. II – Staffing and Management Responsibilities, and Sec. X Social Services: Onsite and Offsite of the Management Plan for more details*

6. Suitable laundry, kitchen, pantry, bicycle storage, and secure storage facilities for shelter stayers shall be provided on-site.

*The Shelter has a self-serve washing machine and two dryers. Clients have access to the laundry facility on a first come-first served basis. There is a fully equipped kitchen on-site and a cook that prepares three meals/day. Food is delivered to the Shelter 2 days/week from the Preble Street Food Security Hub in South Portland. Bicycles can be stored in the open-air secure courtyard. A locker area will provide clients with a locked locker for their personal belongings.*

7. An outdoor area for guest use shall be provided on-site with adequate screening to protect privacy of guests.

*An outdoor courtyard is available for clients. The space is completely screened from Cumberland Ave. a portion of the roof has been removed to create an open-air space. The courtyard includes seating for clients to relax and congregate. Raised garden beds will be planted annually with vegetables, herbs, and flowers. The plants will be selected, plants and cared for by the quests of the teen center and shelter. A five-loop bicycle rack that holds 7 bicycles is proposed for the facility. The size of the bicycle rack is based on the typical number of bicycles that are currently at the facility during the warmer months. See the Courtyard Floor Plan for details.*



## Design and Operation

The courtyard is a safe, enclosed, open air area that serves as a secure entrance to the facility and gives guests a place to congregate and relax. The seating selected for the courtyard includes planting areas. All plantings will be annuals and will be selected, planted and cared for by the guests of the facility. Plants will be a changing combination of vegetables, herbs, and flowers.

The sign location of the sign is the same. The sign message identifies the facility as “Joe’s Place A Preble Street Wellness Shelter for Youth”. The new sign will be illuminated.

The existing exterior light fixtures will be replaced with dark sky compliant fixtures. Two decorative wall sconces will be added to both sides of the front entrance. The new lighting is designed to help guests find the facility and for safety. See the photometrics plan for details on the impact of the new lighting on the sidewalk and surrounding areas.

## **Access and Circulation**

No changes to the site access is proposed. The entrance will be ADA accessible as shown in the floor plan.

No changes to the loading and servicing areas are proposed. The existing loading zone in the front of the building will be adequate to meet the needs of the teen shelter.

The sidewalks in front of the building are brick. No changes to the sidewalk system is proposed.

343 Cumberland Street: Teen Shelter and Center

June 10<sup>th</sup>, 2022

### Accessibility (ADA) Narrative:

The existing building will follow Title III of the Americans with Disabilities Act - New Construction and Alterations – ADAAG.

The main building entry, off 343 Cumberland Street, has an accessible route of travel to arrive on the site and approach the entry door. An accessible route has been provided within the courtyard to the main entrance. The new main entry door will be designed to meet ADA guidelines for size, operability, and clearances.

Upon entry of the building, there will be a check in desk designed with a portion of the counter lowered for accessibility. The café will include a variety of seating, including fixed and flexible seating, accounting for all minimum accessible requirements to be met following Table 221.21 Number of Wheelchair Spaces in Assembly Areas.

All shower and bathroom facility locations will provide a minimum of (1) ADA accessible toilet, shower stall and sink within the same location as the rest of the showers and bathrooms. All of the bathrooms designated as accessible will meet plumbing requirements of Chapter 6.

The sleeping areas provide a clear accessible route throughout the room to both the main entrance and the secondary emergency exits. Clear floor space, complying with Section 305, has been provide on at least one side of the beds.

Full plans, elevations, and details will be provided with submission of the building permit and barrier free accessibility review.



## **Site Landscaping and Buffering**

New landscaping is limited to inside the courtyard. The courtyard is a safe, enclosed, open air area that serves as a secure entrance to the facility and gives guests a place to congregate and relax. The seating selected for the courtyard includes planting areas. All plantings will be annuals and will be selected, planted and cared for by the guests of the facility. Plants will be a changing combination of vegetables, herbs, and flowers.

**Joe's Place  
Preble Street Teen Shelter and Center**

**A. Impact on Surrounding Street System**

The project combines two existing facilities within 500' of each other into one building; therefore, it isn't expected to increase traffic on the street system. The 24-bed teen shelter at 38 Preble Street will move to 343 Cumberland Ave. No additional beds are proposed. This project combines two 12-hour facility, teen center 8AM – 8PM, teen shelter 8PM – 8AM into one 24-hour facility.

Client traffic: Clients tend to get to the facility on foot, bike, or on transit. The facility is within 900 feet of the Monument Square and Elm Street Hub. Most transit routes serving the greater Portland area go through one of those transit stops.

Employee traffic: Employees who work at the site get to work by driving and parking on the street, walking, biking, or on public transit. The current level of staffing will be adequate to serve this project. No new staff will be needed.

Bicycle parking: The facility has a secure, open-air courtyard. Bicycles are stored in the courtyard on a 5-loop bicycle rack that holds 7 bicycles. The size of the bicycle rack is based on the typical number of bicycles at the facility currently.

Delivery traffic: The building at 343 Cumberland Ave has a designated loading/unloading area along the street opposite the front door. Food deliveries are brought to the site on Tuesday and Thursday mornings during the off-peak hours. Food is brought from Preble Street's Food Security Hub in South Portland. Other non-food deliveries are made at the loading/unloading area. Typically, non-food deliveries are limited to 1 – 2 deliveries/week. These deliveries also tend to be during off-peak hours.

Trash pick-up: Trash is picked up by a licensed hauler at night. The loading/unloading zone is used by the hauler.

There are no parking spaces on the site. No new pavement is proposed.



## **Joe's Place: Preble Street's Teen Shelter and Center**

### **Management Plan**

#### **I. Overview:**

##### **Description:**

Preble Street established Preble Street Teen Services (PSTS) in 1996 to provide low-barrier day and shelter services to youth experiencing homelessness in a setting separate from adults. In the ensuing 25 years, Teen Services has grown to include the largest licensed youth shelter in the state, a teen center, a statewide outreach program, and several different types of transitional and rapid rehousing housing programs for youth. Today, Teen Services provides a comprehensive continuum of prevention, shelter, and housing services to runaway and homeless youth 24/365.

The Joe Kreisler Teen Shelter and Center at 343 Cumberland Avenue provides low-barrier shelter, basic needs social work, healthcare, educational/vocational, mental health, substance use, and housing navigation services to youth ages 12 to 20, working collaboratively with providers both on and off site. More than 400 youth each year come for meals, safety and a chance to find their way back to families, into safe placements, or on to independent living.

Preble Street Teen Services Joe Kreisler Teen Shelter (JKTS) is a State of Maine DHHS Licensed Shelter for Homeless Youth (ID # 659627) with a capacity of 24 beds for youth ages 12-20. The JKTS operates under Maine's Shelter for Homeless Youth license, defined as "an emergency shelter designed to provide overnight lodging and supervision" for youth. The JKTS operates under this licensing definition and is open and staffed between 8:00pm-8:00am seven days/week. Preble Street has maintained this license in good standing and full compliance with successful annual audits and licensing reviews since the shelter was built in 2013. Preble Street previously maintained a Shelter for Homeless Youth license between 2004-2013 for the Lighthouse Shelter, the Preble Street-operated youth shelter prior to Joe Kreisler Teen Shelter. The JKTS is one of only three licensed youth shelters in Maine, the largest one in the state, and is the only licensed youth shelter south of Lewiston.

Preble Street Teen Center has historically been open from 8:00am to 8:00pm seven days/week, with a food program that provides three meals/day, including breakfast (8:00-9:00am), lunch (noon-1:00pm), and dinner (6:00-7:00pm). Additional services include private showers, a clothing closet, personal lockers for storage, access to phones and internet, computers, mail, laundry, etc. The Joe Kreisler Teen Shelter and Center have never closed (even during the fiercest winter storms and the COVID-19 pandemic) and are always open as an accessible, low-barrier day and night shelter for youth. Teen Shelter staff are trained in crisis management and social work best practices and are prepared to meet youth where they are when they enter our space.

##### **Population Served:**

The Joe Kreisler Teen Shelter and Teen Center serves youth experiencing homelessness between the ages of 12-20. In 2022, nearly 1 in 4 (24%) of homeless individuals, or 815 people, in Maine were under age 18, and the unaccompanied young adult homeless population (ages 18-24) had increased to 147 people. These youth need an intensive level of age-appropriate services to remain safe and establish a foundation for a stable future. Teen Services meets these urgent needs of homeless and runaway youth—providing warmth and safety, nutritious meals, clothing, crisis intervention, and overnight shelter. Recognizing that LGBTQIA+ and BIPOC youth are disproportionately likely to experience homelessness, PSTS provides services that actively work to reduce race and gender inequities. In the last year, 55% of youth accessing Teen Services' shelter identified as a race other than white, and 25% of youth identified as LGBTQIA+.

Runaway and homeless youth in Portland experience high rates of abuse and trauma, including sexual assaults, prior to leaving home, along with the risk of poor health, violence, and exploitation after. Most are fleeing a range of family problems and challenges, including family alcohol and substance use disorders; personal mental health and substance use issues; high rates of drop-out, academic struggles, and educational deficiencies; and are high risk for pregnancy, HIV/AIDS, sexually transmitted infections, exploitation, and human trafficking. LGBTQIA+ and BIPOC youth face additional barriers and experience homelessness at disproportionately high rates.

Youth without a safe place to stay at night often must resort to unsafe shelter in doorways or abandoned buildings and can be exposed to offers of sex for a place to stay. These dangerous situations not only have a destructive impact on youth – increasing the possibility of trauma, addiction, illness, and/or injury – but also on the community, adding a burden to city and county law enforcement, emergency responders, hospital emergency rooms, etc.

### **Program Use Changes:**

For the past ten years, the Joe Kreisler Teen Shelter and Teen Center have been located in buildings across the street from one another. It was never the intention to create two separate spaces for these services. The history of how this came to be is complicated and reveals a tale of services closing abruptly due to lack of funding and resources. In 2001, Preble Street acquired and renovated the building at 343 Cumberland Avenue in the heart of Portland to create a welcoming, versatile, state-of-the-art facility to house its youth-oriented day programs, now called the Teen Center. Shortly after opening the new Teen Center, Preble Street was asked to assume responsibility for the only youth emergency overnight shelter in Portland, then called the Lighthouse Shelter. The agency that ran the Lighthouse Shelter announced on Monday that it was closing the shelter and by Friday of that week, Preble Street stepped in to fill the gap and take over operations ensuring the only youth shelter didn't close its doors. Preble Street ran the Lighthouse Shelter for nine years in its location on Elm Street. Then, in 2013 Preble Street purchased the building at 38 Preble Street, directly across the street from the Teen Center at 343 Cumberland Avenue and renovated it into what is now the Joe Kreisler Teen Shelter to provide trauma-informed overnight shelter for runaway and homeless youth. Teen Services now operates these two separate, functional, and trauma-informed spaces as a 24-hour staffed program.

There are significant challenges, however, to operating out of two spaces. The most significant challenge is requesting youth to leave one space at 8pm and 8am to walk across the street to the other space. This “cross-over” time is a period of vulnerability and risk for youth. Asking youth to leave one safe space to walk outside to another safe space is not trauma-informed, it is extremely disruptive to youth seeking stabilization, and by creating unnecessary foot traffic in the neighborhood, prevents our spaces from being fully confidential. Additionally, operating out of two locations that are required to close and open at the same time creates consistent challenges for staffing.



By renovating the space at 343 Cumberland into a combined night and day shelter, these harms are reduced and Preble Street Teen Shelter services can be consolidated under one roof, in line with established best practices in the field. The shelter will continue to operate under its' current state of Maine license but will be embedded within the Teen Center space.

The new combined space, named **Joe's Place**, will remain a low-barrier day shelter at the front of the building. Clients enter through the existing outdoor courtyard from the sidewalk into an open, well-lit day space that comprises the kitchen (not moving from its' current location), dining area with tables, locker storage area, and multiple comfortable sitting spaces. This day center is an inviting space that offers space for youth to congregate, socialize and relax in the daytime and early evening hours. Computers, TV, books, and board games are available for use. Clients have access to private showers and bathrooms, nutritious snacks and private storage areas at all times. A partitionable wall will be closed nightly to create a smaller evening common living room space directly next to the shelter dorms, which will be opened for use by 8pm nightly. The dorms, separated by gender identity, are open-concept and trauma-informed. Beds are spaced six feet apart and clients are assigned the same bed each night. As is the case with our current shelter, there are also two small private bedrooms in each dorm for youth who need a more secluded sleeping space. These rooms are most frequently used for minors, youth in acute crisis, or victims of trafficking. Staff desks and offices are located centrally within the night shelter spaces to ensure sight lines to all sleeping areas.

Toward the back of the building, through a locked door accessible only by staff badge are the staff offices, administrative spaces, and office space for our collaborative partners. Since 2004, Preble Street has maintained strong, collaborative relationships with three outside entities to ensure programs are co-located on site at the Teen Center to provide critical services within this building. Our three on-site collaborative partners are:

- **Teen Clinic**, supported by Portland Public Health and Greater Portland Health to provide referrals to primary and preventive medical services to ensure that unsheltered youth in Portland have access to both a medical and dental home. **Portland Adult Education (PAE)**, operating the "Street Academy" which provides alternative education options, including the HiSet, re-integration into a traditional school setting, and support for employment and vocational training, including the Learn to Earn internship-style program. This program is staffed by two full-time educators employed by PAE.
- **Day One**, operating "Street Program" which provides individual and group clinical mental health counseling for youth and also provides supportive, low-barrier educational and substance use counseling services to youth using alcohol and other drugs, with a harm reduction philosophy that does not require abstinence before counseling begins. This program is staffed by two full-time licensed mental health and substance use clinicians.

The collaborative partners are on site during working business hours and serve current clients at the Joe Kreisler Teen Shelter and Center.

## **II. Staffing and Management Responsibilities**

Joe's Place will be operated by a management team consisting of a Program Director and three Program Supervisors, which supports the full team consisting of a Team Leader, Caseworkers on the first and second shifts, Housing Support Workers on the third shift, and a Program Administrator.

- The Program Director has expertise in management of programs working with individuals experiencing homelessness as well as extensive training in mental health and substance use issues. The Director will be accountable for hiring and managing staff, ensuring that all staff meet professional training requirements, and developing and implementing policies and procedures aimed at maintaining a safe environment and furnishing quality social services.
- Supervisors are accountable for supervising and providing leadership to caseworkers and housing support staff while ensuring the daily operations of the shelter and center are in alignment with the mission and meeting regulations. Supervisors are a part of the Teen Services management team.
- Caseworkers and Housing Support Workers will work directly with Joe's Place clients to ensure that basic needs are met. Individual service plans will be developed for each client including a housing stability plan, assistance with applications for benefits, income support, or employment that improve self-sufficiency in housing, and referrals to relevant community resources.
- The Team Leader is additionally responsible for staff scheduling and program operations support.
- The Program Administrator is responsible for HMIS (the federal Homeless Management Information System) data tracking, Client Track case management data system, ESAC (Portland's Emergency Shelter Assessment Committee) shelter usage reporting, reporting for funding requirements, and reporting and tracking for shelter licensing requirements.

The Program Director along with assistance from the Program Administrator will be responsible for the Shelter Program Monitoring Report.

In addition to having 24-hour seven day per week (24/7) onsite staff, Joe's Place also has a 24/7 On-call support service with access to additional coverage and clinical support as needed from Teen Services' full management team including the Senior Director, two Program Directors, one Assistant Director, and four Supervisors.

Teen Shelter state DHHS licensure currently requires a ratio of one awake staff member to eight youth clients. Preble Street will ensure our client to staff ratio, as required by state licensing, is met at all times.

Attached as **Exhibit 1** is a staffing coverage schedule for Joe's Place. The staffing schedule is a sample and may be changed, without reducing overall supervisory effectiveness.

At least one Preble Street LCSW (Licensed Clinical Social Worker) will be available to the Joe's Place team to provide clinical client assessments required for specific housing subsidies.

In addition, staff will be responsible for monitoring safety in the building and on the property. Safety will be monitored by staff at the front desk, requiring that all persons who enter the building are exhibiting safe behavior, and by doing hourly walks throughout and around the facility. Staff will also regularly monitor security cameras placed on the premises (see additional information under Client Access, Assessment and Restrictions).

Caseworkers and Housing Support Workers will receive professional social work training to understand and effectively respond to the complex issues that face homeless, runaway and street youth. This training will include Positive Youth Development, CPR, First Aid, mental health, substance use, co-occurring disorders, homelessness, Housing First, crisis intervention, overdose prevention, intervention and de-escalation of potential conflict, trauma informed care, harm reduction and essential community resources.

In addition, the Program Director and the three Supervisors are expected to demonstrate Preble Street's Management Core Competencies (**see Exhibit 2**) and will receive ongoing training that supports and

further develops those competencies. Similarly, the Caseworkers and Housing Support Workers will demonstrate and receive ongoing professional development and training in Preble Street's Core Competencies for Case Management Staff (see Exhibit 3). Managers are professionally trained and expected to uphold Preble Street's "Management Competencies: Eight Core Competencies." Those core competencies are Self-Aware, Effective Communicator, Problem Solver/Decision-Maker, Accountable, Team Builder, Talent Manager, Cultivator of Cultural Competence and Diversity, and Strategic Leader. Please see the "Management Competencies: Eight Core Competencies" document describing each core competency.

Supervisors will receive additional training in supervision, policy implementation, and crisis intervention and will be directly supervised by the Program Director. Management responsibilities include ensuring the operation of a safe and healthy shelter from intake to case management, providing for basic needs of hot meals, hygiene, clothing, and mail, providing for health, mental health, substance use, dental, education, employment, training, safety and spiritual needs through community partners, and discharge to temporary and permanent housing placements. Management is responsible for working with community partners to optimize the services for the clients, with neighbors and the neighborhood association to ensure helpful and positive communications that inform changes in operations, and with the Portland Police to ensure safety for the shelter clients, neighbors and staff.

### **III. Client Access, Assessments and Access Restrictions**

Joe's Place will only allow clients who meet eligibility for services to enter, as determined by an initial screening and intake. Clients must be between the ages of 12-20 and must be literally homeless with no other safe space to go in order to access services. Joe's Place is accessible twenty-four (24) hours per day. Shelter beds are available on a first come, first served nightly basis. Minors (youth under the age of 18) are always guaranteed a bed. Any youth who completes a shelter intake is permitted to stay at the shelter conditional upon availability of a bed and their following the safety and respect expectations of the shelter. Prioritization will be given to minors, youth who have no other options of a place to stay, and youth who have experienced human trafficking or other forms of violence.

When accepted into the shelter for the first time, the client goes through the Wellness/Health Screening at the check-in location and has an intake meeting with a caseworker. This intake process includes the completion of the Teen Services Intake, review of Teen Services Rules and Expectations (including wellness rules and neighborhood behavior expectations), signing of HMIS and other release forms, and signing the Teen Services Rules and Expectations Agreement.

Knowing the trauma and physical, mental and spiritual toll that experiencing homelessness takes, the design of the shelter allows for adequate rest, nutrition, cleanliness and fresh air, which are all crucial to healing, recovery, and moving out of homelessness.

Joe's Place design includes an enclosed Outdoor Courtyard only accessible to youth clients. The courtyard is located off the sidewalk behind a brick wall and is screened from Cumberland Avenue. A portion of the roof has been removed to create an open-air space, and there are fixed benches and raised bed gardens to create a relaxing and safe space outdoors.

There will be a dual door system that controls shelter access, ensuring proper assessments, safety and security. The primary entrance will be on Cumberland Ave. to the secure outdoor courtyard. The first locked door allows the client to come into the enclosed open-air courtyard, off the street. The second set

of doors will be unlocked and lead from the courtyard to the staffed front desk in the main lobby. This front desk will be staffed by Teen Services staff 24/7. All people entering the courtyard space will have to be buzzed in by Preble Street staff.

Wellness/Health screenings also happen here for all clients, including hand cleansing, masking and COVID-19 screening questions. From this front desk screening area, the client can enter the centralized shelter area. **Refer to floor plan for “staffed front desk” location.**

In addition to individual bathrooms and showers, the day shelter also has a self-serve washing machine and dryer. Clients have access to the laundry facility on a first-come-first-served basis. There is a fully equipped kitchen on-site that provides three meals/day 365 days per year. Food is delivered to the Shelter 2 days/week from the Preble Street Food Security Hub in South Portland and is stored in the pantry located on site at the Shelter. Bicycles can be stored in the open-air secure courtyard. A locker area will provide clients with a locked locker for their personal belongings. Clients will additionally have access to a telephone, computer and internet, and mail services at Joe’s Place.

Clients are not permitted to have guests other than service providers. This teen shelter is designed with the latest health knowledge to prevent the spread of COVID-19 and is considered a ‘controlled shelter’ in that only clients are allowed to access it along with Preble Street staff, pre-approved volunteers and community providers. Only visitors who are service providers will be allowed in the shelter to meet with the clients. The private courtyard in the fresh air and sunshine will have benches and tables to allow an additional COVID safe place for clients to meet with community caseworkers as well as to eat, feel safe and heal.

There is a range of time that individuals stay at Joe’s Place and the turnover rate will depend on this range. Average length of stay for clients in 2021 was 37 nights, but individual lengths of stay vary greatly depending on a number of factors, including rental housing availability and affordability, access to support services that assist people with mental health and substance use treatment, ability to return home, or availability of permanent or transitional supported youth-focused housing. In 2021, most youth (96 of them) stayed in the shelter 50 nights or less, but almost 40 youth stayed between 51-200 days.

Both the physical design of the facility and the program design will act in tandem to control access to the building. The front desk staff person is responsible for monitoring entry into and exit from the building through the one main door on Cumberland Avenue through the private courtyard. The front desk staff will also be monitoring video surveillance placed at doorways around the building to ensure security and restricted access. Three functional surveillance cameras will be situated to monitor the outer perimeter of the property. The Portland Police Department will be asked for help in locating the cameras at optimal places. The cameras are part of a digital video security system that will allow for live viewing of each camera from a central computer as well as the recording of data.

There are two access points to the building:

- The primary entrance will be on Cumberland Avenue into a secure open-air courtyard. This door from the sidewalk into the courtyard will be locked and controlled by a buzzer system. The door from the courtyard into the shelter will be unlocked and lead to the staffed front desk in the main lobby. This front desk will be staffed by Preble Street employees. All people entering the courtyard will have to be buzzed in by Preble Street staff.

- There is one lower-level exit door onto Portland Street. This door provides access for staff, limited access for some clients receiving specific services from providers during the day, and for emergency egress.

Joe's Place is accessible to clients 24 hours a day. Once the night shelter area closes at 8:00am, clients may stay in the day shelter part of the building all day until the night shelter space re-opens at 8:00pm. All services are located on site in the same building as proposed, ensuring 100% of basic needs services can be accessed without having to leave the space. This model is trauma-informed and considered best practice for shelters and creates a safe and secure environment for the clients, staff and neighborhood.

The open concept design of Joe's Place was largely informed from the trauma-informed design features at the current Joe Kreisler Teen Shelter and Teen Center spaces. Having large, open, high-ceilinged spaces at Joe's Place will ensure clear sight lines to sleeping areas and ensure safety. The new night shelter is designed with half walls to provide clear sight lines to protect the safety of clients while also providing privacy. The staff area within the night shelter is centrally located, enclosed with glass panels, providing clear sight lines throughout the sleeping areas. Two private rooms with doors are provided for minor clients (under 18 years), clients in crisis, or, occasionally, clients who are sick.

Staff desks with robust workstations will be located in both the night and day areas of the shelter, allowing staff to have constant ability to monitor the shelter. Workstations will include a computer for entering information and monitoring security cameras, staff phone and two-way radio for immediate communication with other staff who are performing security rounds inside and outside of the building, and hand sanitizer and masks readily available for anyone who may want them. It is Preble Street's experience that clients feel safe and enjoy talking with staff outside of casework appointments so the areas around the staff workstations should include seating for clients. Staff areas have been marked on the floor plan with sight lines to sleeping areas. **Please refer to floor plan for staff operation areas.**

Preble Street's professional social work practices focus on engaging in supportive, trusting relationships with the clients using trauma-informed care approaches. This model creates safe environments as safety is in the relationship between the client and the casework staff.

#### **IV. Client Intake Office, Social Work Appointment Rooms and Food Programs**

The space toward the back of the building (Portland Street side) will consist of offices in which client intakes, case work appointments, supervision sessions, and administrative work will be held. This space is also where the three collaborative partners – Day One Street Program, Portland Adult Education Street Academy, and the Teen Clinic – will have permanent office space in order to provide mental health and substance use counseling sessions, educational and employment services, and physical health clinic services. These offices are accessible through a locked door directly out back from the client-focused spaces and will only be accessible to clients if they are directly working with – and supervised by – a staff member or collaborative partner.

The Program Director's office and first and second shift Supervisor's shared office will be located directly within the day shelter space to ensure regular additional support to caseworkers who are working in the day shelter space.

Preble Street Food Services will continue to operate the existing commercial kitchen and pantry within the day shelter space, providing 3 meals/day 365 days/year. Meals are provided between 8-9am, 12-1pm,

and 6-7pm daily. The kitchen is staffed by a full-time Teen Services Cook with support from a robust volunteer program. Light snacks are available outside of mealtime 24 hrs/day.

## **V. On-Site Surveillance**

Three functional surveillance cameras will be situated in order to monitor the outer perimeter of the property and will be directed to avoid monitoring any neighboring properties unless explicitly agreed with the owner of that property. Two cameras monitoring the Cumberland Avenue frontage already exist. The exact mounting location of the third camera for the Portland Avenue entrance will be selected to maximize viewing coverage, in consultation with the Portland Police Department; and mounting height will be a minimum of 10 feet above the ground to prevent vandalism.

The cameras are part of a digital video security system that will allow for live viewing/playback of each camera from a central computer as well as the recording of data. This data is saved until the footage overwrites itself approximately every 30 days. Front desk staff will be responsible for monitoring the cameras. Any changes in camera locations will be in consultation with the Portland Police Department.

The interior design with open space and clear sightlines allow staff to be located in different stations in order to share responsibility for maintaining a safe environment. Collectively, staff will be able to fully monitor 100% of indoor client space from their workstations. In addition to the visual surveillance that staff are trained to incorporate into their work, there is frequent walking through the shelter spaces, engaging with clients and monitoring for safety.

The front desk staff also monitor safety of entry into and exit from the building as well as activity around the building through video surveillance. Regularly, a staff person equipped with a two-way radio for safety and emergency use, will walk the exterior perimeter of the building, asking people who may be loitering to move along and picking up any trash on the sidewalks. This exterior staff walk is followed by one in the interior courtyard. This collective surveillance of the interior and exterior of the shelter and the courtyard, using video monitors, roving staff and stationed staff in partnership with clients' agreement and assistance will maintain a safe, shelter environment.

## **VI. Safety Measures**

The safety of clients, staff, interns, volunteers and neighbors are the utmost concern to Preble Street. Joe's Place is designed to specifically meet the unique needs of youth and young adults experiencing homelessness. Both the facility and program model are designed to be trauma-informed and are considered best practice for youth shelter, which creates a safe and secure environment for the clients, staff and neighborhood. Using a Positive Youth Development model, Teen Services staff ensure that the program is youth-centric and that youth voices play a prominent role in the program model. By building relationships and trust with staff and collaborative partners, youth are better equipped to identify and work on their goals. Joe's Place is also designed for safety by:

- Creating a small, specialized shelter prioritizing the safety and needs of Maine's homeless youth and young adults.
- Designing a large open indoor space and private outdoor space with a focus on meeting clients' housing, life skills, education, and employment goals.
- Practicing COVID-19 prevention

The vast majority of safety issues can be prevented with evidence-based de-escalation techniques and support services. No metal detectors are used. No searches of personal belongings are conducted unless staff have reason to believe that someone may have weapons. External shelter doors are locked, allowing staff assessment to ensure only eligible youth are permitted entry into the space. COVID assessments are conducted daily and include screening, for COVID symptoms and requiring masks for entry to common spaces in the shelter.

This shelter will have professional staff that are extensively trained and practiced in those skillsets. Preble Street provides extensive trainings to all staff on basic safety including CPR, First Aid, overdose response, crisis intervention and de-escalation of potential conflicts, how to communicate with crisis services and with 911, and the role of police, firefighters and Medcu in on site situations. Preble Street and Teen Services Management has developed specific safety protocols and regularly meets and communicates with the Portland Police and other emergency personnel.

When necessary, Joe's Place staff will work closely with the Portland Police Department, Portland Fire Department, Medcu, other public safety departments and other crisis and health responders including the Maine CDC, Maine Department of Health and Human Services, Maine Medical Center, and TOA Crisis Response Services.

Joe's Place will continue to maintain current licensure in good standing, including compliance with all required safety measures, with the Maine Department of Health and Human Services to serve youth and young adults experiencing homelessness between the ages of 12-20.

Attached as **Exhibit 4** is an outline of the Preble Street training topics and material.

## **VII. Neighborhood Concerns**

Preble Street will take the steps below aimed at ensuring three goals: first, clients of the shelter are given a reasonable and clear set of expectations concerning their behavior at the shelter and in the surrounding neighborhood; second that clients are made aware of these expectations and the expectations are enforced by shelter staff; and third, the mechanisms are in place to receive and respond to any concerns or questions raised by neighbors or other stakeholders. In furtherance of these priorities, Preble Street will take the following steps:

- Preble Street staff facilitate periodic community meetings for clients of the program which include discussion of expectations related to being a good neighbor.
- Preble Street staff will have all clients sign a "Rules and Expectations" agreement upon intake to reinforce and make clear program and neighborhood behavioral expectations, **a copy of which is attached, as Exhibit 5.**
- Preble Street staff promote community-building in the neighborhood through staff and client participation in neighborhood clean ups and regular staff attendance at the Bayside Neighborhood Association meetings. Preble Street staff will commit to having at least one staff attend no less than 75% of the monthly Bayside Neighborhood Meetings.
- Preble Street staff work to connect clients with resources necessary to meet basic needs using a trauma informed, harm reduction approach.
- Preble Street staff meet with and communicate regularly with the Cumberland County Crisis Response Team and the Portland Police Department Community Policing to prevent and/or respond proactively to public safety concerns.



- Preble Street Managers readily provide their contact information and respond in a timely way to questions or concerns from community members.
- Each shift will conduct regular safety rounds of the external perimeter of the shelter, ensuring that the sidewalks are clear of any loitering and all trash is picked up. This is in addition to regular monitoring of external video surveillance.

Additionally, Preble Street Facilities team will continue to conduct daily trash pickup surrounding the entire shelter building at 343 Cumberland Avenue, on both sides of the street around the Wellness Shelter at 5 Portland Street, up to and around the former Joe Kreisler Teen Shelter at 38 Portland Street, and down to 55 Portland Street, on both sides of the street.

**Please see the attached map illustrating the daily trash pickup.**

Mechanisms to resolve neighborhood complaints include:

1. Preble Street will provide a 24/7 telephone number that community members can call any time of the day or night to report any problems related to the Teen Shelter.
2. All calls will be logged and tracked
3. Staff will take immediate action to try to resolve the concern. Resolution could include:
  - A client intervention if the complaint was directed toward the behavior of a shelter client.
  - Staff asking people who are loitering outside and who are not shelter residents to move on.
  - Staff conducting an external safety check of the building perimeter.
  - Supervisory review of camera recordings made during the time period that the neighbor called about.
  - Calling 911 or Community Policing.
  - Calling Medcu.
  - Requesting assistance from mobile crisis response services.
4. A manager will make a return call to the neighbor within 24 hours informing them of the action taken by staff.
5. A copy of the call and a report of the attempted resolve will be given to the Program Director
6. During the monthly Portland Police Department - Preble Street meetings, calls will be reviewed and analyzed to address individual concerns and systemic issues.
7. Management staff will meet with any neighbor at their request in order to discuss concerns.

## **VIII. Controls for Client Behavior and Noise Levels**

Clients' behavior is expected to be safe and appropriate. Upon acceptance into the shelter, clients are required to execute the Preble Street Teen Services Rules and Expectations Agreement.

Clients may not unreasonably disturb others, use the premises for any purpose deemed hazardous, conduct any activity or occupation which is illegal, noisy or dangerous, nor cause any damage or waste to the premises. No alcohol or illicit substances are permitted in any indoor or outdoor shelter area.

Staff are expected to ensure and monitor for a safe and respectful atmosphere at Joe's Place, in the enclosed Courtyard and on the sidewalks surrounding the space.

Loitering of non-clients around Joe's Place is not permitted nor is any behavior that is disruptive or unsafe. Any behavior that does not meet safety and noise expectations as well as any loitering will be addressed immediately by procedures that will vary based on the severity and the responsiveness of the person whose behavior is inappropriate:

- First, the individual(s) is asked to leave the area and staff use any existing relationship with them as well as offers of alternative resources, if needed, to make sure that the individual(s) leave the area and understand the need to change this behavior in the future.
- Second, in the event that the person returns to the area or refuses to leave, Preble Street staff will serve the individual(s) with paperwork approved by the City of Portland Police and Legal Department that lets them know that they are restricted from a specific area around the building.
- Third, if the individual(s) still does not leave the area or returns, the police will be notified to move the individual(s) along and/or to make an arrest for trespassing. Preble Street staff follow up with the Police Department to ensure that individuals do not return to the area and that they understand that continued trespassing can result in incarceration.

Preble Street staff facilitate periodic community meetings for clients of the program which include discussion of expectations related to being a good neighbor, and staff are proactive in addressing concerning behaviors around the building, including outreaching individuals engaging in that behavior and addressing the behavior individually and in community meetings.

## IX. Client Transportation Assistance

There are several Metro Bus Stops within close distance to the JKTS at 343 Cumberland Avenue, as described in the table below:

| <b>Transit stop/hub</b>                 | <b>Distance from 343 Cumberland Ave.</b> | <b>Transit routes available</b>                                                    |
|-----------------------------------------|------------------------------------------|------------------------------------------------------------------------------------|
| METRO Pulse at Elm St.                  | 825'                                     | METRO Rts- 2, 4, 5, 7, 8, Husky                                                    |
| Monument Square                         | 900'                                     | METRO Rts – 1, 8, 9B, 7 Breez<br>South Portland Rts – 21, 24A, 24B<br>ZOOM express |
| Post Office<br>(Portland St/Forest Ave) | 1,060'                                   | METRO Rt - 5                                                                       |
| Library<br>Congress/Casco Sts           | 790'                                     | METRO Rt 1, 9A                                                                     |

Joe's Place staff will work with clients in implementing strategies for utilizing transportation options including:

- Post transit schedules and metro maps in the shelter
- Communicate new information from Metro by posting this information or by relaying the information through caseworkers' individual work with clients
- Make referrals to collaborative partners who provide bus passes for clients
- Pay for taxis when a client has a medical appointment. Preble Street maintains a contract with a local taxi service to ensure reliable service for clients.
- Provide transportation for clients to apartment viewings, meeting with potential landlords and, periodically, medical appointments.

- Assist clients with RTP applications for MaineCare transportation for medical appointments via phone or fax services as required by RTP
- Providing bicycle storage outside the shelter or at a secure Preble Street location for longer storage needs.

## **X. Social Services: Onsite and Offsite**

Joe's Place is essential to the safety net for homeless youth in York and Cumberland County, including Portland, that is designed to rapidly re-house youth, reunifying them with family when possible, or connecting them with other supportive or independent housing options. Providing the entry point for alternatives to the street, Joe's Place is a space where youth engage with caring and skilled adults and begin working on housing, education, mental health, substance use, employment, and health to increase their potential to be a stable, productive adult.

Once basic needs are met for youth at Joe's Place, staff work with that client to develop a Service Plan, supporting youth to develop the coping and problem-solving skills essential for successful goal planning and growth. We recognize that youth have strengths and resilience which, if properly identified and supported, can help them achieve more stable lives and realize their full potential.

As a professional social work agency, Preble Street incorporates casework into all services it provides. Preble Street's Caseworker Core Competencies (**see attached Exhibit 3**) include "Accountable", "Advocate and System Navigator", "Critical Thinker and Problem Solver", all of which lead to proficiency in providing on-site support services.

Joe's Place provides a full spectrum of supportive services, including crisis intervention, family mediation to support permanent connections to family, assessments and referrals, comprehensive case management, life skills groups, and positive youth development activities such as enrichment groups, gardening, music, and community outings.

Youth at Joe's Place have access to the following case management services:

- Support in acquiring credentials and identification (e.g., IDs, birth certificates, SS card, etc.)
- Referrals to health, mental health, substance use treatment, legal services, housing, etc.
- Collaboration with partners, including Day One Street Program, City of Portland Adult Education, Teen Health Clinic, Teen Housing and Outreach Services, and Preble Street Anti-Trafficking services
- Goal setting and everyday problem solving
- Assisting with applications for housing vouchers and subsidies, MaineCare, SSI, SNAP, TANF, and other programs including Maine Housing's Rent Smart Program.
- Skill building (e.g., job searching, interviews, maintaining employment)
- Multicultural support (e.g., translation, connections to community services, linkages to immigration services and supports)
- Conflict resolution; building positive, healthy relationships; and communication
- Family reunification and developing other helpful social supports
- Independent living skills (e.g., money management, being a good tenant)
- Health and wellness (e.g., self-care, stress relief, physical well-being)

With the skills and support provided through holistic casework services and by meeting immediate basic needs, youth can work toward their goals, including graduating from high school or completing the

HiSET, finding employment, accessing needed behavioral health services, making a housing stability plan, gaining independent living skills, and establishing a foundation for stable independent living.

Preble Street Teen Services' innovative collaborative model includes three outside providers who are co-located on site at Joe's Place, allowing daily connection and communication among providers who are working with the same population of youth. The on-site collaborative partners include:

- **Teen Health Clinic:** supported by the City of Portland Public Health Division and Greater Portland Health, it provides primary and preventive medical services to ensure access to both medical and dental homes.
- **Street Academy:** operated by Portland Adult Education, it provides alternative education options, including the HiSet, re-integration into a traditional school setting, and support for employment and vocational training. It also implements the Learn to Earn internship-style program.
- **Day One Street Program:** provides individual and group clinical mental health counseling for youth and also provides supportive, low-barrier educational and substance use counseling services to youth using alcohol and other drugs, with a harm reduction philosophy that does not require abstinence before counseling begins.

Preble Street Teen Housing and Outreach Services also falls under the Preble Street Teen Services umbrella and provides additional support for youth experiencing or at risk of homelessness throughout Maine. Outreach services include Street Outreach throughout York and Cumberland counties and Mobile Diversion and Navigation for youth between the ages of 12-24 in eleven counties throughout southern and central Maine. Teen Housing services includes Transitional Living Programs, Transitional Housing, and Rapid Rehousing programs for youth and young adults throughout southern and central Maine.

## **XI. Monitoring Reports**

On a regular basis determined by the City of Portland's Health and Human Services Department (HHS), Preble Street will submit any required reports to HHS and the City of Portland Police Department.

Additionally, Preble Street will submit regular reports to the funding sources of Joe's Place, as required (United Way, State of Maine, Maine State Housing Authority, etc.). In addition, Preble Street is an active member of three planning and monitoring entities – the local Emergency Shelter Assessment Committee, the Region One Homeless Council, and the Maine Continuum of Care, including the Homeless Youth Provider Group subcommittee of the MCoC. Preble Street will regularly report on the work of Teen Services at those meetings.

While the COVID-19 pandemic is occurring, Preble Street also actively participates on Portland Shelter and COVID Homeless Needs meeting on weekly calls and the Coordinating Clinical Support-COVID & Portland Homeless Providers biweekly meetings facilitated by the DHHS Commissioner's Office. Preble Street reports on all their shelters at these meetings.

**Exhibit 1**  
**Joe's Place Staff Coverage Schedule**

|                                  | Sunday       | Monday     | Tuesday      | Wednesday | Thursday | Friday      | Saturday |
|----------------------------------|--------------|------------|--------------|-----------|----------|-------------|----------|
| <b>1<sup>st</sup> Shift</b>      |              |            |              |           |          |             |          |
| 1 <sup>st</sup> Shift Supervisor |              |            | 7:00a-3:30p  |           |          |             |          |
| Team Leader                      |              |            | 7:00a-3:30p  |           |          |             |          |
| FTE Caseworker 1                 |              |            | 7:00a-3:30p  |           |          |             |          |
| FTE Caseworker 2                 | 7:00a-3:30p  |            |              |           |          |             |          |
| FTE Caseworker 3                 | 7:00a-3:30p  |            |              |           |          |             |          |
| As Needed                        | 7:00a-11:30a |            |              |           |          |             |          |
| <b>2<sup>nd</sup> Shift</b>      |              |            |              |           |          |             |          |
| 2 <sup>nd</sup> Shift Supervisor | 12:30-9:00p  |            |              |           |          |             |          |
| FTE Caseworker 4                 | 11:30-10:00p |            |              |           |          |             |          |
| FTE Caseworker 5                 |              |            | 11:30-10:00p |           |          |             |          |
| FTE Caseworker 6                 |              |            | 12:30-9:00pm |           |          |             |          |
| FTE Caseworker 7                 |              |            | 12:30-9:00pm |           |          |             |          |
| PTE Milieu Worker                | 3:30-9:00pm  |            |              |           |          | 3:30-9:00pm |          |
| <b>3<sup>rd</sup> Shift</b>      |              |            |              |           |          |             |          |
| 3 <sup>rd</sup> Shift Supervisor | 10:00p       | -8:00a 10p | -8:00a 9p    | -8am 10p  | -8a      |             |          |
| Housing Support Worker 1         |              | 9p         | -7a 9p       | -7am 9p   | -7a 9p   | -7am        |          |
| Housing Support Worker 2         | -7am 9:00pm  | -7:00am 9p | -7a 9p       | -7a       |          |             | 9pm      |
| Housing Support Worker 3         | -7am         |            |              | 9p        | -7a 9p   | -7am 9pm    | -7am 9pm |
| Housing Support Worker 4         | -7am 9:00pm  | -7:00am    |              |           | 9p       | -7am 9pm    | -7am 9pm |
| As Needed                        |              |            |              |           |          | 9pm         | -7am     |
| <b>Program Admin</b>             |              |            |              |           |          |             |          |
| Senior Director of Teen Services |              |            |              |           |          |             |          |
| Teen Shelter Services Director   |              |            |              |           |          |             |          |
| Teen Housing & Outreach Director |              |            |              |           |          |             |          |
| Program Administrator            |              |            |              |           |          |             |          |



### Management Competencies: Eight Core Competencies

*A competency is a broad indicator of best practice; an area of knowledge critical to be able to perform your job well. Competencies are also connected to the goals and outcomes of the larger agency. These management competencies will provide a framework for training, coaching and evaluation to support your management level role and supervisory/management responsibilities.*

#### Self-Aware

- Works to be conscious of own strengths and motivations, manages assumptions and professional development needs.
- Attends to own personal wellness and responsibility, and promotes this in the work environment.
- Provides individual and team feedback based on open, objective observation.
- Uses a strength-based approach to promote learning and professional development as a supervisor.

#### Effective Communicator

- Communicates in a clear, organized manner.
- Applies active listening skills by checking for understanding and asking for clarification.
- Encourages diverse perspectives.
- Applies skills in communicating with diverse interaction and learning styles.

#### Problem-Solver/Decision-Maker

- Identifies and analyzes challenges and implements solutions from a strength-based perspective.
- Evaluates information and resources to develop viable, sustainable solutions.
- Facilitates effective problem solving, consulting with others when appropriate.
- Uses supervision to communicate obstacles to accomplishing essential job functions and goals.
- Effectively prioritizes issues and projects in alignment with goals and outcomes of Preble Street.

#### Accountable:

- Displays an understanding of essential job functions.
- Creates a standard of work and follow-through to ensure the standard is upheld.
- Dedicated to meeting and exceeding exceptional service and performance.
- Maintains knowledge of and compliance with Preble Street policy, procedures and legal obligations.
- Displays continuous work toward understanding, integrating and achieving supervisory best practices.
- Monitors performance measures connected to programs and activities.
- Demonstrates financial stewardship including the careful use and protection of financial resources.
- Acts in a professional and ethical manner.
- Creates and facilitates effective, relevant and productive agendas and meetings.

### Team Builder

- Inspires and fosters team commitment, trust and group excellence and positive morale.
- Coaches and guides employees towards desired outcomes.
- Promotes positive partnerships and collaboration within the agency and throughout the community.
- Encourages group problem solving through collaborative decision-making, when appropriate.
- Promotes the team in working collectively in support of the agency mission.

### Talent Manager

- Ensures appropriate selection and development of qualified staff.
- Swiftly and confidently addresses performance problems.
- Ensures compliance with Human Resources policies and procedures.
- Develops employees through effective, proactive coaching and mentoring.
- Actively works with employees to facilitate continuous improvement.
- Assesses individual, program and agency strengths and weaknesses to increase effectiveness of performance.

### Cultivator of Cultural Competence and Diversity

- Challenges stereotypes and holds self and others accountable for addressing bias or prejudice.
- Fosters an inclusive workplace where diversity and individual differences are valued.
- Develops and maintains a culturally diverse environment.
- Uses fair and equitable hiring practices.
- Fosters a culture that promotes creativity and innovation in alignment with the Preble Street mission.

### Strategic Leader

- Builds a shared vision and acts as a catalyst for change.
- Influences others to translate a vision into positive action.
- Participates in succession planning efforts and development plans.
- Supports strategic planning by connecting implementation plans to current and future agency goals.
- Applies varied perspectives to develop goals and strategies in line with the Preble Street mission.
- Effectively communicates program initiatives, strengths, and challenges within and across programs.





### **Caseworker Core Competencies**

The mission of Preble Street is to provide accessible barrier-free services to empower people experiencing problems with homelessness, housing, hunger, and poverty, and to advocate for solutions to these problems.

Preble Street develops a culture of casework teams who understand and practice the following throughout their role:

- Relationship is the foundation of our work
- Social work is rooted in love, compassion and curiosity
- Dignity, self-determination, and respect is inherent in how we work with all clients and each other

A competency is a broad indicator of best practice, and an area of knowledge essential to be able to perform a job effectively. Competencies are connected to the goals and outcomes of the larger agency. These casework competencies will provide a framework for ongoing training, coaching and evaluation.

Throughout this document our reference of colleagues is inclusive of co-workers across agency and community partners.

### **Oriented to Mission**

- Promotes working collectively in support of the mission as an individual and as a member of the team
- Works to advance social and economic justice by connecting direct services work and policy change
- Demonstrates a commitment to client centered service provision utilizing person-first language, a strengths-based, non-judgmental approach, and offering low-barrier services
- Builds relationships based on unconditional positive regard, empathy, and authenticity
- Develops awareness of how systems of oppression including racism, sexism, xenophobia, ableism, homophobia, transphobia, classism and/or other social dynamics intersect and combine to impact us as individuals and the people we serve based on the multiple identities we each hold
- Ensures that delivery of services is inclusive and accessible

### **Oriented to Population**

- Cultivates knowledge of the experience of those served across Preble Street programs including adult and youth homelessness, trauma, human trafficking, military service, mental illness, and substance use
- Develops comprehensive knowledge of resources necessary for the stability of clients including but not limited to housing, food, primary and mental health care, substance use treatment, education, legal services and employment
- Utilizes social work assessment to help understand client behavior
- Learns and implements evidence based best practices including but not limited to person centered care, trauma informed care, harm reduction, motivational interviewing, and Housing First

### **Self-Aware**

- Utilizes reflective and critical thinking skills to gain insight into the impacts of personal experience, privilege, marginalization, bias, and prejudice and how they shape assumptions, worldviews, values, and beliefs
- Applies principles of mindfulness to enhance capacity to pause and respond rather than immediately react
- Utilizes supervision in an open and self-reflective manner in alignment with the agency definition of supervision
- Receives and provides feedback in a professional manner based on open, objective observation and individual professional development needs
- Takes responsibility for personal wellness, and promotes this with colleagues

### **Effective Communicator**

- Communicates in a clear, organized manner in both verbal and written communication
- Applies active listening skills as a foundation for developing professional relationships
- Demonstrates openness to and respect for diverse perspectives
- Adapts communication strategies as required to effectively communicate with a diversity of individuals

- Ensures coordinated programming and service provision through active communication and collaboration across the agency

### **Promotes Safety**

- Ensures safety in our programs through relationships, assessments, self-awareness, de-escalation strategies, crisis intervention and compliance with program and agency policies and procedures
- Practices effective crisis intervention skills, conducting crisis and risk assessments in consultation with supervisor and team and providing intervention, support, and follow up as appropriate in accordance with agency protocols
- Establishes and maintains professional boundaries with colleagues and clients, utilizing supervision and other appropriate resources to ethically navigate boundary challenges as they arise
- Monitors, assesses, and intervenes to maintain a safe working environment both in the community and within low barrier program spaces

### **Accountable**

- Maintains knowledge of and compliance with Preble Street policies, procedures, and legal obligations
- Maintains professional, timely documentation of services provided to clients in a manner consistent with program and agency practice
- Develops, implements, accesses, and updates client-driven service plans with consistent follow-through, regular monitoring, and support to the client throughout each stage of the plan
- Practices effective time management, works efficiently in tight time frames, and responds in a timely way to clients and colleagues to ensure adequate follow-through
- Reliably completes tasks assigned or undertaken in alignment with job description

### **Advocate and System Navigator**

- Works from an empowerment perspective in support of client efficacy
- Collaborates with colleagues in a professional manner that promotes respect and increases access to quality care for clients
- Navigates systems and resources relevant to client needs, and advocates for access to these systems and resources
- Engages in advocacy for and with clients at all levels, including direct services, community resources/benefits administration, and policy changes/legislation
- Maintains familiarity with and actively supports the advocacy work of Preble Street by connecting direct services and policy change

### **Critical Thinker and Problem Solver**

- Applies problem solving techniques and informed professional judgment in order to practice solution-oriented approach to challenges
- Positively contributes to the planning and implementation of sustainable improvements in service delivery and the quality of services
- Demonstrates an ability to navigate client services through assessment and research, identifying available options, and taking appropriate action, including identifying when to consult with a supervisor
- Aims to work to the highest level of autonomy within the scope of the position
- Maintains ethical practice at all times, supported by the use of appropriate resources, including team members, supervision, legal and ethical codes, and the agency mission, policies, and resources

### **Collaborative Member of Program and Agency**

- Grows professionally through actively engaging in the three components of agency supervision; administrative, educational, and supportive
- Maintains a flexible, team-oriented approach to the work and assumes positive intent with colleagues
- Readily and actively participates in program and agency-wide activities and initiatives
- Practices direct, respectful, solution-oriented collaboration, within team, agency, and colleagues
- Recognizes and acts on opportunities to promote and integrate team member diversity to strengthen teams and improve client services

## **Exhibit 4:**

### **Preble Street Training Material Outline**

#### **Preble Street Required Training for All Agency Staff**

**I. Orientation:**

- a. Preble Street mission and values
- b. Preble Street Handbook and Policies
- c. Confidentiality Policy and Unlawful Harassment Policy
- d. Exposure Risk Policies (Universal Precautions, Bloodborne and Airborne Pathogens)
- e. Incident and Accident reporting, Worker's Compensation, and Trauma Protocol
- f. Low barrier services
- g. Empathy and unconditional positive regard
- h. Structural causes of homelessness, including racism, redlining and LGBTQIA+ prejudice
- i. Harm reduction philosophy
- j. Self-awareness and bias
- k. Language and stigma

**II. Maintaining a Safe Work Environment:**

- a. Boundaries & Confidentiality
- b. Crisis Prevention, Intervention, and De-escalation
- c. Challenging Behaviors
- d. Emergency Services
- e. Intervention Basics
- f. Weapon Policy and Trauma Procedures
- g. Emergency & Non-Emergency Procedures
- h. Mental Health Crisis Intervention
- i. Overdose Response Training
- j. Supervision

**Additional Annual Training:**

- Unlawful Harassment & Safety Training
- Video Display Terminal Training (for office staff)

#### **Preble Street Specific Program Training – Required for all Teen Services Staff**

**III. Teen Services Program Orientation**

- a. Program overview and staff expectations
- b. Introduction to the milieu: policies and procedures
- c. Expectations, consequences, and restorative interventions
- d. Universal policies and procedures, including weapons, grievance and CTOs
- e. Mandated Reporting
- f. Introduction to Collaborative partners
- g. Emergency and Safety Procedures – site specific

- h. Evacuation Instructions – site specific
- i. Documentation expectations and file upkeep/ maintenance
- j. Client presentation, engagement, and intervention
- k. Understanding street culture
- l. Mental and Behavioral Health, including Suicide Prevention Training
- m. Introduction to screenings and assessments
- n. Community Resources

**IV. Additional Trainings/Requirements**

- a. CPR/ First Aid
- b. Trauma-informed care: Approach and Practices
- c. Human Trafficking in Maine: Identification and Response
- d. Positive Youth Development
- e. Motivational Interviewing
- f. Upon Hire and as required by shelter license:
  - i. Physical exam for staff
  - ii. TB testing
  - iii. First Aid/CPR (American Red Cross)
  - iv. FBI Fingerprinting background check
  - v. Maine DHHS background check

## Welcome to Preble Street Teen Services

### **Joe's Place Hours:**

8:00am to 8:00pm, 7 days a week, 365 days a year.

Breakfast 8:00-9:00am

Lunch 12:00-1:00pm

Dinner 6:00-7:00pm

### **Overnight Hours:**

8:00pm to 8:00am, 7 days a week, 365 days a year.

**Teen Services** serves ages 12-20 and offers basic needs, shelter, food and casework.

### **Street Academy:**

Monday-Friday, 8am-3pm

- School Enrollment and Tutoring
- HiSET Pre-Testing & Testing
- Learn to Earn Employment
- Career Exploration and College Prep

### **Day One Street Program:**

Monday-Friday, 9am-5pm

- Mental Health/ Substance Use Counseling
- Intensive Case Management
- Referrals for medication management
- Maine Mother's Network connections

### **Teen Health Clinic:**

3 days weekly

- Address medical concerns & issues
- First Aid
- Referrals to medical homes (PCPs)
- Sexual health services

*The mission of Preble Street is to provide accessible, barrier-free services to empower people experiencing problems with homelessness, housing, hunger, and poverty; and to advocate for solutions to these problems.*

*While you are here, we commit to supporting you, respecting you, and maintaining a safe environment.*

*We ask that you are safe and respectful of yourself and others.*

*We believe that people should have equitable access to our space and not face unnecessary barriers.*

*Our rules are grounded in this belief and our basic values of safety and respect for you, staff, and others.*

## **Joe's Place Basic Rules + Expectations**

1. **Violence, Bullying + Hate Speech:** Violence or threats of violence in any form—verbal, physical, emotional, or cyber bullying—will not be tolerated at Teen Services. Hate speech—saying things that put down or demean a person or group of people in some way or saying something that may make another person or group of people feel unsafe—is not permitted at Preble Street. Engagement in any of the above directed toward other clients or staff may result in being asked to leave the space, and a longer consequence may be decided by staff.
2. **Weapons:** Absolutely NO firearms are allowed on Teen Services property. **Clients who bring firearms onto Teen Services properties will be permanently restricted from our services.** No weapons of any kind are allowed within Teen Services programs. Weapons other than firearms **MUST BE** checked in with staff upon entry. Staff reserve the right to determine what is a weapon and may choose to not check in weapons based on size or other factors.
3. **Animals** are only allowed on Teen Services properties if they are documented service, therapy, or emotional support animals and have current and appropriate vaccinations as required by law.
4. **Babies** and children are only allowed in the Teen Center with their program-eligible parent/guardians during meals, appointments, appropriate groups, and family laundry times. Clients who bring their child into the Teen Center are solely responsible for the safety and care of their child while in the space.
5. **Bathrooms/showers:** One person at a time may use the bathrooms and showers, with the door kept shut for privacy. Youth may do hair, make-up, etc. together with the door open. If youth have been in the bathroom for an extended period of time, staff will perform bathroom checks to ensure their safety. This can range from knocking on the door to entering the bathroom or shower.
6. **Buying and Selling:** There is no buying or selling of any items on Teen Services property; youth cannot exchange money and youth are encouraged not to have any money visible in the space.

7. **Cell Phones + Cameras:** Youth may use cell phones (respectful voice level, no drug selling/seeking), though staff may ask youth to take conversation outside if conversation becomes too loud or inappropriate for the space. For confidentiality reasons, youth are not allowed to do video calls, take videos, or take photos on Teen Services property—this includes selfies!
8. **Computers:** Youth are permitted to use Teen Services client computers at any time. If multiple people are interested in using computers staff will start a list of names and each person will be given 30 minutes of time. If staff believe that inappropriate behavior is occurring on computers in the space, staff have the right to end someone's computer time and potentially limit their access to Teen Services' computers. *Staff computers are not available for use by clients.*
9. **Clothing Policy:** Any clothing that refers to drugs or alcohol; has explicit violent or sexual language, images or references; or clothing that might be deemed offensive to a group of people is not acceptable in the space. Clothes must be worn in a way such that genitals, buttocks, and nipples are covered with opaque material. Shirt (with fabric on front, back and sides), bottoms and shoes must be worn at all times. This policy is intended to ensure that all people are treated equitably regardless of gender/gender identification, sexual orientation, race, ethnicity, body type/size, religion, and personal style.
10. **Doors:** Only staff are permitted to open the entry and exit doors to allow people to come into the Teen Center or Shelter.
11. **Drugs + Alcohol:** If youth are *seeking, selling, using, or sharing* drugs or alcohol—or there is reasonable suspicion of this behavior—they will be asked to leave the space and a longer consequence may be decided by staff. No scales or paraphernalia (for example – bowls or bongs) are allowed in the space. Clients may seek services at Teen Services while under the influence of drugs or alcohol. Clients will be referred to another safe place (ex- the hospital emergency room) if their condition or behavior jeopardizes their safety or the safety of others in the community.
12. **Food:** Meals are served 3 times a day: Breakfast at 8am, Lunch at 12pm, and Dinner at 6pm. Between meals there is cereal, bread, milk, and other snacks available. Teen Center dishes, cups and silverware cannot be taken outside of the drop-in space (i.e., courtyard, sidewalk, etc.). To-go ("bagged") meals are provided for youth who may be working during meals, have been at the hospital or in school, or have been restricted from eating meals inside the Teen Center.
13. **Lockers:** Youth may sign up for a locker by checking in with staff + signing a locker agreement.
14. **Music:** If you wish to listen to music, movies, or videos while in the Teen Center or Joe Kreisler Teen Shelter, you can do so while wearing headphones in common areas, and at a respectful volume in the bathrooms or courtyards.
15. **Physical Contact:** Extended physical contact (sitting on laps, kissing, etc.) and any physical contact that could hurt another person (fighting, wrestling, or horseplay) is not permitted.
16. **Smoking + Nicotine Vapes:** Clients can use tobacco in the courtyards outside the Teen Center and the Joe Kreisler Teen Shelter. **Clients are not permitted to use tobacco inside Teen Services Buildings, including nicotine vapes.**
17. **Television and Movies:** Movie and television content may not contain extreme language, sex, or violence, and staff have the discretion to determine what is appropriate to be shown in the space.
18. **Grievances:** Please contact staff if you have a problem you need staff support to solve. If the matter is not resolved, you may request a Grievance Form. Please give completed forms to a staff person, and a supervisor or director will meet with you to address your concerns.
19. **Termination of Services:** If a client's behavior becomes unsafe based on the rules, norms and expectations in this document, staff may suspend or terminate services. Clients will be notified of the decision to terminate services and will be provided a Grievance Form if desired. Clients who have shelter services terminated will be referred to casework services off site and will be encouraged to work with a caseworker to find other appropriate housing/shelter options.

## Shelter Space Specific Expectations

1. Youth must be in the sleeping areas between 11pm-7am. Lights are out by 11pm, unless there is an early “lights out” request, which could be as early as 8:30pm. Quiet is expected in the dorm after “lights out”.
2. Youth under the age of 18 (minors) are required to sign into the shelter by 9:00pm (10:00pm during summer and weekends). If this curfew is missed, youth may only access the Teen Center drop-in the following day if they engage in meaningful work toward goals with their caseworker.
3. The shelter curfew for adults (18+) is 2:00am. Youth are not permitted to enter the shelter after 2am.
4. Leaving the property after signing into the shelter is equivalent of signing out. Youth who sign out and return the same evening will have to plan to spend the following night out of the shelter.
5. Youth are permitted to go to the outside courtyard for smoke breaks periodically throughout the night. Youth are expected to respect the time frame provided by staff for length of smoke break (generally, 15 minutes).
6. Youth must stay in the dorm and the bed they are assigned to.
7. Youth are responsible for making their bed in the evening and bringing their linen to the laundry cart in the morning.
8. Please check in prescription medications when signing into the shelter. All medications will be returned each morning

\_\_\_\_\_  
Client Name and Signature

\_\_\_\_\_  
Date

\_\_\_\_\_ (client initials) I have been informed that if I have any concerns around the expectations of the space or feel that I have been unfairly treated, I have the right to file a written grievance which will be submitted to and reviewed by management. Staff can provide me with a grievance form upon request.

**My signature below indicates that I AGREE to follow all the rules and have been orientated with and clearly understand the emergency procedures, locations of all emergency exits and where to assemble in case of an emergency.**

\_\_\_\_\_  
Client Name and Signature

\_\_\_\_\_  
Date

## Preble Street Teen Services Mask Requirement

I, \_\_\_\_\_ understand that it is a requirement for me to wear a mask at all times while inside the Teen Center Drop-In and the common areas of the Joe Kreisler Teen Shelter.

I understand that I am not required to wear a mask when I am:

- On my bed at the Teen Shelter
- Eating
- In the outside courtyards of the Drop-In and shelter.

I understand that this rule is about keeping myself and others safe during the Covid-19 pandemic.

\_\_\_\_\_  
Client Signature

\_\_\_\_\_  
Date



PC1

mike@harborlightadvisors.com <mike@harborlightadvisors... Sep 2, 2022, 11:31:51 AM (3 days ago)  
to planningboard@portlandmaine.gov, ctetelman@portlandmaine.gov

Hello, I am writing in regards to the Minor Site Plan Application notice received for PL-002095-2022 at 343 Cumberland Avenue. I am one of the owners of 24 Preble Street. We think it is a good idea to consolidate services in one building at 343 Cumberland Avenue and understand the efficiencies that will bring. With that said, we do have some concerns. Our building has a vacant first floor storefront that we are trying to lease. There are constantly people hanging out on the steps and leaving trash. I don't know where the people are coming from but a lot of the time it is teenagers. The adjacent alley to our building has also been used to as a dumping ground for trash requiring us to spend a decent amount of money constantly cleaning up for something that we do not even own. We do the cleanup though since it reflects poorly on our building. We did work with the abutting property to install a locked gate on the alley that we paid for to help mitigate this. We have received feedback from multiple prospective tenants that this is an area of concern for them.

Lastly, we would like to know the plan for 38 Preble Street.

I appreciate your consideration to these issues.

Mike

--

**Michael A. d'Hemecourt**  
Principal



Charles Tetelman &lt;ctetelman@portlandmaine.gov&gt;

## Public Comment 343 Cumberland Avenue: Various Questions

George Rheault &lt;george.rheault@gmail.com&gt;

Mon, Sep 12, 2022 at 9:58 AM

To: Planning Board <planningboard@portlandmaine.gov>, jmy <jmy@portlandmaine.gov>, Abigail Reed <areed@portlandmaine.gov>, Christine Grimando <cdg@portlandmaine.gov>, ctetelman@portlandmaine.gov

As a nearby property-owner, I fully support the consolidation of the Preble Street (PS) Teen Shelter operations into the Cumberland Avenue location.

As I wish this plan to be successful and to be achieved efficiently and expeditiously (unlike the [5 Portland Street](#) shelter which the City of Portland, including the Planning Board, did everything in its power to slow down), I have some outstanding questions listed below.

1.) How long was the previous "teen" Lighthouse Shelter on Elm Street in operation before Preble Street took over its operation from the Salvation Army circa 2003?

The need for Maine's largest city to have an effective youth shelter is obvious and it is important to emphasize the long history of this service in the neighborhood which likely predates most if not all adjacent current property-owners and residents. It is also worth noting that as soon as PS moved the shelter operation out of the Elm Street facility in 2013, AVESTA demolished the structure and has selfishly LAND BANKED the parcel for almost 10 years despite our region's housing crisis worsening year after year. Of course the parcel has significantly appreciated in value over this time frame.

2.) How does PS shelter staff handle the mixing of ages served by the facility (12-20) which is a very wide range considering this vulnerable age group? One would not expect good outcomes with pre-adolescent kids mixing with young adults, some of whom may have already been in and out of adult prison environments. This is a primary concern of many outside observers that youth served by the teen shelter end up being poorly influenced by their older "peers" during their shelter stays which makes it even more difficult for them to achieve stability and success beyond their shelter experiences.

3.) How is the stairwell in the back of the building accessed (presumably this secondary means of egress must be accessible to shelter occupants - at the very least in the event of an emergency)? Do PS staff regularly use it to come and go, is there a camera recording the area and is there a concern that this access point could be abused by shelter guests if not properly monitored throughout the day and night?

4.) What will be the paving material used for the "new" courtyard? Currently the courtyard appears to be asphalt - which is unattractive, probably somewhat difficult to keep clean and presentable and maybe even uncomfortably hot during the warm months. Is the new paving material going to make the courtyard experience more pleasant and conducive to socialization? Presumably existing floor drains will be retained so that it can be pressure-washed on a regular basis and maintained with pride.

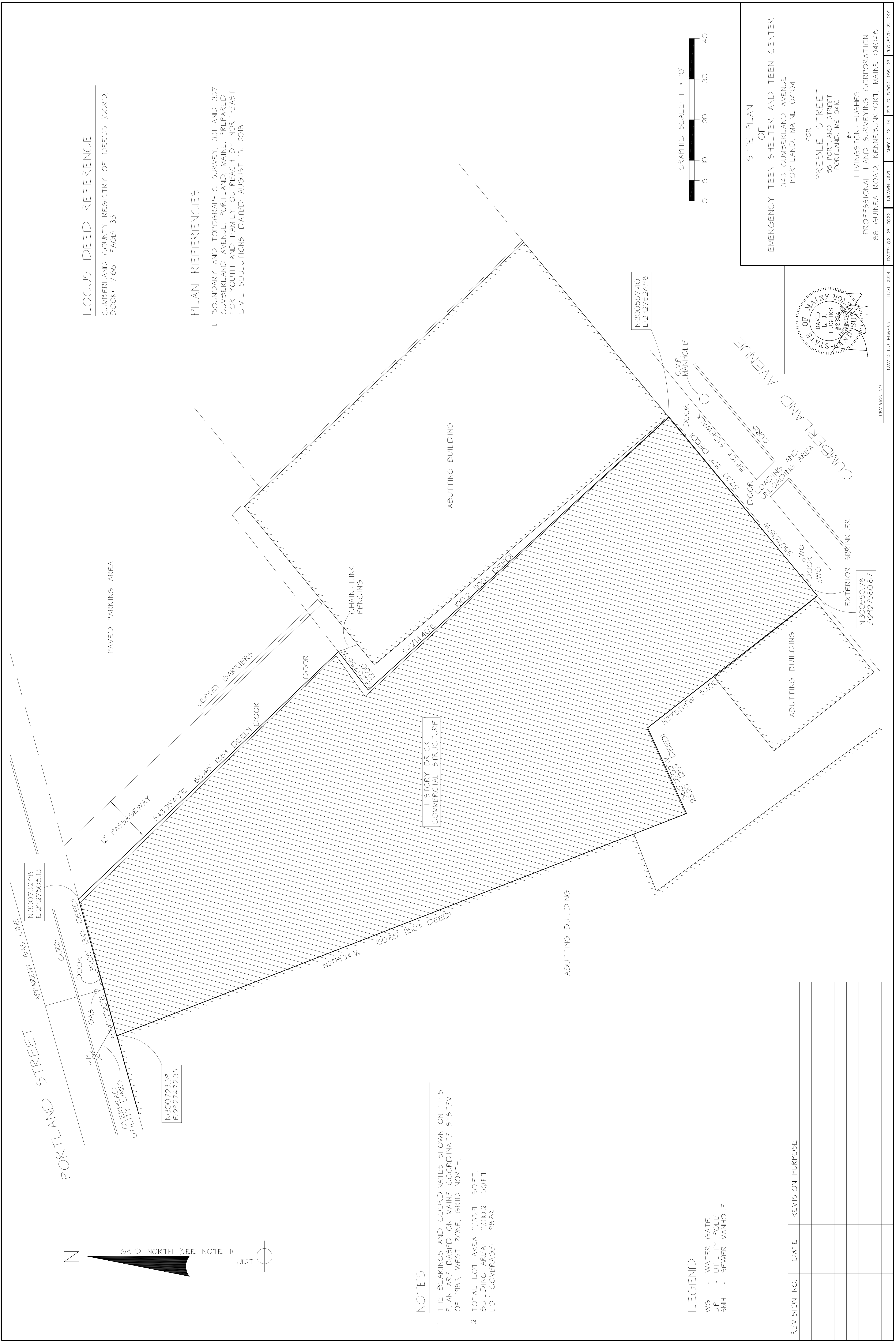
5.) What is the facility's smoking policy? How do non-smokers enjoy the courtyard and co-exist on the same basis as smokers? Do smokers at times have to smoke outside on the sidewalk? Is this part of the general loitering that is often associated with the current facilities (both Cumberland & Preble)?

6.) What is the average stay of teen shelter guests? Are placements in foster homes and other alternative settings relatively quick or will some guests be staying for weeks at a time? Does PS track how often a shelter guest returns for repeated stays? Is there any limit on such "repeat" visits and what is the plan for guests that continue to "drop-out" of non-shelter housing placements?

7.) Does PS encourage or require shelter guests to do any "chores" to help maintain the facility in a clean and safe condition? This could mean simple tasks like sweeping, meal service, gathering of bed linen, etc. Should guests engage in such activity are they given any special recognition, privileges or otherwise rewarded for such assistance and good neighborliness?

8.) Has planning staff coordinated with Permitting around Fire & Life-Safety requirements so a repeat of the 5 Portland Street saga does not happen again (i.e., the planning process failing to identify a MAJOR fire safety issue that allows the City of Portland to find creative ways to drag out the applicant's implementation of its approved plan while allowing the Planning Board to look magnanimous)?





LOCUS DEED REFERENCE

CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD)  
BOOK: 17166 PAGE: 35

PLAN REFERENCES

- BOUNDARY AND TOPOGRAPHIC SURVEY, 331 AND 337 CUMBERLAND AVENUE, PORTLAND, MAINE, PREPARED FOR YOUTH AND FAMILY OUTREACH BY NORTHEAST CIVIL SOLUTIONS, DATED AUGUST 15, 2018

NOTES

- THE BEARINGS AND COORDINATES SHOWN ON THIS PLAN ARE BASED ON MAINE COORDINATE SYSTEM OF 1983, WEST ZONE, GRID NORTH.
- TOTAL LOT AREA: 11,135.9 SQ.FT.  
BUILDING AREA: 11,010.2 SQ.FT.  
LOT COVERAGE: 98.8%

LEGEND

WG - WATER GATE  
UP - UTILITY POLE  
SMH - SEWER MANHOLE

REVISION NO. DATE REVISION PURPOSE

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REVISION NO.

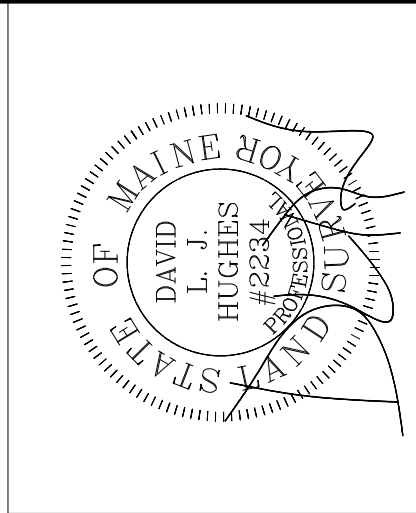
DAVID L.J. HUGHES P.L.S. 2234

DRAWN: JDT

CHECKED: D.J.H.

FIELD BOOK: 165-271

PROJECT: 22-005

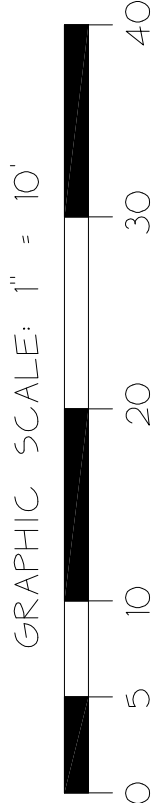


SITE PLAN

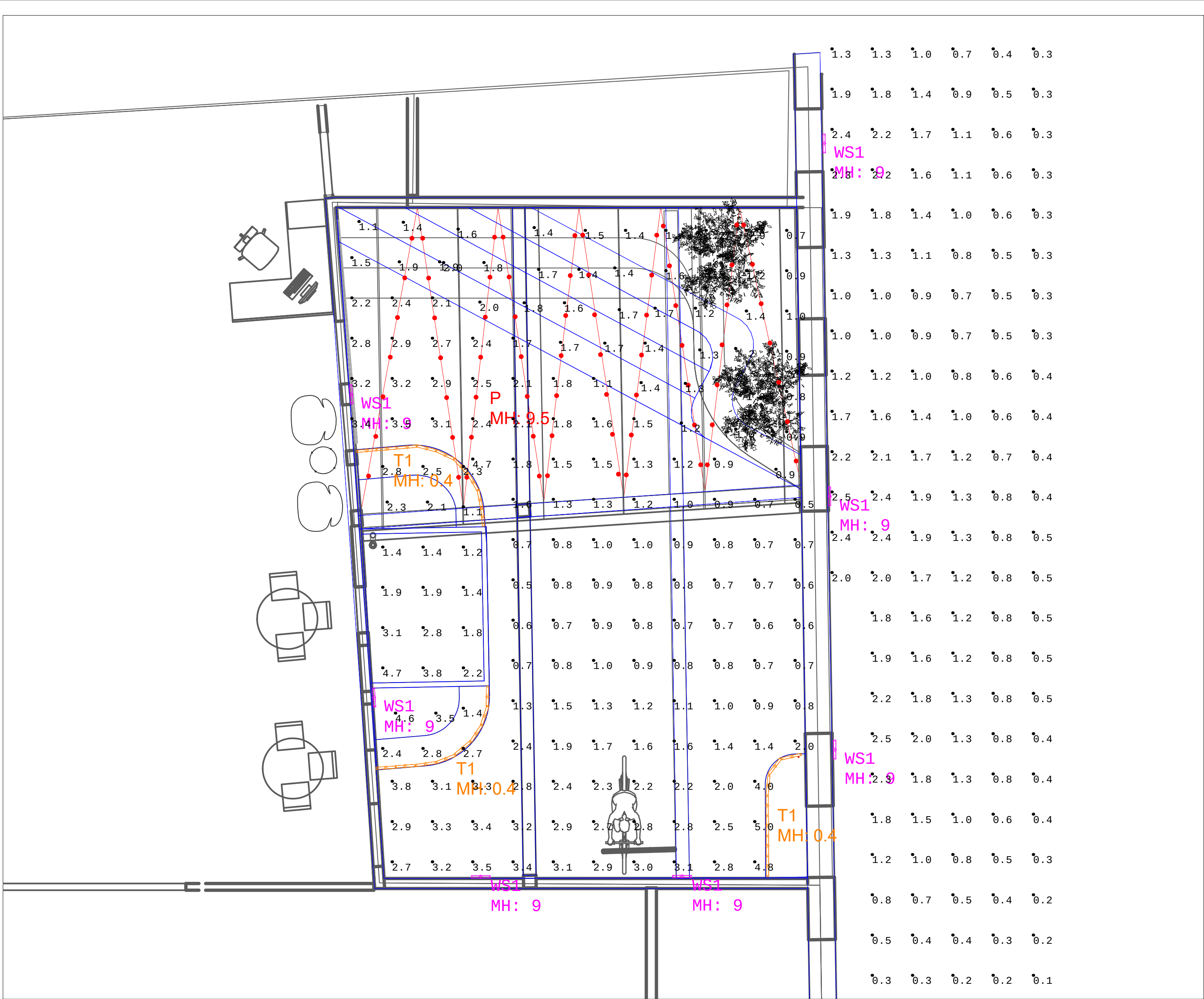
OF  
EMERGENCY TEEN SHELTER AND TEEN CENTER  
343 CUMBERLAND AVENUE  
PORTLAND, MAINE 04104

FOR  
PREBLE STREET  
55 PORTLAND STREET  
PORTLAND, ME 04101

BY  
LIVINGSTON-HUGHES  
PROFESSIONAL LAND SURVEYING CORPORATION  
88 GUINEA ROAD, KENNEBUNKPORT, MAINE 04046







Luminaire Schedule

| Symbol                                                                              | Qty | Label | Description                                              | Tag                                                                                                                                                                                   | Luminaire Lumens | Luminaire Watts | LLF   |
|-------------------------------------------------------------------------------------|-----|-------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|-------|
|  | 70  | P     | TIVOLI: LSL2-B-24-H-30-C-12                              |                                                                                                                                                                                       | 14               | 0.4             | 0.900 |
|  | 24  | T1    | NOVA FLEX: NF-DS-W-64-24V-3000K<br>CHANNEL NF-CH-3525-2M | Product dimmed in photometric to 25 lm/ft level to meet town requirements, Reflex to provide necessary local controls to restrict light fixtures from exceeding town FC requirements. | 238              | 3.06557         | 0.095 |
|  | 7   | WS1   | LIGMAN: UAB-30003-14w-W30-XX-120/277v                    | Product dimmed in photometric to 382 lm level to meet town requirements, Reflex to provide necessary local controls to restrict light fixtures from exceeding town FC requirements.   | 765              | 11.1            | 0.450 |

Calculation Summary

| Label         | Units | Avg  | Max | Min | Avg/Min | Max/Min |
|---------------|-------|------|-----|-----|---------|---------|
| Bench_1_Top   | Fc    | 2.20 | 2.3 | 2.1 | 1.05    | 1.10    |
| Bench_2_Top_1 | Fc    | 4.05 | 4.6 | 3.5 | 1.16    | 1.31    |
| Bench_4_Top_1 | Fc    | 2.30 | 4.7 | 1.2 | 1.92    | 3.92    |
| Bench_Top     | Fc    | 2.25 | 2.8 | 1.1 | 2.05    | 2.55    |
| Exterior      | Fc    | 1.00 | 2.5 | 0.1 | 10.00   | 25.00   |
| Floor         | Fc    | 1.86 | 5.0 | 0.5 | 3.72    | 10.00   |
| Grass_Top     | Fc    | 1.16 | 1.6 | 0.7 | 1.66    | 2.29    |
| Step_1_Top    | Fc    | 1.63 | 2.0 | 1.3 | 1.25    | 1.54    |
| Step_2_Top    | Fc    | 1.54 | 1.7 | 1.3 | 1.18    | 1.31    |
| Step_Top      | Fc    | 1.60 | 2.0 | 1.1 | 1.45    | 1.82    |
| Step_Top_1    | Fc    | 1.26 | 1.7 | 0.9 | 1.40    | 1.89    |

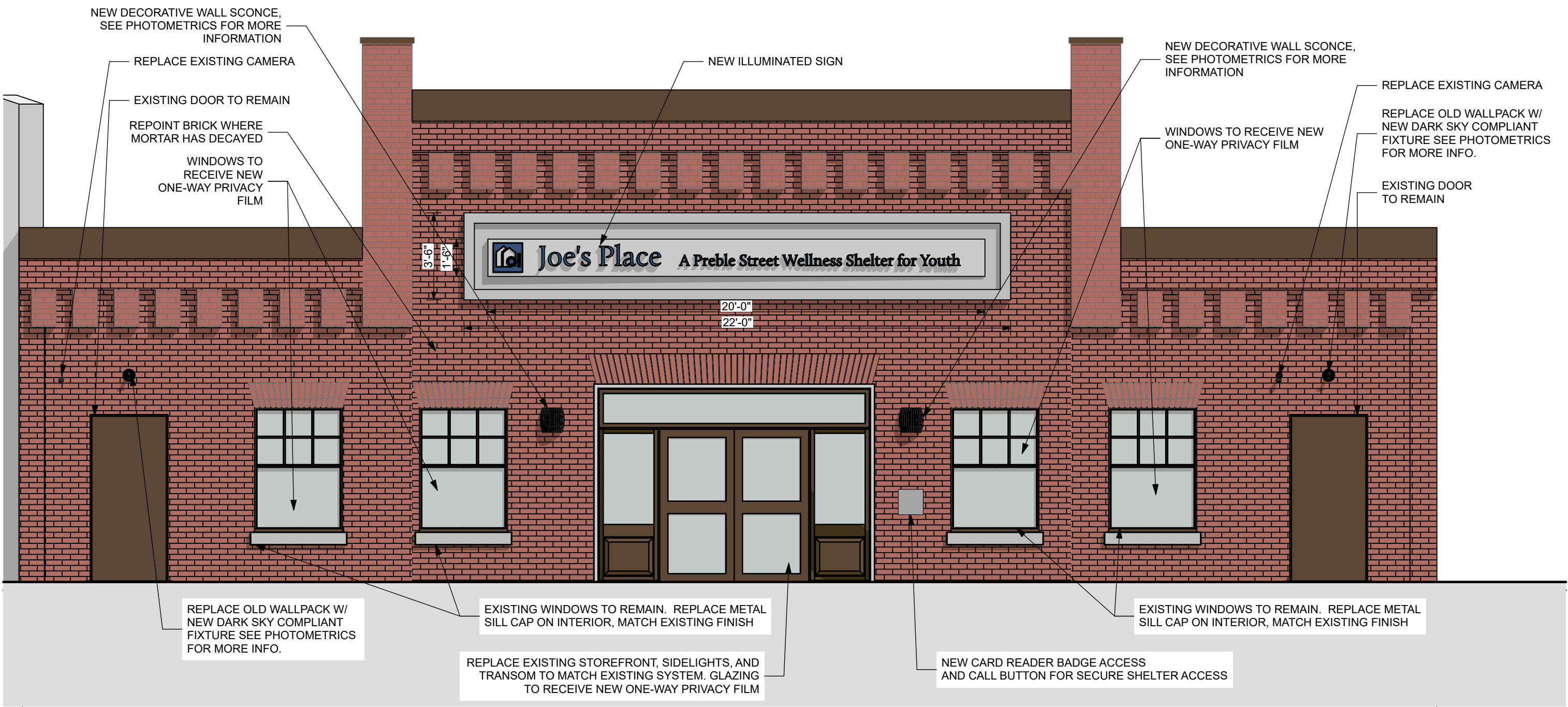




2 EXISTING ELEVATION  
SCALE: 1/4" = 1'-0"  
0 2' 4' 8'



EXISTING CONDITIONS PHOTO



1 PROPOSED EXTERIOR ELEVATION  
SCALE: 1/4" = 1'-0"  
0 2' 4' 8'

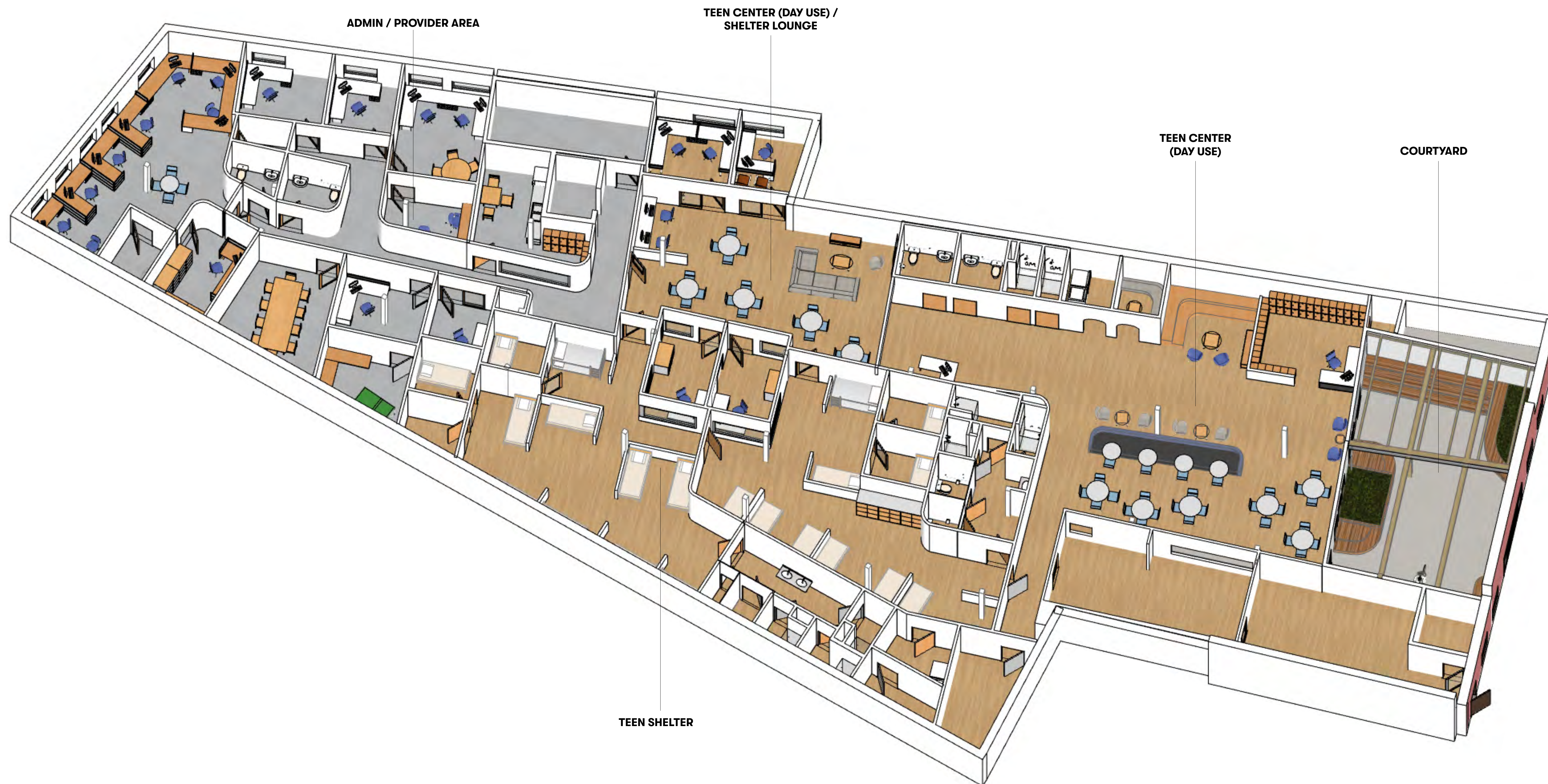












## ISOMETRIC 3D VIEW





① VIEW OF STAFF AREA @ SLEEPING AREA 1  
SCALE: 1:55.83



③ VIEW OF STAFF AREA @ SLEEPING AREA 2  
SCALE: 1:55.55



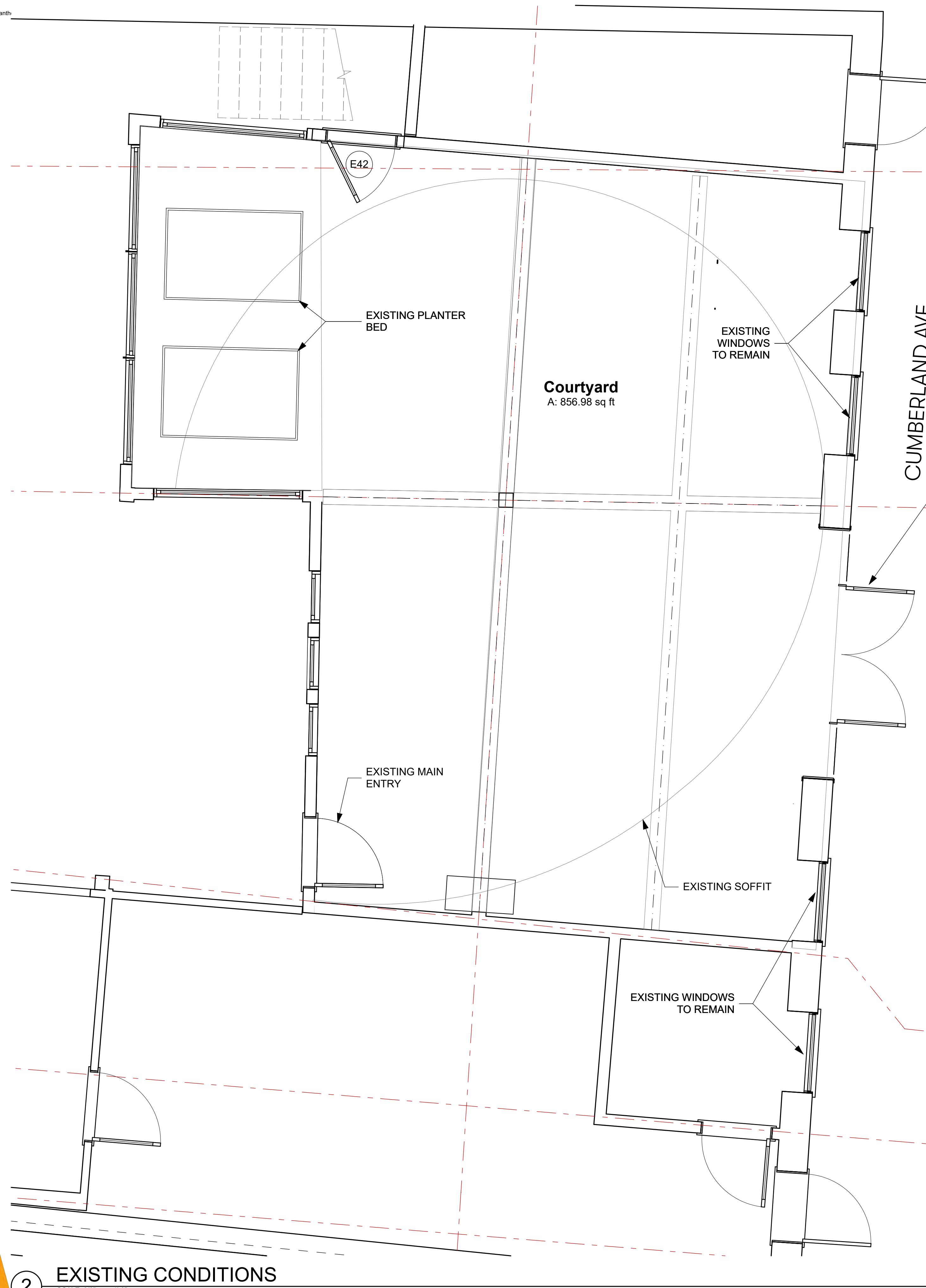
③ VIEW OF SLEEPING AREA 1  
SCALE: 1:55.59



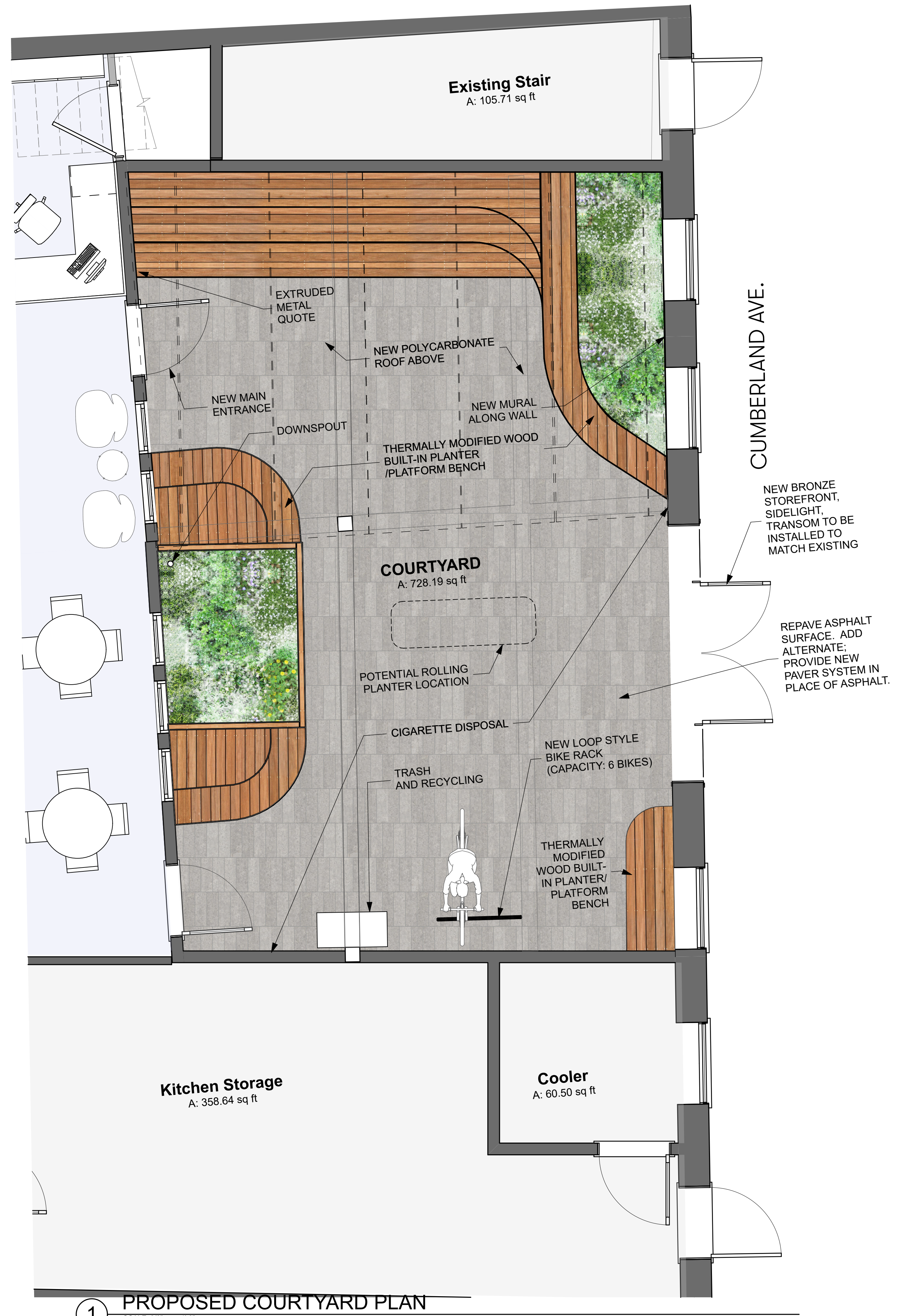
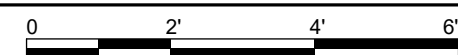
④ VIEW OF SLEEPING AREA 2  
SCALE: 1:55.74

## INTERIOR SIGHTLINES

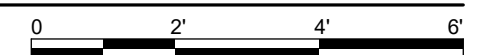




2 EXISTING CONDITIONS  
SCALE: 3/8" = 1'-0"



1 PROPOSED COURTYARD PLAN  
SCALE: 3/8" = 1'-0"

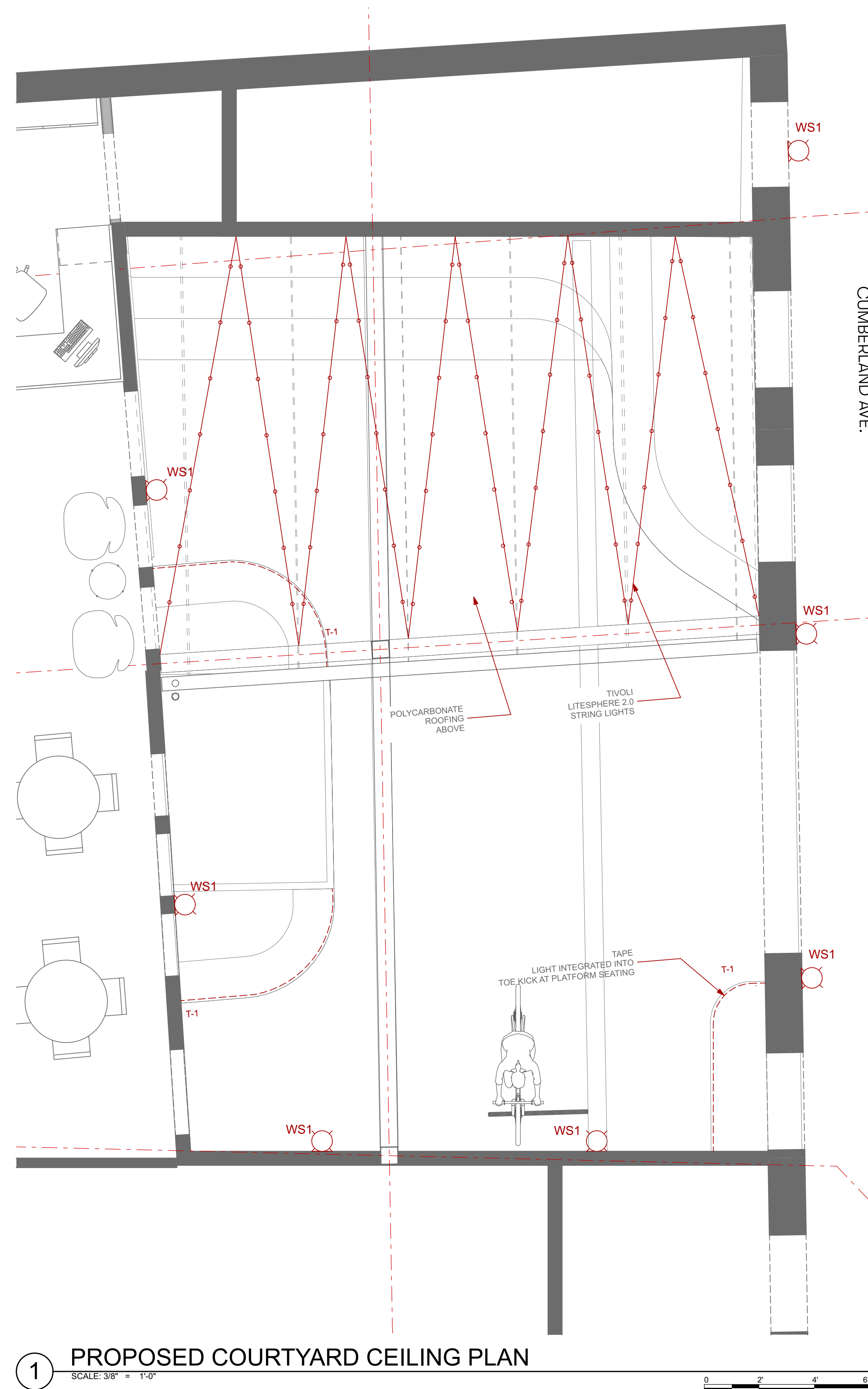


# COURTYARD ENLARGED PLANS

Kaplan  
Thompson  
Architects

Preble Street Teen Center  
& Shelter





# COURTYARD CEILING PLANS





## LOWER LEVEL PLAN



UNE Center for Health Sciences  
780 Stevens Avenue  
Major Site Plan & Conditional Use Application  
PL-002017-2022  
University of New England, Applicant

|                             |                         |                     |                     |
|-----------------------------|-------------------------|---------------------|---------------------|
| <b>Submitted to:</b>        | Portland Planning Board | <b>Prepared By:</b> | Austen Torres Davis |
| <b>Public Hearing Date:</b> | September 27, 2022      | <b>Date:</b>        | September 23, 2022  |

## I. INTRODUCTION

The University of New England (UNE) has submitted a Major Site Plan and Conditional Use application to facilitate the construction of the Harold and Bibby Alfond Center for Health Sciences at their Portland campus within the Deering Center neighborhood. The application includes the construction of an approximately 111,813 square foot, four-story building at 780 Stevens Avenue, in the R-5 Residential zone. The new building would house the Harold and Bibby Alfond Center for Health Sciences, allowing UNE to consolidate professionally-based medical training and expand their post-secondary offerings within the city limits.

The application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Site Plan Standards, Section 14.6, General Conditional Use Standards, Section 6.5.2, and supplemental use specific conditional use standards, Section 6.5.6 (F.8).



*Figure 1. 780 Stevens Avenue in Campus Context*

The Planning Board held a workshop on July 26, 2022. In anticipation of this Planning Board Public Hearing, the Planning and Urban Development Department mailed 72 notices to residences within 500 feet of the subject property. A legal advertisement ran in the September 17, 2022 and September 20, 2022 editions of the *Portland Press Herald*.

**Applicant:** Alan Thibeault, University of New England

**Applicant Representative:** Tom Saucier, Site Design Associates

**II. PROJECT ACTIONS**

| <b>Applicant's Proposal</b>                                                                                                                     | <b>Applicable Standards</b>                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major Site Plan                                                                                                                                 | Land Use Code Sec. 14.6 Site Plan Review Standards                                                                                                                                                   |
| General Conditional Use                                                                                                                         | Land Use Code Sec. 6.5.2                                                                                                                                                                             |
| Supplemental Use-Specific Conditional Use<br>(Institutional uses excluding preschools)                                                          | Land Use Code Sec. 6.5.6 (F.8)                                                                                                                                                                       |
| <b>Waiver Requests</b>                                                                                                                          | <b>Citation</b>                                                                                                                                                                                      |
| Technical Manual Sec. 12.3.5 - Applicant is requesting the ability to use light fixtures of between 4000K and 5000K CCT.                        | All fixtures must be LED and shall not exceed 3000K Correlated Color Temperature (CCT). Screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT.                            |
| Technical Manual Sec. 1.7.2.7 - Applicant is requesting the ability to locate the main driveway 38 feet from the existing neighboring driveway. | Along streets with a speed limit of 30 miles-per-hour, the minimum acceptable spacing between double or multiple driveways shall be 125 feet measured from center of driveway to center of driveway. |

**III. PROJECT DATA**

| <b>SUBJECT</b>                                                             | <b>780 Stevens Avenue</b>                                         |
|----------------------------------------------------------------------------|-------------------------------------------------------------------|
| <b>Total area of the site</b>                                              | 467,095 square feet (10.72 acres)                                 |
| <b>Total Disturbed Area</b>                                                | 309,920 square feet (7 acres)                                     |
| <b>Existing Zoning</b>                                                     | R-5 Residential                                                   |
| <b>Existing Use</b>                                                        | Unstriped Parking Area and Storage                                |
| <b>Proposed Use</b>                                                        | Center for Health Sciences;<br>Post-Secondary School              |
| <b>Impervious Surface Area</b><br>--Existing<br>--Proposed<br>--Net Change | 214,589 square feet<br>171,482 square feet<br>-43,107 square feet |
| <b>Building Footprint</b><br>--Existing<br>--Proposed<br>--Net Change      | 0 square feet<br>27,953 square feet<br>+27,953 square feet        |
| <b>Building Floor Area</b><br>--Existing<br>--Proposed<br>-Net Change      | 0 square feet<br>111,813 square feet<br>+111,813 square feet      |
| <b>Parking Spaces</b>                                                      | 193                                                               |
| <b>Bicycle parking Spaces</b>                                              | 40                                                                |



#### IV. BACKGROUND AND EXISTING CONDITIONS

##### Site Conditions

The subject property at 780 Stevens Avenue consists of two lots totaling approximately 467,095 square feet in size (10.72 acres), occupied by multiple university buildings and surface parking.

The surrounding area is characterized by educational and institutional uses related to the University of New England's Portland Campus. Historic buildings are clustered toward the south of the site, on the locally designated historic district Westbrook College campus site. This area functions as a traditional university quad. In contrast, the area to be developed (highlighted in Figure 2) is not currently programmed for academic or instructional functions. Instead, this area is programmed for facilities services and is characterized by surface parking, storage, and minimal landscaping.



Figure 2. 780 Stevens Avenue, Area Included in Development

The UNE campus is located along Stevens Avenue, a priority corridor identified in the city's comprehensive plan, *Portland's Plan 2030*. Residential neighborhoods sit across Stevens Avenue to the east, while Evergreen Cemetery, a locally designated historic cemetery, is located to the West and South of the site. To the north is the Morrill's Corner intersection and numerous commercial establishments in an area predominantly zoned B-2 Community Business. The site is accessible to public transit along Stevens Avenue via GP Metro routes 9A and 9B. Additionally, GP Metro Route 2 and the Lakes Region Bus can be accessed nearby along Forest Avenue.

Recent applications related to the University of New England's Portland campus include an application for a new maintenance building at 180 Bishop Street (PL-001626-2021) that was approved by the Planning Authority on October 28, 2021. Additionally, UNE sought an Institutional Overlay Zone (IOZ) designation and developed a draft Institutional Development Plan (IDP) which went before the Planning Board for a workshop on March 22, 2022. This application has been paused by the applicant.

#### V. PROPOSED DEVELOPMENT

The applicant proposes to develop a four-story building totaling approximately 111,813 square feet. This new building would house the Harold and Bibby Alfond Center for Health Sciences. Construction of this facility would allow UNE to increase their presence in the city, bringing the *College of Osteopathic Medicine* and the *Institute for Interprofessional Education and Practice* to the city of Portland.

As submitted, this application included waivers seeking relief from Technical Manual section 1.17 and Land Use Code Sections 14.6.2 (C.3). These waivers were sought to reduce the amount of parking lot landscaping

and to reduce the number of required EV charging stations. 193 parking spaces, including six ADA designated spaces, would be provided at the western side of the new building located at 780 Stevens Avenue. Parking would be accessed via an existing 42.5 foot curb cut off of Stevens Avenue, leading to a 24 foot wide driveway.

Associated site improvements proposed in connection with the new building include a realigned pedestrian walkway forming a central quad, reconfigured and landscaped parking, as well as the demolition and removal of a former residential structure currently used for storage.



*Figure 3. Site Plan highlighting the new Center for Health Services*

#### **VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY**

The owner of the property is the University of New England, a Maine-based non-profit corporation. The applicant has submitted a Statement of Financial Capacity letter, as demonstration of their financial capacity (Attachment G). The university has raised \$30 million for this project, and has secured \$50 million in debt financing. A Statement of Technical Capacity has been provided by the applicant which lists numerous projects completed by the university in recent years, along with the engineering, architectural, and construction firms working on this project.

## VII. ZONING ANALYSIS

### A. DIMENSIONAL AND USE REQUIREMENTS

780 Stevens Avenue (parcels 145 B018 and 145 B002), is located in the R-5 Residential zone. The R-5 dimensional standards are described in Table 7-A of the Land Use Code. Post-secondary schools are listed as conditional uses in the R-5 zone as described in Table 6-A of the Land Use Code.

As per Article 19, Table 19-A, the minimum off-street parking requirement for schools serving students aged 16 or older is calculated as one space for every 100 square feet used for instruction purposes. However off-street parking requirements can be waived for sites within  $\frac{1}{4}$  mile of fixed route transit service if submitting a Transportation Demand Management (TDM) Plan. The applicant has submitted a TDM plan outlining their current and future transportation needs. The applicant is not required to provide any additional parking on site, and is planning for a reduction in the amount of parking provided throughout campus from 1,261 spaces to 1,086 spaces.

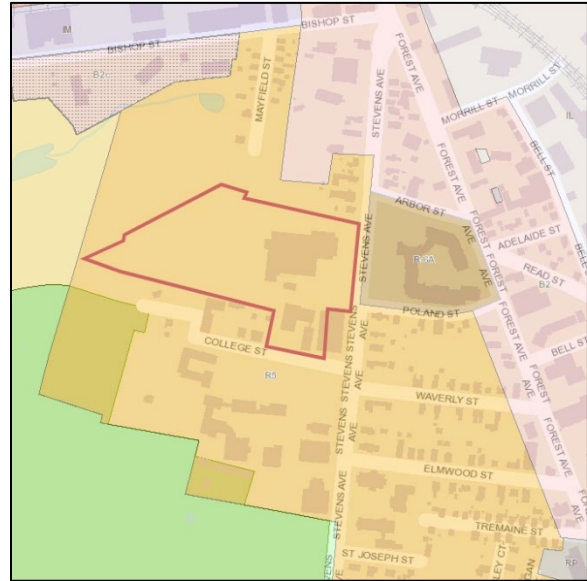


Figure 4. Area of Development in R-5 Zone Context

The following table shows the dimensional requirements of the R-5 zone which are met by this proposal:

| <i>Standard</i>          | <i>R-5 Zoning Requirement</i>                             | <i>780 Stevens Ave</i> |
|--------------------------|-----------------------------------------------------------|------------------------|
| Minimum Lot Area         | 2 acres                                                   | 10.72 acres            |
| Minimum Street Frontage  | 50 feet                                                   | 579.46 feet            |
| Minimum Front Setback    | 20 feet                                                   | 404 feet               |
| Minimum Rear Setback     | 20 feet                                                   | > 30 feet              |
| Minimum Side Setback     | 30 feet<br>14 feet<br>(for buildings 2.5 stories or more) | 84 feet                |
| Maximum Lot Coverage     | 40%                                                       | 15%                    |
| Minimum Lot Width        | 60 feet                                                   | 448 feet               |
| Maximum Structure Height | 35 feet                                                   | 54 feet                |

|                                    |                                                                             |            |
|------------------------------------|-----------------------------------------------------------------------------|------------|
|                                    | (55 feet if meeting conditional use standard 6.5.6 F.8)                     |            |
| Minimum Landscaped Open Area       | N/A                                                                         | N/A        |
| Minimum Off-Street Parking         | 249<br>(1 space/100 SF used for instruction purposes)                       | 193 spaces |
| Minimum Off-Street Bicycle Storage | 20<br>(2 spaces/10 vehicle parking spaces for the first 100 vehicle spaces) | 40 Spaces  |

**VIII. CONDITIONAL USE REVIEW****A. GENERAL CONDITIONAL USE STANDARDS – SECTION 6.5.2**

1. **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.**

The proposed building will be located on the UNE campus and will have hours of operation consistent with other university buildings. As such, the applicant does not anticipate traffic to be substantially greater than what is already generated by the university. The applicant has provided a detailed Transportation Demand Management (TDM) plan and a Traffic Impact Study that have been found satisfactory by transportation engineering reviewers.

Much of the area proposed to be developed is currently used as unstriped surface parking and storage; redevelopment will increase the amount of parking on site by 92 spaces, from 101 to 193 spaces, however the proposed project will result in a reduction of total overall parking campus wide. A parking lot that is proposed to be reconfigured as part of this proposal already exists, but would be improved with landscaping and striping of parking spaces. The current number of one-way trips generated by the site is 1,870, while the new building and site improvements are expected to yield an increase of 624 daily trips. Existing peak hour trips have been estimated at 155, while the proposed development will yield a total of 240. As this increase of 85 peak hour trips is less than the MaineDOT Traffic Movement Permit (TMP) threshold of 100, no TMP is required. However, any future development on campus would likely require a TMP.

***Comments from traffic engineering peer-reviewer Tom Errico are as follows:***

*It was determined through discussions with Maine DOT representatives that the TMP methodology is reasonable and that it would not significantly alter the scope of the traffic study prepared by the applicant. No further action is required of the applicant. It should be noted that the next project proposed by UNE will require a Traffic Movement Permit.*

2. **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.**

The Department of Public Works has provided a wastewater capacity authorization (Attachment N) noting that the sewer infrastructure located downstream from the project has the capacity to convey the required wastewater flows. Additionally, the applicant has provided lighting cut-sheets and a photometrics plan showing no detrimental impacts to surroundings from proposed lighting. The institutional and academic use of the site is not anticipated to create harmful or unsanitary conditions related to noise, glare, dust, emissions, odor, or litter.

3. **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.**

The proposed conditional use fits within the footprint of the UNE campus and is proposed to be built behind and connected to the existing Innovation Hall. Deliveries and trash removal, as well as access to the proposed parking lot, would take place from a connecting road at the north of the site. This connecting road leads from Stevens Avenue in a westward downward sloping direction. Loading and solid waste storage is proposed at the northern section of the structure, facing away

from the campus pedestrian spaces, accessed from a curb cut off the connecting road. The loading and waste area is separated and buffered with plantings from the parking lot.

**4. 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.**

The proposed expansion of the existing post-secondary school use, which is conditional in the R-5 zone, is required to meet the supplemental use-specific conditional use standards of Section 6.5.6 F.8. of the Land Use Code. The R-5 zone requires structures to be built with a maximum height of 35 feet, whereas Section 6.5.6 F.8 allows for post-secondary school structures to be built to a height of 55 feet if the following criteria are met:

- a. **Minimum lot size: 10 acres which may include adjacent land owned by the institution on both sides of a public street.**

***Staff Response:** The total area of the site is 10.72 acres, therefore the standard has been met.*

- b. **Minimum setback between buildings on-site: 20 feet.**

***Staff Response:** The proposed building would be connected to the existing Innovation Hall building via an enclosed walkway; staff's interpretation of this standard's applicability is that this connection is not subject to the 20 foot minimum setback requirement because they are connected buildings. The next closest building, Alexander Hall, is approximately 307 feet away from the combined Center for Health Services and Innovation Hall. As setbacks between buildings are greater than 20 feet, this standard has been met.*

- 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.**

***Staff Response:** The proposed building's closest point to the external property boundary is approximately 270 feet, therefore the standard has been met.*

- 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.**

***Staff Response:** Landscaping including plantings and shrubs are proposed to buffer the proposed building and associated site improvements from the adjacent residential properties fronting College Street, therefore the standard has been met.*

## **IX. DEVELOPMENT REVIEW**

### **A. SITE PLAN REVIEW STANDARDS (Section 14.6)**

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and other applicable regulations. Staff comments are listed below.



**a) Transportation Standards****1. Impact on Surrounding Street Systems**

The proposed project is located on Stevens Avenue, which is a major arterial, and the applicant is proposing to provide 193 vehicular parking spaces and 40 bicycle parking spaces (an increase of 40 spaces) for a building with a floor area of 111,813 square feet. The current number of one-way trips generated by the site is 1,870, while the new building and site improvements are expected to yield an increase of 624 daily trips, totaling 2,494 trips. Existing peak hour trips have been estimated at 155, while the proposed development will yield a total of 240, an increase of 85 peak hour trips.

The site is accessible to public transit along Stevens Avenue via GP Metro routes 9A and 9B. Additionally, GP Metro Route 2 and the Lakes Region Bus can be accessed nearby along Forest Avenue. No bicycle lanes exist along Stevens Avenue.

**Staff Response:**

The applicant has provided a detailed Transportation Demand Management (TDM) plan and a Traffic Impact Study that show a commitment to reducing demand for vehicular parking on site. While there will be an increase of parking on site, the entire UNE campus will have a reduced amount of parking. The proposal is anticipated to reduce demand for on-street parking on nearby streets through the provision of on-site parking, while reducing the demand for parking overall through access to alternative modes of transportation such as public transit and carpooling. This standard has been met.

**2. Access and Circulation**

The applicant proposes a driveway access road on the property leading from an existing curb cut from Stevens Avenue at the east to the proposed building and parking lot toward the west. The driveway would be accessed from a 42.5 foot curb cut off of Stevens Avenue, leading to an approximately 24 foot wide driveway. This meets the preferred two-way ingress and egress width of Technical Manual Standard 1.7.2.3.

The applicant is seeking an access and circulation waiver for relief from Technical Manual Section 1.7.2.7., requesting the ability to locate the main driveway 38 feet from the existing neighboring driveway. An alternatives analysis was conducted by the applicant at the request of the Department of Public Works and consulting traffic engineering reviewers and the applicant's preferred alternative, with the driveway in the proposed location, was found to be acceptable.

Pedestrian circulation throughout the site is provided by a series of intersecting walkways connecting campus buildings to parking areas. Planning staff have suggested adding a pedestrian connection to Stevens Avenue between the Innovation Hall and Oral Health buildings to avoid pedestrian movements through the existing parking lot. The applicant has agreed to provide this pedestrian connection.

**Justin Pellarin, DPW Senior Engineer, offers the following comments:**

DPW has reviewed the updated information and alternatives analysis provided by the applicant regarding the proposed driveway location on Stevens Avenue. After reviewing the information, DPW supports the proposed driveway separation waiver for this project. UNE should pursue and implement alternative site access locations and TDM strategies as part of future development and

expansion of the site with the intention of reducing traffic on Stevens Avenue and through Morrill's Corner.

**Staff Response:**

Staff find that this waiver is warranted, and that if granted the waiver this standard would be met.

**3. Public Transit Access**

All institutional developments of at least 20,000 square feet square feet gross floor area shall provide a transit shelter adjacent to or within public right-of-way along its frontage when the development is proposed along an existing public transit route on a principal or minor arterial roadway and if the nearest existing transit shelter on the route is more than ¼ mile from the site.

**Staff Response:**

The proposed building will include 111,813 square feet of floor area; as the project site is within ¼ mile from an existing transit shelter as measured along rights-of-way, staff find that this standard is met.

**4. Parking: Vehicle and Bicycle**

The applicant is proposing to provide 193 vehicular parking spaces and 40 bicycle parking spaces for a building of 111,813 square feet. The applicant has submitted a TDM plan outlining their current and future transportation needs, concluding that no addition of parking is necessary. The University of New England has noted a commitment within the submitted TDM to reduce parking demand on site through alternative transportation access such as carpooling and access to public transportation.

Per Article 19, Table 19-A, the minimum off-street parking requirement for schools with students 16 years and older is calculated as one space per 10 seats used for instruction, or if not utilizing fixed seats, 100 feet of area used for instructional purposes. However, per Article 19, Table 19-B, off-street parking requirements can be waived for sites within ¼ mile of fixed route transit service. Therefore, the applicant is not required to provide any parking on site if they choose to submit a TDM plan to take advantage of this exception.

The applicant has provided a detailed Transportation Demand Management (TDM) plan and a Traffic Impact Study noting a commitment to reduce parking demand on site through alternative transportation access such as carpooling and access to public transportation. Staff and transportation engineering reviewers find that the submitted TDM plan satisfies categorical exemptions to off-street parking minimums of Article 19, Table 19-B, and that the proposed amount of parking meets standards of the Land Use Code.

Initially the applicant sought a waiver providing relief from Technical Manual Section 1.17, which requires that 20% of parking spaces have electrical outlets or installed chargers capable of providing Level 2 EV charging or higher for 20% of parking spaces. UNE proposed to provide 30 EV parking spaces out of the 36 required to meet the 20% EV standard. Staff observed that UNE is seeking a reduction of 6 EV chargers or outlets due to a lack of demand. However, as the intention of the EV standard is to expand EV infrastructure to incentivize widespread adoption, staff were unsupportive of this waiver.

Additionally, the applicant sought a waiver providing relief from Land Use Code Sec. 14.6.2 (C.3) (a. and b.) which requires that developments include at least two trees per five parking spaces planted in landscaped islands, and that landscaped islands be distributed so that uninterrupted pavement does not exceed forty spaces.

After feedback from the Planning Board during the July 26 Workshop, and further conversations with Planning & Urban development staff, the applicant has rescinded the waiver requests for reduced EV outlets and conduit, and parking lot landscaping. As a result, the applicant is now meeting these standards.

**Staff Response:**

Staff and peer reviewers find that the standard is met.

**b) Environmental Quality Standards**

**1. Preservation of Significant Natural Features**

Aside from the existing building and surface parking to be removed, the area of the lot proposed to be developed currently consists of denatured land devoid of significant natural features.

**Staff Response:**

As the proposal calls for a decrease in impervious surface area and an increase in landscaping in an area that is currently devoid of natural features, staff find that this standard is being met.

**2. Landscaping and Landscape Preservation**

The existing conditions of the development site are mostly devoid of landscape features and planting, instead consisting of impervious surface, parking, and storage. The applicant has provided a detailed landscape and planting plan showing trees and perennials to be installed throughout the site. Walkways lined with trees would connect the new building and quad to the existing and proposed parking lots, as well as to the historic core of UNE's Portland campus to the south. Between the walkways lawns are proposed, while the edges of the site are buffered from adjacent residences with shrubs and other plantings.

**Staff Response:**

As the site currently consists mostly of surface parking, the proposed landscaping would improve the site by removing impervious cover and replacement with quads, walkways, and plantings.

**3. Water Quality, Storm Water Management and Erosion Control**

The Applicant has provided a detailed Stormwater Management Report (Attachment J), as well as an Erosion and Sedimentation Control Report to meet the Basic Standards. The site is relatively flat where it meets Stevens Avenue, but has a significant downward slope toward the western portion of the lot, with an elevation loss of about 20 feet. Grading is proposed throughout the site that would direct runoff away from buildings and pathways and toward multiple catch basins.

**Lauren Swett, Consulting Stormwater Engineer, offers the following comments:**

As the impervious area for this project is less than the three acre threshold, the project does not need MaineDEP Site Location of Development Act (SLODA) review and approval.

**Staff Response:**

This standard is met.

**Public Infrastructure and Community Safety Standards**

1. **Consistency with City Master Plans**

This development is consistent with the goals and policies outlined in *Portland's Plan 2030*. The consolidation of professionally-based medical training and the expansion of post-secondary offerings aligns with the City's vision statements and goals related to the economy and environment.

UNE's TDM plan describes a commitment to sustainable transportation such as cycling by identifying city proposals, such as the Riverton Neighborhood Byway, with hopes to eventually connect the campus to the city's cycling network. The provision of bike parking aligns with the city's environmental goals.



Figure 5. Vision Statement from Portland's Plan 2030

The proposal aligns with the comprehensive plan's economic development goals by bringing professional medical education to the city of Portland. This will attract human capital through new residents, and will expand the tax and employment base. Furthermore the proposed project supports sustainable growth in Portland's educational institutions.

Relevant vision statements and goals are provided below:

**Goals:**

- Environment: Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation.
- Economy: Create economic prosperity by growing Portland's tax and employment base.
- Economy: Support sustainable growth in our educational, medical, and cultural institutions.
- Economy: Invest in, attract, and retain human capital to support a growing economy.

2. **Public Safety and Fire Prevention (CPTED and Fire)**

The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance and Technical Manual address the principles of natural surveillance, access control and territorial reinforcement so that the design of developments enhance the security of public and private spaces and reduce the potential for crime. The site's landscaping its configuration as a series of quads and walkways reinforce ownership by visually tying the campus buildings together. The

proposed building and landscaping also improve natural surveillance of the site by creating active visible space in an area of UNE's campus that is currently hidden behind buildings and away from pedestrian activity.

The Life Safety Peer Reviewer has viewed the plans and finds them satisfactory.

**Staff Response:**

The lighting as proposed is sufficient to promote visibility and security. The applicant has filed a Technical Manual waiver related to lighting, citing campus safety best practices related to lighting color temperature. The applicant has noted that their proposed color temperature meets precedent for lighting and safety best practices at UNE as well as other colleges and universities. Staff find that this waiver is warranted, and that if granted the waiver this standard would be met.

3. **Availability and Adequate Capacity of Public Utilities**

The Applicant has received a Wastewater Capacity Authorization from the Department of Public Works, as well as an ability to serve letter from the Portland Water District in order to meet basic standards. An ability to serve letter from Central Maine Power has also been provided.

**Staff Response:**

This standard is met.

c) **Site Design Standards**

1. **Massing, Ventilation and Wind Impact**

The new building proposed is not anticipated to impact any adjacent structures as it relates to bulk or diminution of available light and air to abutting properties. The building does not differ substantially from adjacent and nearby university structures regarding massing so negative impacts are not anticipated. The proposed building is proposed to rise to a height of approximately 54 feet, which is below the maximum height of 55 feet that is conditionally permitted for post-secondary schools in the R-5 zone.

**Staff Response:**

This standard is met.

2. **Shadows**

The new building is proposed to be situated near the center of the lot, away from property lines and nearby residences. As such, shadows are expected to fall within the property for the majority of the year and are not anticipated to encroach on adjacent residential properties. No City-owned parkland is proximate to the site and thus there is no potential for shadow impacts to them.

**Staff Response:**

This standard is met.

3. **Snow and Ice Loading**

As the site has ample surface area, paved and landscaped, no negative impacts related to snow or ice storage are anticipated to abutting properties or public rights-of-way. However, as the site plans do not show the location of on-site snow and ice storage, a condition of approval has been added to this report to address this standard.

**Staff Response:**

The applicant shall update the drawing set for review and approval by the Planning Authority to include locations of on-site snow and ice storage to meet this standard.

**4. View Corridors**

Not applicable.

**5. Historic Resources**

The site is not within an established historic district, though the southernmost of the two parcels that would be developed is within 100 feet of the locally designated Westbrook College Historic District. A meeting was held with Historic Preservation Staff and the determination was made that because development on the portion of the southernmost parcel within 100 feet of a district is limited to landscape improvements, this project does not require a staff level Advisory Review.

**6. Exterior Lighting**

Applicants have submitted lighting cut-sheets and a photometrics plan to show compliance with lighting standards.

**Staff Response:**

This standard is met through the provision of photometrics and lighting cut sheets, though the applicant has filed a Technical Manual waiver related to lighting. The applicant has noted that their proposed color temperature meets precedent for lighting and safety best practices at UNE as well as other colleges and universities. Staff find that this waiver is warranted, and that if granted the waiver this standard would be met.

**7. Noise and Vibration**

All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will be required to meet state and federal emissions requirements. Equipment is planned to be located toward the interior of the site and away from neighboring residential properties.

**Staff Response:**

This standard is met.

**8. Signage and Wayfinding**

Planning and Urban Development Staff reviewed application documents noting that signage and wayfinding is proposed to be consistent with existing UNE campus signage in comparison to site plans denoting materials. Staff finds that the proposed use of materials and campus entrances are consistent with the historic quad of Westbrook College and clearly denote pedestrian walkways and campus-ownership.

**Staff Response:**

This standard is met.

**9. Zoning Related Design Standards**



A meeting was held with Urban Design staff to determine design-review applicability. In the R-5 zone a formal design review is required for Planned Residential Unit Developments (PRUDs) as well as Multiplexes and Small Residential Lot Developments. As this proposal does not fit within the above development categories, this site is not subject to a design review, therefore this standard is not applicable.

#### **IX. PUBLIC COMMENT**

In anticipation of this Planning Board Public Hearing, the Planning and Urban Development Department mailed 72 notices to residences within 500 feet of the subject property. A legal advertisement ran in the September 17, 2022 and September 20, 2022 editions of the *Portland Press Herald*.

At the time of writing this memo, the Planning Department has received one public comment related to parking along Stevens Avenue.

#### **X. STAFF RECOMMENDATION**

Subject to the proposed motions and conditions of approval listed below, Planning Department staff find that the Major Site Plan & Conditional Use Application for the development of the UNE Harold and Bibby Alford Center for Health Sciences at 780 Stevens Avenue meets the applicable standards of Portland's Land Use Code.

### **PROPOSED MOTIONS**

#### **A. WAIVERS**

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on September 27, 2022 for application PL-002017-2022 relevant to the Site Plan Standards of the Land Use Code and Portland's Technical and Design Standards, and other regulations, and testimony presented at the Planning Board public hearing:

1. Lighting Fixture Color Temperature  
The Planning Board [**finds/does not find**] that extraordinary conditions exist or undue hardship may result from strict compliance with Technical Manual Section 12.3.5, which requires that fixtures not exceed 3000K Correlated Color Temperature (CCT) and that screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [**waives/does not waive**] Technical Manual Section 12.3.5 to allow the use of light fixtures of between 4000K and 5000K CCT.

#### **B. CONDITIONAL USE**

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 27, 2022 for application PL-002017-2022 relevant to Land Use Code sections 6.5.2 and 6.5.6 (F.8) and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan [**is/is not**] in conformance with the conditional use standards of the Land Use Code.

#### **C. SITE PLAN 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 September 27, 2022 for application PL-002017-2022 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:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The applicant shall update the drawing set for review and approval by the Planning Authority to include a pedestrian crosswalk at the intersection of Stevens Avenue and the connector road at the north of the site, pursuant to the requirements of Technical Manual Section 1.20.2.
2. The applicant shall update the drawing set for review and approval by the Planning Authority to include locations of on-site snow and ice storage, pursuant to the requirements of Land Use Code Section 14.6.4 (C.).

**X. ATTACHMENTS**

**PLANNING BOARD REPORT ATTACHMENTS**

1. Preliminary Site Plan Review Comments from Staff
2. Secondary Site Plan Review Comments from Staff
3. Final Traffic Engineering Comments
4. Stevens Avenue On-Street Parking Restrictions Map

**APPLICANT'S SUBMITTAL**

- A. Cover Letter
- B. Major Site Plan Checklist
- C. Right, Title, and Interest
- D. Zoning Assessment
- E. Waiver Requests
- F. Financial Capacity
- G. Technical Capability
- H. Conformity with Land Use Ordinance
- I. Stormwater Management Report
- J. Wastewater Capacity
- K. Exterior Lighting
- L. PWD Ability to Serve
- M. Traffic Impact Study
- N. Transportation Demand Management Plan
- O. Compiled Mechanical Unit Information
- P. CMP Ability to Serve
- Q. Responses to Staff Comments (July 25, 2022)
- R. Responses to Staff Comments (September 13, 2022)

**PLANS**

- Plan 1 - Cover Letter, Legend, and Abbreviations  
Plan 2 - Existing Conditions & Boundary Survey

Plan 3 - Site Demolition Plan  
Plan 4 - Overall Site Plan  
Plan 5 - Site Notes & Legends  
Plan 6 - Site Layout & Materials Plan  
Plan 7 - Site Layout Details  
Plan 8 - Erosion & Sediment Control Plan  
Plan 9 - Erosion & Sediment Control Details & Notes  
Plan 10 - Site Grading & Drainage Plan  
Plan 11 - Site Grading & Drainage Schedule  
Plan 12 - Connector Road Plan & Profiles  
Plan 13 - Utilities Plan & Details  
Plan 14 - Planting Plan & Details  
Plan 15 - Site Photometric Plan  
Plan 16 - Facility Plans  
Plan 17 – Elevations

## **PLANS**

PC1. Fr.Paul Sullivan 8-9-2022

## Planning and Urban Development Department

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**Subject:** Site Plan Review Comments – 780 Stevens Ave.

**Written by:** Austen Torres Davis, Planner

**Date Written:** July 8, 2022

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Dear Tom Saucier,

The proposed UNE Center for Health Services and associated site improvements located at 780 Stevens Avenue (PL-002017-2022) was reviewed against Chapter 14 of the City of Portland Land Use Code, as well as the City of Portland Technical Manual. Please find below, comments from Planning & Urban Development Department staff and site plan peer-reviewers.

### General Comments from Planning Staff

- For the benefit of the Planning Authority's review, as well as the Planning Board and members of the public that may wish to review plans, staff are requesting an illustrative site plan that uses color to denote areas of new construction and landscaping. The current overall site plan is sufficient for review, though an additional supplemental plan, less heavily annotated and using color, would be greatly beneficial as an overview.
- The driveway at the northern edge of the lot should be separated from the parking lot of the adjacent church, and will need a technical manual waiver as it is within 20 feet of the adjacent driveway.
- Staff recommend that a pedestrian walkway be extended from Stevens Avenue to the newly created quad to discourage students, staff, and faculty from walking through the parking lot between the Innovation Center and Oral Health Building.
- Increased UNE presence in Portland will certainly lead to students, staff, and faculty locating to the surrounding neighborhoods. The TDM shows the conceptual Riverton Neighborhood Byway along the UNE Shuttle Road. This road is currently not open to the public but staff suggest allowing cyclists or pedestrians to use the road as an alternative connection to neighborhoods to the north of campus.
- Though grading may make this difficult to achieve, construction of an ADA-accessible ramp from the parking lot to the proposed quad and university walkways should be explored.

Comments from Traffic and Circulation Reviewers:

- When comparing the existing traffic count data to the ITE estimate, I am concerned the trip generation calculation for the project is underestimated. According to the traffic counts at the three driveway locations, UNE Drive, College Street and Finley Center Drive, the site currently generates 246 AM peak hour trips and 219 PM peak hour trips. The ITE estimate for the existing campus is 179 AM peak hour trips during both the AM and PM peak hours. In addition, not all of the UNE trips currently generated by the campus was captured at the noted driveway locations as vehicles generated by UNE park on local streets, in the Bishop Street lot, behind the Armory and in other off-street lots. In general, I am concerned the trip generation estimate using ITE data does not accurately reflect local conditions. According to ITE, Land Use Code 550 University/College had on average 24,000 students for the sites sampled during the AM peak hour and 19,000 students on average for the sites sampled during the PM peak hour. Clearly, the sites sampled were large institutions that do not have similar characteristics to the UNE campus. Accordingly, I do not accept the methodology used to estimate traffic for the project. The applicant should consider other methods for estimating trip generation.
- The applicant conducted a capacity analysis at nearby intersections both with and without the project. It should be noted that revisions to the trip generation estimate may alter the following comments.
  - o The SimTraffic reports in the appendix should be clearly labeled as to the scenario for which they apply. Some seem to be for a rezoning scenario. The applicant should also forward the Synchro network files for review.
  - o Morrill's Corner: The study evaluated conditions at the Stevens Avenue/Bishop Street and Allen Avenue/McDonalds intersections. Conditions at the Forest Avenue/Warren Avenue intersection does influence conditions at Allen Avenue and to some degree at Stevens Avenue. Accordingly, the analysis does not accurately estimate delay within Morrill's Corner. Long delays and vehicle queuing are common. MaineDOT and the City are currently in the process of redesigning Morrill's Corner with the objective of improving conditions for all users. I need to coordinate with MaineDOT and the City on the need for additional analysis and next steps for this review.
  - o Stevens/Walton Street: The analysis indicates the intersection will operate at acceptable levels of service.
  - o Warren Avenue/Bishop Street: The analysis indicates the intersection will operate at acceptable levels of service.
  - o Stevens Avenue/College Street: The analysis indicates the intersection will operate at acceptable levels of service.
  - o Stevens Avenue/Finley Center Drive: The analysis indicates the intersection will operate at acceptable levels of service.
  - o Stevens Avenue/UNE Driveway/Poland Street: The analysis indicates the intersection will operate at acceptable levels of service.
- A safety analysis was performed at High Crash Locations in the vicinity of the project. My comments for each location are noted as follows.

- Stevens Avenue between Arbor Street and .03 miles south of Forest Avenue: This location did have some pedestrian and bicycle crashes that concern me. I'm coordinating with City staff on suggested improvement strategies.
  - Forest Avenue between Bishop Street and Allen Avenue: I concur that access management improvements would help to reduce crashes. The concept improvement plan being proposed by MaineDOT and the City should help to mitigate driveway movement crashes.
  - Forest Avenue/Bishop Street: The MaineDOT/City project is proposing to restrict movements in and out of Bishop Street and thus I would expect improvements to safety conditions.
  - Forest Avenue/Allen Avenue/McDonald's: The MaineDOT/City project is proposing to restrict movements in and out of McDonald's and thus I would expect improvements to safety conditions.
- The proposed driveway location on Stevens Avenue does not meet driveway separation standards with the abutting Stevens Avenue Congregational Church driveway. Given the increase in traffic volume intensity it is recommended that the applicant coordinate with the abutter and create a shared driveway that serves both UNE and Church traffic or close the church driveway closest to UNE.
  - The applicant should note if the Church driveway on the connector road is to remain. This may not be relevant given the request to change the driveway on Stevens Avenue.
  - The parking area on the northwest side of the Oral Health Building is being modified. Three parallel parking spaces are being created but is unclear if the loading dock will remain active and thus block these spaces.
  - A crosswalk shall be painted on the connector road at Stevens Avenue. Additionally, a stop bar and stop sign shall be provided.
  - The applicant should note if delivery trucks will be accessing the proposed building and if so, provide vehicle turning templates for maneuvering.
  - The applicant should conduct a parking study documenting current demand and expected demand with the proposed project. This shall include a supply/demand analysis. (The TDM Plan includes information that will inform the parking study). The study should attempt to document the number of vehicles associated with UNE that parking on local streets.

Comments from Zoning Reviewers:

- In the provided zoning analysis, the maximum height allowable height is given as 55'. In Table 7-A it is 35' in the R-5 zone. The proposed height is given as 54.8' which exceeds 35'. Please provide information on how this proposal fits within what is permissible.
- The average grade on the elevations is given as 122' .5". Please provide information on how the average grade was calculated.



Comments from Stormwater Management Reviewers:

- The project is required to comply with MaineDEP Chapter 500 and City of Portland Section 5 Stormwater management regulations.
  - o I believe based on the size and scale of this project it would be reviewed as a Site Location of Development permit. Applicability for SLOD comes into play when there is 3 acres or more of “structure”, which per the state statute for SLOD includes “buildings, parking lots, roads, paved areas, wharves, or areas to be stripped or graded and not to be revegetated.” This project will result in almost 4 acres of redeveloped impervious area, and based on past experience with Maine DEP, the standard applies to redeveloped/reconstructed structure area. SLOD requires an evaluation of existing and proposed surfaces to determine the extent of treatment required, and the minimum percentage of treatment is 50%, which is the level of treatment currently proposed to meet the City of Portland redevelopment standard.
  - o Basic Standards – The project plans include standard details and notes to address erosion control measures and a plan showing locations of erosion control materials has been provided in accordance with the Basic Standards. The Applicant should review the plan to ensure that adequate sediment barrier will be utilized around all proposed work, including at culverts located near the edge of the site. In addition, there are resource areas shown around the site. Double rows of sediment barrier should be utilized when protecting resource areas.
  - o General/Redevelopment Standards – 50% of the redeveloped area is being treated utilizing grassed underdrained soil filters.
  - o Flooding Standards – The project will be reducing or maintaining flow at each of the evaluated study points.
  - o Urban Impaired Stream – The project is located within the Capisic UIS watershed, and will be reducing impervious surface.
- The project will be required to provide a stormwater maintenance agreement – it is referenced, but I did not see a copy.

Standards in Need of Waiver:

*Technical Manual Section 1.7.1: Driveway Design*

- o *A driveway shall be located on the lot in a manner to provide a minimum distance of twenty (20) feet spacing between it and adjacent driveways. This spacing shall be measured between the edge of driveways at the property line.*

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### Comments from Historic Preservation and Urban Design Staff

As the parcels on which development is proposed are within 100 feet of the Westbrook College Historic District, a meeting was held with Historic Preservation and Urban Design Staff. The site does not trigger either a Historic Preservation Advisory Review, or a Design Review. Suggestions in this section are therefore not mandatory, but are encouraged.

#### Historic Preservation:

- The preservation of the Facilities Buildings is recommended. This may be an opportunity to enhance this structure as a visual landmark viewed from both College Street and Stevens Ave. The UNE Portland campus has many contributions of building typologies in form and time period and the Facilities Building connects to this diversity.
- The preservation of the Facilities Building also creates an opportunity to improve the network of pedestrian paths and gathering spaces as a linkage between the collection of buildings at the northern portion of the campus

#### Urban Design:

- The connectivity from the public way and within the campus to the proposed Center for Health Sciences can be enhanced. The existing building entrance and stair tower at the east of Innovation Hall is a visual destination but creates unique challenges with the existing parking lot, service areas and indirect pedestrian pathways that should be considered into the current proposal.
- Additional pathway connections from Stevens Ave. are recommended, especially from the existing bus shelter to access Innovation Hall and the proposed Center of Health Sciences.
- Consider the addition of this visual elements, similar to the existing brick pillars and campus gateways prevalent along Stevens Avenue and at the historic Westbrook College quad. This would enhance and demarcate the boundaries and entrances to the UNE campus and provide clear pedestrian connections to the campus from Stevens Ave.



Austen Davis &lt;austentd@portlandmaine.gov&gt;

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**UNE Site Plan review (PL-002015-2022)**

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**Austen Davis** <austentd@portlandmaine.gov>

To: Donna Bisson &lt;dbisson@une.edu&gt;

Wed, Sep 7, 2022 at 2:02 PM

Cc: Alan Thibeault &lt;athibeault@une.edu&gt;, Tom Saucier &lt;tsaucier@sitedesignassociates.biz&gt;

Good afternoon Alan &amp; Tom,

I wanted to forward you some of our team's remaining comments.

On the Planning review I do not have any *Section 14* or *Technical Manual* concerns. Further, I want to thank your team for including the walkway from Stevens Avenue to access the proposed internal quad. It seems Zoning also does not have any outstanding concerns. The concerns below are from DPW related to access/circulation/stormwater:

- DPW is looking for further rationale for the proposed Stevens Avenue driveway location separation waiver request as discussed in a meeting conducted on 8/29/22. We are primarily looking to understand what alternatives were explored and why the alternatives were considered infeasible for this project.
- The construction management plan narrative should be updated to include language on what standard ESC measures will be implemented to protect surrounding wetlands and urban stream watersheds and how the construction project will manage/clean up any sediment which tracks into surrounding City Streets including Stevens Avenue and Bishop Street. The CMP/ESC plans should also specify that prior to any required construction dewatering, a formal dewatering plan will need to be reviewed and approved by the Water Resources Division at DPW.
- The ESC plan and construction management plan should be updated to include ESC measures for the proposed construction entrance access route from the Bishop street parking lot to the project site. This access route is adjacent to Capisic Brook, the City's priority Urban Stream watershed. The plan should be updated to add ESC measures along this corridor during construction. The ESC plan should be updated to show a secondary stabilized construction entrance where the primary construction access route enters the westerly end of the site. The construction management plan indicates that the Bishop Street parking lot is a potential material storage location. The ESC plan should be updated to include ESC measures for this area.
- A comment made during the initial stormwater review stated that double rows of sediment barriers should be utilized when protecting resource areas. The ESC plan should be updated to address this comment.
- A TMP is not required though future projects at UNE will trigger a TMP. No further action regarding trip generation is required.
- Stormwater reviewers are in agreement that the proposed development does not meet/exceed requirements for SLODA review.

We are looking forward to the Planning Board meeting this month. Feel free to reach out with any concerns or questions.

Best wishes,

Austen

[Quoted text hidden]

[Quoted text hidden]





Austen Davis &lt;austentd@portlandmaine.gov&gt;

## 780 Steven Avenue (UNE) - Final Traffic Comments

1 message

Tom Errico &lt;thomas.errico@tylin.com&gt;

To: Austen Torres Davis &lt;austentd@portlandmaine.gov&gt;

Cc: Justin Pellerin &lt;jrp@portlandmaine.gov&gt;, Jeremiah Bartlett &lt;jbartlett@portlandmaine.gov&gt;

Thu, Sep 22, 2022 at 8:35 AM

Hi Austen – I have reviewed the application materials and offer the following final traffic comments as a status update of previous comments.

- I have reviewed the traffic study prepared by Sewall dated May 5, 2022, and I have the following comments.
  - When comparing the existing traffic count data to the ITE estimate, I am concerned the trip generation calculation for the project is underestimated. According to the traffic counts at the three driveway locations, UNE Drive, College Street and Finley Center Drive, the site currently generates 246 AM peak hour trips and 219 PM peak hour trips. The ITE estimate for the existing campus is 179 AM peak hour trips during both the AM and PM peak hours. In addition, not all of the UNE trips currently generated by the campus was captured at the noted driveway locations as vehicles generated by UNE park on local streets, in the Bishop Street lot, behind the Armory and in other off-street lots. In general, I am concerned the trip generation estimate using ITE data does not accurately reflect local conditions. According to ITE, Land Use Code 550 University/College had on average 24,000 students for the sites sampled during the AM peak hour and 19,000 students on average for the sites sampled during the PM peak hour. Clearly, the sites sampled were large institutions that do not have similar characteristics to the UNE campus. Accordingly, I do not accept the methodology used to estimate traffic for the project. The applicant should consider other methods for estimating trip generation.

**Status: I discussed the trip generation methodology with Steve Landry, PE MaineDOT State Traffic Engineer and it was determined that the methodology is reasonable and that it would not significantly alter the scope of the traffic study prepared by the applicant. No further action is required of the applicant. It should be noted that the next project proposed by UNE, will require a Traffic Movement Permit.**

- The applicant conducted a capacity analysis at nearby intersections both with and without the project. It should be noted that revisions to the trip generation estimate may alter the following comments.
  - The SimTraffic reports in the appendix should be clearly labeled as to the scenario for which they apply. Some seem to be for a rezoning scenario. The applicant should also forward the Synchro network files for review.

**Status: The applicant provided a response to this comment, and I have no further comment.**

- Morrill's Corner: The study evaluated conditions at the Stevens Avenue/Bishop Street and Allen Avenue/McDonalds intersections. Conditions at the Forest Avenue/Warren Avenue intersection does influence conditions at Allen Avenue and to some degree at Stevens Avenue. Accordingly, the analysis does not accurately estimate delay within Morrill's Corner. Long delays and vehicle queuing are common. MaineDOT and the City are currently in the process of redesigning Morrill's Corner with the objective of improving conditions for all users. I need to coordinate with MaineDOT and the City on the need for additional analysis and next steps for this review.

**Status: Based on discussions with MaineDOT, no further action is required by the applicant.**

- Stevens/Walton Street: The analysis indicates the intersection will operate at acceptable levels of service.

**Status: I have no further comment.**

- Warren Avenue/Bishop Street: The analysis indicates the intersection will operate at acceptable levels of service.

**Status: I have no further comment.**

- Stevens Avenue/College Street: The analysis indicates the intersection will operate at acceptable levels of service.

**Status: I have no further comment.**

- Stevens Avenue/Finley Center Drive: The analysis indicates the intersection will operate at acceptable levels of service.

**Status: I have no further comment.**

- Stevens Avenue/UNE Driveway/Poland Street: The analysis indicates the intersection will operate at acceptable levels of service.

**Status: I have no further comment.**

- A safety analysis was performed at High Crash Locations in the vicinity of the project. My comments for each location are noted as follows.
  - Stevens Avenue between Arbor Street and .03 miles south of Forest Avenue: This location did have some pedestrian and bicycle crashes that concern me. I'm coordinating with City staff on suggested improvement strategies.

**Status: Specific mitigation strategies have not been identified and no further action is required.**

- Forest Avenue between Bishop Street and Allen Avenue: I concur that access management improvements would help to reduce crashes. The concept improvement plan being proposed by MaineDOT, and the City should help to mitigate driveway movement crashes.

**Status: I have no further comment.**

- Forest Avenue/Bishop Street: The MaineDOT/City project is proposing to restrict movements in and out of Bishop Street and thus I would expect improvements to safety conditions.

**Status: I have no further comment.**

- Forest Avenue/Allen Avenue/McDonald's: The MaineDOT/City project is proposing to restrict movements in and out of McDonald's and thus I would expect improvements to safety conditions.

**Status: I have no further comment.**

- The proposed driveway location on Stevens Avenue does not meet driveway separation standards with the abutting Stevens Avenue Congregational Church driveway. Given the increase in traffic volume intensity it is recommended that the applicant coordinate with the abutter and create a shared driveway that serves both UNE and Church traffic or close the church driveway closest to UNE.

**Status:** The applicant has conducted an analysis of driveway reconfiguration alternatives that eliminates the driveway separation nonconformity. I support a waiver from the City's Technical Standards because the abutting property owner is not willing to consider a shared access drive scenario. I do believe a vehicle connection from this campus to Bishop Street will help to relieve traffic demand pressure on Stevens Avenue and UNE should commit to advancing this connection as part of future development applications.

- The applicant should note if the Church driveway on the connector road is to remain. This may not be relevant given the request to change the driveway on Stevens Avenue.

**Status:** The applicant has noted that this connection is being eliminated and UNE will no longer be leasing parking spaces from the church. I would suggest that UNE commit to reinstalling this connection in the future if the church property is redeveloped such that the driveway separation noncompliance issue on Stevens Avenue can be resolved through the creation of a shared access drive.

- The parking area on the northwest side of the Oral Health Building is being modified. Three parallel parking spaces are being created but is unclear if the loading dock will remain active and thus block these spaces.

**Status:** These spaces will be for staff parking, and I find conditions to be acceptable.

- A crosswalk shall be painted on the connector road at Stevens Avenue. Additionally, a stop bar and stop sign shall be provided.

**Status:** The applicant has noted that a STOP sign and STOP bar are proposed. A crosswalk shall also be installed.

- The applicant should note if delivery trucks will be accessing the proposed building and if so, provide vehicle turning templates for maneuvering.

**Status:** The applicant has provided the requested information and I find conditions to be acceptable.

- The applicant should conduct a parking study documenting current demand and expected demand with the proposed project. This shall include a supply/demand analysis. (The TDM Plan includes information that will inform the parking study). The study should attempt to document the number of vehicles associated with UNE that parking on local streets.

**Status:** The applicant has documented parking supply and demand and the UNE campus will have sufficient off-street parking for the proposed demand. The applicant notes that that they are committed to implementing the goals of the TDM Plan with the objective of reducing parking demand. I have no further comment.

If you have any questions, please contact me.

Best regards,

Tom Errico, PE

NE TRAFFIC ENGINEERING DIRECTOR

T +1 207.347.4354  
M +1 207.400.0719  
E thomas.errico@tylin.com

**TYLin**

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Falmouth, ME 04105, United States

[TYLin.com](http://TYLin.com)





# Stevens Ave Street Parking Restrictions

### Legend

#### Portland Parking Restrictions

- One Way Streets
- Unrestricted Parking
- 5 Minute Parking
- 15 Minute Parking
- 30 Minute Parking
- 1 Hour Parking
- 2 Hour Parking
- No Parking
- Restricted Parking
- No Parking - Bus Zone
- Paid Parking
- Private Parking
- No Parking - School Zone
- Commercial Loading Zone
- Curbside Pickup Drop Off & Hotel Loading
- Reserved Parking - Emergency Vehicles
- Handicap Parking
- No Parking - Except Government / Emergency Response Vehicles
- Residential Parking Permit Area
- Motorcycle/Moped Parking Only-10 Hour Limit





**Site Design Associates**  
**Consulting Engineering and Land Planning**

April 29, 2022

Mr. James Rather  
Development Review Services Manager  
Planning Division  
389 Congress St., Fourth Floor  
Portland, ME 04101

**RE: University of New England - Portland Campus**  
**Major Site Plan Application for:**  
**Harold and Bibby Alford Center for Health Sciences**  
**Parcel ID 145 B018001**  
**780 Stevens Avenue**

Dear James:

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to submit a major Site Plan Application for the referenced project. We understand the site plan application fee for a project of this size is \$4,000 and will be invoiced.

The project is located on the UNE campus in the R5 zone, where institutional post-secondary use is permitted as a conditional use. The project was reviewed with staff at two pre-application meetings on November 10, 2021, and January 24, 2022. Based on feedback from staff, the concept remains as discussed at those meetings.

This submission contains the following information:

- Major Site Plan Checklist
- Letter of Agent Authorization
- Evidence of Right, Title, and Interest
- Zoning Assessment
- Letter of Financial Capacity
- Evidence of Technical Capability
- Site Plan Standards Assessment
- Waiver Requests
- Sewall Traffic Impact Study
- Transportation Demand Management Plan
- Stormwater Management Plan
- Ability to Serve from Portland Water District and city Public Works
- HVAC Equipment Information
- Construction Management Plan

23 Whitney Way Topsham, Maine 04086  
Phone: (207) 449-4275 email: [info@sitedesignassociates.biz](mailto:info@sitedesignassociates.biz)

- The following project drawings:
  - C-001 Site Notes & Legends
  - CD101 Site Demolition Plan
  - CE001 Site Erosion & Sediment Control Notes
  - CE101 Erosion & Sediment Control Plan
  - CE501 Erosion & Sediment Control Details
  - CG101 Site Grading & Drainage Plan
  - CG102 Grading & Drainage Schedule
  - CG201 Connector Road Plan & Profile Sta 02+50 To 26+50 (1 Of 2)
  - CG202 Connector Road Plan & Profile Sta 26+50 To 33+00 (2 Of 2)
  - CG501 Grading & Drainage Details
  - CG502 Grading & Drainage Details
  - CP101 Layout & Materials Plan
  - CP401 Site Layout & Materials Enlargements
  - CP501 Site Layout Details
  - CP502 Site Layout Details
  - CP503 Site Layout Details
  - CP504 Site Layout Details
  - CU101 Utilities Plan
  - CU501 Utility Details
  - CU502 Utility Details
  - CU503 Utility Details
  - LP101 Planting Plan
  - LP502 Planting Detail and Plant Schedule
  - GI-001 Cover Sheet, Legend & Abbreviations
  - A-101 Ground Level - Facility Plan
  - A-102 Quad Level - Facility Plan
  - A-103 Third Level - Facility Plan
  - A-104 Fourth Level - Facility Plan
  - A-201 Exterior Elevations - North
  - A-202 Exterior Elevations - East
  - A-203 Exterior Elevations - South
  - A-204 Exterior Elevations - West
  - ES101 Site Photometric Plan
  - Sheet 1 Existing Conditions and Boundary Survey

UNE is moving its prestigious College of Osteopathic Medicine (COM), Maine's only medical school, to its Portland Campus, into a brand new, state-of-the-art facility, the Harold and Bibby Alford Center for Health Sciences. (HBACHS) The HBACHS will also house the Institute for Interprofessional Education and Practice (IPEP), building on UNE's longstanding leadership in Interprofessional Education (IPE) to create the next generation of programming—especially where IPE intersects with aging and rural populations. These changes will increase UNE's already category-leading focus on cross-disciplinary medical-

team collaboration and the use of cutting-edge technology, such as telehealth and digital medicine. UNE is poised to become not only the premiere educator of medical professionals in Northern New England, but also to serve as a national model for holistic, team-based health care education and practice.

Across Maine, New England, and the nation, there is an acute shortage of health care professionals, particularly in underserved remote, rural areas. This project allows UNE to increase its medical school class size and educate more urgently needed doctors. These changes will allow UNE to graduate professionals with best-in-class skills: improving patient outcomes through team-based care; fostering expertise with new and emerging technologies; and expanding UNE's focus on cross-cultural competencies. The resulting synergies will deepen UNE's clinical partnerships with health care providers across the state and region, and the presence of COM on the Portland Campus will increase enrollment demand for UNE's diverse slate of health professions offerings.

Details of the HBACHS are as follows:

- **Unique footprint with 12 health professions programs on one campus**, creating a dedicated health sciences hub, unique in the region and rare in U.S. higher education
- **111,-square-foot, state-of-the-art building for COM and the IIPEP**, customized for medical education according to the latest in pedagogical design, including active learning spaces and integrated technology
- **Enhanced facilities across campus and expanded programming for interprofessional studies:**
  - **Digital Health Teaching Center** with critical technology for reaching remote patients
  - **Expanded SIM lab** for team-based teaching simulations
  - **Improved anatomy lab** with dedicated space for non-COM students and partners from the health care community
  - **Flexible classrooms** to foster interaction and serve multiple learning modalities

The proposed development comprises approximately seven acres of the Portland campus of UNE on the northwesterly corner of the block defined by Stevens Avenue and Innovation Hall to the East, UNE's Main Campus and Evergreen Cemetery to the south, undeveloped woodlands to the west, and a field and wooded areas to the north. A portion of the site is currently utilized as parking for UNE and the remainder of the site is gravel parking and maintenance areas for the Maine Army National Guard. The site is primarily gravel and impervious surfaces. There are minor wetlands adjacent to the site, but no wetland impacts will occur as a result of this project.

The new home of HBACHS will be a four story, 111,813 square foot building located behind Innovation Hall on a sloped site. The ground, third and fourth floors are all

approximately 27,842 square feet. The quad level second floor (approximately 28,396 sf) is larger as this is where the building connects to Innovation Hall.

The proposed building height is 54.8 ft. The compact L-shaped building embeds the long side of the L into the existing steeply sloped site. The portion of the new building that faces Innovation Hall will be three stories tall, creating a new campus quad which will enhance visual connections to the existing campus. The facades that face the field and Bishop Street will be four stories tall as the grade falls away from the quad.

The HBACHS connects to the existing Innovation Hall with a one-story connector, where 200 square feet will be renovated for casual seating and grab and go food service. Entrances will be located on two levels, with the main entrance on the lower level, and a second level entrance from the landscaped quad area.

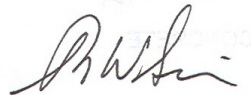
Spaces within the new building include classrooms, a 220-person lecture hall, lab spaces for hands-on learning, a suite of medical exam simulation rooms, conference rooms, faculty offices and generous amounts of open space to allow for casual interactions between students and faculty that are integral to collaborative learning.

Access to the site will be over an existing access drive from Stevens Avenue which will be reconstructed with a 24 ft wide travel way and adjacent sidewalk. Utilities are available in Stevens Avenue and the utilities have indicated their ability to serve the project.

We look forward to working with staff and the planning board toward approval of this project. Please contact me with any questions or comments concerning this conditional use application.

Sincerely,

Site Design Associates

A handwritten signature in dark ink, appearing to read 'Tom Saucier', with a stylized flourish at the end.

Tom Saucier, P.E.  
President

cc: Alan Thibeault, UNE, Vice president for Campus Operations

# 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

|                                  |    |                                                                                                                                                                                                                                      |
|----------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="radio"/> | NA | <b>Project Description</b> <ul style="list-style-type: none"><li>Cover letter with detailed project description</li></ul>                                                                                                            |
| <input checked="" type="radio"/> | NA | <b>Completed Checklist</b> (this document)                                                                                                                                                                                           |
| <input checked="" type="radio"/> | NA | <b>Evidence of Right, Title, and Interest</b> <ul style="list-style-type: none"><li>Deeds, leases, or purchase and sales agreements</li></ul>                                                                                        |
| <input checked="" type="radio"/> | NA | <b>Evidence of State or Federal Approvals</b> <ul style="list-style-type: none"><li>Permits or letters of non-jurisdiction, if applicable</li></ul>                                                                                  |
| <input checked="" type="radio"/> | NA | <b>Zoning Assessment</b> (see <u>Zoning Assessment Table</u> )<br>Summary of compliance with use and dimensional standards of the land use code                                                                                      |
| <input checked="" type="radio"/> | NA | <b>Site Plan Standards Assessment</b> (see Section 14.6 of the land use code) <ul style="list-style-type: none"><li>Summary of project compliance with site plan standards of the land use code</li></ul>                            |
| <input checked="" type="radio"/> | NA | <b>Summary of Existing and/or Proposed Easements or Covenants, applicable.</b> <ul style="list-style-type: none"><li>Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way</li></ul> |
| <input checked="" type="radio"/> | NA | <b>Waiver Requests</b> (see <u>Waiver Table</u> ) <ul style="list-style-type: none"><li>Written request for waiver describing request and compliance with applicable waiver standards</li></ul>                                      |
| <input checked="" type="radio"/> | NA | <b>Financial Capability</b> <ul style="list-style-type: none"><li>Letter or evidence from a financial institution or third party verifying financial capacity to undertake project</li></ul>                                         |
| <input checked="" type="radio"/> | NA | <b>Technical Capability</b> <ul style="list-style-type: none"><li>Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects</li></ul>                                                 |



## 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 | <b>Impact on Surrounding Street Systems (14-14.6.1(A))</b> <ul style="list-style-type: none"> <li>Describe incremental volume of traffic impacts and mitigation measures. If needed</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Yes | NA | <b>Access and Circulation (14-14.6.1(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Site access and internal circulation, including ADA access</li> <li>Drive-up features, if applicable</li> <li>Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable</li> <li>Sidewalks and condition along street frontages and internal walkways</li> <li>Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)</li> </ul> |
| Yes | NA | <b>Public Transit (14-14.6.1(C)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| Yes | NA | <b>Off-Street Parking (14-14.6.1(D)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code</li> <li>Curb cut separation and parking layout (Technical Manual, Section 1)</li> <li>Construction details for bicycle racks</li> <li>Management plan for snow storage and removal</li> </ul>                                                                                                             |
| Yes | NA | <b>Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable</b> <ul style="list-style-type: none"> <li>Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |

| ENVIRONMENTAL |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes           | NA | <b>Preservation of Significant Natural Features (14-14.6.2(A)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• High and moderate value waterfowl and wading habitat</li> <li>• Aquifers (for Casco Bay Islands)</li> <li>• Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)</li> <li>• Proposed preservation areas and protection measures</li> <li>• Documentation from environmental compliance consultants and determinations from applicable state and federal agencies</li> </ul> |
| Yes           | NA | <b>Landscape Preservation (14-14.6.2(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4)</li> <li>• Measures to protect existing vegetation during construction</li> </ul>                                                                                                                                                                                                                                                                |
| Yes           | NA | <b>Site Landscaping and Buffers (14-14.6.2(C))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Overall landscaping approach and consistency with standards</li> <li>• The use of screening and buffering of service areas and between non-residential and residential uses</li> <li>• Existing Heritage or Feature Trees on site and measures to preserve</li> <li>• Compliance with street tree requirements</li> </ul>                                                                                                                      |
| Yes           | NA | <b>Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>• Erosion and sedimentation control plan and measures</li> <li>• Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable</li> <li>• Subsurface sanitary sewage disposal and groundwater protection measures</li> </ul>                                                                                                                                |

| PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes                                        | NA | <b>Consistency with City Master Plans (14-14.6.3(A))</b> <ul style="list-style-type: none"> <li>Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable</li> </ul>                                                                                                                                                                                                                    |
| Yes                                        | NA | <b>Public Safety and Fire Prevention (14-14.6.3(B))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3)</li> <li>Emergency vehicle access</li> <li>Consistency with public safety standards (Technical Manual, Section 3)</li> </ul>                                                                        |
| Yes                                        | NA | <b>Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 &amp; 9)</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Electrical services, including providing underground services</li> <li>Existing and proposed connections for public utilities and required public utility upgrades</li> <li>Sewer line connections</li> </ul>                                                     |
| SITE DESIGN                                |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Yes                                        | NA | <b>Massing, Ventilations and Wind Impact (14-14.6.4(A))</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable</li> <li>Bulk, location, or height impacts on adjoining structures</li> </ul>                                                                                                            |
| Yes                                        | NA | <b>Shadows (14-14.6.4(B)), if applicable</b> <ul style="list-style-type: none"> <li>Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)</li> </ul>                                                                                                                                                                                                                                                          |
| Yes                                        | NA | <b>Snow and Ice Loading (14-14.6.4(C))</b> <ul style="list-style-type: none"> <li>Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways</li> </ul>                                                                                                                                                                                                                                      |
| Yes                                        | NA | <b>View Corridors (14-14.6.4(D)), if applicable</b> <ul style="list-style-type: none"> <li>Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)</li> </ul>                                                                                                                                                                                                                                                            |
| Yes                                        | NA | <b>Historic Resources (14-14.6.4(E)), if applicable</b><br>Identify and describe the following: <ul style="list-style-type: none"> <li>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</li> <li>Compliance with standards for preservation and documentation of archaeological resources</li> </ul> |

|     |    |                                                                                                                                                                                                                                                                                                        |
|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes | NA | <b>Exterior Lighting (14-14.6.4(F))</b> <ul style="list-style-type: none"> <li>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</li> </ul>                     |
| Yes | NA | <b>Noise and Vibration (14-14.6.4(G))</b> <ul style="list-style-type: none"> <li>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</li> </ul>   |
| Yes | NA | <b>Signage and Wayfinding (14-14.6.4(H)), if applicable</b> <ul style="list-style-type: none"> <li>Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs</li> <li>Provide drawings of all commercial and directional signage on site</li> </ul> |
| Yes | NA | <b>Zone-Related Design Standards (14-14.6.4(I))</b> <ul style="list-style-type: none"> <li>Address any applicable design review standards by zone, including compliance with Design Manual</li> </ul>                                                                                                  |

## 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



|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <ul style="list-style-type: none"> <li>• Location of solid waste management receptacles</li> <li>• Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable</li> <li>• Location of proposed easements and rights-of-way, including dimensions</li> <li>• Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed</li> </ul> |
| ✓ | <b>UTILITY PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |
|   | <ul style="list-style-type: none"> <li>• Proposed electrical infrastructure</li> <li>• Location, sizing and directional flows of all proposed sewer and stormwater infrastructure</li> <li>• Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site</li> <li>• Electric utility infrastructure</li> </ul>                                                                                               |
| ✓ | <b>GRADING AND DRAINAGE PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                            |
|   | <ul style="list-style-type: none"> <li>• Proposed grades</li> <li>• Proposed stormwater management measures meeting Technical Manual (Section 5) standards</li> <li>• Any proposed alteration of a watercourse or wetlands</li> <li>• Any groundwater protection measures</li> <li>• Proposed buffers and preservation measures for wetlands or significant natural features</li> </ul>                                                                |
| ✓ | <b>LANDSCAPE PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
|   | <ul style="list-style-type: none"> <li>• Existing vegetation to be preserved and preservation measures</li> <li>• Proposed landscaping, screening, and street trees, including caliper widths for trees</li> <li>• Planting schedule, including street trees</li> </ul>                                                                                                                                                                                |
| ✓ | <b>ARCHITECTURAL PLANS AND RENDERINGS including:</b>                                                                                                                                                                                                                                                                                                                                                                                                   |
|   | <ul style="list-style-type: none"> <li>• Exterior building elevations, color renderings, illustrations of all sides</li> <li>• Axonometric and street-level views for structures greater than three stories in height</li> <li>• Provide context drawings, if applicable (Design Manual, page 1)</li> <li>• Floor plans</li> </ul>                                                                                                                     |
| ✓ | <b>CONSTRUCTION MANAGEMENT PLAN including:</b>                                                                                                                                                                                                                                                                                                                                                                                                         |
|   | <ul style="list-style-type: none"> <li>• Specifics on traffic control, sidewalk sheds, and pedestrian rerouting</li> <li>• Include a drawing and written narrative</li> </ul>                                                                                                                                                                                                                                                                          |
| ✓ | <b>OTHER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|   | <ul style="list-style-type: none"> <li>• Details and cross-sections, as necessary</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |

QUITCLAIM DEED

**THE STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT** successor in interest to the **STATE OF MAINE**, acting by and through the Acting Adjutant General pursuant to 37-B M.R.S.A. § 264, (the "Grantor"), FOR CONSIDERATION PAID, grants to the **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation, whose mailing address is 716 Stevens Avenue Portland, ME 04103 (the "Grantee"), certain real property, together with any improvements thereon, located at 760-780 Stevens Avenue, in the City of Portland, County of Cumberland and State of Maine, more particularly describes as follows:

A certain lot or parcel of land with the buildings thereon situated on the westerly side of Stevens Avenue in the City of Portland in said County of Cumberland and State of Maine, being the same premises conveyed by Elizur B. Forbes to Portland and Forest Avenue Rail Road Company by deed dated March 22, 1864, and recorded in Cumberland County Registry of Deeds in Book 326, Page 212, in which deed said premises were bounded as follows:

"A certain parcel of land fronting on the principal street at Stevens's Plains in Westbrook aforesaid, bounded as follows; beginning on said street at the southeast corner of land formerly of Jeremiah Beedle, now of Woodbury Polleys; thence running North sixty-four and a half degrees West five hundred seven and a half feet; thence North twenty-five and a half degrees East, thirty three feet; thence North sixty-three degrees West one hundred twenty-five feet; thence South seventy-five degrees forty-five minutes West seven hundred twenty feet; thence South sixty-four degrees east nine hundred ten and a half feet; thence North twenty and a quarter degrees east one hundred forty and a half feet; thence South sixty-six and a half degrees east, three hundred twenty four feet to the street or Stevens's Plains road before mentioned; thence North (by the line of the Street) nineteen degrees and three quarters east, two hundred ninety feet to the place of beginning - estimated to contain about nine and one quarter acres."

Meaning and intending to convey the same premises delineated on the Plan of Property in Portland, Maine made for the Adjutant General, Augusta, Maine prepared by H.I. & E.C. Jordan dated August 22, 1958.

For Grantor's source of title see: Warranty Deed from Portland Rail Road Company to the State of Maine dated October 14, 1940 and recorded at the York County Registry of Deeds in Book 1619, Page 299.

MAINE REAL ESTATE TAX PAID

By his signature hereon, the Acting Adjutant General certifies that the premises being conveyed in compliance with 37-B MRSA § 264, Section 6, Subsection 5 constitutes the Portland Armory, that he has designated an officer to inspect the premises, that he has determined the property to be unfit for military use, and has condemned the premises and furthermore that the premises are not being sold for less than appraised value as determined by a person licensed as a real estate appraiser under Title 32, chapter 123 and that the State of Maine Department of Defense, Veterans and Emergency Management is the successor in interest to the State Military Defense Commission of the State of Maine.

IN WITNESS WHEREOF, the State of Maine has caused this instrument to be executed in its name by Brigadier General Gerard F. Bolduc in his capacity as the Acting Adjutant General of the Maine National Guard, pursuant to 37-B M.R.S.A. § 264, this 11 day of June, 2015.

JA.  
Witness

STATE OF MAINE

By: Gerard F. Bolduc

Gerard F. Bolduc  
Brigadier General, The Acting Adjutant General

State of Maine  
County of Kennebec, ss

June 11, 2015

The personally appeared the above-named Brigadier General Gerard F. Bolduc, The Acting Adjutant General of the Maine National Guard, and acknowledged the foregoing instrument to be his free act and deed and, pursuant to authorization of the Maine Legislature as found in 37-B M.R.S.A. § 264, the free act and deed of the State of Maine.

Before me,

Stacy M. Bradbury

Notary Public/Attorney-at-Law

Commission Expires:

Print Name: Stacy M. Bradbury

Under authority of  
37-B MRSA 390-C.  
Attorney at Law

Received  
Recorded Register of Deeds  
Jun 17, 2015 08:54:11A  
Cumberland County  
Nancy A. Lane

Portland, Maine



Yes. Life's good here.

Planning &amp; Urban Development Department

**ZONING ANALYSIS** Relevant Zone(s) R5

**All Projects:**

|                           | Required | Proposed     |
|---------------------------|----------|--------------|
| Lot Size                  | 2 acres  | 70 acres +/- |
| Area Per Dwelling Unit    | NA       |              |
| Minimum Street Frontage   | 50 ft    | 579.46 ft*   |
| Front Yard Setback        | 30 ft    | 404 ft +/-   |
| Front Yard Maximum        |          |              |
| Rear Setback              | 30 ft    | > 30 ft      |
| Yard Right                |          |              |
| Yard Left                 |          |              |
| Side Setback              | 30 ft    | 84 ft +/-    |
| Step Back                 |          |              |
| Maximum Lot Coverage**    | 40%      | 15%+/-       |
| Minimum Lot Coverage      |          |              |
| Maximum Height            | 55 ft    | 54.8 ft +/-  |
| Open Space                |          |              |
| Maximum Impervious Area   |          |              |
| Pavement Setback          |          |              |
| Floor Area Ratio          |          |              |
| Off Street Parking Spaces |          |              |
| Loading Bays              |          |              |
| Other 1                   |          |              |
| Other 2                   |          |              |
| Other 3                   |          |              |

\* Along Stevens Ave north of College Street

\*\* In R5 zone

### 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<br>Increase or<br>Decrease | Maximum<br>Allowable<br>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):    |                                  |                                    |          |



## **Waiver Requests**

### **Standard to be waived:**

Technical Manual Section 1.17, Electric Vehicle Infrastructure

Electrical outlets or installed chargers capable of providing Level 2 EV charging or higher for 20% of parking spaces

### **Waiver sought and justification:**

Allow EV charging stations to be provided for 15.5% of parking spaces given that UNE is providing a substantial number of EV chargers capable of handling current and future demand and sufficient capacity is available for future demand.

### **Standard to be waived:**

Land Use Code 14.6.2.C.3. Parking and Vehicle Display Lot Landscaping

- a. Developments shall include at least two trees (or one tree and three shrubs) per five parking spaces planted in landscaped islands to screen, shade, and break up parking. Trees and shrubs in parking lots may be in informal groups, straight rows, or concentrated in clusters as described in the landscaping and landscape preservation standards of the Technical Manual.
- b. Landscaped islands shall be distributed so that uninterrupted pavement does not exceed forty parking spaces.

### **Waiver sought and justification:** Reduced parking lot landscape and islands.

1. Enhanced maintenance and snow removal.
2. Interior site landscaping significantly exceeds ordinance requirements.
3. Development will result in an increase of 43,000 sf of vegetation on the site, with the removal of impervious area.
4. Additional islands and landscaping would result in an expanded footprint of the parking lot, increasing stormwater runoff and impacts to adjacent wetlands.
5. Stormwater treatment facilities are designed to filter and cool runoff from storm events.
6. Significant screening and buffering exists around the site perimeter.

### **Standard to be waived:**

Technical Manual Section 12.3.5, General Standards – Luminaire Types

All fixtures must be LED and shall not exceed 3000K Correlated Color Temperature (CCT). Screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT.

**Waiver sought and justification:**

The 3000 CCT that is currently the Portland standard, will provide a very warm color with a large amount of yellow light emitted from the light fixtures. This CCT is generally used in homes, guest rooms of hotels, hotel lobbies dining areas, etc. where you want to create a warm and calming atmosphere. This CCT will also not provide accurate viewing of any of the primary colors. For example; a red car being lit with 3000 CCT will appear gray, and a blue shirt being viewed under 3000 CCT will appear black. Color distinction is very difficult.

Outdoor lighting, specifically in locations such as college campus parking lots where both vehicular-pedestrian traffic and security are of the utmost concern, is traditionally designed with a color temperature of 4000K-5000K. The higher CCT produces an increased amount of lighting in the blue wavelength range as opposed to the yellow light emitted from a 3000K light source. This leads to an increase in the alertness and visual acuity of the area's occupants, enhancing both the safety and security of the space. IESNA's RP-20 *Lighting for Parking Facilities* agree with the recommendation of using higher CCT, cooler lighting sources for alertness, safer vehicular traffic, and security in parking environments. A waiver from the city standard is requested, and was granted by staff for a recent UNE project.



Office of Finance and Administration

Biddeford Campus  
11 Hills Beach Road  
Biddeford, ME 04005  
U.S.A.  
(207) 283-0171

Portland Campus  
716 Stevens Avenue  
Portland, ME 04103  
U.S.A.  
(207) 797-7261

[www.une.edu](http://www.une.edu)

April 25, 2022

City of Portland  
Planning Board  
389 Congress St.  
Portland, ME 04101

Dear Planning Board Members,

Please accept this letter as assurance that the University of New England (UNE) has the financial capacity to construct, equip, and operate the proposed Harold and Bibby Alfond Center for Health Sciences.

From 2017 to 2021, UNE has experienced a total positive change in net assets from operations of over \$175 million. These surpluses have improved upon the University's liquidity position and overall financial capacity. Total net assets during the same period increased from \$285 million to over \$445 million. This demonstrates UNE's continued commitment to sound management practices and financial sustainability.

To date, UNE has raised over \$30 million to construct and equip the proposed Harold and Bibby Alfond Center for Health Sciences. These fundraising efforts are continuing. Additionally, UNE holds A-level credit ratings from Moody's Investor Services and Fitch Ratings which has provided access to capital markets for project financing. The University issued the UNE Series 2021AB Revenue Bonds in December of 2021 which included \$50 million dedicated to the design and construction of the Harold and Bibby Alfond Center for Health Sciences. Long range financial planning analysis and cash flow projections provide further confirmation that the University can readily afford the construction and future direct and indirect operating costs associated with the proposed project.

Taking into consideration the \$30 million raised, \$50 of debt financing secured, and financial strength of the University, management is confident it has sufficient resources to complete the project.

Respectfully submitted,

Nicole L. Labbé-Trufant  
Senior Vice President for Finance and Administration  
University of New England

## **Technical Ability**

UNE has completed numerous projects on the campus in recent years, including:

- College of Pharmacy
- Innovation Hall
- Oral Health Center

UNE has retained a qualified team to permit, design, and construct the project, including:

### **Civil Engineer, Permitting & Survey**

Site Design Associates  
23 Whitney Way  
Topsham, Maine 04086

### **Architect:**

SMRT, Inc.  
75 Washington Avenue  
Suite 3A  
Portland, Maine 04101

### **Construction Manager**

Ledgewood  
27 Main St  
South Portland, ME 04106

## **Applicable Site Plan Standards**

University of New England (UNE) has recently announced plans to consolidate its College of Osteopathic Medicine onto its Portland campus to improve its Interprofessional Education (IPE) model to provide an even better prepared and more robust workforce in the future. The new home of The Harold and Bibby Alford Center for Health Sciences (HBACHS) will be a new four story, 111, 813 square foot building located behind Innovation Hall on a sloped site. The portion of the new building that faces Innovation Hall will be three stories tall, creating a new campus quad which will provide visual connections to the existing campus, and have a connector providing for direct access to Innovation Hall and its state-of-the-art simulator. The facades that face the rear of the campus and Bishop Street will be four stories tall as the grade falls away from the campus center.

Sustainability and environmental stewardship are highly valued by UNE. The HBACHS building will be designed to incorporate best practices around sustainability and occupant wellness, as well as making significant efforts to reduce the University's carbon footprint.

Section 14.6 of the Land Use Ordinance outlines the standards for Site Plan Approval. The following discussion documents compliance with the applicable standards.

**14.6.1.A. Impact on Surrounding Street Systems.** – See attached Traffic Impact Study by Sewall.

**14.6.1.B. Access and Circulation.** As presented at the pre-application meetings, the site will continue to be accessed via an existing access drive which will be reconstructed with a 24 ft wide travel way and adjacent sidewalk from an existing curb cut in Stevens Avenue. Details and cross sections for this work are included in the drawings.

A new parking lot will be constructed creating 193 spaces (including 6 accessible) to the immediate west of the new building in the general location of the existing parking area. The parking lot will include motorcycle parking and 30 EV charging stations.

The HBACHS building will include a formal service yard on the north side, adjacent to the existing internal access drive. This area will be bounded on two sides with a retaining wall with rail, and one side by the building, effectively screening this area from public view. The service yard will provide for two dumpsters with screening fence and gate enclosure, a future generator, and loading and receiving for building services.

The public access to the building will be on the lower level. The ground floor has the entry from the parking lot/shuttle stop and houses the Standardized Patient Suite, the Osteopathic Manipulative Medicine (OMM) Clinic along with meeting rooms, student lockers and the mechanical/electrical and building support spaces.

There are existing sidewalks along UNE's Stevens Avenue frontage. The city will be reconstructing portion of the sidewalks this spring.



**14.6.1.C. Public Transit Access** – The campus is presently serviced by the Greater Portland Metro Route 9 connecting to the City of Portland. The two existing bus stops and shelters along Stevens Avenue will remain.

**14.6.1.D. Parking** – As noted previously, 193 vehicle parking spaces will be located in a lot westerly of the building. This will include six accessible spaces, motorcycle parking, and EV charging stations. Twenty (20) dual bicycle racks are included at the main entrance and in the upper quad area, and are detailed on the drawings.

COM building parking lot design provides (2) dual-port, Level 2 (208V, 40A-60A) and (13) dedicated duplex receptacles for connection of Level 1 (120V, 12A) EV car charges. Duplex receptacles will be mounted to lighting fixtures throughout the parking lot to allow for distributed charging. Between Level 1 and Level 2 charging stations, a total of (30) parking spaces have EV charging capabilities.

Additionally, each landscaped parking island/row have both a power and communications conduit and handhole location centered with the green space to allow for wiring to future EV stations at all parking spaces. Power distribution equipment and wiring is not planned for these future spaces at initial construction.

Snow storage will be off the southerly end of the parking lot and along the perimeter, and will be removed from the site if necessary.

**14.6.1.E. Transportation Demand Management** – See TDM attached. UNE's Portland campus Transportation Plan has been developed with its main goal being to reduce vehicle trips and, thus, reduce the demand for on-site parking. UNE hopes to achieve this goal by increasing Transportation Demand Management (TDM) actions through the promotion and encouragement of alternative modes of transportation.

**14.6.2.A. Preservation of Significant Natural Features** – The project is generally located in a currently developed area. There will be no freshwater wetlands impacted by the project.

**14.6.2.B. Landscape Preservation** – No significant trees will be removed to construct the project. The project when complete will result in significant reestablishment of vegetated areas which are currently compacted gravel and impervious surfaces. The impervious area on the site will be reduced by over 40,000 sf. There will be clearing along the western edge of the site to allow for installation of stormwater features. Refer to sheet CD101 in the plan set.

Any individual trees or groupings of trees to remain will be protected in place with fencing as outlined in the specifications. Refer to sheet CE101.

An erosion and sedimentation control plan has been developed which will minimize both sedimentation and runoff.

Limited work is proposed within setback areas and primarily consists of reconstruction of an existing driveway. Individual trees are called out to be protected in areas where parcel abuts adjacent landowners.

**14.6.2.C. Site Landscaping and Buffers** – The project site is located on a rear portion of the property, and is not proximate to any public street frontage. Loading and service areas will not be readily visible from public streets or sidewalks. The project involves the redevelopment of a developed parcel on a college campus. The existing vegetation along the perimeters of the site, including along the existing street frontage on Steven Avenue is to remain.

The site has 580 linear feet of frontage along Stevens Avenue which would require approximately 20 shade trees or 120 plantings as describe in this ordinance. There are 66 shade trees (including some existing) and 134 perennials proposed for the interior of the site.

The HBACHS building will include a formal service yard on the north side, adjacent to the existing internal access drive. This area will be bounded on two sides with a retaining wall with rail, and on one side by the building, effectively screening this area from public view. The service yard will provide for two dumpsters with screening fence and gate enclosures, a future generator, and loading and receiving for building services.

Buffering is proposed between the proposed development and the adjacent Fuller properties. Seven 8'-10' White Fir are proposed to be planted at 15' on center in gaps between existing trees.

Limited landscape planting within the parking lot has been proposed for this internal campus parking lot in consideration of maintenance and snow removal operations. Proposed quantities do not meet ordinance requirements and a waiver is requested. See the waiver section for the request.

Landscape islands within the parking lot have been proposed for this internal campus parking lot in consideration of maintenance and snow removal operations. Proposed quantities do not meet ordinance quantities and a waiver is requested. See the waiver section for the request.

**14.6.2.D. Water Quality, Stormwater Management, and Erosion Control** – See the Stormwater Management Plan.

**14.6.3.A. Consistency with City Master Plans** – We are unaware of any conflicts with city council approved master plans.

This project is in basic harmony with the City's Comprehensive Plan and the City's goals and policies expressed in that plan. UNE has been able to incorporate the City's Comprehensive Plan goals and policies while at the same time supporting the University's priorities for growth and for improving the quality of the education it provides to Portland's residents and the local region. The City's Comprehensive Plan for institutional growth has been put in place to "ensure that the growth of Portland's educational, medical and cultural institutions is integrated into Portland's urban fabric through the use of high-quality design, management of impacts, community partnerships, and innovative planning" (Comprehensive Plan, p.45). UNE has fully embraced this statement and has assimilated this vision into its development plans.

UNE has discussed its key institutional needs -- to upgrade and grow its programs on the Portland campus to support the continued requirements of the University to provide state of the art post-secondary and graduate studies in fields such as healthcare, dentistry and pharmacy to name a few. All of these programs have and will continue to support the growing need to deliver public services to the people of northern New England and in particular the City of Portland along with providing highly trained professionals to the local workforce. The City of Portland's 2030 Comprehensive Plan "promotes the orderly expansion of institutional uses, such as educational and hospital campuses, which are central to workforce development, employment, and the health of the local and regional economies" (City of Portland's Comprehensive Plan, p.45)

**14.6.3.B. Public Safety and Fire Prevention** – The plan has been reviewed by the fire department who commented that the access and fire hydrant placement are acceptable.

In regards to Crime Prevention Through Environmental Design (CPTED), UNE aims to create a safe environment for all in and around its campus. UNE's Campus Safety and Security Department monitors UNE's campuses through in-person patrols and CCTV cameras and provides response to any situations that may arise, 24 hours a day/7 days a week.

UNE has currently incorporated some or all of the following design strategies on its Portland campus that have been demonstrated to deter criminal activity. It is the intent to continue to integrate these strategies on future developments on the campus:

- Providing a clean and aesthetically pleasing campus environment that is designed with vandal-resistant materials
- Providing clear and properly-sized signs in safe locations to ensure safe wayfinding
- Ensuring that paths from transit stops, bike storage areas, and parking areas to main pedestrian entrances are well-lit, with clear sight lines
- Designing street-level elevations and landscaping areas to minimize potential hideouts
- Call boxes with blue lights for easy identification
- Installation of CCTV to monitor remote areas
- Insure adequate lighting levels on walkways, parking lots and roadways.

UNE's Campus Safety and Security Department provides a yearly Clery Report that reports the past year's offense/crime statistics on each of its campuses. Over the past 3 years there have been no events reported related to issues stemming from CPTED deficiencies on the Portland campus. The University feels that active CPTED during the planning of projects has contributed to this.

**14.6.3.C. Public Utilities** – Utilities are available in Stevens Avenue. Portland Water District, the city public works department, Unitil, and Central Maine Power have all been consulted, reviewed the proposed utility plan, and have indicated that there are no issues with providing

service to the site. The PWD ability to serve letter is attached along with the wastewater capacity authorization from the city.

**14.6.4.A. Massing, Ventilation and Wind Impact** – To reduce its mass and minimize its impact on other UNE buildings and the adjacent properties, the compact L-shaped building embeds the long side of the L into the existing steeply sloped site. Mechanical equipment is centrally located on the roof and the generator is located in the walled service yard that is also cut into the slope. Additionally, the building is separated from Innovation Hall by a one-story connector (approximately 60' long). We do not anticipate any adverse impact to adjacent properties or buildings in regard to wind or ventilation.

Proposed building height, bulk, and location meet the City Zoning Ordinance. All HVAC mechanical units are located on the roof. All exhaust is directed away from public spaces and any residential abutters.

**14.6.4.B. Shadow** – The proposed building is centrally located within UNE's existing campus; shadow studies indicate that shadows cast by the building remain on UNE property for the majority of the year and do not fall on publicly accessible open space.

**14.6.4.C. Snow and Ice Loading** – Not applicable. There are no abutting properties or public ways proximate to the building or site.

**14.6.4.D. View Corridors** – Not applicable. There are no public view corridors.

**14.6.4.E. Historic Resources** – Not applicable. Proposed work is not within 100 feet of a City of Portland identified Historic District. No work is proposed within 100 ft. of the Westbrook College Historic District.

No known archaeological resources have been identified within the limit work. If any such resource is discovered during construction, it will be documented and protected according to the City of Portland's Land Use Ordinance. The City of Portland's Historic Preservation Program and Maine Historic Preservation Commission will be notified if any discovery of such a resource is be uncovered.

**14.6.4.F. Exterior Lighting** – The photometric plan is attached.

**Exterior Lighting and Controls:**

All new fixtures will utilize LED technology with a color temperature of 4000K and will be full-cutoff type as defined by Illuminating Engineering Society of North America (IESNA), in order to minimize light pollution into the night sky.

While it is understood that the City of Portland requires the use of 3000K color temperature in all exterior fixtures, outdoor lighting, specifically in locations such as college campus parking lots where both vehicular-pedestrian traffic and security are of the utmost concern, is traditionally designed with a color temperature of 4000K-5000K. The higher CCT produces an increased amount of lighting in the blue wavelength range as opposed to the yellow light emitted from a 3000K light source; this leads to an increase in the alertness and visual acuity of the area's

occupants, enhancing both the safety and security of the space. IESNA's RP-20 *Lighting for Parking Facilities* agree with the recommendation of using higher CCT, cooler lighting sources for alertness, safer vehicular traffic, and security in parking environments. A waiver from the city standard is requested, and was granted by staff for a recent UNE project.

Lighting along the access drive will be provided via pole mounted area style fixtures. Fixtures will be mounted at 30'-0" AFG with Type II distribution pattern. Parking lot lights will be comprised of pole mounted area style fixtures mounted at 20'-0" AFG with Type III and Type IV distribution patterns are required to adequately illuminate the drives, intersections, and parking spaces.

In addition to roadway and parking lot lighting, pedestrian walkways along the project site will be provided with bollard light fixtures. Fixtures will be ground mounted at 3'-0" AFG with an asymmetric distribution to cast light on the walking path.

Lighting will be controlled via a building-wide lighting control system located with the building. Lighting control system will be utilized to provide astronomical clock on/off operation and to allow for schedule overrides to be programmed. In addition to astronomical on/off operation, lighting control system will be provided with exterior photocell to turn lighting on when ambient lighting levels drop below 10 f.c.

Average lighting levels for the parking lot are as follows:

| EXTERIOR PHOTOMETRIC CALCULATIONS |              |              |              |         |    |
|-----------------------------------|--------------|--------------|--------------|---------|----|
| DESCRIPTION                       | AVERAGE (FC) | MAXIMUM (FC) | MINIMUM (FC) | MAX/MIN | MA |
| OVERALL                           | 0.4          | 15.7         | 0.0          | N/A     |    |
| ROADWAY                           | 2.1          | 6.8          | 0.3          | 23:1    |    |
| PARKING LOT                       | 2.6          | 5.0          | 0.4          | 13:1    |    |
| PATHWAYS                          | 3.3          | 14.3         | 0.2          | N/A     |    |

**14.6.4.G. Noise and Vibration** – All HVAC units will meet the applicable local, state and federal emission requirements. See attached catalogue cuts for information. All HVAC equipment will be mounted on the roof of the proposed building. The future generator will be located in the interior of site, and away from abutting residential property.

**14.6.4.H. Signage and Wayfinding** – All proposed signage will be provided by the Owner and will be consistent with previously approved University of New England and City of Portland design standards and guidelines. See the architectural drawing elevations for the building signage.

**14.6.4.I. Design Standards** – Not applicable.



# STORMWATER MANAGEMENT REPORT

## UNE CENTER FOR HEALTH SCIENCES

Stevens Avenue, Portland, Maine

April 29, 2022

### **Introduction**

Site Design Associates (SDA) was retained to assist the University of New England (UNE) (Applicant) in the design and permitting for the Harold and Bibby Alford Center for Health Sciences building and associated redevelopment of a portion of the UNE campus on Stevens Avenue in Portland, Maine. The proposed project includes the redevelopment of approximately 7.2± acres of the existing UNE campus for the construction of the new building with a footprint of approximately 29,560± square feet and the associated access driveway, parking, landscaping, and stormwater amenities.

This Stormwater Management Report assesses both pre-development and post-development peak runoff rates and stormwater treatment practices for the redevelopment area in accordance with the City of Portland land use code.

### **Methodology**

The stormwater runoff analysis has been undertaken utilizing the HydroCAD Stormwater Modeling System software (Version 10.0) developed by the Applied Microcomputer Systems of Chocorua, New Hampshire. The program is based upon the TR-20 computer program and the TR-55 tabular method, both of which are based upon techniques developed by the USDA Soil Conservation Service. The analysis was undertaken for the 2, 10, and 25-year frequencies (3.1, 4.6, and 5.8 inches, respectively). Twenty-four hour storms with a Type III distribution were the basis for the analysis.

All storm drainage piping and stormwater treatment BMPs have been sized for the 25-year, 24-hour storm utilizing the HydroCAD program. Copies of the pre and post development HydroCAD output are included in the Appendix A and Appendix B of this report, respectively.

### **Pre-Development Conditions**

The site of the proposed project is located on a 7.2-acre portion of the UNE campus on Stevens Avenue in Portland, Maine, which was the site of the former Maine National Guard Armory. The area is primarily developed with an access drive, parking lots, existing buildings, and landscaped areas. As taken from the website of the “*Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey*,” the predominant soil types in the redevelopment area are Windsor loamy sand (Wm) (HSG A) and Scantic silt loam (Sn) (HSG D). The USDA soil map is included in Appendix D of this report. The soil boundaries are shown on drawings D1.0 Pre-development Drainage Plan and D2.0 Post-development Drainage Plan in Appendix F of this report.

The easterly side of the site generally drains to the east toward Stevens Avenue. The drainage system in Stevens Avenue drains in two directions from a high point near the center of the frontage of the property. Therefore, there are two analysis points in Stevens Avenue (AP1 and AP5); one on either side of the high point. The northerly side of the site drains offsite at two locations identified as AP2 and AP3. The westerly side of the site drains through multiple small wetlands and culverts to a large wetland within the UNE campus identified as AP4.

A portion of the existing Innovation Hall roof, shown as subcatchment 0.0 on the drainage plans, drains to existing dry wells. Stormwater from SC 0.0 does not leave the site.

Stormwater peak runoff flow rates from the site for the 2, 10, and 25-year storm events were analyzed at each of the analysis points (AP1 – AP5) and are summarized in Table 1 in the Stormwater Quantity section of this report. Pre-development HydroCAD calculations are included in Appendix A. Sheet D1.0 – Pre Development Drainage Plan is included in Appendix F.

### **Post-Development Conditions**

The proposed project includes the redevelopment of approximately 7.2± acres of the existing campus for the construction of the new building with a footprint of approximately 29,560± square feet and the associated access driveway, parking, landscaping, and stormwater amenities. The redevelopment will result in a 43,107 square foot net reduction in impervious area from the existing condition.

Stormwater will generally be collected in multiple catch basin and storm drain systems throughout the site. Runoff from the majority of the access driveway and parking lot will be directed to two grassed underdrained soil filters to provide stormwater treatment and detention prior to outletting.

Post-development stormwater peak runoff flow rates for the 2, 10, and 25-year storm events at each of the analysis points are summarized in Table 1 in the Stormwater Quantity section of this report

### **Stormwater Quantity**

The overall stormwater runoff volume from the redevelopment site is significantly reduced due to the reduction of 43,107 square feet of impervious area. Additional stormwater detention is provided within the two grassed underdrained soil filters that will treat stormwater runoff from the majority of the proposed access driveway and parking lot.

Stormwater runoff peak flow rates for the 2, 10, and 25-year storm events were analyzed at each analysis point for both the pre and post development conditions to verify that the peak flow rates are maintained or reduced in the post development condition. Table 1 below summarizes the peak flow rates at each analysis point.

| <b>Table 1</b><br><b>Pre and Post Development Peak Runoff Rates (cfs)</b> |               |                |                |
|---------------------------------------------------------------------------|---------------|----------------|----------------|
| <b>Storm Frequency</b>                                                    | <b>2-Year</b> | <b>10-Year</b> | <b>25-Year</b> |
| <b>AP1</b>                                                                |               |                |                |
| Pre-Development                                                           | 2.5           | 5.0            | 7.1            |
| Post-Development                                                          | 2.0           | 4.1            | 6.0            |
| <b>AP2</b>                                                                |               |                |                |
| Pre-Development                                                           | 1.9           | 2.9            | 3.7            |
| Post-Development                                                          | 0.0           | 0.0            | 0.0            |
| <b>AP3</b>                                                                |               |                |                |
| Pre-Development                                                           | 1.9           | 3.4            | 4.7            |
| Post-Development                                                          | 0.0           | 0.3            | 0.5            |
| <b>AP4</b>                                                                |               |                |                |
| Pre-Development                                                           | 16.6          | 18.1           | 21.5           |
| Post-Development                                                          | 6.5           | 13.5           | 19.2           |
| <b>AP5</b>                                                                |               |                |                |
| Pre-Development                                                           | 2.8           | 5.5            | 7.9            |
| Post-Development                                                          | 2.8           | 5.5            | 7.9            |

As shown in the Table 1, the peak runoff rates at each analysis point under the post-development conditions will remain at or below the peak pre-development runoff rates for the 2, 10, and 25-year storm events. Based on this analysis, we do not anticipate any adverse impact on downgradient drainage systems due to the proposed development.

Stormwater runoff from subcatchment 0.0 is directed to drywells and does not leave the site.

### **Redevelopment and Stormwater Quality**

This project consists of the redevelopment of 7.2 acres of the existing developed UNE campus on Stevens Avenue. Therefore, the City of Portland Redevelopment Standard is applicable to this project.

The existing impervious area within the redevelopment window is 214,589 square feet. The proposed impervious area within the redevelopment window is 171,482 square feet, which results in a reduction of 43,107 square feet of impervious area in the redeveloped condition. See Sheets I1.0 – Pre Development Impervious Area Plan and I2.0 – Post Development Impervious Area Plan in Appendix F for the redevelopment impervious area calculations.

Pollutant loading calculations have been performed for the pre and post development conditions within the redevelopment window in accordance with Maine DEP Chapter 500 methodology for redevelopment projects. The total impervious area will be significantly reduced, therefore, the Ranked Impact Change (RIC) from the pre to post development condition is -0.38, which would typically mean that stormwater treatment is not required because the RIC is less than 0.0. However, since more than 5,000 square feet of non-roof impervious area will be reconstructed, the

City of Portland requires that stormwater treatment is provided for a minimum of 50% of the total redeveloped impervious area. See Sheets R1.0 – Pre Development Pollutant Loading Plan and R2.0 – Post Development Pollutant Loading Plan in Appendix F for the redevelopment pollutant loading calculations.

Two grassed underdrained soil filters will be constructed to provide stormwater treatment at the site. The BMPs have been designed in accordance with the City of Portland and Maine DEP Chapter 500 rules. The soil filters will collect stormwater runoff from the new access driveway and parking lot, which are the areas of the site that will have the highest pollutant loading. The soil filters are sized to treat 1-inch over the contributing impervious area and 0.4 inches over the contributing landscaped area in accordance with the City of Portland and Maine DEP BMP regulations. The contributing areas to the stormwater filters are shown on Sheet D3.0 – Stormwater Treatment Plan in Appendix F.

The proposed stormwater management plan will collect and treat stormwater runoff from 85,909 square feet of impervious area, which results in treatment of 50.1% of the redeveloped impervious area. Stormwater treatment calculations are summarized below in Table 2.

| Table 2<br>Water Quality Calculations                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|---------------------|----------------------------------------|---------------------------|-------------------------------------------------|------------------------------------|----------------------------------------------------|---------------------------------------|-------------------|
| Subcatchment Area                                                                                                                                                                                                                                                                                                                                                                                                                                        | Impervious Area (SF) | Landscaped Area (SF) | Developed Area (SF) | Filter Area Required <sup>1</sup> (SF) | Filter Area Provided (SF) | Water Quality Volume Required <sup>2</sup> (CF) | Water Quality Volume Provided (CF) | Sediment Forebay Volume required <sup>3</sup> (CF) | Sediment Forebay Volume Provided (CF) | BMP               |
| TREATED AREAS                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.3                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 37,812               | 11,495               | 49,307              | 2,322                                  | 3,092                     | 3,850                                           | 5,951                              | 48                                                 | 61                                    | Soil Filter (SF1) |
| 4.6                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0                    | 10,062               | 10,062              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 24,710               | 1,319                | 26,029              | 2,739                                  | 2,831                     | 4,543                                           | 5,131                              | 61                                                 | 61                                    | Soil Filter (SF2) |
| 4.5                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 21,831               | 1,361                | 23,192              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.11                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1,556                | 14,005               | 15,561              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| TOTAL TREATED                                                                                                                                                                                                                                                                                                                                                                                                                                            | 85,909               | 38,242               | 124,151             |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| TOTAL REDEVELOPED IMPERVIOUS AREA <sup>4</sup>                                                                                                                                                                                                                                                                                                                                                                                                           | 171,482              |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| PERCENT REDEVELOPED IMPERVIOUS AREA TREATED                                                                                                                                                                                                                                                                                                                                                                                                              | 50.1%                |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| Notes:<br>1. Filter area required is calculated at 5% of contributing impervious area and 2% of contributing landscaped area.<br>2. Water quality volume required is calculated as 1" over the contributing impervious area plus 0.4" over the contributing landscaped area.<br>3. Sediment Volume Required is calculated as Sanded Area (acres) x 500lbs/acre x 90 lbs/CF x 10 storms/year.<br>4. See Sheet I2.0 for Total Redeveloped Impervious Area. |                      |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |

### **Urban Impaired Stream Standard**

The project is located within the Capixic Brook Urban Impaired Stream (UIS) watershed, as identified by the Maine DEP. Since the project results in a net reduction of 43,107 square feet of impervious area from the existing condition, the UIS Standard is not applicable to this project. However, the proposed design achieves significant UIS mitigation credits due to the reduction of impervious area and treatment of redeveloped impervious and landscaped areas. Since there may be future redevelopment and/or expansions on the UNE campus, it is important to track these mitigation credits and bank them for use on future development within the UIS watershed.

Table 3 below summarizes the UIS mitigation credits achieved for this project based on treatment and elimination of source areas per Maine DEP Chapter 501 standards.

| Table 3<br>Urban Impaired Stream Mitigation Credits Achieved                       |                                |           |           |                 |               |
|------------------------------------------------------------------------------------|--------------------------------|-----------|-----------|-----------------|---------------|
| Mitigation Activity                                                                | Development Type               | Area (SF) | Area (AC) | Credit Per Acre | Credit Earned |
| Retrofit with General Standards at Required Size*                                  | Medium Use Parking Lot         | 62,415    | 1.43      | 1.2             | 1.72          |
|                                                                                    | Roof or Other Impervious Areas | 13,494    | 0.31      | 0.6             | 0.19          |
|                                                                                    | Landscaped Areas               | 38,243    | 0.88      | 0.3             | 0.26          |
| Eliminate Impervious Source Area, Replace with Landscaped Area                     | Medium Use Parking Lot         | 36,215    | 0.83      | 0.7             | 0.58          |
|                                                                                    | Roof or Other Impervious Areas | 6,892     | 0.16      | 0.2             | 0.03          |
| <b>Cumulative UIS Mitigation Credit Achieved and Banked for Future Development</b> |                                |           |           |                 | <b>2.78</b>   |

\*Areas treated in grassed underdrained soil filters SF1 and SF2.

As indicated in Table 3 above, the project has achieved 2.78 UIS mitigation credits that will be banked for potential future development projects onsite.

### **Erosion Control**

BMPs such as a stabilized construction entrance, silt fence and/or filter berms of erosion control mix, riprap pipe inlet and outlet protection, turf reinforcement matting, mulch, and permanent seeding will be used to prevent erosion and downstream migration of sediment during construction. The locations of temporary and permanent erosion control measures and erosion and sedimentation control notes and details are shown on the design drawing set.

### **Inspection & Maintenance**

The University of New England will be responsible for maintaining the stormwater facilities for the project. An Inspection and Maintenance Plan is included as Appendix D. The plan includes a draft of a Stormwater Drainage System Maintenance Agreement, to be finalized and recorded as a condition of approval.

### **Conclusions**

The stormwater management for this project includes a variety of BMPs to control both the quantity and quality of stormwater runoff. The HydroCAD calculations show that the peak runoff rates at the analysis points under post-development conditions are estimated to be equal to or less than the peak pre-development runoff rates for the 2, 10, and 25-year storm events. This meets the stormwater quantity requirements of the City of Portland ordinance. Stormwater treatment BMPs have been designed to treat stormwater runoff from more than 50% of the redeveloped impervious area in compliance with the City of Portland ordinance. Based on the information provided, no adverse impacts to downstream receiving bodies are anticipated.





## **SUPPORTING DATA AND CALCULATIONS**

The following material presents calculations and copies of source material used during the analysis for this study.

Appendix A: Pre-Development HydroCAD Calculations

Appendix B: Post-Development HydroCAD Calculations

Appendix C: Stormwater BMP Spillway Calculations

Appendix D: Inspection & Maintenance Plan & City of Portland Maintenance Agreement

Appendix E: USDA NRCS Soil Map

Appendix F: Drainage Plans

I1.0 – Pre Development Impervious Area Plan

I2.0 – Post Development Impervious Area Plan

R1.0 – Pre Development Pollutant Loading Plan

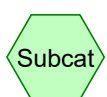
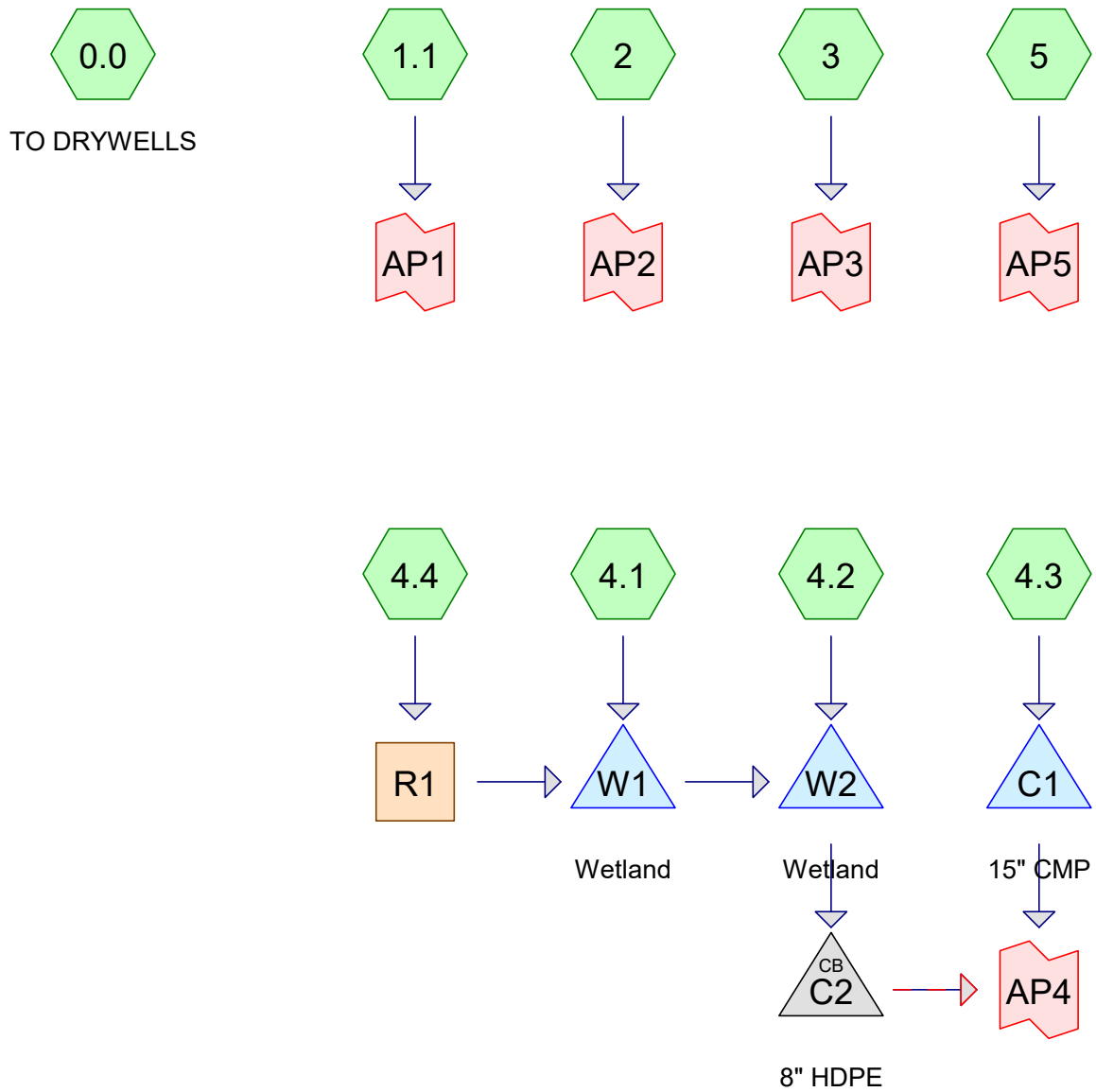
R2.0 – Post Development Pollutant Loading Plan

D1.0 – Pre Development Drainage Plan

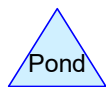
D2.0 – Post Development Drainage Plan

D3.0 – Stormwater Treatment Plan

**Appendix A:**  
**Pre-Development HydroCAD Calculations**



Reach



**Routing Diagram for Pre-Development\_COM**  
 Prepared by Site Design Associates, Printed 4/27/2022  
 HydroCAD® 10.00-26 s/n 08018 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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

|                                      |                                                                                                                                                |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth>2.87"<br>Tc=5.0 min CN=98 Runoff=1.15 cfs 0.089 af                                       |
| <b>Subcatchment 1.1:</b>             | Runoff Area=73,008 sf 67.16% Impervious Runoff Depth>1.26"<br>Tc=5.0 min CN=79 Runoff=2.52 cfs 0.176 af                                        |
| <b>Subcatchment 2:</b>               | Runoff Area=28,684 sf 92.59% Impervious Runoff Depth>2.45"<br>Tc=5.0 min CN=94 Runoff=1.87 cfs 0.134 af                                        |
| <b>Subcatchment 3:</b>               | Runoff Area=43,749 sf 61.78% Impervious Runoff Depth>1.53"<br>Tc=5.0 min CN=83 Runoff=1.86 cfs 0.128 af                                        |
| <b>Subcatchment 4.1:</b>             | Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>0.59"<br>Flow Length=520' Tc=13.8 min CN=66 Runoff=1.50 cfs 0.175 af                     |
| <b>Subcatchment 4.2:</b>             | Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>2.07"<br>Tc=5.0 min CN=90 Runoff=8.84 cfs 0.613 af                                       |
| <b>Subcatchment 4.3:</b>             | Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>1.14"<br>Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=0.90 cfs 0.076 af       |
| <b>Subcatchment 4.4:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>2.87"<br>Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 af                                       |
| <b>Subcatchment 5:</b>               | Runoff Area=80,791 sf 67.43% Impervious Runoff Depth>1.26"<br>Tc=5.0 min CN=79 Runoff=2.79 cfs 0.195 af                                        |
| <b>Reach R1:</b>                     | Avg. Flow Depth=0.24' Max Vel=2.90 fps Inflow=1.78 cfs 0.137 af<br>n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=1.72 cfs 0.137 af |
| <b>Pond C1: 15" CMP</b>              | Peak Elev=95.53' Storage=79 cf Inflow=0.90 cfs 0.076 af<br>15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=0.85 cfs 0.076 af          |
| <b>Pond C2: 8" HDPE</b>              | Peak Elev=98.04' Inflow=15.87 cfs 0.859 af<br>Primary=1.93 cfs 0.616 af Secondary=13.94 cfs 0.243 af Outflow=15.87 cfs 0.859 af                |
| <b>Pond W1: Wetland</b>              | Peak Elev=100.41' Storage=6,526 cf Inflow=2.63 cfs 0.312 af<br>Outflow=0.31 cfs 0.246 af                                                       |
| <b>Pond W2: Wetland</b>              | Peak Elev=98.01' Storage=1,215 cf Inflow=8.96 cfs 0.859 af<br>Outflow=15.87 cfs 0.859 af                                                       |
| <b>Link AP1:</b>                     | Inflow=2.52 cfs 0.176 af<br>Primary=2.52 cfs 0.176 af                                                                                          |
| <b>Link AP2:</b>                     | Inflow=1.87 cfs 0.134 af<br>Primary=1.87 cfs 0.134 af                                                                                          |
| <b>Link AP3:</b>                     | Inflow=1.86 cfs 0.128 af<br>Primary=1.86 cfs 0.128 af                                                                                          |

**Pre-Development\_COM***Type III 24-hr 2-Yr Storm Rainfall=3.10"*

Prepared by Site Design Associates

Printed 4/27/2022

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Page 3

**Link AP4:**Inflow=16.60 cfs 0.935 af  
Primary=16.60 cfs 0.935 af**Link AP5:**Inflow=2.79 cfs 0.195 af  
Primary=2.79 cfs 0.195 af**Total Runoff Area = 14.046 ac   Runoff Volume = 1.723 af   Average Runoff Depth = 1.47"**  
**38.50% Pervious = 5.408 ac   61.50% Impervious = 8.638 ac**



**Summary for Subcatchment 0.0: TO DRYWELLS**

Runoff = 1.15 cfs @ 12.07 hrs, Volume= 0.089 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 16,178  | 98 | Impervious              |
| 16,178    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 1.1:**

Runoff = 2.52 cfs @ 12.08 hrs, Volume= 0.176 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 49,030  | 98 | Impervious                    |
| 23,978    | 39 | >75% Grass cover, Good, HSG A |
| 73,008    | 79 | Weighted Average              |
| 23,978    |    | 32.84% Pervious Area          |
| 49,030    |    | 67.16% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 2:**

Runoff = 1.87 cfs @ 12.07 hrs, Volume= 0.134 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 26,559  | 98 | Impervious                    |
| 2,125     | 39 | >75% Grass cover, Good, HSG A |
| 28,684    | 94 | Weighted Average              |
| 2,125     |    | 7.41% Pervious Area           |
| 26,559    |    | 92.59% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 3:**

Runoff = 1.86 cfs @ 12.08 hrs, Volume= 0.128 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 27,030    | 98 | Impervious                    |
|   | 3,290     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,686     | 80 | >75% Grass cover, Good, HSG D |
|   | 2,065     | 30 | Brush, Good, HSG A            |
|   | 1,737     | 30 | Woods, Good, HSG A            |
|   | 5,941     | 77 | Woods, Good, HSG D            |
|   | 43,749    | 83 | Weighted Average              |
|   | 16,719    |    | 38.22% Pervious Area          |
|   | 27,030    |    | 61.78% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.1:**

Runoff = 1.50 cfs @ 12.23 hrs, Volume= 0.175 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 65,523    | 98 | Impervious                    |
|   | 30,118    | 39 | >75% Grass cover, Good, HSG A |
|   | 41,927    | 30 | Woods, Good, HSG A            |
|   | 17,462    | 77 | Woods, Good, HSG D            |
|   | 155,030   | 66 | Weighted Average              |
|   | 89,507    |    | 57.74% Pervious Area          |
|   | 65,523    |    | 42.26% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                                                                            |
|-------------|------------------|------------------|----------------------|-------------------|------------------------------------------------------------------------------------------------------------------------|
| 12.4        | 110              | 0.0140           | 0.15                 |                   | <b>Sheet Flow, AB</b><br>Grass: Short n= 0.150 P2= 3.10"                                                               |
| 0.9         | 110              | 0.1600           | 2.00                 |                   | <b>Shallow Concentrated Flow, BC</b><br>Woodland Kv= 5.0 fps                                                           |
| 0.5         | 300              | 0.0170           | 9.36                 | 112.37            | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 2.0 ' Top.W=10.00'<br>n= 0.022 Earth, clean & straight |
| 13.8        | 520              | Total            |                      |                   |                                                                                                                        |

**Summary for Subcatchment 4.2:**

Runoff = 8.84 cfs @ 12.07 hrs, Volume= 0.613 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 112,529   | 98 | Impervious                    |
|   | 3,492     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,392     | 80 | >75% Grass cover, Good, HSG D |
|   | 3,417     | 30 | Brush, Good, HSG A            |
|   | 31,736    | 77 | Woods, Good, HSG D            |
|   | 154,566   | 90 | Weighted Average              |
|   | 42,037    |    | 27.20% Pervious Area          |
|   | 112,529   |    | 72.80% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.3:**

Runoff = 0.90 cfs @ 12.15 hrs, Volume= 0.076 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|  | Area (sf) | CN | Description           |
|--|-----------|----|-----------------------|
|  | 34,895    | 77 | Woods, Good, HSG D    |
|  | 34,895    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                         |
|-------------|------------------|------------------|----------------------|-------------------|---------------------------------------------------------------------|
| 10.0        | 80               | 0.0900           | 0.13                 |                   | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10" |

**Summary for Subcatchment 4.4:**

Runoff = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 24,940    | 98 | Impervious              |
|   | 24,940    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 54,474    | 98 | Impervious                    |
|   | 24,317    | 39 | >75% Grass cover, Good, HSG A |
| * | 2,000     | 39 |                               |
|   | 80,791    | 79 | Weighted Average              |
|   | 26,317    |    | 32.57% Pervious Area          |
|   | 54,474    |    | 67.43% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Reach R1:**

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth > 2.87" for 2-Yr Storm event  
Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af  
Outflow = 1.72 cfs @ 12.09 hrs, Volume= 0.137 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Max. Velocity= 2.90 fps, Min. Travel Time= 1.7 min  
Avg. Velocity= 0.83 fps, Avg. Travel Time= 6.0 min

Peak Storage= 178 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.24'  
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 111.27 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight  
Side Slope Z-value= 2.0 '/' Top Width= 10.00'  
Length= 300.0' Slope= 0.0167 '/'  
Inlet Invert= 108.00', Outlet Invert= 103.00'

**Summary for Pond C1: 15" CMP**

Inflow Area = 0.801 ac, 0.00% Impervious, Inflow Depth > 1.14" for 2-Yr Storm event  
Inflow = 0.90 cfs @ 12.15 hrs, Volume= 0.076 af  
Outflow = 0.85 cfs @ 12.19 hrs, Volume= 0.076 af, Atten= 6%, Lag= 2.4 min  
Primary = 0.85 cfs @ 12.19 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Pre-Development\_COM**

Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Site Design Associates

Printed 4/27/2022

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Peak Elev= 95.53' @ 12.19 hrs Surf.Area= 446 sf Storage= 79 cf

Plug-Flow detention time= 0.5 min calculated for 0.076 af (100% of inflow)

Center-of-Mass det. time= 0.5 min ( 857.0 - 856.5 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 95.00'               | 3,164 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 95.00               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |  |
| 96.00               | 1,595                | 626.0            | 532                                                        | 532                       | 31,186              |  |
| 97.00               | 3,831                | 882.0            | 2,633                                                      | 3,164                     | 61,916              |  |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                    |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 94.90' | <b>15.0" Round Culvert</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.23 sf |

**Primary OutFlow** Max=0.84 cfs @ 12.19 hrs HW=95.53' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.84 cfs @ 2.00 fps)**Summary for Pond C2: 8" HDPE**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 1.34" for 2-Yr Storm event  
 Inflow = 15.87 cfs @ 12.12 hrs, Volume= 0.859 af  
 Outflow = 15.87 cfs @ 12.12 hrs, Volume= 0.859 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.93 cfs @ 12.12 hrs, Volume= 0.616 af  
 Secondary = 13.94 cfs @ 12.12 hrs, Volume= 0.243 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 98.04' @ 12.12 hrs

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.60' | <b>8.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf                                                                    |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=1.93 cfs @ 12.12 hrs HW=98.04' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.93 cfs @ 5.52 fps)**Secondary OutFlow** Max=13.94 cfs @ 12.12 hrs HW=98.04' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 13.94 cfs @ 2.16 fps)



**Summary for Pond W1: Wetland**

Inflow Area = 4.132 ac, 50.27% Impervious, Inflow Depth > 0.91" for 2-Yr Storm event  
 Inflow = 2.63 cfs @ 12.13 hrs, Volume= 0.312 af  
 Outflow = 0.31 cfs @ 14.19 hrs, Volume= 0.246 af, Atten= 88%, Lag= 123.7 min  
 Primary = 0.31 cfs @ 14.19 hrs, Volume= 0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 100.41' @ 14.19 hrs Surf.Area= 8,342 sf Storage= 6,526 cf

Plug-Flow detention time= 279.0 min calculated for 0.245 af (79% of inflow)

Center-of-Mass det. time= 191.2 min ( 1,028.8 - 837.6 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|
| #1                  | 99.40'               | 31,698 cf        | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 99.40               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                                                        | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                                                      | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                                                      | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                                                     | 23,709                    | 41,022              |
| 102.50              | 17,962               | 697.0            | 7,988                                                      | 31,698                    | 41,371              |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                     |
|--------|----------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 99.40' | <b>6.0" Round Culvert</b><br>L= 40.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' /' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 0.20 sf  |
| #2     | Device 1 | 99.40' | <b>18.0" Round Culvert</b><br>L= 14.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' /' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=0.31 cfs @ 14.19 hrs HW=100.41' TW=97.24' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 0.31 cfs @ 1.56 fps)

↑2=Culvert (Passes 0.31 cfs of 2.15 cfs potential flow)

**Summary for Pond W2: Wetland**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 1.34" for 2-Yr Storm event  
 Inflow = 8.96 cfs @ 12.07 hrs, Volume= 0.859 af  
 Outflow = 15.87 cfs @ 12.12 hrs, Volume= 0.859 af, Atten= 0%, Lag= 2.8 min  
 Primary = 15.87 cfs @ 12.12 hrs, Volume= 0.859 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 98.01' @ 12.11 hrs Surf.Area= 2,664 sf Storage= 1,215 cf

Plug-Flow detention time= 1.6 min calculated for 0.859 af (100% of inflow)

Center-of-Mass det. time= 1.3 min ( 871.5 - 870.2 )

**Pre-Development\_COM**

Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Site Design Associates

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| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 97.00'               | 6,210 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 97.00               | 209                  | 106.0            | 0                                                          | 0                         | 209                 |  |
| 98.00               | 2,637                | 405.0            | 1,196                                                      | 1,196                     | 12,370              |  |
| 99.00               | 7,853                | 571.0            | 5,014                                                      | 6,210                     | 25,272              |  |

| Device | Routing | Invert | Outlet Devices                                 |      |      |      |
|--------|---------|--------|------------------------------------------------|------|------|------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> |      |      |      |
|        |         |        | Head (feet)                                    | 0.00 | 1.00 | 2.00 |
|        |         |        | Width (feet)                                   | 4.00 | 6.00 | 8.00 |

**Primary OutFlow** Max=0.00 cfs @ 12.12 hrs HW=98.01' TW=98.04' (Dynamic Tailwater)  
 ↳ 1=Custom Weir/Orifice ( Controls 0.00 cfs)

**Summary for Link AP1:**

Inflow Area = 1.676 ac, 67.16% Impervious, Inflow Depth > 1.26" for 2-Yr Storm event  
 Inflow = 2.52 cfs @ 12.08 hrs, Volume= 0.176 af  
 Primary = 2.52 cfs @ 12.08 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.658 ac, 92.59% Impervious, Inflow Depth > 2.45" for 2-Yr Storm event  
 Inflow = 1.87 cfs @ 12.07 hrs, Volume= 0.134 af  
 Primary = 1.87 cfs @ 12.07 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 1.004 ac, 61.78% Impervious, Inflow Depth > 1.53" for 2-Yr Storm event  
 Inflow = 1.86 cfs @ 12.08 hrs, Volume= 0.128 af  
 Primary = 1.86 cfs @ 12.08 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 8.481 ac, 54.95% Impervious, Inflow Depth > 1.32" for 2-Yr Storm event  
 Inflow = 16.60 cfs @ 12.12 hrs, Volume= 0.935 af  
 Primary = 16.60 cfs @ 12.12 hrs, Volume= 0.935 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP5:**

Inflow Area = 1.855 ac, 67.43% Impervious, Inflow Depth > 1.26" for 2-Yr Storm event  
Inflow = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af  
Primary = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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

|                                      |                                                                                                                                                |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth>4.36"<br>Tc=5.0 min CN=98 Runoff=1.72 cfs 0.135 af                                       |
| <b>Subcatchment 1.1:</b>             | Runoff Area=73,008 sf 67.16% Impervious Runoff Depth>2.46"<br>Tc=5.0 min CN=79 Runoff=5.00 cfs 0.343 af                                        |
| <b>Subcatchment 2:</b>               | Runoff Area=28,684 sf 92.59% Impervious Runoff Depth>3.91"<br>Tc=5.0 min CN=94 Runoff=2.92 cfs 0.215 af                                        |
| <b>Subcatchment 3:</b>               | Runoff Area=43,749 sf 61.78% Impervious Runoff Depth>2.81"<br>Tc=5.0 min CN=83 Runoff=3.42 cfs 0.235 af                                        |
| <b>Subcatchment 4.1:</b>             | Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>1.46"<br>Flow Length=520' Tc=13.8 min CN=66 Runoff=4.45 cfs 0.432 af                     |
| <b>Subcatchment 4.2:</b>             | Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>3.49"<br>Tc=5.0 min CN=90 Runoff=14.55 cfs 1.032 af                                      |
| <b>Subcatchment 4.3:</b>             | Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>2.29"<br>Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=1.87 cfs 0.153 af       |
| <b>Subcatchment 4.4:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>4.36"<br>Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 af                                       |
| <b>Subcatchment 5:</b>               | Runoff Area=80,791 sf 67.43% Impervious Runoff Depth>2.46"<br>Tc=5.0 min CN=79 Runoff=5.53 cfs 0.380 af                                        |
| <b>Reach R1:</b>                     | Avg. Flow Depth=0.30' Max Vel=3.31 fps Inflow=2.66 cfs 0.208 af<br>n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=2.59 cfs 0.208 af |
| <b>Pond C1: 15" CMP</b>              | Peak Elev=95.80' Storage=271 cf Inflow=1.87 cfs 0.153 af<br>15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=1.64 cfs 0.153 af         |
| <b>Pond C2: 8" HDPE</b>              | Peak Elev=98.08' Inflow=16.90 cfs 1.493 af<br>Primary=1.94 cfs 0.957 af Secondary=14.95 cfs 0.536 af Outflow=16.90 cfs 1.493 af                |
| <b>Pond W1: Wetland</b>              | Peak Elev=101.30' Storage=14,973 cf Inflow=6.09 cfs 0.640 af<br>Outflow=0.51 cfs 0.462 af                                                      |
| <b>Pond W2: Wetland</b>              | Peak Elev=98.21' Storage=1,832 cf Inflow=14.78 cfs 1.494 af<br>Outflow=16.90 cfs 1.493 af                                                      |
| <b>Link AP1:</b>                     | Inflow=5.00 cfs 0.343 af<br>Primary=5.00 cfs 0.343 af                                                                                          |
| <b>Link AP2:</b>                     | Inflow=2.92 cfs 0.215 af<br>Primary=2.92 cfs 0.215 af                                                                                          |
| <b>Link AP3:</b>                     | Inflow=3.42 cfs 0.235 af<br>Primary=3.42 cfs 0.235 af                                                                                          |

**Pre-Development\_COM***Type III 24-hr 10-Yr Storm Rainfall=4.60"*

Prepared by Site Design Associates

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**Link AP4:**Inflow=18.05 cfs 1.646 af  
Primary=18.05 cfs 1.646 af**Link AP5:**Inflow=5.53 cfs 0.380 af  
Primary=5.53 cfs 0.380 af**Total Runoff Area = 14.046 ac   Runoff Volume = 3.133 af   Average Runoff Depth = 2.68"**  
**38.50% Pervious = 5.408 ac   61.50% Impervious = 8.638 ac**



**Summary for Subcatchment 0.0: TO DRYWELLS**

Runoff = 1.72 cfs @ 12.07 hrs, Volume= 0.135 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 16,178  | 98 | Impervious              |
| 16,178    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 1.1:**

Runoff = 5.00 cfs @ 12.08 hrs, Volume= 0.343 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 49,030  | 98 | Impervious                    |
| 23,978    | 39 | >75% Grass cover, Good, HSG A |
| 73,008    | 79 | Weighted Average              |
| 23,978    |    | 32.84% Pervious Area          |
| 49,030    |    | 67.16% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 2:**

Runoff = 2.92 cfs @ 12.07 hrs, Volume= 0.215 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 26,559  | 98 | Impervious                    |
| 2,125     | 39 | >75% Grass cover, Good, HSG A |
| 28,684    | 94 | Weighted Average              |
| 2,125     |    | 7.41% Pervious Area           |
| 26,559    |    | 92.59% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 3:**

Runoff = 3.42 cfs @ 12.07 hrs, Volume= 0.235 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 27,030    | 98 | Impervious                    |
|   | 3,290     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,686     | 80 | >75% Grass cover, Good, HSG D |
|   | 2,065     | 30 | Brush, Good, HSG A            |
|   | 1,737     | 30 | Woods, Good, HSG A            |
|   | 5,941     | 77 | Woods, Good, HSG D            |
|   | 43,749    | 83 | Weighted Average              |
|   | 16,719    |    | 38.22% Pervious Area          |
|   | 27,030    |    | 61.78% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.1:**

Runoff = 4.45 cfs @ 12.20 hrs, Volume= 0.432 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 65,523    | 98 | Impervious                    |
|   | 30,118    | 39 | >75% Grass cover, Good, HSG A |
|   | 41,927    | 30 | Woods, Good, HSG A            |
|   | 17,462    | 77 | Woods, Good, HSG D            |
|   | 155,030   | 66 | Weighted Average              |
|   | 89,507    |    | 57.74% Pervious Area          |
|   | 65,523    |    | 42.26% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                                                                            |
|-------------|------------------|------------------|----------------------|-------------------|------------------------------------------------------------------------------------------------------------------------|
| 12.4        | 110              | 0.0140           | 0.15                 |                   | <b>Sheet Flow, AB</b><br>Grass: Short n= 0.150 P2= 3.10"                                                               |
| 0.9         | 110              | 0.1600           | 2.00                 |                   | <b>Shallow Concentrated Flow, BC</b><br>Woodland Kv= 5.0 fps                                                           |
| 0.5         | 300              | 0.0170           | 9.36                 | 112.37            | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 2.0 ' Top.W=10.00'<br>n= 0.022 Earth, clean & straight |
| 13.8        | 520              | Total            |                      |                   |                                                                                                                        |

**Summary for Subcatchment 4.2:**

Runoff = 14.55 cfs @ 12.07 hrs, Volume= 1.032 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 112,529   | 98 | Impervious                    |
|   | 3,492     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,392     | 80 | >75% Grass cover, Good, HSG D |
|   | 3,417     | 30 | Brush, Good, HSG A            |
|   | 31,736    | 77 | Woods, Good, HSG D            |
|   | 154,566   | 90 | Weighted Average              |
|   | 42,037    |    | 27.20% Pervious Area          |
|   | 112,529   |    | 72.80% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.3:**

Runoff = 1.87 cfs @ 12.14 hrs, Volume= 0.153 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|  | Area (sf) | CN | Description           |
|--|-----------|----|-----------------------|
|  | 34,895    | 77 | Woods, Good, HSG D    |
|  | 34,895    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                         |
|-------------|------------------|------------------|----------------------|-------------------|---------------------------------------------------------------------|
| 10.0        | 80               | 0.0900           | 0.13                 |                   | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10" |

**Summary for Subcatchment 4.4:**

Runoff = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 24,940    | 98 | Impervious              |
|   | 24,940    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 54,474    | 98 | Impervious                    |
|   | 24,317    | 39 | >75% Grass cover, Good, HSG A |
| * | 2,000     | 39 |                               |
|   | 80,791    | 79 | Weighted Average              |
|   | 26,317    |    | 32.57% Pervious Area          |
|   | 54,474    |    | 67.43% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Reach R1:**

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-Yr Storm event  
Inflow = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af  
Outflow = 2.59 cfs @ 12.09 hrs, Volume= 0.208 af, Atten= 2%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Max. Velocity= 3.31 fps, Min. Travel Time= 1.5 min  
Avg. Velocity= 0.94 fps, Avg. Travel Time= 5.3 min

Peak Storage= 235 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.30'  
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 111.27 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight  
Side Slope Z-value= 2.0 ' ' Top Width= 10.00'  
Length= 300.0' Slope= 0.0167 ' '  
Inlet Invert= 108.00', Outlet Invert= 103.00'

**Summary for Pond C1: 15" CMP**

Inflow Area = 0.801 ac, 0.00% Impervious, Inflow Depth > 2.29" for 10-Yr Storm event  
Inflow = 1.87 cfs @ 12.14 hrs, Volume= 0.153 af  
Outflow = 1.64 cfs @ 12.20 hrs, Volume= 0.153 af, Atten= 12%, Lag= 3.6 min  
Primary = 1.64 cfs @ 12.20 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Pre-Development\_COM**

Type III 24-hr 10-Yr Storm Rainfall=4.60"

Prepared by Site Design Associates

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Peak Elev= 95.80' @ 12.20 hrs Surf.Area= 1,017 sf Storage= 271 cf

Plug-Flow detention time= 1.0 min calculated for 0.153 af (100% of inflow)

Center-of-Mass det. time= 1.0 min ( 837.1 - 836.1 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 95.00'               | 3,164 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 95.00               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |  |
| 96.00               | 1,595                | 626.0            | 532                                                        | 532                       | 31,186              |  |
| 97.00               | 3,831                | 882.0            | 2,633                                                      | 3,164                     | 61,916              |  |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                    |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 94.90' | <b>15.0" Round Culvert</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.23 sf |

**Primary OutFlow** Max=1.64 cfs @ 12.20 hrs HW=95.80' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.64 cfs @ 2.44 fps)**Summary for Pond C2: 8" HDPE**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 2.33" for 10-Yr Storm event  
 Inflow = 16.90 cfs @ 12.08 hrs, Volume= 1.493 af  
 Outflow = 16.90 cfs @ 12.08 hrs, Volume= 1.493 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.94 cfs @ 12.08 hrs, Volume= 0.957 af  
 Secondary = 14.95 cfs @ 12.08 hrs, Volume= 0.536 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 98.08' @ 12.08 hrs

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.60' | <b>8.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf                                                                    |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=1.93 cfs @ 12.08 hrs HW=98.05' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.93 cfs @ 5.53 fps)**Secondary OutFlow** Max=14.29 cfs @ 12.08 hrs HW=98.06' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 14.29 cfs @ 2.18 fps)



**Summary for Pond W1: Wetland**

Inflow Area = 4.132 ac, 50.27% Impervious, Inflow Depth > 1.86" for 10-Yr Storm event  
 Inflow = 6.09 cfs @ 12.16 hrs, Volume= 0.640 af  
 Outflow = 0.51 cfs @ 14.88 hrs, Volume= 0.462 af, Atten= 92%, Lag= 163.3 min  
 Primary = 0.51 cfs @ 14.88 hrs, Volume= 0.462 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 101.30' @ 14.88 hrs Surf.Area= 10,991 sf Storage= 14,973 cf

Plug-Flow detention time= 316.1 min calculated for 0.462 af (72% of inflow)  
 Center-of-Mass det. time= 216.5 min ( 1,046.8 - 830.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 99.40' | 31,698 cf     | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 99.40               | 0                    | 0.0              | 0                         | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                       | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                     | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                     | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                    | 23,709                    | 41,022              |
| 102.50              | 17,962               | 697.0            | 7,988                     | 31,698                    | 41,371              |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                              |
|--------|----------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 99.40' | <b>6.0" Round Culvert</b><br>L= 40.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 0.20 sf  |
| #2     | Device 1 | 99.40' | <b>18.0" Round Culvert</b><br>L= 14.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=0.51 cfs @ 14.88 hrs HW=101.30' TW=97.30' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 0.51 cfs @ 2.58 fps)  
 ↑ **2=Culvert** (Passes 0.51 cfs of 5.85 cfs potential flow)

**Summary for Pond W2: Wetland**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 2.33" for 10-Yr Storm event  
 Inflow = 14.78 cfs @ 12.07 hrs, Volume= 1.494 af  
 Outflow = 16.90 cfs @ 12.08 hrs, Volume= 1.493 af, Atten= 0%, Lag= 0.6 min  
 Primary = 16.90 cfs @ 12.08 hrs, Volume= 1.493 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 98.21' @ 12.11 hrs Surf.Area= 3,493 sf Storage= 1,832 cf

Plug-Flow detention time= 1.7 min calculated for 1.493 af (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 872.4 - 871.0 )

**Pre-Development\_COM**

Type III 24-hr 10-Yr Storm Rainfall=4.60"

Prepared by Site Design Associates

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| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 97.00'               | 6,210 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 97.00               | 209                  | 106.0            | 0                                                          | 0                         | 209                 |  |
| 98.00               | 2,637                | 405.0            | 1,196                                                      | 1,196                     | 12,370              |  |
| 99.00               | 7,853                | 571.0            | 5,014                                                      | 6,210                     | 25,272              |  |

| Device | Routing | Invert | Outlet Devices                                 |      |      |      |
|--------|---------|--------|------------------------------------------------|------|------|------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> |      |      |      |
|        |         |        | Head (feet)                                    | 0.00 | 1.00 | 2.00 |
|        |         |        | Width (feet)                                   | 4.00 | 6.00 | 8.00 |

**Primary OutFlow** Max=10.66 cfs @ 12.08 hrs HW=98.19' TW=98.06' (Dynamic Tailwater)  
 ↳ **1=Custom Weir/Orifice** (Weir Controls 10.66 cfs @ 1.73 fps)

**Summary for Link AP1:**

Inflow Area = 1.676 ac, 67.16% Impervious, Inflow Depth > 2.46" for 10-Yr Storm event  
 Inflow = 5.00 cfs @ 12.08 hrs, Volume= 0.343 af  
 Primary = 5.00 cfs @ 12.08 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.658 ac, 92.59% Impervious, Inflow Depth > 3.91" for 10-Yr Storm event  
 Inflow = 2.92 cfs @ 12.07 hrs, Volume= 0.215 af  
 Primary = 2.92 cfs @ 12.07 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 1.004 ac, 61.78% Impervious, Inflow Depth > 2.81" for 10-Yr Storm event  
 Inflow = 3.42 cfs @ 12.07 hrs, Volume= 0.235 af  
 Primary = 3.42 cfs @ 12.07 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 8.481 ac, 54.95% Impervious, Inflow Depth > 2.33" for 10-Yr Storm event  
 Inflow = 18.05 cfs @ 12.08 hrs, Volume= 1.646 af  
 Primary = 18.05 cfs @ 12.08 hrs, Volume= 1.646 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP5:**

Inflow Area = 1.855 ac, 67.43% Impervious, Inflow Depth > 2.46" for 10-Yr Storm event  
Inflow = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af  
Primary = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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

|                                      |                                                                                                                                                |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth>5.56"<br>Tc=5.0 min CN=98 Runoff=2.18 cfs 0.172 af                                       |
| <b>Subcatchment 1.1:</b>             | Runoff Area=73,008 sf 67.16% Impervious Runoff Depth>3.50"<br>Tc=5.0 min CN=79 Runoff=7.10 cfs 0.489 af                                        |
| <b>Subcatchment 2:</b>               | Runoff Area=28,684 sf 92.59% Impervious Runoff Depth>5.10"<br>Tc=5.0 min CN=94 Runoff=3.74 cfs 0.280 af                                        |
| <b>Subcatchment 3:</b>               | Runoff Area=43,749 sf 61.78% Impervious Runoff Depth>3.90"<br>Tc=5.0 min CN=83 Runoff=4.70 cfs 0.327 af                                        |
| <b>Subcatchment 4.1:</b>             | Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>2.29"<br>Flow Length=520' Tc=13.8 min CN=66 Runoff=7.27 cfs 0.678 af                     |
| <b>Subcatchment 4.2:</b>             | Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>4.65"<br>Tc=5.0 min CN=90 Runoff=19.09 cfs 1.374 af                                      |
| <b>Subcatchment 4.3:</b>             | Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>3.30"<br>Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=2.71 cfs 0.220 af       |
| <b>Subcatchment 4.4:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>5.56"<br>Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 af                                       |
| <b>Subcatchment 5:</b>               | Runoff Area=80,791 sf 67.43% Impervious Runoff Depth>3.50"<br>Tc=5.0 min CN=79 Runoff=7.86 cfs 0.541 af                                        |
| <b>Reach R1:</b>                     | Avg. Flow Depth=0.34' Max Vel=3.56 fps Inflow=3.36 cfs 0.265 af<br>n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=3.29 cfs 0.265 af |
| <b>Pond C1: 15" CMP</b>              | Peak Elev=95.98' Storage=501 cf Inflow=2.71 cfs 0.220 af<br>15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=2.25 cfs 0.220 af         |
| <b>Pond C2: 8" HDPE</b>              | Peak Elev=98.16' Inflow=19.70 cfs 1.974 af<br>Primary=1.98 cfs 1.130 af Secondary=17.72 cfs 0.844 af Outflow=19.70 cfs 1.974 af                |
| <b>Pond W1: Wetland</b>              | Peak Elev=102.01' Storage=23,799 cf Inflow=9.33 cfs 0.943 af<br>Outflow=0.62 cfs 0.601 af                                                      |
| <b>Pond W2: Wetland</b>              | Peak Elev=98.37' Storage=2,472 cf Inflow=19.43 cfs 1.975 af<br>Outflow=19.70 cfs 1.974 af                                                      |
| <b>Link AP1:</b>                     | Inflow=7.10 cfs 0.489 af<br>Primary=7.10 cfs 0.489 af                                                                                          |
| <b>Link AP2:</b>                     | Inflow=3.74 cfs 0.280 af<br>Primary=3.74 cfs 0.280 af                                                                                          |
| <b>Link AP3:</b>                     | Inflow=4.70 cfs 0.327 af<br>Primary=4.70 cfs 0.327 af                                                                                          |

**Pre-Development\_COM***Type III 24-hr 25-Yr Storm Rainfall=5.80"*

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**Link AP4:**Inflow=21.45 cfs 2.195 af  
Primary=21.45 cfs 2.195 af**Link AP5:**Inflow=7.86 cfs 0.541 af  
Primary=7.86 cfs 0.541 af**Total Runoff Area = 14.046 ac   Runoff Volume = 4.345 af   Average Runoff Depth = 3.71"**  
**38.50% Pervious = 5.408 ac   61.50% Impervious = 8.638 ac**



**Summary for Subcatchment 0.0: TO DRYWELLS**

Runoff = 2.18 cfs @ 12.07 hrs, Volume= 0.172 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 16,178    | 98 | Impervious              |
|   | 16,178    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Subcatchment 1.1:**

Runoff = 7.10 cfs @ 12.07 hrs, Volume= 0.489 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 49,030    | 98 | Impervious                    |
|   | 23,978    | 39 | >75% Grass cover, Good, HSG A |
|   | 73,008    | 79 | Weighted Average              |
|   | 23,978    |    | 32.84% Pervious Area          |
|   | 49,030    |    | 67.16% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Subcatchment 2:**

Runoff = 3.74 cfs @ 12.07 hrs, Volume= 0.280 af, Depth> 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 26,559    | 98 | Impervious                    |
|   | 2,125     | 39 | >75% Grass cover, Good, HSG A |
|   | 28,684    | 94 | Weighted Average              |
|   | 2,125     |    | 7.41% Pervious Area           |
|   | 26,559    |    | 92.59% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Subcatchment 3:**

Runoff = 4.70 cfs @ 12.07 hrs, Volume= 0.327 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 27,030    | 98 | Impervious                    |
|   | 3,290     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,686     | 80 | >75% Grass cover, Good, HSG D |
|   | 2,065     | 30 | Brush, Good, HSG A            |
|   | 1,737     | 30 | Woods, Good, HSG A            |
|   | 5,941     | 77 | Woods, Good, HSG D            |
|   | 43,749    | 83 | Weighted Average              |
|   | 16,719    |    | 38.22% Pervious Area          |
|   | 27,030    |    | 61.78% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.1:**

Runoff = 7.27 cfs @ 12.20 hrs, Volume= 0.678 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 65,523    | 98 | Impervious                    |
|   | 30,118    | 39 | >75% Grass cover, Good, HSG A |
|   | 41,927    | 30 | Woods, Good, HSG A            |
|   | 17,462    | 77 | Woods, Good, HSG D            |
|   | 155,030   | 66 | Weighted Average              |
|   | 89,507    |    | 57.74% Pervious Area          |
|   | 65,523    |    | 42.26% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                                                                            |
|-------------|------------------|------------------|----------------------|-------------------|------------------------------------------------------------------------------------------------------------------------|
| 12.4        | 110              | 0.0140           | 0.15                 |                   | <b>Sheet Flow, AB</b><br>Grass: Short n= 0.150 P2= 3.10"                                                               |
| 0.9         | 110              | 0.1600           | 2.00                 |                   | <b>Shallow Concentrated Flow, BC</b><br>Woodland Kv= 5.0 fps                                                           |
| 0.5         | 300              | 0.0170           | 9.36                 | 112.37            | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 2.0 ' Top.W=10.00'<br>n= 0.022 Earth, clean & straight |
| 13.8        | 520              | Total            |                      |                   |                                                                                                                        |

**Summary for Subcatchment 4.2:**

Runoff = 19.09 cfs @ 12.07 hrs, Volume= 1.374 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 112,529   | 98 | Impervious                    |
|   | 3,492     | 39 | >75% Grass cover, Good, HSG A |
|   | 3,392     | 80 | >75% Grass cover, Good, HSG D |
|   | 3,417     | 30 | Brush, Good, HSG A            |
|   | 31,736    | 77 | Woods, Good, HSG D            |
|   | 154,566   | 90 | Weighted Average              |
|   | 42,037    |    | 27.20% Pervious Area          |
|   | 112,529   |    | 72.80% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.3:**

Runoff = 2.71 cfs @ 12.14 hrs, Volume= 0.220 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|  | Area (sf) | CN | Description           |
|--|-----------|----|-----------------------|
|  | 34,895    | 77 | Woods, Good, HSG D    |
|  | 34,895    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                         |
|-------------|------------------|------------------|----------------------|-------------------|---------------------------------------------------------------------|
| 10.0        | 80               | 0.0900           | 0.13                 |                   | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10" |

**Summary for Subcatchment 4.4:**

Runoff = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 24,940    | 98 | Impervious              |
|   | 24,940    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 54,474    | 98 | Impervious                    |
|   | 24,317    | 39 | >75% Grass cover, Good, HSG A |
| * | 2,000     | 39 |                               |
|   | 80,791    | 79 | Weighted Average              |
|   | 26,317    |    | 32.57% Pervious Area          |
|   | 54,474    |    | 67.43% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Reach R1:**

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth > 5.56" for 25-Yr Storm event  
Inflow = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af  
Outflow = 3.29 cfs @ 12.09 hrs, Volume= 0.265 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
Max. Velocity= 3.56 fps, Min. Travel Time= 1.4 min  
Avg. Velocity= 1.02 fps, Avg. Travel Time= 4.9 min

Peak Storage= 277 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 111.27 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight  
Side Slope Z-value= 2.0 ' ' Top Width= 10.00'  
Length= 300.0' Slope= 0.0167 ' '  
Inlet Invert= 108.00', Outlet Invert= 103.00'

**Summary for Pond C1: 15" CMP**

Inflow Area = 0.801 ac, 0.00% Impervious, Inflow Depth > 3.30" for 25-Yr Storm event  
Inflow = 2.71 cfs @ 12.14 hrs, Volume= 0.220 af  
Outflow = 2.25 cfs @ 12.21 hrs, Volume= 0.220 af, Atten= 17%, Lag= 4.4 min  
Primary = 2.25 cfs @ 12.21 hrs, Volume= 0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Peak Elev= 95.98' @ 12.21 hrs Surf.Area= 1,533 sf Storage= 501 cf

Plug-Flow detention time= 1.4 min calculated for 0.220 af (100% of inflow)

Center-of-Mass det. time= 1.4 min ( 827.0 - 825.6 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 95.00'               | 3,164 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 95.00               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |  |
| 96.00               | 1,595                | 626.0            | 532                                                        | 532                       | 31,186              |  |
| 97.00               | 3,831                | 882.0            | 2,633                                                      | 3,164                     | 61,916              |  |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                    |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 94.90' | <b>15.0" Round Culvert</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.25 cfs @ 12.21 hrs HW=95.98' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 2.25 cfs @ 2.67 fps)

**Summary for Pond C2: 8" HDPE**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 3.08" for 25-Yr Storm event  
 Inflow = 19.70 cfs @ 12.10 hrs, Volume= 1.974 af  
 Outflow = 19.70 cfs @ 12.10 hrs, Volume= 1.974 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.98 cfs @ 12.10 hrs, Volume= 1.130 af  
 Secondary = 17.72 cfs @ 12.10 hrs, Volume= 0.844 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 98.16' @ 12.10 hrs

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.60' | <b>8.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf                                                                    |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=1.98 cfs @ 12.10 hrs HW=98.15' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.98 cfs @ 5.66 fps)

**Secondary OutFlow** Max=17.45 cfs @ 12.10 hrs HW=98.15' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Weir Controls 17.45 cfs @ 2.33 fps)



**Summary for Pond W1: Wetland**

Inflow Area = 4.132 ac, 50.27% Impervious, Inflow Depth > 2.74" for 25-Yr Storm event  
 Inflow = 9.33 cfs @ 12.16 hrs, Volume= 0.943 af  
 Outflow = 0.62 cfs @ 15.38 hrs, Volume= 0.601 af, Atten= 93%, Lag= 192.9 min  
 Primary = 0.62 cfs @ 15.38 hrs, Volume= 0.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 102.01' @ 15.38 hrs Surf.Area= 14,118 sf Storage= 23,799 cf

Plug-Flow detention time= 338.3 min calculated for 0.600 af (64% of inflow)  
 Center-of-Mass det. time= 227.5 min ( 1,052.0 - 824.6 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|
| #1                  | 99.40'               | 31,698 cf        | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 99.40               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                                                        | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                                                      | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                                                      | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                                                     | 23,709                    | 41,022              |
| 102.50              | 17,962               | 697.0            | 7,988                                                      | 31,698                    | 41,371              |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                    |
|--------|----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 99.40' | <b>6.0" Round Culvert</b><br>L= 40.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 0.20 sf  |
| #2     | Device 1 | 99.40' | <b>18.0" Round Culvert</b><br>L= 14.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |

**Primary OutFlow** Max=0.62 cfs @ 15.38 hrs HW=102.01' TW=97.33' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 0.62 cfs @ 3.16 fps)  
 ↑ **2=Culvert** (Passes 0.62 cfs of 8.84 cfs potential flow)

**Summary for Pond W2: Wetland**

Inflow Area = 7.680 ac, 60.68% Impervious, Inflow Depth > 3.09" for 25-Yr Storm event  
 Inflow = 19.43 cfs @ 12.07 hrs, Volume= 1.975 af  
 Outflow = 19.70 cfs @ 12.10 hrs, Volume= 1.974 af, Atten= 0%, Lag= 1.8 min  
 Primary = 19.70 cfs @ 12.10 hrs, Volume= 1.974 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
 Peak Elev= 98.37' @ 12.11 hrs Surf.Area= 4,260 sf Storage= 2,472 cf

Plug-Flow detention time= 1.8 min calculated for 1.973 af (100% of inflow)  
 Center-of-Mass det. time= 1.6 min ( 867.4 - 865.8 )

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 97.00'               | 6,210 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 97.00               | 209                  | 106.0            | 0                                                          | 0                         | 209                 |  |
| 98.00               | 2,637                | 405.0            | 1,196                                                      | 1,196                     | 12,370              |  |
| 99.00               | 7,853                | 571.0            | 5,014                                                      | 6,210                     | 25,272              |  |

| Device | Routing | Invert | Outlet Devices                                 |      |      |      |
|--------|---------|--------|------------------------------------------------|------|------|------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> |      |      |      |
|        |         |        | Head (feet)                                    | 0.00 | 1.00 | 2.00 |
|        |         |        | Width (feet)                                   | 4.00 | 6.00 | 8.00 |

**Primary OutFlow** Max=15.86 cfs @ 12.10 hrs HW=98.37' TW=98.15' (Dynamic Tailwater)  
 ↳ **1=Custom Weir/Orifice** (Weir Controls 15.86 cfs @ 2.15 fps)

**Summary for Link AP1:**

Inflow Area = 1.676 ac, 67.16% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event  
 Inflow = 7.10 cfs @ 12.07 hrs, Volume= 0.489 af  
 Primary = 7.10 cfs @ 12.07 hrs, Volume= 0.489 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.658 ac, 92.59% Impervious, Inflow Depth > 5.10" for 25-Yr Storm event  
 Inflow = 3.74 cfs @ 12.07 hrs, Volume= 0.280 af  
 Primary = 3.74 cfs @ 12.07 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 1.004 ac, 61.78% Impervious, Inflow Depth > 3.90" for 25-Yr Storm event  
 Inflow = 4.70 cfs @ 12.07 hrs, Volume= 0.327 af  
 Primary = 4.70 cfs @ 12.07 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 8.481 ac, 54.95% Impervious, Inflow Depth > 3.11" for 25-Yr Storm event  
 Inflow = 21.45 cfs @ 12.10 hrs, Volume= 2.195 af  
 Primary = 21.45 cfs @ 12.10 hrs, Volume= 2.195 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP5:**

Inflow Area = 1.855 ac, 67.43% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event  
Inflow = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af  
Primary = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Appendix B:**  
**Post-Development HydroCAD Calculations**





Time span=0.00-50.00 hrs, dt=0.02 hrs, 2501 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                      |                                                                                                                          |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth=2.87"<br>Tc=5.0 min CN=98 Runoff=1.15 cfs 0.089 af                 |
| <b>Subcatchment 1.1:</b>             | Runoff Area=67,320 sf 61.89% Impervious Runoff Depth=1.08"<br>Tc=5.0 min CN=76 Runoff=1.95 cfs 0.139 af                  |
| <b>Subcatchment 2:</b>               | Runoff Area=3,142 sf 0.00% Impervious Runoff Depth=0.00"<br>Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af                    |
| <b>Subcatchment 3:</b>               | Runoff Area=12,320 sf 0.00% Impervious Runoff Depth=0.28"<br>Tc=5.0 min CN=57 Runoff=0.04 cfs 0.007 af                   |
| <b>Subcatchment 4.1:</b>             | Runoff Area=85,556 sf 22.76% Impervious Runoff Depth=0.25"<br>Flow Length=338' Tc=8.3 min CN=56 Runoff=0.20 cfs 0.041 af |
| <b>Subcatchment 4.10:</b>            | Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=2.87"<br>Tc=5.0 min CN=98 Runoff=2.77 cfs 0.213 af                 |
| <b>Subcatchment 4.11:</b>            | Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=1.46"<br>Tc=5.0 min CN=82 Runoff=0.63 cfs 0.043 af                  |
| <b>Subcatchment 4.12:</b>            | Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=2.76"<br>Tc=5.0 min CN=97 Runoff=2.12 cfs 0.159 af                  |
| <b>Subcatchment 4.13:</b>            | Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.03"<br>Tc=5.0 min CN=45 Runoff=0.00 cfs 0.000 af                   |
| <b>Subcatchment 4.2:</b>             | Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.17"<br>Tc=5.0 min CN=53 Runoff=0.08 cfs 0.021 af                  |
| <b>Subcatchment 4.3:</b>             | Runoff Area=49,308 sf 76.69% Impervious Runoff Depth=1.99"<br>Tc=5.0 min CN=89 Runoff=2.71 cfs 0.188 af                  |
| <b>Subcatchment 4.4:</b>             | Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=2.65"<br>Tc=5.0 min CN=96 Runoff=1.79 cfs 0.132 af                  |
| <b>Subcatchment 4.5:</b>             | Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=2.55"<br>Tc=5.0 min CN=95 Runoff=1.56 cfs 0.113 af                  |
| <b>Subcatchment 4.6:</b>             | Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=1.20"<br>Tc=5.0 min CN=78 Runoff=0.33 cfs 0.023 af                   |
| <b>Subcatchment 4.7:</b>             | Runoff Area=31,446 sf 5.78% Impervious Runoff Depth=1.26"<br>Tc=5.0 min CN=79 Runoff=1.09 cfs 0.076 af                   |
| <b>Subcatchment 4.8:</b>             | Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=1.14"<br>Tc=5.0 min CN=77 Runoff=0.80 cfs 0.056 af                   |
| <b>Subcatchment 4.9:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=2.87"<br>Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 af                 |

**Subcatchment 5:** Runoff Area=80,791 sf 68.61% Impervious Runoff Depth=1.26"  
Tc=5.0 min CN=79 Runoff=2.79 cfs 0.195 af

**Reach R1.1:** Avg. Flow Depth=0.22' Max Vel=2.93 fps Inflow=1.78 cfs 0.158 af  
n=0.030 L=300.0' S=0.0367 '/' Capacity=160.95 cfs Outflow=1.72 cfs 0.158 af

**Pond C1: Twin 18" HDPE** Peak Elev=96.15' Storage=791 cf Inflow=5.81 cfs 0.929 af  
Primary=5.08 cfs 0.929 af Secondary=0.00 cfs 0.000 af Outflow=5.08 cfs 0.929 af

**Pond C2: 15" HDPE** Peak Elev=95.88' Inflow=1.46 cfs 0.275 af  
Primary=1.46 cfs 0.275 af Secondary=0.00 cfs 0.000 af Outflow=1.46 cfs 0.275 af

**Pond C3: 18" HDPE** Peak Elev=102.28' Inflow=1.75 cfs 0.199 af  
18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=1.75 cfs 0.199 af

**Pond CB1: CB2.2** Peak Elev=102.37' Inflow=1.79 cfs 0.132 af  
15.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=1.79 cfs 0.132 af

**Pond CB2: CB2.3** Peak Elev=101.75' Inflow=3.34 cfs 0.245 af  
18.0" Round Culvert n=0.013 L=155.0' S=0.0050 '/' Outflow=3.34 cfs 0.245 af

**Pond CB3: CB2.5** Peak Elev=96.93' Inflow=2.18 cfs 0.448 af  
18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=2.18 cfs 0.448 af

**Pond CB4: CB3.3** Peak Elev=122.07' Inflow=1.78 cfs 0.158 af  
15.0" Round Culvert n=0.013 L=102.0' S=0.0200 '/' Outflow=1.78 cfs 0.158 af

**Pond CB5: CB3.4** Peak Elev=119.93' Inflow=1.78 cfs 0.158 af  
15.0" Round Culvert n=0.013 L=120.0' S=0.0607 '/' Outflow=1.78 cfs 0.158 af

**Pond CB6: CB1.10** Peak Elev=100.12' Inflow=2.71 cfs 0.188 af  
15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=2.71 cfs 0.188 af

**Pond D2: DMH-RD2** Peak Elev=107.85' Inflow=2.77 cfs 0.214 af  
15.0" Round Culvert n=0.013 L=280.0' S=0.0357 '/' Outflow=2.77 cfs 0.214 af

**Pond ED: EX DMH** Peak Elev=125.08' Inflow=1.78 cfs 0.137 af  
10.0" Round Culvert n=0.013 L=48.0' S=0.0260 '/' Outflow=1.78 cfs 0.137 af

**Pond SF1: Soil Filter 1** Peak Elev=99.48' Storage=5,852 cf Inflow=3.04 cfs 0.211 af  
Primary=0.08 cfs 0.211 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.211 af

**Pond SF2: Soil Filter 2** Peak Elev=100.64' Storage=5,706 cf Inflow=3.97 cfs 0.288 af  
Primary=1.16 cfs 0.288 af Secondary=0.00 cfs 0.000 af Outflow=1.16 cfs 0.288 af

**Pond W1: Wetland** Peak Elev=99.81' Storage=1,998 cf Inflow=1.75 cfs 0.199 af  
18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=0.69 cfs 0.199 af

**Pond W2: Wetland** Peak Elev=97.22' Storage=79 cf Inflow=1.48 cfs 0.275 af  
Outflow=1.46 cfs 0.275 af

**Link AP1:** Inflow=1.95 cfs 0.139 af  
Primary=1.95 cfs 0.139 af

**Link AP2:** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Post-Development\_COM***Type III 24-hr 2-Yr Storm Rainfall=3.10"*

Prepared by Site Design Associates

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**Link AP3:**Inflow=0.04 cfs 0.007 af  
Primary=0.04 cfs 0.007 af**Link AP4:**Inflow=6.53 cfs 1.203 af  
Primary=6.53 cfs 1.203 af**Link AP5:**Inflow=2.79 cfs 0.195 af  
Primary=2.79 cfs 0.195 af**Total Runoff Area = 14.046 ac   Runoff Volume = 1.633 af   Average Runoff Depth = 1.40"**  
**46.21% Pervious = 6.491 ac   53.79% Impervious = 7.555 ac**

### Summary for Subcatchment 0.0: TO DRYWELLS

Runoff = 1.15 cfs @ 12.07 hrs, Volume= 0.089 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 16,178  | 98 | Impervious              |
| 16,178    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

### Summary for Subcatchment 1.1:

Runoff = 1.95 cfs @ 12.08 hrs, Volume= 0.139 af, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 41,661  | 98 | Impervious                    |
| 25,659    | 39 | >75% Grass cover, Good, HSG A |
| 67,320    | 76 | Weighted Average              |
| 25,659    |    | 38.11% Pervious Area          |
| 41,661    |    | 61.89% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

### Summary for Subcatchment 2:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,142     | 39 | >75% Grass cover, Good, HSG A |
| 3,142     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 3:**

Runoff = 0.04 cfs @ 12.29 hrs, Volume= 0.007 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,259     | 39 | >75% Grass cover, Good, HSG A |
| 2,584     | 73 | Brush, Good, HSG D            |
| 1,591     | 30 | Woods, Good, HSG A            |
| 3,886     | 77 | Woods, Good, HSG D            |
| 12,320    | 57 | Weighted Average              |
| 12,320    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 5.0      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.1:**

Runoff = 0.20 cfs @ 12.36 hrs, Volume= 0.041 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 19,475  | 98 | Impervious                    |
| 20,340    | 39 | >75% Grass cover, Good, HSG A |
| 3,943     | 80 | >75% Grass cover, Good, HSG D |
| 11,472    | 77 | Woods, Good, HSG D            |
| 30,326    | 30 | Woods, Good, HSG A            |
| 85,556    | 56 | Weighted Average              |
| 66,081    |    | 77.24% Pervious Area          |
| 19,475    |    | 22.76% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                                                                             |
|----------|---------------|---------------|-------------------|----------------|-------------------------------------------------------------------------------------------------------------------------|
| 5.5      | 40            | 0.1000        | 0.12              |                | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 2.3      | 30            | 0.5000        | 0.22              |                | <b>Sheet Flow, BC</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 0.2      | 95            | 0.0260        | 8.47              | 135.53         | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 0.1      | 28            | 0.0180        | 7.98              | 14.09          | <b>Pipe Channel, DE</b><br>18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'<br>n= 0.013 Corrugated PE, smooth interior     |
| 0.2      | 145           | 0.0510        | 11.86             | 189.82         | <b>Trap/Vee/Rect Channel Flow, EF</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 8.3      | 338           | Total         |                   |                |                                                                                                                         |



**Summary for Subcatchment 4.10:**

Runoff = 2.77 cfs @ 12.07 hrs, Volume= 0.213 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 38,900  | 98 | Impervious              |
| 38,900    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.11:**

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 1,556   | 98 | Impervious                    |
| 14,005    | 80 | >75% Grass cover, Good, HSG D |
| 15,561    | 82 | Weighted Average              |
| 14,005    |    | 90.00% Pervious Area          |
| 1,556     |    | 10.00% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.12:**

Runoff = 2.12 cfs @ 12.07 hrs, Volume= 0.159 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 28,472  | 98 | Impervious                    |
| 1,723     | 80 | >75% Grass cover, Good, HSG D |
| 30,195    | 97 | Weighted Average              |
| 1,723     |    | 5.71% Pervious Area           |
| 28,472    |    | 94.29% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.13:**

Runoff = 0.00 cfs @ 15.60 hrs, Volume= 0.000 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 762     | 98 | Impervious                    |
| 6,276     | 39 | >75% Grass cover, Good, HSG A |
| 7,038     | 45 | Weighted Average              |
| 6,276     |    | 89.17% Pervious Area          |
| 762       |    | 10.83% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.2:**

Runoff = 0.08 cfs @ 12.39 hrs, Volume= 0.021 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 15,536  | 98 | Impervious                    |
| 48,474    | 39 | >75% Grass cover, Good, HSG A |
| 64,010    | 53 | Weighted Average              |
| 48,474    |    | 75.73% Pervious Area          |
| 15,536    |    | 24.27% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.3:**

Runoff = 2.71 cfs @ 12.07 hrs, Volume= 0.188 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 37,812  | 98 | Impervious                    |
| 5,466     | 39 | >75% Grass cover, Good, HSG A |
| 6,030     | 80 | >75% Grass cover, Good, HSG D |
| 49,308    | 89 | Weighted Average              |
| 11,496    |    | 23.31% Pervious Area          |
| 37,812    |    | 76.69% Impervious Area        |

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Type III 24-hr 2-Yr Storm Rainfall=3.10"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.4:**

Runoff = 1.79 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 24,710    | 98 | Impervious                    |
|   | 821       | 39 | >75% Grass cover, Good, HSG A |
|   | 498       | 80 | >75% Grass cover, Good, HSG D |
|   | 26,029    | 96 | Weighted Average              |
|   | 1,319     |    | 5.07% Pervious Area           |
|   | 24,710    |    | 94.93% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.5:**

Runoff = 1.56 cfs @ 12.07 hrs, Volume= 0.113 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 21,831    | 98 | Impervious                    |
|   | 1,322     | 39 | >75% Grass cover, Good, HSG A |
|   | 39        | 80 | >75% Grass cover, Good, HSG D |
|   | 23,192    | 95 | Weighted Average              |
|   | 1,361     |    | 5.87% Pervious Area           |
|   | 21,831    |    | 94.13% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.6:**

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|  | Area (sf) | CN | Description               |
|--|-----------|----|---------------------------|
|  | 10,062    | 78 | Meadow, non-grazed, HSG D |
|  | 10,062    |    | 100.00% Pervious Area     |

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Type III 24-hr 2-Yr Storm Rainfall=3.10"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.7:**

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.076 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 1,817     | 98 | Impervious                    |
|   | 4,925     | 80 | >75% Grass cover, Good, HSG D |
|   | 24,704    | 77 | Woods, Good, HSG D            |
|   | 31,446    | 79 | Weighted Average              |
|   | 29,629    |    | 94.22% Pervious Area          |
|   | 1,817     |    | 5.78% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.8:**

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|  | Area (sf) | CN | Description           |
|--|-----------|----|-----------------------|
|  | 25,845    | 77 | Woods, Good, HSG D    |
|  | 25,845    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.9:**

Runoff = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 24,940    | 98 | Impervious              |
|   | 24,940    |    | 100.00% Impervious Area |

**Post-Development\_COM**

Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Site Design Associates

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Yr Storm Rainfall=3.10"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 55,430    | 98 | Impervious                    |
|   | 25,361    | 39 | >75% Grass cover, Good, HSG A |
|   | 80,791    | 79 | Weighted Average              |
|   | 25,361    |    | 31.39% Pervious Area          |
|   | 55,430    |    | 68.61% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Reach R1.1:**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 0.93" for 2-Yr Storm event  
Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af  
Outflow = 1.72 cfs @ 12.09 hrs, Volume= 0.158 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
Max. Velocity= 2.93 fps, Min. Travel Time= 1.7 min  
Avg. Velocity = 0.92 fps, Avg. Travel Time= 5.4 min

Peak Storage= 176 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.95 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding  
Side Slope Z-value= 3.0 ' Top Width= 14.00'  
Length= 300.0' Slope= 0.0367 '  
Inlet Invert= 113.00', Outlet Invert= 102.00'

**Summary for Pond C1: Twin 18" HDPE**

Inflow Area = 5.191 ac, 68.12% Impervious, Inflow Depth = 2.15" for 2-Yr Storm event  
Inflow = 5.81 cfs @ 12.07 hrs, Volume= 0.929 af  
Outflow = 5.08 cfs @ 12.12 hrs, Volume= 0.929 af, Atten= 13%, Lag= 2.6 min  
Primary = 5.08 cfs @ 12.12 hrs, Volume= 0.929 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af



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Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Site Design Associates

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 96.15' @ 12.12 hrs Surf.Area= 1,869 sf Storage= 791 cf

Plug-Flow detention time= 1.6 min calculated for 0.928 af (100% of inflow)

Center-of-Mass det. time= 1.5 min ( 1,128.3 - 1,126.8 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 95.00'               | 6,851 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 95.00               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |  |
| 96.00               | 1,595                | 626.0            | 532                                                        | 532                       | 31,186              |  |
| 97.00               | 3,831                | 882.0            | 2,633                                                      | 3,164                     | 61,916              |  |
| 97.50               | 11,617               | 951.0            | 3,687                                                      | 6,851                     | 71,991              |  |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                             |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.10' | <b>18.0" Round Culvert X 2.00</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' / ' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2     | Secondary | 97.40' | <b>400.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63                        |

**Primary OutFlow** Max=5.06 cfs @ 12.12 hrs HW=96.15' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 5.06 cfs @ 2.70 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)**Summary for Pond C2: 15" HDPE**

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 0.70" for 2-Yr Storm event  
 Inflow = 1.46 cfs @ 12.11 hrs, Volume= 0.275 af  
 Outflow = 1.46 cfs @ 12.11 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.46 cfs @ 12.11 hrs, Volume= 0.275 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 95.88' @ 12.11 hrs

Flood Elev= 97.00'

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.20' | <b>15.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf                                                                 |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=1.45 cfs @ 12.11 hrs HW=95.88' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 1.45 cfs @ 3.11 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Summary for Pond C3: 18" HDPE

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event  
 Inflow = 1.75 cfs @ 12.09 hrs, Volume= 0.199 af  
 Outflow = 1.75 cfs @ 12.09 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.75 cfs @ 12.09 hrs, Volume= 0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.28' @ 12.09 hrs

Flood Elev= 104.50'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.60' | <b>18.0" Round Culvert</b><br>L= 28.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=1.74 cfs @ 12.09 hrs HW=102.28' TW=99.72' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.74 cfs @ 2.22 fps)

### Summary for Pond CB1: CB2.2

Inflow Area = 0.598 ac, 94.93% Impervious, Inflow Depth = 2.65" for 2-Yr Storm event  
 Inflow = 1.79 cfs @ 12.07 hrs, Volume= 0.132 af  
 Outflow = 1.79 cfs @ 12.07 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.79 cfs @ 12.07 hrs, Volume= 0.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.37' @ 12.07 hrs

Flood Elev= 105.30'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.57' | <b>15.0" Round Culvert</b><br>L= 110.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=1.77 cfs @ 12.07 hrs HW=102.36' TW=101.75' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 1.77 cfs @ 3.08 fps)

### Summary for Pond CB2: CB2.3

Inflow Area = 1.130 ac, 94.56% Impervious, Inflow Depth = 2.60" for 2-Yr Storm event  
 Inflow = 3.34 cfs @ 12.07 hrs, Volume= 0.245 af  
 Outflow = 3.34 cfs @ 12.07 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.34 cfs @ 12.07 hrs, Volume= 0.245 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 101.75' @ 12.07 hrs  
Flood Elev= 105.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 100.77' | <b>18.0" Round Culvert</b><br>L= 155.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=3.32 cfs @ 12.07 hrs HW=101.75' TW=100.17' (Dynamic Tailwater)  
**1=Culvert** (Barrel Controls 3.32 cfs @ 3.86 fps)

### Summary for Pond CB3: CB2.5

Inflow Area = 2.180 ac, 80.62% Impervious, Inflow Depth = 2.46" for 2-Yr Storm event  
Inflow = 2.18 cfs @ 12.07 hrs, Volume= 0.448 af  
Outflow = 2.18 cfs @ 12.07 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min  
Primary = 2.18 cfs @ 12.07 hrs, Volume= 0.448 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
Peak Elev= 96.93' @ 12.08 hrs  
Flood Elev= 103.10'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 96.13' | <b>18.0" Round Culvert</b><br>L= 145.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=2.17 cfs @ 12.07 hrs HW=96.92' TW=96.09' (Dynamic Tailwater)  
**1=Culvert** (Outlet Controls 2.17 cfs @ 3.33 fps)

### Summary for Pond CB4: CB3.3

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 0.93" for 2-Yr Storm event  
Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af  
Outflow = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
Peak Elev= 122.07' @ 12.07 hrs  
Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 121.42' | <b>15.0" Round Culvert</b><br>L= 102.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=1.76 cfs @ 12.07 hrs HW=122.07' TW=119.93' (Dynamic Tailwater)  
**1=Culvert** (Inlet Controls 1.76 cfs @ 2.74 fps)

**Summary for Pond CB5: CB3.4**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 0.93" for 2-Yr Storm event  
 Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af  
 Outflow = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.78 cfs @ 12.07 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 119.93' @ 12.07 hrs

Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 119.28' | <b>15.0" Round Culvert</b><br>L= 120.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=1.76 cfs @ 12.07 hrs HW=119.93' TW=113.22' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.76 cfs @ 2.74 fps)

**Summary for Pond CB6: CB1.10**

Inflow Area = 1.132 ac, 76.69% Impervious, Inflow Depth = 1.99" for 2-Yr Storm event  
 Inflow = 2.71 cfs @ 12.07 hrs, Volume= 0.188 af  
 Outflow = 2.71 cfs @ 12.07 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.71 cfs @ 12.07 hrs, Volume= 0.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.12' @ 12.07 hrs

Flood Elev= 103.60'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|---------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.11' | <b>15.0" Round Culvert</b><br>L= 21.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.70 cfs @ 12.07 hrs HW=100.12' TW=98.66' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 2.70 cfs @ 3.48 fps)

**Summary for Pond D2: DMH-RD2**

Inflow Area = 1.055 ac, 86.34% Impervious, Inflow Depth = 2.43" for 2-Yr Storm event  
 Inflow = 2.77 cfs @ 12.07 hrs, Volume= 0.214 af  
 Outflow = 2.77 cfs @ 12.07 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.77 cfs @ 12.07 hrs, Volume= 0.214 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 107.85' @ 12.07 hrs

Flood Elev= 113.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                  |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 107.00' | <b>15.0" Round Culvert</b><br>L= 280.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 107.00' / 97.00' S= 0.0357 ' ' Cc= 0.900 |

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.75 cfs @ 12.07 hrs HW=107.84' TW=96.09' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.75 cfs @ 3.13 fps)

### Summary for Pond ED: EX DMH

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Yr Storm event  
 Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af  
 Outflow = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.78 cfs @ 12.07 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 125.08' @ 12.07 hrs

Flood Elev= 128.40'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                 |
|--------|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 124.20' | <b>10.0" Round Culvert</b><br>L= 48.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Primary OutFlow** Max=1.76 cfs @ 12.07 hrs HW=125.07' TW=122.07' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.76 cfs @ 3.23 fps)

### Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.363 ac, 63.69% Impervious, Inflow Depth = 1.86" for 2-Yr Storm event  
 Inflow = 3.04 cfs @ 12.07 hrs, Volume= 0.211 af  
 Outflow = 0.08 cfs @ 16.70 hrs, Volume= 0.211 af, Atten= 97%, Lag= 277.7 min  
 Primary = 0.08 cfs @ 16.70 hrs, Volume= 0.211 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 99.48' @ 16.70 hrs Surf.Area= 4,818 sf Storage= 5,852 cf

Plug-Flow detention time= 746.4 min calculated for 0.211 af (100% of inflow)

Center-of-Mass det. time= 746.4 min ( 1,562.0 - 815.7 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 98.00' | 15,804 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 98.00               | 3,092                | 0                         | 0                         |
| 99.50               | 4,842                | 5,951                     | 5,951                     |
| 101.00              | 6,522                | 8,523                     | 14,474                    |
| 101.20              | 6,781                | 1,330                     | 15,804                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 95.50' | <b>12.0" Round Culvert</b><br>L= 35.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2     | Device 1 | 98.00' | <b>0.750 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                            |



|    |           |        |                                                                                                                                                                                    |
|----|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #3 | Device 1  | 99.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                    |
| #4 | Secondary | 99.90' | <b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=0.08 cfs @ 16.70 hrs HW=99.48' TW=95.37' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.08 cfs of 6.86 cfs potential flow)

↑ **2=Exfiltration** (Exfiltration Controls 0.08 cfs)

↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=95.00' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond SF2: Soil Filter 2

Inflow Area = 1.487 ac, 74.24% Impervious, Inflow Depth = 2.33" for 2-Yr Storm event  
 Inflow = 3.97 cfs @ 12.07 hrs, Volume= 0.288 af  
 Outflow = 1.16 cfs @ 12.39 hrs, Volume= 0.288 af, Atten= 71%, Lag= 19.3 min  
 Primary = 1.16 cfs @ 12.39 hrs, Volume= 0.288 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.64' @ 12.39 hrs Surf.Area= 4,133 sf Storage= 5,706 cf

Plug-Flow detention time= 549.4 min calculated for 0.288 af (100% of inflow)

Center-of-Mass det. time= 549.3 min ( 1,335.6 - 786.2 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 99.00'               | 16,412 cf                 | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 99.00               | 2,831                | 0                         | 0                                                          |
| 100.50              | 4,010                | 5,131                     | 5,131                                                      |
| 102.00              | 5,316                | 6,995                     | 12,125                                                     |
| 102.80              | 5,402                | 4,287                     | 16,412                                                     |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                               |
|--------|-----------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 96.50'  | <b>15.0" Round Culvert</b><br>L= 73.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2     | Device 1  | 99.00'  | <b>0.750 in/hr Exfiltration over Horizontal area</b> Phase-In= 0.01'                                                                                                                                         |
| #3     | Device 1  | 100.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                              |
| #4     | Secondary | 101.50' | <b>20.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                           |

**Primary OutFlow** Max=1.16 cfs @ 12.39 hrs HW=100.64' TW=96.81' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.16 cfs of 9.94 cfs potential flow)

↑ **2=Exfiltration** (Exfiltration Controls 0.07 cfs)

↑ **3=Orifice/Grate** (Weir Controls 1.09 cfs @ 1.23 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=99.00' TW=99.40' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond W1: Wetland

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event  
 Inflow = 1.75 cfs @ 12.09 hrs, Volume= 0.199 af  
 Outflow = 0.69 cfs @ 12.46 hrs, Volume= 0.199 af, Atten= 61%, Lag= 22.2 min  
 Primary = 0.69 cfs @ 12.46 hrs, Volume= 0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 99.81' @ 12.46 hrs Surf.Area= 6,509 sf Storage= 1,998 cf

Plug-Flow detention time= 62.3 min calculated for 0.199 af (100% of inflow)

Center-of-Mass det. time= 62.4 min ( 886.5 - 824.2 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|
| #1                  | 99.40'               | 23,709 cf        | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 99.40               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                                                        | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                                                      | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                                                      | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                                                     | 23,709                    | 41,022              |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.40' | <b>18.0" Round Culvert</b><br>L= 80.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=0.69 cfs @ 12.46 hrs HW=99.81' TW=97.18' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.69 cfs @ 1.73 fps)

### Summary for Pond W2: Wetland

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 0.70" for 2-Yr Storm event  
 Inflow = 1.48 cfs @ 12.09 hrs, Volume= 0.275 af  
 Outflow = 1.46 cfs @ 12.11 hrs, Volume= 0.275 af, Atten= 1%, Lag= 1.0 min  
 Primary = 1.46 cfs @ 12.11 hrs, Volume= 0.275 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.22' @ 12.11 hrs Surf.Area= 518 sf Storage= 79 cf

Plug-Flow detention time= 1.5 min calculated for 0.275 af (100% of inflow)

Center-of-Mass det. time= 1.2 min ( 876.8 - 875.5 )

**Post-Development\_COM**

Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Site Design Associates

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| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 97.00'               | 6,210 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 97.00               | 209                  | 106.0            | 0                                                          | 0                         | 209                 |  |
| 98.00               | 2,637                | 405.0            | 1,196                                                      | 1,196                     | 12,370              |  |
| 99.00               | 7,853                | 571.0            | 5,014                                                      | 6,210                     | 25,272              |  |

| Device | Routing | Invert | Outlet Devices                                 |      |      |      |
|--------|---------|--------|------------------------------------------------|------|------|------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> |      |      |      |
|        |         |        | Head (feet)                                    | 0.00 | 1.00 | 2.00 |
|        |         |        | Width (feet)                                   | 4.00 | 6.00 | 8.00 |

**Primary OutFlow** Max=1.45 cfs @ 12.11 hrs HW=97.22' TW=95.88' (Dynamic Tailwater)  
 ↳ **1=Custom Weir/Orifice** (Weir Controls 1.45 cfs @ 1.53 fps)

**Summary for Link AP1:**

Inflow Area = 1.545 ac, 61.89% Impervious, Inflow Depth = 1.08" for 2-Yr Storm event  
 Inflow = 1.95 cfs @ 12.08 hrs, Volume= 0.139 af  
 Primary = 1.95 cfs @ 12.08 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr Storm event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 0.283 ac, 0.00% Impervious, Inflow Depth = 0.28" for 2-Yr Storm event  
 Inflow = 0.04 cfs @ 12.29 hrs, Volume= 0.007 af  
 Primary = 0.04 cfs @ 12.29 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 9.919 ac, 49.95% Impervious, Inflow Depth = 1.46" for 2-Yr Storm event  
 Inflow = 6.53 cfs @ 12.11 hrs, Volume= 1.203 af  
 Primary = 6.53 cfs @ 12.11 hrs, Volume= 1.203 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP5:**

Inflow Area = 1.855 ac, 68.61% Impervious, Inflow Depth = 1.26" for 2-Yr Storm event  
Inflow = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af  
Primary = 2.79 cfs @ 12.08 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

Time span=0.00-50.00 hrs, dt=0.02 hrs, 2501 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                      |                                                                                                                          |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth=4.36"<br>Tc=5.0 min CN=98 Runoff=1.72 cfs 0.135 af                 |
| <b>Subcatchment 1.1:</b>             | Runoff Area=67,320 sf 61.89% Impervious Runoff Depth=2.21"<br>Tc=5.0 min CN=76 Runoff=4.13 cfs 0.285 af                  |
| <b>Subcatchment 2:</b>               | Runoff Area=3,142 sf 0.00% Impervious Runoff Depth=0.13"<br>Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af                    |
| <b>Subcatchment 3:</b>               | Runoff Area=12,320 sf 0.00% Impervious Runoff Depth=0.90"<br>Tc=5.0 min CN=57 Runoff=0.25 cfs 0.021 af                   |
| <b>Subcatchment 4.1:</b>             | Runoff Area=85,556 sf 22.76% Impervious Runoff Depth=0.84"<br>Flow Length=338' Tc=8.3 min CN=56 Runoff=1.37 cfs 0.138 af |
| <b>Subcatchment 4.10:</b>            | Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=4.36"<br>Tc=5.0 min CN=98 Runoff=4.14 cfs 0.325 af                 |
| <b>Subcatchment 4.11:</b>            | Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=2.72"<br>Tc=5.0 min CN=82 Runoff=1.18 cfs 0.081 af                  |
| <b>Subcatchment 4.12:</b>            | Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=4.25"<br>Tc=5.0 min CN=97 Runoff=3.19 cfs 0.245 af                  |
| <b>Subcatchment 4.13:</b>            | Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.32"<br>Tc=5.0 min CN=45 Runoff=0.02 cfs 0.004 af                   |
| <b>Subcatchment 4.2:</b>             | Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.68"<br>Tc=5.0 min CN=53 Runoff=0.81 cfs 0.084 af                  |
| <b>Subcatchment 4.3:</b>             | Runoff Area=49,308 sf 76.69% Impervious Runoff Depth=3.39"<br>Tc=5.0 min CN=89 Runoff=4.54 cfs 0.320 af                  |
| <b>Subcatchment 4.4:</b>             | Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=4.14"<br>Tc=5.0 min CN=96 Runoff=2.72 cfs 0.206 af                  |
| <b>Subcatchment 4.5:</b>             | Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=4.02"<br>Tc=5.0 min CN=95 Runoff=2.39 cfs 0.179 af                  |
| <b>Subcatchment 4.6:</b>             | Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=2.38"<br>Tc=5.0 min CN=78 Runoff=0.66 cfs 0.046 af                   |
| <b>Subcatchment 4.7:</b>             | Runoff Area=31,446 sf 5.78% Impervious Runoff Depth=2.46"<br>Tc=5.0 min CN=79 Runoff=2.15 cfs 0.148 af                   |
| <b>Subcatchment 4.8:</b>             | Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=2.29"<br>Tc=5.0 min CN=77 Runoff=1.65 cfs 0.113 af                   |
| <b>Subcatchment 4.9:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=4.36"<br>Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 af                 |



**Subcatchment 5:** Runoff Area=80,791 sf 68.61% Impervious Runoff Depth=2.46"  
Tc=5.0 min CN=79 Runoff=5.53 cfs 0.380 af

**Reach R1.1:** Avg. Flow Depth=0.32' Max Vel=3.59 fps Inflow=3.41 cfs 0.292 af  
n=0.030 L=300.0' S=0.0367 '/' Capacity=160.95 cfs Outflow=3.33 cfs 0.292 af

**Pond C1: Twin 18" HDPE** Peak Elev=96.77' Storage=2,363 cf Inflow=13.07 cfs 1.519 af  
Primary=10.63 cfs 1.519 af Secondary=0.00 cfs 0.000 af Outflow=10.63 cfs 1.519 af

**Pond C2: 15" HDPE** Peak Elev=96.27' Inflow=3.00 cfs 0.578 af  
Primary=3.00 cfs 0.578 af Secondary=0.00 cfs 0.000 af Outflow=3.00 cfs 0.578 af

**Pond C3: 18" HDPE** Peak Elev=102.82' Inflow=4.56 cfs 0.430 af  
18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=4.56 cfs 0.430 af

**Pond CB1: CB2.2** Peak Elev=102.65' Inflow=2.72 cfs 0.206 af  
15.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=2.72 cfs 0.206 af

**Pond CB2: CB2.3** Peak Elev=102.05' Inflow=5.12 cfs 0.384 af  
18.0" Round Culvert n=0.013 L=155.0' S=0.0050 '/' Outflow=5.12 cfs 0.384 af

**Pond CB3: CB2.5** Peak Elev=97.89' Inflow=7.53 cfs 0.711 af  
18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=7.53 cfs 0.711 af

**Pond CB4: CB3.3** Peak Elev=122.39' Inflow=3.41 cfs 0.292 af  
15.0" Round Culvert n=0.013 L=102.0' S=0.0200 '/' Outflow=3.41 cfs 0.292 af

**Pond CB5: CB3.4** Peak Elev=120.25' Inflow=3.41 cfs 0.292 af  
15.0" Round Culvert n=0.013 L=120.0' S=0.0607 '/' Outflow=3.41 cfs 0.292 af

**Pond CB6: CB1.10** Peak Elev=100.55' Inflow=4.54 cfs 0.320 af  
15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=4.54 cfs 0.320 af

**Pond D2: DMH-RD2** Peak Elev=108.11' Inflow=4.15 cfs 0.329 af  
15.0" Round Culvert n=0.013 L=280.0' S=0.0357 '/' Outflow=4.15 cfs 0.329 af

**Pond ED: EX DMH** Peak Elev=125.64' Inflow=2.66 cfs 0.208 af  
10.0" Round Culvert n=0.013 L=48.0' S=0.0260 '/' Outflow=2.66 cfs 0.208 af

**Pond SF1: Soil Filter 1** Peak Elev=99.68' Storage=6,864 cf Inflow=5.20 cfs 0.366 af  
Primary=1.72 cfs 0.366 af Secondary=0.00 cfs 0.000 af Outflow=1.72 cfs 0.366 af

**Pond SF2: Soil Filter 2** Peak Elev=100.88' Storage=6,709 cf Inflow=6.29 cfs 0.466 af  
Primary=4.85 cfs 0.466 af Secondary=0.00 cfs 0.000 af Outflow=4.85 cfs 0.466 af

**Pond W1: Wetland** Peak Elev=100.12' Storage=4,168 cf Inflow=4.56 cfs 0.430 af  
18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=1.90 cfs 0.430 af

**Pond W2: Wetland** Peak Elev=97.36' Storage=164 cf Inflow=3.04 cfs 0.578 af  
Outflow=3.00 cfs 0.578 af

**Link AP1:** Inflow=4.13 cfs 0.285 af  
Primary=4.13 cfs 0.285 af

**Link AP2:** Inflow=0.00 cfs 0.001 af  
Primary=0.00 cfs 0.001 af

**Post-Development\_COM***Type III 24-hr 10-Yr Storm Rainfall=4.60"*

Prepared by Site Design Associates

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**Link AP3:**

Inflow=0.25 cfs 0.021 af

Primary=0.25 cfs 0.021 af

**Link AP4:**

Inflow=13.53 cfs 2.097 af

Primary=13.53 cfs 2.097 af

**Link AP5:**

Inflow=5.53 cfs 0.380 af

Primary=5.53 cfs 0.380 af

**Total Runoff Area = 14.046 ac   Runoff Volume = 2.919 af   Average Runoff Depth = 2.49"**  
**46.21% Pervious = 6.491 ac   53.79% Impervious = 7.555 ac**

**Summary for Subcatchment 0.0: TO DRYWELLS**

Runoff = 1.72 cfs @ 12.07 hrs, Volume= 0.135 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 16,178  | 98 | Impervious              |
| 16,178    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 1.1:**

Runoff = 4.13 cfs @ 12.08 hrs, Volume= 0.285 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 41,661  | 98 | Impervious                    |
| 25,659    | 39 | >75% Grass cover, Good, HSG A |
| 67,320    | 76 | Weighted Average              |
| 25,659    |    | 38.11% Pervious Area          |
| 41,661    |    | 61.89% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 2:**

Runoff = 0.00 cfs @ 14.58 hrs, Volume= 0.001 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,142     | 39 | >75% Grass cover, Good, HSG A |
| 3,142     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 3:**

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,259     | 39 | >75% Grass cover, Good, HSG A |
| 2,584     | 73 | Brush, Good, HSG D            |
| 1,591     | 30 | Woods, Good, HSG A            |
| 3,886     | 77 | Woods, Good, HSG D            |
| 12,320    | 57 | Weighted Average              |
| 12,320    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 5.0      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.1:**

Runoff = 1.37 cfs @ 12.14 hrs, Volume= 0.138 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 19,475  | 98 | Impervious                    |
| 20,340    | 39 | >75% Grass cover, Good, HSG A |
| 3,943     | 80 | >75% Grass cover, Good, HSG D |
| 11,472    | 77 | Woods, Good, HSG D            |
| 30,326    | 30 | Woods, Good, HSG A            |
| 85,556    | 56 | Weighted Average              |
| 66,081    |    | 77.24% Pervious Area          |
| 19,475    |    | 22.76% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                                                                             |
|----------|---------------|---------------|-------------------|----------------|-------------------------------------------------------------------------------------------------------------------------|
| 5.5      | 40            | 0.1000        | 0.12              |                | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 2.3      | 30            | 0.5000        | 0.22              |                | <b>Sheet Flow, BC</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 0.2      | 95            | 0.0260        | 8.47              | 135.53         | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 0.1      | 28            | 0.0180        | 7.98              | 14.09          | <b>Pipe Channel, DE</b><br>18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'<br>n= 0.013 Corrugated PE, smooth interior     |
| 0.2      | 145           | 0.0510        | 11.86             | 189.82         | <b>Trap/Vee/Rect Channel Flow, EF</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 8.3      | 338           | Total         |                   |                |                                                                                                                         |

**Summary for Subcatchment 4.10:**

Runoff = 4.14 cfs @ 12.07 hrs, Volume= 0.325 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 38,900  | 98 | Impervious              |
| 38,900    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.11:**

Runoff = 1.18 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 1,556   | 98 | Impervious                    |
| 14,005    | 80 | >75% Grass cover, Good, HSG D |
| 15,561    | 82 | Weighted Average              |
| 14,005    |    | 90.00% Pervious Area          |
| 1,556     |    | 10.00% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.12:**

Runoff = 3.19 cfs @ 12.07 hrs, Volume= 0.245 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 28,472  | 98 | Impervious                    |
| 1,723     | 80 | >75% Grass cover, Good, HSG D |
| 30,195    | 97 | Weighted Average              |
| 1,723     |    | 5.71% Pervious Area           |
| 28,472    |    | 94.29% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.13:**

Runoff = 0.02 cfs @ 12.34 hrs, Volume= 0.004 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 762     | 98 | Impervious                    |
| 6,276     | 39 | >75% Grass cover, Good, HSG A |
| 7,038     | 45 | Weighted Average              |
| 6,276     |    | 89.17% Pervious Area          |
| 762       |    | 10.83% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.2:**

Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.084 af, Depth= 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 15,536  | 98 | Impervious                    |
| 48,474    | 39 | >75% Grass cover, Good, HSG A |
| 64,010    | 53 | Weighted Average              |
| 48,474    |    | 75.73% Pervious Area          |
| 15,536    |    | 24.27% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.3:**

Runoff = 4.54 cfs @ 12.07 hrs, Volume= 0.320 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 37,812  | 98 | Impervious                    |
| 5,466     | 39 | >75% Grass cover, Good, HSG A |
| 6,030     | 80 | >75% Grass cover, Good, HSG D |
| 49,308    | 89 | Weighted Average              |
| 11,496    |    | 23.31% Pervious Area          |
| 37,812    |    | 76.69% Impervious Area        |



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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.4:**

Runoff = 2.72 cfs @ 12.07 hrs, Volume= 0.206 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 24,710    | 98 | Impervious                    |
|   | 821       | 39 | >75% Grass cover, Good, HSG A |
|   | 498       | 80 | >75% Grass cover, Good, HSG D |
|   | 26,029    | 96 | Weighted Average              |
|   | 1,319     |    | 5.07% Pervious Area           |
|   | 24,710    |    | 94.93% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.5:**

Runoff = 2.39 cfs @ 12.07 hrs, Volume= 0.179 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 21,831    | 98 | Impervious                    |
|   | 1,322     | 39 | >75% Grass cover, Good, HSG A |
|   | 39        | 80 | >75% Grass cover, Good, HSG D |
|   | 23,192    | 95 | Weighted Average              |
|   | 1,361     |    | 5.87% Pervious Area           |
|   | 21,831    |    | 94.13% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.6:**

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 0.046 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|  | Area (sf) | CN | Description               |
|--|-----------|----|---------------------------|
|  | 10,062    | 78 | Meadow, non-grazed, HSG D |
|  | 10,062    |    | 100.00% Pervious Area     |

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.7:**

Runoff = 2.15 cfs @ 12.08 hrs, Volume= 0.148 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 1,817   | 98 | Impervious                    |
| 4,925     | 80 | >75% Grass cover, Good, HSG D |
| 24,704    | 77 | Woods, Good, HSG D            |
| 31,446    | 79 | Weighted Average              |
| 29,629    |    | 94.22% Pervious Area          |
| 1,817     |    | 5.78% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.8:**

Runoff = 1.65 cfs @ 12.08 hrs, Volume= 0.113 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description           |
|-----------|----|-----------------------|
| 25,845    | 77 | Woods, Good, HSG D    |
| 25,845    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.9:**

Runoff = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 24,940  | 98 | Impervious              |
| 24,940    |    | 100.00% Impervious Area |

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Yr Storm Rainfall=4.60"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 55,430    | 98 | Impervious                    |
|   | 25,361    | 39 | >75% Grass cover, Good, HSG A |
|   | 80,791    | 79 | Weighted Average              |
|   | 25,361    |    | 31.39% Pervious Area          |
|   | 55,430    |    | 68.61% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Reach R1.1:**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 1.72" for 10-Yr Storm event

Inflow = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af

Outflow = 3.33 cfs @ 12.10 hrs, Volume= 0.292 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 3.59 fps, Min. Travel Time= 1.4 min

Avg. Velocity = 1.10 fps, Avg. Travel Time= 4.6 min

Peak Storage= 279 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.32'

Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.95 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 3.0 ' Top Width= 14.00'

Length= 300.0' Slope= 0.0367 ' /'

Inlet Invert= 113.00', Outlet Invert= 102.00'

**Summary for Pond C1: Twin 18" HDPE**

Inflow Area = 5.191 ac, 68.12% Impervious, Inflow Depth = 3.51" for 10-Yr Storm event

Inflow = 13.07 cfs @ 12.09 hrs, Volume= 1.519 af

Outflow = 10.63 cfs @ 12.16 hrs, Volume= 1.519 af, Atten= 19%, Lag= 4.2 min

Primary = 10.63 cfs @ 12.16 hrs, Volume= 1.519 af

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 96.77' @ 12.16 hrs Surf.Area= 3,239 sf Storage= 2,363 cf

Plug-Flow detention time= 2.0 min calculated for 1.519 af (100% of inflow)

Center-of-Mass det. time= 2.0 min ( 1,017.2 - 1,015.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 95.00' | 6,851 cf      | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 95.00               | 0                    | 0.0              | 0                         | 0                         | 0                   |
| 96.00               | 1,595                | 626.0            | 532                       | 532                       | 31,186              |
| 97.00               | 3,831                | 882.0            | 2,633                     | 3,164                     | 61,916              |
| 97.50               | 11,617               | 951.0            | 3,687                     | 6,851                     | 71,991              |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                             |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.10' | <b>18.0" Round Culvert X 2.00</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' / ' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2     | Secondary | 97.40' | <b>400.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63                        |

**Primary OutFlow** Max=10.63 cfs @ 12.16 hrs HW=96.77' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Barrel Controls 10.63 cfs @ 3.37 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)**Summary for Pond C2: 15" HDPE**

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event  
 Inflow = 3.00 cfs @ 12.12 hrs, Volume= 0.578 af  
 Outflow = 3.00 cfs @ 12.12 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.00 cfs @ 12.12 hrs, Volume= 0.578 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 96.27' @ 12.12 hrs

Flood Elev= 97.00'

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.20' | <b>15.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf                                                                 |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=3.00 cfs @ 12.12 hrs HW=96.26' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 3.00 cfs @ 3.62 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Summary for Pond C3: 18" HDPE

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 1.29" for 10-Yr Storm event  
 Inflow = 4.56 cfs @ 12.11 hrs, Volume= 0.430 af  
 Outflow = 4.56 cfs @ 12.11 hrs, Volume= 0.430 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.56 cfs @ 12.11 hrs, Volume= 0.430 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.82' @ 12.11 hrs

Flood Elev= 104.50'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.60' | <b>18.0" Round Culvert</b><br>L= 28.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=4.53 cfs @ 12.11 hrs HW=102.81' TW=99.92' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 4.53 cfs @ 2.96 fps)

### Summary for Pond CB1: CB2.2

Inflow Area = 0.598 ac, 94.93% Impervious, Inflow Depth = 4.14" for 10-Yr Storm event  
 Inflow = 2.72 cfs @ 12.07 hrs, Volume= 0.206 af  
 Outflow = 2.72 cfs @ 12.07 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.72 cfs @ 12.07 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.65' @ 12.07 hrs

Flood Elev= 105.30'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.57' | <b>15.0" Round Culvert</b><br>L= 110.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.70 cfs @ 12.07 hrs HW=102.64' TW=102.05' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 2.70 cfs @ 3.24 fps)

### Summary for Pond CB2: CB2.3

Inflow Area = 1.130 ac, 94.56% Impervious, Inflow Depth = 4.08" for 10-Yr Storm event  
 Inflow = 5.12 cfs @ 12.07 hrs, Volume= 0.384 af  
 Outflow = 5.12 cfs @ 12.07 hrs, Volume= 0.384 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.12 cfs @ 12.07 hrs, Volume= 0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 102.05' @ 12.07 hrs

Flood Elev= 105.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 100.77' | <b>18.0" Round Culvert</b><br>L= 155.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=5.08 cfs @ 12.07 hrs HW=102.05' TW=100.81' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.08 cfs @ 4.26 fps)**Summary for Pond CB3: CB2.5**

Inflow Area = 2.180 ac, 80.62% Impervious, Inflow Depth = 3.91" for 10-Yr Storm event  
Inflow = 7.53 cfs @ 12.11 hrs, Volume= 0.711 af  
Outflow = 7.53 cfs @ 12.11 hrs, Volume= 0.711 af, Atten= 0%, Lag= 0.0 min  
Primary = 7.53 cfs @ 12.11 hrs, Volume= 0.711 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.89' @ 12.11 hrs

Flood Elev= 103.10'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 96.13' | <b>18.0" Round Culvert</b><br>L= 145.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=7.49 cfs @ 12.11 hrs HW=97.88' TW=96.69' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 7.49 cfs @ 4.57 fps)**Summary for Pond CB4: CB3.3**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 1.72" for 10-Yr Storm event  
Inflow = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af  
Outflow = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min  
Primary = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 122.39' @ 12.08 hrs

Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 121.42' | <b>15.0" Round Culvert</b><br>L= 102.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=3.40 cfs @ 12.08 hrs HW=122.39' TW=120.25' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.40 cfs @ 3.35 fps)



**Summary for Pond CB5: CB3.4**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 1.72" for 10-Yr Storm event  
 Inflow = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af  
 Outflow = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.41 cfs @ 12.08 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 120.25' @ 12.08 hrs  
 Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 119.28' | <b>15.0" Round Culvert</b><br>L= 120.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=3.40 cfs @ 12.08 hrs HW=120.25' TW=113.31' (Dynamic Tailwater)  
 ↑**1=Culvert** (Inlet Controls 3.40 cfs @ 3.35 fps)

**Summary for Pond CB6: CB1.10**

Inflow Area = 1.132 ac, 76.69% Impervious, Inflow Depth = 3.39" for 10-Yr Storm event  
 Inflow = 4.54 cfs @ 12.07 hrs, Volume= 0.320 af  
 Outflow = 4.54 cfs @ 12.07 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.54 cfs @ 12.07 hrs, Volume= 0.320 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 100.55' @ 12.07 hrs  
 Flood Elev= 103.60'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|---------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.11' | <b>15.0" Round Culvert</b><br>L= 21.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=4.50 cfs @ 12.07 hrs HW=100.54' TW=99.25' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 4.50 cfs @ 4.01 fps)

**Summary for Pond D2: DMH-RD2**

Inflow Area = 1.055 ac, 86.34% Impervious, Inflow Depth = 3.74" for 10-Yr Storm event  
 Inflow = 4.15 cfs @ 12.07 hrs, Volume= 0.329 af  
 Outflow = 4.15 cfs @ 12.07 hrs, Volume= 0.329 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.15 cfs @ 12.07 hrs, Volume= 0.329 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 108.11' @ 12.07 hrs  
 Flood Elev= 113.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                  |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 107.00' | <b>15.0" Round Culvert</b><br>L= 280.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 107.00' / 97.00' S= 0.0357 ' ' Cc= 0.900 |

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.11 cfs @ 12.07 hrs HW=108.11' TW=96.52' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 4.11 cfs @ 3.58 fps)

### Summary for Pond ED: EX DMH

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Yr Storm event  
 Inflow = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af  
 Outflow = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.66 cfs @ 12.07 hrs, Volume= 0.208 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 125.64' @ 12.07 hrs

Flood Elev= 128.40'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                 |
|--------|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 124.20' | <b>10.0" Round Culvert</b><br>L= 48.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Primary OutFlow** Max=2.64 cfs @ 12.07 hrs HW=125.62' TW=122.38' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.64 cfs @ 4.83 fps)

### Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.363 ac, 63.69% Impervious, Inflow Depth = 3.22" for 10-Yr Storm event  
 Inflow = 5.20 cfs @ 12.07 hrs, Volume= 0.366 af  
 Outflow = 1.72 cfs @ 12.36 hrs, Volume= 0.366 af, Atten= 67%, Lag= 17.2 min  
 Primary = 1.72 cfs @ 12.36 hrs, Volume= 0.366 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 99.68' @ 12.36 hrs Surf.Area= 5,049 sf Storage= 6,864 cf

Plug-Flow detention time= 510.4 min calculated for 0.366 af (100% of inflow)

Center-of-Mass det. time= 510.3 min ( 1,310.9 - 800.6 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 98.00' | 15,804 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 98.00               | 3,092                | 0                         | 0                         |
| 99.50               | 4,842                | 5,951                     | 5,951                     |
| 101.00              | 6,522                | 8,523                     | 14,474                    |
| 101.20              | 6,781                | 1,330                     | 15,804                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 95.50' | <b>12.0" Round Culvert</b><br>L= 35.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2     | Device 1 | 98.00' | <b>0.750 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                            |

|    |           |        |                                                                                                                                                                                    |
|----|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #3 | Device 1  | 99.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                    |
| #4 | Secondary | 99.90' | <b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=1.72 cfs @ 12.36 hrs HW=99.68' TW=96.51' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 1.72 cfs of 6.74 cfs potential flow)
- ↑ **2=Exfiltration** (Exfiltration Controls 0.09 cfs)
- ↑ **3=Orifice/Grate** (Weir Controls 1.63 cfs @ 1.41 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=95.00' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond SF2: Soil Filter 2

Inflow Area = 1.487 ac, 74.24% Impervious, Inflow Depth = 3.76" for 10-Yr Storm event  
 Inflow = 6.29 cfs @ 12.07 hrs, Volume= 0.466 af  
 Outflow = 4.85 cfs @ 12.13 hrs, Volume= 0.466 af, Atten= 23%, Lag= 3.7 min  
 Primary = 4.85 cfs @ 12.13 hrs, Volume= 0.466 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.88' @ 12.13 hrs Surf.Area= 4,339 sf Storage= 6,709 cf

Plug-Flow detention time= 375.0 min calculated for 0.466 af (100% of inflow)

Center-of-Mass det. time= 375.0 min ( 1,150.5 - 775.4 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 99.00'               | 16,412 cf                 | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 99.00               | 2,831                | 0                         | 0                                                          |
| 100.50              | 4,010                | 5,131                     | 5,131                                                      |
| 102.00              | 5,316                | 6,995                     | 12,125                                                     |
| 102.80              | 5,402                | 4,287                     | 16,412                                                     |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                |
|--------|-----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 96.50'  | <b>15.0" Round Culvert</b><br>L= 73.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' /' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2     | Device 1  | 99.00'  | <b>0.750 in/hr Exfiltration over Horizontal area</b> Phase-In= 0.01'                                                                                                                                          |
| #3     | Device 1  | 100.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                               |
| #4     | Secondary | 101.50' | <b>20.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                            |

**Primary OutFlow** Max=4.83 cfs @ 12.13 hrs HW=100.88' TW=97.86' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 4.83 cfs of 9.56 cfs potential flow)

↑ **2=Exfiltration** (Exfiltration Controls 0.08 cfs)

↑ **3=Orifice/Grate** (Weir Controls 4.76 cfs @ 2.01 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=99.00' TW=99.40' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond W1: Wetland

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 1.29" for 10-Yr Storm event  
 Inflow = 4.56 cfs @ 12.11 hrs, Volume= 0.430 af  
 Outflow = 1.90 cfs @ 12.43 hrs, Volume= 0.430 af, Atten= 58%, Lag= 19.5 min  
 Primary = 1.90 cfs @ 12.43 hrs, Volume= 0.430 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.12' @ 12.43 hrs Surf.Area= 7,664 sf Storage= 4,168 cf

Plug-Flow detention time= 53.5 min calculated for 0.430 af (100% of inflow)

Center-of-Mass det. time= 53.6 min ( 883.9 - 830.3 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|
| #1                  | 99.40'               | 23,709 cf        | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 99.40               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                                                        | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                                                      | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                                                      | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                                                     | 23,709                    | 41,022              |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.40' | <b>18.0" Round Culvert</b><br>L= 80.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=1.90 cfs @ 12.43 hrs HW=100.12' TW=97.32' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 1.90 cfs @ 2.28 fps)

### Summary for Pond W2: Wetland

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event  
 Inflow = 3.04 cfs @ 12.10 hrs, Volume= 0.578 af  
 Outflow = 3.00 cfs @ 12.12 hrs, Volume= 0.578 af, Atten= 1%, Lag= 1.1 min  
 Primary = 3.00 cfs @ 12.12 hrs, Volume= 0.578 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.36' @ 12.12 hrs Surf.Area= 765 sf Storage= 164 cf

Plug-Flow detention time= 1.3 min calculated for 0.578 af (100% of inflow)

Center-of-Mass det. time= 1.1 min ( 870.5 - 869.4 )

**Post-Development\_COM**

Type III 24-hr 10-Yr Storm Rainfall=4.60"

Prepared by Site Design Associates

Printed 4/27/2022

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| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 97.00'               | 6,210 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 97.00               | 209                  | 106.0            | 0                                                          | 0                         | 209                 |  |
| 98.00               | 2,637                | 405.0            | 1,196                                                      | 1,196                     | 12,370              |  |
| 99.00               | 7,853                | 571.0            | 5,014                                                      | 6,210                     | 25,272              |  |

| Device | Routing | Invert | Outlet Devices                                 |      |      |      |
|--------|---------|--------|------------------------------------------------|------|------|------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> |      |      |      |
|        |         |        | Head (feet)                                    | 0.00 | 1.00 | 2.00 |
|        |         |        | Width (feet)                                   | 4.00 | 6.00 | 8.00 |

**Primary OutFlow** Max=3.00 cfs @ 12.12 hrs HW=97.36' TW=96.26' (Dynamic Tailwater)  
 ↳ **1=Custom Weir/Orifice** (Weir Controls 3.00 cfs @ 1.93 fps)

**Summary for Link AP1:**

Inflow Area = 1.545 ac, 61.89% Impervious, Inflow Depth = 2.21" for 10-Yr Storm event  
 Inflow = 4.13 cfs @ 12.08 hrs, Volume= 0.285 af  
 Primary = 4.13 cfs @ 12.08 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-Yr Storm event  
 Inflow = 0.00 cfs @ 14.58 hrs, Volume= 0.001 af  
 Primary = 0.00 cfs @ 14.58 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 0.283 ac, 0.00% Impervious, Inflow Depth = 0.90" for 10-Yr Storm event  
 Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af  
 Primary = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 9.919 ac, 49.95% Impervious, Inflow Depth = 2.54" for 10-Yr Storm event  
 Inflow = 13.53 cfs @ 12.15 hrs, Volume= 2.097 af  
 Primary = 13.53 cfs @ 12.15 hrs, Volume= 2.097 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP5:**

Inflow Area = 1.855 ac, 68.61% Impervious, Inflow Depth = 2.46" for 10-Yr Storm event  
Inflow = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af  
Primary = 5.53 cfs @ 12.08 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs



Time span=0.00-50.00 hrs, dt=0.02 hrs, 2501 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                      |                                                                                                                          |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment 0.0: TO DRYWELLS</b> | Runoff Area=16,178 sf 100.00% Impervious Runoff Depth=5.56"<br>Tc=5.0 min CN=98 Runoff=2.18 cfs 0.172 af                 |
| <b>Subcatchment 1.1:</b>             | Runoff Area=67,320 sf 61.89% Impervious Runoff Depth=3.21"<br>Tc=5.0 min CN=76 Runoff=6.01 cfs 0.413 af                  |
| <b>Subcatchment 2:</b>               | Runoff Area=3,142 sf 0.00% Impervious Runoff Depth=0.39"<br>Tc=5.0 min CN=39 Runoff=0.01 cfs 0.002 af                    |
| <b>Subcatchment 3:</b>               | Runoff Area=12,320 sf 0.00% Impervious Runoff Depth=1.56"<br>Tc=5.0 min CN=57 Runoff=0.48 cfs 0.037 af                   |
| <b>Subcatchment 4.1:</b>             | Runoff Area=85,556 sf 22.76% Impervious Runoff Depth=1.48"<br>Flow Length=338' Tc=8.3 min CN=56 Runoff=2.78 cfs 0.242 af |
| <b>Subcatchment 4.10:</b>            | Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=5.56"<br>Tc=5.0 min CN=98 Runoff=5.24 cfs 0.414 af                 |
| <b>Subcatchment 4.11:</b>            | Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=3.80"<br>Tc=5.0 min CN=82 Runoff=1.63 cfs 0.113 af                  |
| <b>Subcatchment 4.12:</b>            | Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=5.44"<br>Tc=5.0 min CN=97 Runoff=4.04 cfs 0.315 af                  |
| <b>Subcatchment 4.13:</b>            | Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.72"<br>Tc=5.0 min CN=45 Runoff=0.08 cfs 0.010 af                   |
| <b>Subcatchment 4.2:</b>             | Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=1.26"<br>Tc=5.0 min CN=53 Runoff=1.88 cfs 0.154 af                  |
| <b>Subcatchment 4.3:</b>             | Runoff Area=49,308 sf 76.69% Impervious Runoff Depth=4.54"<br>Tc=5.0 min CN=89 Runoff=5.99 cfs 0.428 af                  |
| <b>Subcatchment 4.4:</b>             | Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=5.33"<br>Tc=5.0 min CN=96 Runoff=3.46 cfs 0.265 af                  |
| <b>Subcatchment 4.5:</b>             | Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=5.21"<br>Tc=5.0 min CN=95 Runoff=3.06 cfs 0.231 af                  |
| <b>Subcatchment 4.6:</b>             | Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=3.40"<br>Tc=5.0 min CN=78 Runoff=0.95 cfs 0.066 af                   |
| <b>Subcatchment 4.7:</b>             | Runoff Area=31,446 sf 5.78% Impervious Runoff Depth=3.50"<br>Tc=5.0 min CN=79 Runoff=3.06 cfs 0.211 af                   |
| <b>Subcatchment 4.8:</b>             | Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=3.31"<br>Tc=5.0 min CN=77 Runoff=2.38 cfs 0.163 af                   |
| <b>Subcatchment 4.9:</b>             | Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=5.56"<br>Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 af                 |

**Subcatchment 5:** Runoff Area=80,791 sf 68.61% Impervious Runoff Depth=3.50"  
Tc=5.0 min CN=79 Runoff=7.86 cfs 0.541 af

**Reach R1.1:** Avg. Flow Depth=0.39' Max Vel=4.05 fps Inflow=5.20 cfs 0.419 af  
n=0.030 L=300.0' S=0.0367 ' Outflow=5.10 cfs 0.419 af

**Pond C1: Twin 18" HDPE** Peak Elev=97.37' Storage=5,473 cf Inflow=20.87 cfs 2.005 af  
Primary=14.64 cfs 2.005 af Secondary=0.00 cfs 0.000 af Outflow=14.64 cfs 2.005 af

**Pond C2: 15" HDPE** Peak Elev=96.87' Inflow=4.76 cfs 0.872 af  
Primary=4.76 cfs 0.872 af Secondary=0.00 cfs 0.000 af Outflow=4.76 cfs 0.872 af

**Pond C3: 18" HDPE** Peak Elev=103.67' Inflow=7.71 cfs 0.661 af  
18.0" Round Culvert n=0.013 L=28.0' S=0.0571 ' Outflow=7.71 cfs 0.661 af

**Pond CB1: CB2.2** Peak Elev=102.89' Inflow=3.46 cfs 0.265 af  
15.0" Round Culvert n=0.013 L=110.0' S=0.0050 ' Outflow=3.46 cfs 0.265 af

**Pond CB2: CB2.3** Peak Elev=102.30' Inflow=6.52 cfs 0.497 af  
18.0" Round Culvert n=0.013 L=155.0' S=0.0050 ' Outflow=6.52 cfs 0.497 af

**Pond CB3: CB2.5** Peak Elev=99.48' Inflow=10.62 cfs 0.924 af  
18.0" Round Culvert n=0.013 L=145.0' S=0.0050 ' Outflow=10.62 cfs 0.924 af

**Pond CB4: CB3.3** Peak Elev=122.82' Inflow=5.20 cfs 0.419 af  
15.0" Round Culvert n=0.013 L=102.0' S=0.0200 ' Outflow=5.20 cfs 0.419 af

**Pond CB5: CB3.4** Peak Elev=120.68' Inflow=5.20 cfs 0.419 af  
15.0" Round Culvert n=0.013 L=120.0' S=0.0607 ' Outflow=5.20 cfs 0.419 af

**Pond CB6: CB1.10** Peak Elev=100.99' Inflow=5.99 cfs 0.428 af  
15.0" Round Culvert n=0.013 L=21.0' S=0.0052 ' Outflow=5.99 cfs 0.428 af

**Pond D2: DMH-RD2** Peak Elev=108.43' Inflow=5.30 cfs 0.424 af  
15.0" Round Culvert n=0.013 L=280.0' S=0.0357 ' Outflow=5.30 cfs 0.424 af

**Pond ED: EX DMH** Peak Elev=126.25' Inflow=3.36 cfs 0.265 af  
10.0" Round Culvert n=0.013 L=48.0' S=0.0260 ' Outflow=3.36 cfs 0.265 af

**Pond SF1: Soil Filter 1** Peak Elev=99.84' Storage=7,681 cf Inflow=6.94 cfs 0.494 af  
Primary=4.23 cfs 0.494 af Secondary=0.00 cfs 0.000 af Outflow=4.23 cfs 0.494 af

**Pond SF2: Soil Filter 2** Peak Elev=100.98' Storage=7,167 cf Inflow=8.15 cfs 0.610 af  
Primary=6.96 cfs 0.610 af Secondary=0.00 cfs 0.000 af Outflow=6.96 cfs 0.610 af

**Pond W1: Wetland** Peak Elev=100.40' Storage=6,404 cf Inflow=7.71 cfs 0.661 af  
18.0" Round Culvert n=0.013 L=80.0' S=0.0113 ' Outflow=3.35 cfs 0.661 af

**Pond W2: Wetland** Peak Elev=97.48' Storage=272 cf Inflow=4.81 cfs 0.872 af  
Outflow=4.76 cfs 0.872 af

**Link AP1:** Inflow=6.01 cfs 0.413 af  
Primary=6.01 cfs 0.413 af

**Link AP2:** Inflow=0.01 cfs 0.002 af  
Primary=0.01 cfs 0.002 af

**Post-Development\_COM***Type III 24-hr 25-Yr Storm Rainfall=5.80"*

Prepared by Site Design Associates

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**Link AP3:**

Inflow=0.48 cfs 0.037 af

Primary=0.48 cfs 0.037 af

**Link AP4:**

Inflow=19.16 cfs 2.877 af

Primary=19.16 cfs 2.877 af

**Link AP5:**

Inflow=7.86 cfs 0.541 af

Primary=7.86 cfs 0.541 af

**Total Runoff Area = 14.046 ac   Runoff Volume = 4.043 af   Average Runoff Depth = 3.45"**  
**46.21% Pervious = 6.491 ac   53.79% Impervious = 7.555 ac**

**Summary for Subcatchment 0.0: TO DRYWELLS**

Runoff = 2.18 cfs @ 12.07 hrs, Volume= 0.172 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 16,178  | 98 | Impervious              |
| 16,178    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 1.1:**

Runoff = 6.01 cfs @ 12.08 hrs, Volume= 0.413 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 41,661  | 98 | Impervious                    |
| 25,659    | 39 | >75% Grass cover, Good, HSG A |
| 67,320    | 76 | Weighted Average              |
| 25,659    |    | 38.11% Pervious Area          |
| 41,661    |    | 61.89% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 2:**

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,142     | 39 | >75% Grass cover, Good, HSG A |
| 3,142     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

### Summary for Subcatchment 3:

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,259     | 39 | >75% Grass cover, Good, HSG A |
| 2,584     | 73 | Brush, Good, HSG D            |
| 1,591     | 30 | Woods, Good, HSG A            |
| 3,886     | 77 | Woods, Good, HSG D            |
| 12,320    | 57 | Weighted Average              |
| 12,320    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

### Summary for Subcatchment 4.1:

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.242 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 19,475  | 98 | Impervious                    |
| 20,340    | 39 | >75% Grass cover, Good, HSG A |
| 3,943     | 80 | >75% Grass cover, Good, HSG D |
| 11,472    | 77 | Woods, Good, HSG D            |
| 30,326    | 30 | Woods, Good, HSG A            |
| 85,556    | 56 | Weighted Average              |
| 66,081    |    | 77.24% Pervious Area          |
| 19,475    |    | 22.76% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                                                                             |
|----------|---------------|---------------|-------------------|----------------|-------------------------------------------------------------------------------------------------------------------------|
| 5.5      | 40            | 0.1000        | 0.12              |                | <b>Sheet Flow, AB</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 2.3      | 30            | 0.5000        | 0.22              |                | <b>Sheet Flow, BC</b><br>Woods: Light underbrush n= 0.400 P2= 3.10"                                                     |
| 0.2      | 95            | 0.0260        | 8.47              | 135.53         | <b>Trap/Vee/Rect Channel Flow, CD</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 0.1      | 28            | 0.0180        | 7.98              | 14.09          | <b>Pipe Channel, DE</b><br>18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'<br>n= 0.013 Corrugated PE, smooth interior     |
| 0.2      | 145           | 0.0510        | 11.86             | 189.82         | <b>Trap/Vee/Rect Channel Flow, EF</b><br>Bot.W=2.00' D=2.00' Z= 3.0 ' Top.W=14.00'<br>n= 0.030 Earth, grassed & winding |
| 8.3      | 338           | Total         |                   |                |                                                                                                                         |

**Summary for Subcatchment 4.10:**

Runoff = 5.24 cfs @ 12.07 hrs, Volume= 0.414 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 38,900  | 98 | Impervious              |
| 38,900    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.11:**

Runoff = 1.63 cfs @ 12.07 hrs, Volume= 0.113 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 1,556   | 98 | Impervious                    |
| 14,005    | 80 | >75% Grass cover, Good, HSG D |
| 15,561    | 82 | Weighted Average              |
| 14,005    |    | 90.00% Pervious Area          |
| 1,556     |    | 10.00% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment 4.12:**

Runoff = 4.04 cfs @ 12.07 hrs, Volume= 0.315 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 28,472  | 98 | Impervious                    |
| 1,723     | 80 | >75% Grass cover, Good, HSG D |
| 30,195    | 97 | Weighted Average              |
| 1,723     |    | 5.71% Pervious Area           |
| 28,472    |    | 94.29% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |



**Summary for Subcatchment 4.13:**

Runoff = 0.08 cfs @ 12.12 hrs, Volume= 0.010 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 762       | 98 | Impervious                    |
|   | 6,276     | 39 | >75% Grass cover, Good, HSG A |
|   | 7,038     | 45 | Weighted Average              |
|   | 6,276     |    | 89.17% Pervious Area          |
|   | 762       |    | 10.83% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Subcatchment 4.2:**

Runoff = 1.88 cfs @ 12.09 hrs, Volume= 0.154 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 15,536    | 98 | Impervious                    |
|   | 48,474    | 39 | >75% Grass cover, Good, HSG A |
|   | 64,010    | 53 | Weighted Average              |
|   | 48,474    |    | 75.73% Pervious Area          |
|   | 15,536    |    | 24.27% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Summary for Subcatchment 4.3:**

Runoff = 5.99 cfs @ 12.07 hrs, Volume= 0.428 af, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 37,812    | 98 | Impervious                    |
|   | 5,466     | 39 | >75% Grass cover, Good, HSG A |
|   | 6,030     | 80 | >75% Grass cover, Good, HSG D |
|   | 49,308    | 89 | Weighted Average              |
|   | 11,496    |    | 23.31% Pervious Area          |
|   | 37,812    |    | 76.69% Impervious Area        |

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.4:**

Runoff = 3.46 cfs @ 12.07 hrs, Volume= 0.265 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 24,710    | 98 | Impervious                    |
|   | 821       | 39 | >75% Grass cover, Good, HSG A |
|   | 498       | 80 | >75% Grass cover, Good, HSG D |
|   | 26,029    | 96 | Weighted Average              |
|   | 1,319     |    | 5.07% Pervious Area           |
|   | 24,710    |    | 94.93% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.5:**

Runoff = 3.06 cfs @ 12.07 hrs, Volume= 0.231 af, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 21,831    | 98 | Impervious                    |
|   | 1,322     | 39 | >75% Grass cover, Good, HSG A |
|   | 39        | 80 | >75% Grass cover, Good, HSG D |
|   | 23,192    | 95 | Weighted Average              |
|   | 1,361     |    | 5.87% Pervious Area           |
|   | 21,831    |    | 94.13% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.6:**

Runoff = 0.95 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|  | Area (sf) | CN | Description               |
|--|-----------|----|---------------------------|
|  | 10,062    | 78 | Meadow, non-grazed, HSG D |
|  | 10,062    |    | 100.00% Pervious Area     |

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.7:**

Runoff = 3.06 cfs @ 12.07 hrs, Volume= 0.211 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 1,817   | 98 | Impervious                    |
| 4,925     | 80 | >75% Grass cover, Good, HSG D |
| 24,704    | 77 | Woods, Good, HSG D            |
| 31,446    | 79 | Weighted Average              |
| 29,629    |    | 94.22% Pervious Area          |
| 1,817     |    | 5.78% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.8:**

Runoff = 2.38 cfs @ 12.08 hrs, Volume= 0.163 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description           |
|-----------|----|-----------------------|
| 25,845    | 77 | Woods, Good, HSG D    |
| 25,845    |    | 100.00% Pervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 4.9:**

Runoff = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 24,940  | 98 | Impervious              |
| 24,940    |    | 100.00% Impervious Area |

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 5:**

Runoff = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Yr Storm Rainfall=5.80"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 55,430    | 98 | Impervious                    |
|   | 25,361    | 39 | >75% Grass cover, Good, HSG A |
|   | 80,791    | 79 | Weighted Average              |
|   | 25,361    |    | 31.39% Pervious Area          |
|   | 55,430    |    | 68.61% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Reach R1.1:**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 2.46" for 25-Yr Storm event

Inflow = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af

Outflow = 5.10 cfs @ 12.09 hrs, Volume= 0.419 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 4.05 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 1.21 fps, Avg. Travel Time= 4.1 min

Peak Storage= 377 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.39'

Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.95 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 3.0 ' Top Width= 14.00'

Length= 300.0' Slope= 0.0367 ' /'

Inlet Invert= 113.00', Outlet Invert= 102.00'

**Summary for Pond C1: Twin 18" HDPE**

Inflow Area = 5.191 ac, 68.12% Impervious, Inflow Depth = 4.64" for 25-Yr Storm event

Inflow = 20.87 cfs @ 12.10 hrs, Volume= 2.005 af

Outflow = 14.64 cfs @ 12.22 hrs, Volume= 2.005 af, Atten= 30%, Lag= 6.8 min

Primary = 14.64 cfs @ 12.22 hrs, Volume= 2.005 af

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 97.37' @ 12.22 hrs Surf.Area= 9,132 sf Storage= 5,473 cf

Plug-Flow detention time= 2.6 min calculated for 2.005 af (100% of inflow)  
 Center-of-Mass det. time= 2.6 min ( 963.9 - 961.3 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |  |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|--|
| #1                  | 95.00'               | 6,851 cf         | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |  |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |  |
| 95.00               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |  |
| 96.00               | 1,595                | 626.0            | 532                                                        | 532                       | 31,186              |  |
| 97.00               | 3,831                | 882.0            | 2,633                                                      | 3,164                     | 61,916              |  |
| 97.50               | 11,617               | 951.0            | 3,687                                                      | 6,851                     | 71,991              |  |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                             |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.10' | <b>18.0" Round Culvert X 2.00</b><br>L= 20.0' CMP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' / ' Cc= 0.900<br>n= 0.025 Corrugated metal, Flow Area= 1.77 sf |
| #2     | Secondary | 97.40' | <b>400.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63                        |

**Primary OutFlow** Max=14.64 cfs @ 12.22 hrs HW=97.37' TW=0.00' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Barrel Controls 14.64 cfs @ 4.14 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.00' TW=0.00' (Dynamic Tailwater)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond C2: 15" HDPE

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 2.21" for 25-Yr Storm event  
 Inflow = 4.76 cfs @ 12.13 hrs, Volume= 0.872 af  
 Outflow = 4.76 cfs @ 12.13 hrs, Volume= 0.872 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.76 cfs @ 12.13 hrs, Volume= 0.872 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 96.87' @ 12.13 hrs  
 Flood Elev= 97.00'

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                                    |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.20' | <b>15.0" Round Culvert</b><br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf                                                                 |
| #2     | Secondary | 97.40' | <b>10.0' long x 7.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80<br>2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65<br>2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78 |

**Primary OutFlow** Max=4.75 cfs @ 12.13 hrs HW=96.86' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 4.75 cfs @ 3.87 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

### Summary for Pond C3: 18" HDPE

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 1.98" for 25-Yr Storm event  
 Inflow = 7.71 cfs @ 12.11 hrs, Volume= 0.661 af  
 Outflow = 7.71 cfs @ 12.11 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min  
 Primary = 7.71 cfs @ 12.11 hrs, Volume= 0.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 103.67' @ 12.10 hrs

Flood Elev= 104.50'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.60' | <b>18.0" Round Culvert</b><br>L= 28.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=7.67 cfs @ 12.11 hrs HW=103.66' TW=100.13' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 7.67 cfs @ 4.34 fps)

### Summary for Pond CB1: CB2.2

Inflow Area = 0.598 ac, 94.93% Impervious, Inflow Depth = 5.33" for 25-Yr Storm event  
 Inflow = 3.46 cfs @ 12.07 hrs, Volume= 0.265 af  
 Outflow = 3.46 cfs @ 12.07 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.46 cfs @ 12.07 hrs, Volume= 0.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.89' @ 12.07 hrs

Flood Elev= 105.30'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 101.57' | <b>15.0" Round Culvert</b><br>L= 110.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=3.43 cfs @ 12.07 hrs HW=102.88' TW=102.29' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 3.43 cfs @ 3.31 fps)

### Summary for Pond CB2: CB2.3

Inflow Area = 1.130 ac, 94.56% Impervious, Inflow Depth = 5.27" for 25-Yr Storm event  
 Inflow = 6.52 cfs @ 12.07 hrs, Volume= 0.497 af  
 Outflow = 6.52 cfs @ 12.07 hrs, Volume= 0.497 af, Atten= 0%, Lag= 0.0 min  
 Primary = 6.52 cfs @ 12.07 hrs, Volume= 0.497 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2



Peak Elev= 102.30' @ 12.07 hrs  
Flood Elev= 105.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 100.77' | <b>18.0" Round Culvert</b><br>L= 155.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=6.47 cfs @ 12.07 hrs HW=102.29' TW=100.94' (Dynamic Tailwater)  
**1=Culvert** (Barrel Controls 6.47 cfs @ 4.48 fps)

### Summary for Pond CB3: CB2.5

Inflow Area = 2.180 ac, 80.62% Impervious, Inflow Depth = 5.09" for 25-Yr Storm event  
Inflow = 10.62 cfs @ 12.10 hrs, Volume= 0.924 af  
Outflow = 10.62 cfs @ 12.10 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min  
Primary = 10.62 cfs @ 12.10 hrs, Volume= 0.924 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
Peak Elev= 99.48' @ 12.11 hrs  
Flood Elev= 103.10'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                |
|--------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 96.13' | <b>18.0" Round Culvert</b><br>L= 145.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=10.60 cfs @ 12.10 hrs HW=99.44' TW=97.12' (Dynamic Tailwater)  
**1=Culvert** (Outlet Controls 10.60 cfs @ 6.00 fps)

### Summary for Pond CB4: CB3.3

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 2.46" for 25-Yr Storm event  
Inflow = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af  
Outflow = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min  
Primary = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
Peak Elev= 122.82' @ 12.08 hrs  
Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 121.42' | <b>15.0" Round Culvert</b><br>L= 102.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=5.19 cfs @ 12.08 hrs HW=122.82' TW=120.68' (Dynamic Tailwater)  
**1=Culvert** (Inlet Controls 5.19 cfs @ 4.23 fps)

**Summary for Pond CB5: CB3.4**

Inflow Area = 2.042 ac, 45.50% Impervious, Inflow Depth = 2.46" for 25-Yr Storm event  
 Inflow = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af  
 Outflow = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.20 cfs @ 12.08 hrs, Volume= 0.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 120.68' @ 12.08 hrs  
 Flood Elev= 125.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 119.28' | <b>15.0" Round Culvert</b><br>L= 120.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=5.19 cfs @ 12.08 hrs HW=120.68' TW=113.39' (Dynamic Tailwater)  
 ↑**1=Culvert** (Inlet Controls 5.19 cfs @ 4.23 fps)

**Summary for Pond CB6: CB1.10**

Inflow Area = 1.132 ac, 76.69% Impervious, Inflow Depth = 4.54" for 25-Yr Storm event  
 Inflow = 5.99 cfs @ 12.07 hrs, Volume= 0.428 af  
 Outflow = 5.99 cfs @ 12.07 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.99 cfs @ 12.07 hrs, Volume= 0.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 100.99' @ 12.07 hrs  
 Flood Elev= 103.60'

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|---------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.11' | <b>15.0" Round Culvert</b><br>L= 21.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |

**Primary OutFlow** Max=5.94 cfs @ 12.07 hrs HW=100.97' TW=99.68' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 5.94 cfs @ 4.84 fps)

**Summary for Pond D2: DMH-RD2**

Inflow Area = 1.055 ac, 86.34% Impervious, Inflow Depth = 4.82" for 25-Yr Storm event  
 Inflow = 5.30 cfs @ 12.07 hrs, Volume= 0.424 af  
 Outflow = 5.30 cfs @ 12.07 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.30 cfs @ 12.07 hrs, Volume= 0.424 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2  
 Peak Elev= 108.43' @ 12.07 hrs  
 Flood Elev= 113.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                  |
|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 107.00' | <b>15.0" Round Culvert</b><br>L= 280.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 107.00' / 97.00' S= 0.0357 ' ' Cc= 0.900 |

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=5.26 cfs @ 12.07 hrs HW=108.42' TW=96.95' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 5.26 cfs @ 4.29 fps)

### Summary for Pond ED: EX DMH

Inflow Area = 0.573 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Yr Storm event  
 Inflow = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af  
 Outflow = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.36 cfs @ 12.07 hrs, Volume= 0.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 126.25' @ 12.07 hrs

Flood Elev= 128.40'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                 |
|--------|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 124.20' | <b>10.0" Round Culvert</b><br>L= 48.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Primary OutFlow** Max=3.33 cfs @ 12.07 hrs HW=126.23' TW=122.80' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 3.33 cfs @ 6.11 fps)

### Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.363 ac, 63.69% Impervious, Inflow Depth = 4.35" for 25-Yr Storm event  
 Inflow = 6.94 cfs @ 12.07 hrs, Volume= 0.494 af  
 Outflow = 4.23 cfs @ 12.17 hrs, Volume= 0.494 af, Atten= 39%, Lag= 5.7 min  
 Primary = 4.23 cfs @ 12.17 hrs, Volume= 0.494 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 99.84' @ 12.17 hrs Surf.Area= 5,227 sf Storage= 7,681 cf

Plug-Flow detention time= 399.3 min calculated for 0.494 af (100% of inflow)

Center-of-Mass det. time= 399.3 min ( 1,191.8 - 792.5 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 98.00' | 15,804 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 98.00               | 3,092                | 0                         | 0                         |
| 99.50               | 4,842                | 5,951                     | 5,951                     |
| 101.00              | 6,522                | 8,523                     | 14,474                    |
| 101.20              | 6,781                | 1,330                     | 15,804                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                               |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 95.50' | <b>12.0" Round Culvert</b><br>L= 35.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2     | Device 1 | 98.00' | <b>0.750 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                            |

|    |           |        |                                                                                                                                                                                    |
|----|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #3 | Device 1  | 99.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                    |
| #4 | Secondary | 99.90' | <b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=4.21 cfs @ 12.17 hrs HW=99.84' TW=97.34' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 4.21 cfs of 5.98 cfs potential flow)
- ↑ **2=Exfiltration** (Exfiltration Controls 0.09 cfs)
- ↑ **3=Orifice/Grate** (Weir Controls 4.12 cfs @ 1.91 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=95.00' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond SF2: Soil Filter 2

|               |                                                                         |
|---------------|-------------------------------------------------------------------------|
| Inflow Area = | 1.487 ac, 74.24% Impervious, Inflow Depth = 4.92" for 25-Yr Storm event |
| Inflow =      | 8.15 cfs @ 12.07 hrs, Volume= 0.610 af                                  |
| Outflow =     | 6.96 cfs @ 12.12 hrs, Volume= 0.610 af, Atten= 15%, Lag= 2.8 min        |
| Primary =     | 6.96 cfs @ 12.12 hrs, Volume= 0.610 af                                  |
| Secondary =   | 0.00 cfs @ 0.00 hrs, Volume= 0.000 af                                   |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.98' @ 12.12 hrs Surf.Area= 4,430 sf Storage= 7,167 cf

Plug-Flow detention time= 297.8 min calculated for 0.610 af (100% of inflow)

Center-of-Mass det. time= 297.8 min ( 1,067.4 - 769.6 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 99.00'               | 16,412 cf                 | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 99.00               | 2,831                | 0                         | 0                                                          |
| 100.50              | 4,010                | 5,131                     | 5,131                                                      |
| 102.00              | 5,316                | 6,995                     | 12,125                                                     |
| 102.80              | 5,402                | 4,287                     | 16,412                                                     |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                |
|--------|-----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 96.50'  | <b>15.0" Round Culvert</b><br>L= 73.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' /' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2     | Device 1  | 99.00'  | <b>0.750 in/hr Exfiltration over Horizontal area</b> Phase-In= 0.01'                                                                                                                                          |
| #3     | Device 1  | 100.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                               |
| #4     | Secondary | 101.50' | <b>20.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                            |

**Primary OutFlow** Max=6.85 cfs @ 12.12 hrs HW=100.98' TW=99.43' (Dynamic Tailwater)

- ↑ **1=Culvert** (Outlet Controls 6.85 cfs @ 5.58 fps)  
   ↑ **2=Exfiltration** (Passes < 0.08 cfs potential flow)  
     ↑ **3=Orifice/Grate** (Passes < 6.87 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=99.00' TW=99.40' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond W1: Wetland

Inflow Area = 4.006 ac, 34.35% Impervious, Inflow Depth = 1.98" for 25-Yr Storm event  
 Inflow = 7.71 cfs @ 12.11 hrs, Volume= 0.661 af  
 Outflow = 3.35 cfs @ 12.39 hrs, Volume= 0.661 af, Atten= 57%, Lag= 17.1 min  
 Primary = 3.35 cfs @ 12.39 hrs, Volume= 0.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.40' @ 12.39 hrs Surf.Area= 8,308 sf Storage= 6,404 cf

Plug-Flow detention time= 48.0 min calculated for 0.661 af (100% of inflow)

Center-of-Mass det. time= 48.0 min ( 876.4 - 828.3 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------|
| #1                  | 99.40'               | 23,709 cf        | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)                                  | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 99.40               | 0                    | 0.0              | 0                                                          | 0                         | 0                   |
| 99.50               | 5,121                | 314.0            | 171                                                        | 171                       | 7,846               |
| 100.00              | 7,402                | 583.0            | 3,113                                                      | 3,284                     | 27,049              |
| 101.00              | 9,781                | 571.0            | 8,564                                                      | 11,848                    | 28,293              |
| 102.00              | 14,071               | 697.0            | 11,861                                                     | 23,709                    | 41,022              |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 99.40' | <b>18.0" Round Culvert</b><br>L= 80.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=3.35 cfs @ 12.39 hrs HW=100.40' TW=97.45' (Dynamic Tailwater)

- ↑ **1=Culvert** (Inlet Controls 3.35 cfs @ 2.68 fps)

### Summary for Pond W2: Wetland

Inflow Area = 4.728 ac, 29.99% Impervious, Inflow Depth = 2.21" for 25-Yr Storm event  
 Inflow = 4.81 cfs @ 12.11 hrs, Volume= 0.872 af  
 Outflow = 4.76 cfs @ 12.13 hrs, Volume= 0.872 af, Atten= 1%, Lag= 1.3 min  
 Primary = 4.76 cfs @ 12.13 hrs, Volume= 0.872 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.48' @ 12.13 hrs Surf.Area= 1,032 sf Storage= 272 cf

Plug-Flow detention time= 1.0 min calculated for 0.872 af (100% of inflow)

Center-of-Mass det. time= 1.0 min ( 863.1 - 862.1 )

**Post-Development\_COM**

Type III 24-hr 25-Yr Storm Rainfall=5.80"

Prepared by Site Design Associates

Printed 4/27/2022

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| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 97.00' | 6,210 cf      | <b>Custom Stage Data (Irregular)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 97.00               | 209                  | 106.0            | 0                         | 0                         | 209                 |
| 98.00               | 2,637                | 405.0            | 1,196                     | 1,196                     | 12,370              |
| 99.00               | 7,853                | 571.0            | 5,014                     | 6,210                     | 25,272              |

| Device | Routing | Invert | Outlet Devices                                                                                              |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 97.00' | <b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b><br>Head (feet) 0.00 1.00 2.00<br>Width (feet) 4.00 6.00 8.00 |

**Primary OutFlow** Max=4.75 cfs @ 12.13 hrs HW=97.48' TW=96.86' (Dynamic Tailwater)  
 ↳ **1=Custom Weir/Orifice** (Weir Controls 4.75 cfs @ 2.22 fps)

**Summary for Link AP1:**

Inflow Area = 1.545 ac, 61.89% Impervious, Inflow Depth = 3.21" for 25-Yr Storm event  
 Inflow = 6.01 cfs @ 12.08 hrs, Volume= 0.413 af  
 Primary = 6.01 cfs @ 12.08 hrs, Volume= 0.413 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP2:**

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-Yr Storm event  
 Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af  
 Primary = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 0.283 ac, 0.00% Impervious, Inflow Depth = 1.56" for 25-Yr Storm event  
 Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.037 af  
 Primary = 0.48 cfs @ 12.09 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 9.919 ac, 49.95% Impervious, Inflow Depth = 3.48" for 25-Yr Storm event  
 Inflow = 19.16 cfs @ 12.21 hrs, Volume= 2.877 af  
 Primary = 19.16 cfs @ 12.21 hrs, Volume= 2.877 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs



**Summary for Link AP5:**

Inflow Area = 1.855 ac, 68.61% Impervious, Inflow Depth = 3.50" for 25-Yr Storm event  
Inflow = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af  
Primary = 7.86 cfs @ 12.07 hrs, Volume= 0.541 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs

**Appendix C:**  
**Stormwater BMP Spillway Calculations**

# SOIL FILTER SF1 SPILLWAY CALCULATION - 25-YEAR

## Post-Development\_COM

Prepared by Site Design Associates, Inc.

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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### Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.363 ac, 63.69% Impervious, Inflow Depth = 4.35" for 25-Yr Storm event  
 Inflow = 6.94 cfs @ 12.07 hrs, Volume= 0.494 af  
 Outflow = 3.71 cfs @ 12.19 hrs, Volume= 0.311 af, Atten= 47%, Lag= 7.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 3.71 cfs @ 12.19 hrs, Volume= 0.311 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.17' @ 12.19 hrs Surf.Area= 5,589 sf Storage= 9,430 cf

Plug-Flow detention time= 190.4 min calculated for 0.311 af (63% of inflow)

Center-of-Mass det. time= 89.9 min ( 882.5 - 792.5 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 98.00' | 15,804 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 98.00               | 3,092                | 0                         | 0                         |
| 99.50               | 4,842                | 5,951                     | 5,951                     |
| 101.00              | 6,522                | 8,523                     | 14,474                    |
| 101.20              | 6,781                | 1,330                     | 15,804                    |

1' of freeboard  
with primary  
outlet clogged

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                      |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.50' | <b>12.0" Round Culvert X 0.00</b><br>L= 35.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2     | Device 1  | 98.00' | <b>0.750 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                                   |
| #3     | Device 1  | 99.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                     |
| #4     | Secondary | 99.90' | <b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63                                  |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=95.00' (Dynamic Tailwater)

1=Culvert ( Controls 0.00 cfs)

2=Exfiltration ( Controls 0.00 cfs)

3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=3.69 cfs @ 12.19 hrs HW=100.17' TW=97.31' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 3.69 cfs @ 1.39 fps)

# SOIL FILTER SF1 SPILLWAY CALCULATION - 100-YEAR

**Post-Development\_COM**

Type III 24-hr 100-Yr Storm Rainfall=8.10"

Prepared by Site Design Associates, Inc.

Printed 3/2/2022

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## Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.363 ac, 63.69% Impervious, Inflow Depth = 6.56" for 100-Yr Storm event  
 Inflow = 10.26 cfs @ 12.07 hrs, Volume= 0.746 af  
 Outflow = 8.70 cfs @ 12.12 hrs, Volume= 0.562 af, Atten= 15%, Lag= 2.9 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 8.70 cfs @ 12.12 hrs, Volume= 0.562 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.37' @ 12.12 hrs Surf.Area= 5,817 sf Storage= 10,588 cf

Plug-Flow detention time= 150.6 min calculated for 0.562 af (75% of inflow)

Center-of-Mass det. time= 66.3 min ( 848.1 - 781.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 98.00' | 15,804 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 98.00               | 3,092                | 0                         | 0                         |
| 99.50               | 4,842                | 5,951                     | 5,951                     |
| 101.00              | 6,522                | 8,523                     | 14,474                    |
| 101.20              | 6,781                | 1,330                     | 15,804                    |

Filter does not  
overtop in  
100-year with  
primary outlet  
clogged.

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                |
|--------|-----------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 95.50' | <b>12.0" Round Culvert X 0.00</b><br>L= 35.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' S= 0.0029 ' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2     | Device 1  | 98.00' | <b>0.750 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                                             |
| #3     | Device 1  | 99.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                               |
| #4     | Secondary | 99.90' | <b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63                                            |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=95.00' (Dynamic Tailwater)

1=Culvert ( Controls 0.00 cfs)

2=Exfiltration ( Controls 0.00 cfs)

3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=8.70 cfs @ 12.12 hrs HW=100.37' TW=97.45' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 8.70 cfs @ 1.85 fps)

# SOIL FILTER SF2 SPILLWAY CALCULATION - 25-YEAR

**Post-Development\_COM**

Type III 24-hr 25-Yr Storm Rainfall=5.80"

Prepared by Site Design Associates, Inc.

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## Summary for Pond SF2: Soil Filter 2

Inflow Area = 1.487 ac, 74.24% Impervious, Inflow Depth = 4.92" for 25-Yr Storm event  
 Inflow = 8.15 cfs @ 12.07 hrs, Volume= 0.610 af  
 Outflow = 7.04 cfs @ 12.12 hrs, Volume= 0.390 af, Atten= 14%, Lag= 2.7 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 7.04 cfs @ 12.12 hrs, Volume= 0.390 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 101.77' @ 12.12 hrs Surf.Area= 5,115 sf Storage= 10,924 cf

Plug-Flow detention time= 193.2 min calculated for 0.390 af (64% of inflow)

Center-of-Mass det. time= 91.5 min ( 861.2 - 769.6 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 99.00' | 16,412 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 99.00               | 2,831                | 0                         | 0                         |
| 100.50              | 4,010                | 5,131                     | 5,131                     |
| 102.00              | 5,316                | 6,995                     | 12,125                    |
| 102.80              | 5,402                | 4,287                     | 16,412                    |

1' of freeboard  
with primary  
outlet clogged

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                      |
|--------|-----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 96.50'  | <b>15.0" Round Culvert X 0.00</b><br>L= 73.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2     | Device 1  | 99.00'  | <b>0.750 in/hr Exfiltration over Horizontal area</b> Phase-In= 0.01'                                                                                                                                                |
| #3     | Device 1  | 100.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                     |
| #4     | Secondary | 101.50' | <b>20.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                  |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=99.00' TW=96.13' (Dynamic Tailwater)

1=Culvert ( Controls 0.00 cfs)  
 2=Exfiltration ( Controls 0.00 cfs)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=7.01 cfs @ 12.12 hrs HW=101.77' TW=100.36' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 7.01 cfs @ 1.30 fps)

# SOIL FILTER SF2 SPILLWAY CALCULATION - 100-YEAR

## Post-Development\_COM

Type III 24-hr 100-Yr Storm Rainfall=8.10"

Prepared by Site Design Associates, Inc.

Printed 3/2/2022

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### Summary for Pond SF2: Soil Filter 2

Inflow Area = 1.487 ac, 74.24% Impervious, Inflow Depth = 7.18" for 100-Yr Storm event  
 Inflow = 11.71 cfs @ 12.07 hrs, Volume= 0.890 af  
 Outflow = 10.97 cfs @ 12.10 hrs, Volume= 0.670 af, Atten= 6%, Lag= 1.8 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 10.97 cfs @ 12.10 hrs, Volume= 0.670 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 101.86' @ 12.10 hrs Surf.Area= 5,193 sf Storage= 11,386 cf

Plug-Flow detention time= 158.7 min calculated for 0.669 af (75% of inflow)

Center-of-Mass det. time= 73.4 min ( 835.4 - 762.0 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 99.00' | 16,412 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 99.00               | 2,831                | 0                         | 0                         |
| 100.50              | 4,010                | 5,131                     | 5,131                     |
| 102.00              | 5,316                | 6,995                     | 12,125                    |
| 102.80              | 5,402                | 4,287                     | 16,412                    |

Filter does not  
overtop in  
100-year with  
primary outlet  
clogged.

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                       |
|--------|-----------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 96.50'  | <b>15.0" Round Culvert X 0.00'</b><br>L= 73.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2     | Device 1  | 99.00'  | <b>0.750 in/hr Exfiltration over Horizontal area</b> Phase-In= 0.01'                                                                                                                                                 |
| #3     | Device 1  | 100.50' | <b>24.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                      |
| #4     | Secondary | 101.50' | <b>20.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                   |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=99.00' TW=96.13' (Dynamic Tailwater)

1=Culvert ( Controls 0.00 cfs)

2=Exfiltration ( Controls 0.00 cfs)

3=Orifice/Grate ( Controls 0.00 cfs)

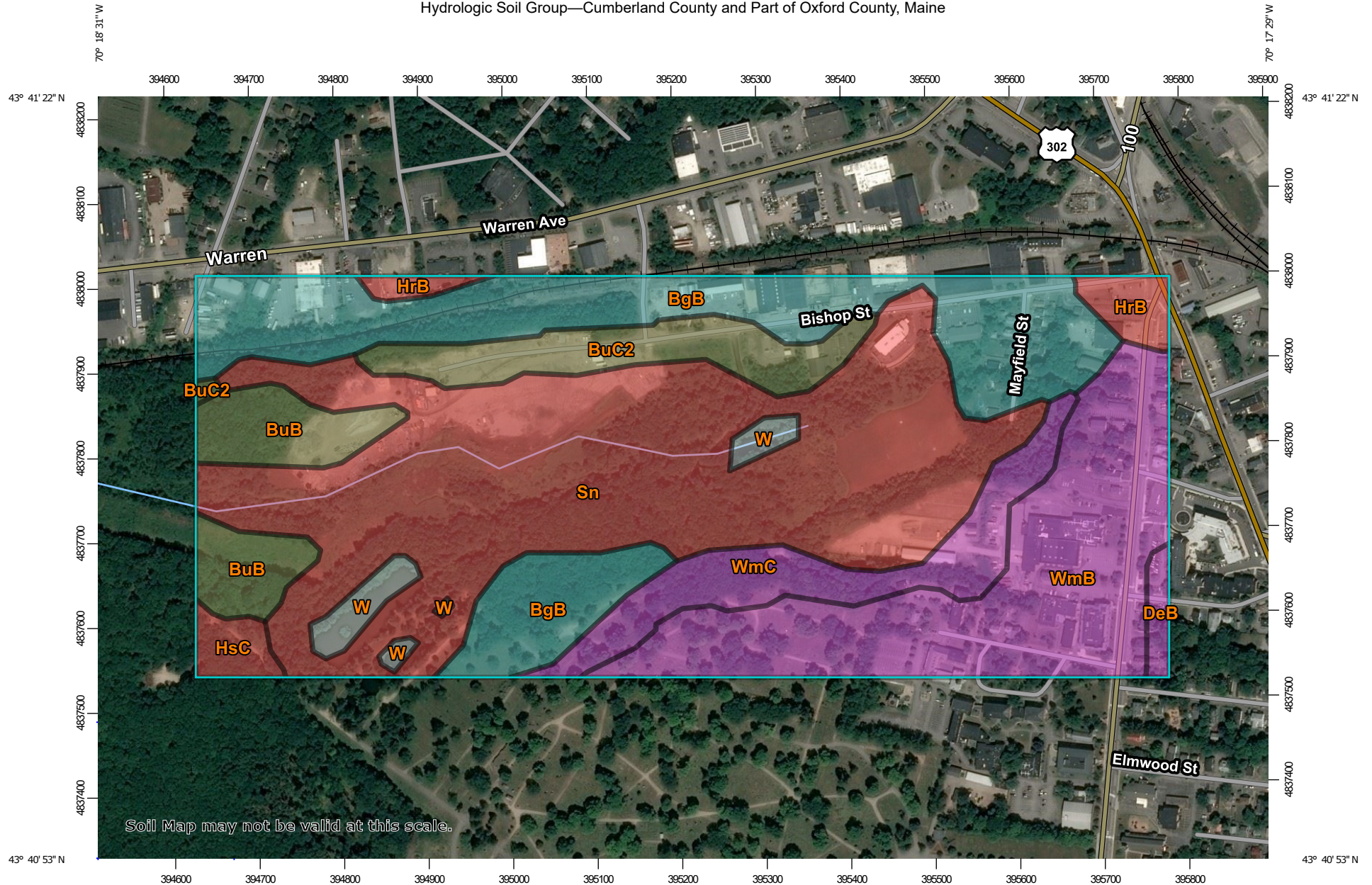
**Secondary OutFlow** Max=10.96 cfs @ 12.10 hrs HW=101.86' TW=101.15' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 10.96 cfs @ 1.53 fps)



**Appendix D:**  
**USDA Soil Map**

# Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine



Soil Map may not be valid at this scale.

Map Scale: 1:6,330 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 300 600 1200 1800 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey  
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9/9/2021  
Page 1 of 4

## 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 17, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

| Map unit symbol                    | Map unit name                                           | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---------------------------------------------------------|--------|--------------|----------------|
| BgB                                | Nicholville very fine sandy loam, 0 to 8 percent slopes | C      | 27.4         | 20.2%          |
| BuB                                | Lamoine silt loam, 3 to 8 percent slopes                | C/D    | 7.4          | 5.4%           |
| BuC2                               | Buxton silt loam, 8 to 15 percent slopes                | C/D    | 7.7          | 5.7%           |
| DeB                                | Deerfield loamy fine sand, 3 to 8 percent slopes        | A      | 1.0          | 0.7%           |
| HrB                                | Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky   | D      | 2.6          | 1.9%           |
| HsC                                | Lyman-Abram complex, 8 to 15 percent slopes, very rocky | D      | 1.7          | 1.2%           |
| Sn                                 | Scantic silt loam, 0 to 3 percent slopes                | D      | 51.6         | 38.1%          |
| W                                  | Water                                                   |        | 2.5          | 1.9%           |
| WmB                                | Windsor loamy sand, 0 to 8 percent slopes               | A      | 24.1         | 17.8%          |
| WmC                                | Windsor loamy sand, 8 to 15 percent slopes              | A      | 9.4          | 6.9%           |
| <b>Totals for Area of Interest</b> |                                                         |        | <b>135.3</b> | <b>100.0%</b>  |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**Appendix E:**  
**Inspection & Maintenance Plan &**  
**City of Portland Stormwater Maintenance Agreement**



## **Inspection and Maintenance Plan For Stormwater Management Facilities**

**University of New England**  
**Center for Health Sciences**  
Stevens Avenue, Portland, Maine

April 29, 2022

Stormwater management facilities include paved surfaces, catch basins and drainage manholes, culverts, storm drain pipe, ditches/swales, and grassed underdrain soil filters. During construction activities and upon completion of construction, the operation and maintenance of all stormwater management facilities, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book will be the responsibility of the University of New England.

The University of New England shall enter into a Stormwater Drainage System Maintenance Agreement with the City of Portland to be recorded at the Cumberland County Registry of Deeds. A template for this agreement is included in this section and shall be completed upon final approval of the project.

At a minimum, the following maintenance activities for each stormwater management system shall be performed on a prescribed schedule.

### Paved Surfaces

Accumulations of winter sand along paved surfaces shall be cleared at least once a year, preferably in the spring, and periodically during the year on an as-needed basis, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping or vacuuming. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

### Ditches and Swales

Open swales and ditches shall be inspected twice per year (in spring and fall) to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris and sediments shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the ditches and slopes proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal vegetation in the ditches and slopes as required in order to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.

Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where

the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.

Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

#### Catch Basins, Field Inlets, and Drainage Manholes

All catch basins, field inlets, and drainage manholes throughout the collection system shall be inspected twice per year (in spring and fall) to assure that the inlet entry and grates are clear of debris and will accept the intended flows. Any debris and sediments shall be cleared. Sediment should be removed from these structures when it accumulates within 12 inches of the lowest pipe invert. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules. Confined space entry safety procedures shall be practiced should entry into these structures be required.

#### Culverts and Storm Drainage Pipes

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the stormwater filter or wetland areas as this will reduce the ponds capacity and ability to infiltrate runoff, and will hasten the time when the pond must be cleaned or rehabilitated.

Riprap aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

#### Grassed Underdrained Soil Filters

Mowing and removal of woody growth – underdrained soil filters are designed to grow water tolerant plantings and mowing is not required in the interior of the structure. However, the external and top slopes of earthen embankments will be mowed up to three times per growing season to control over growth.

Outlet inspection and cleaning – The soil filter outlet consists of a layer of planting loam and sand with a stone and perforated pipe underdrain. Influx of sediments will be limited by sumps on all upstream catch basin structures and vegetated swales. Outlet inspections shall include flushing of the underdrain through the cleanout at the end of the pipe. Trash, sediment and debris shall be removed from the vicinity of the outlet and disposed of at a

licensed off-site facility. The basin shall be inspected bi-annually for evidence of excessive retention or rapid release of flow.

If the filter fails to drain within 72 hours, the surface of the pond shall be rototilled to promote aeration of the filter media and vegetation shall be re-established. If aeration of the surface soil fails to promote filtration of impounded water within 72 hours, then the filter media shall be replaced as necessary. The stone underdrain shall also be replaced at this time, along with the perforated pipe.

If the filter drains too rapidly, (i.e. prior to 24 hours), then an adjustable orifice shall be installed on the underdrain outlet pipe. The orifice shall be adjusted such that the filter completely drains within 24 to 72 hours.

Underdrained soil filters shall not be used for snow storage areas.

Vehicular equipment used to maintain or rehabilitate underdrained soil filters should work from the basin perimeter and not enter the basin area, as this will compact the soil surface and reduce the design infiltration rate.

#### Disposal

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

#### Recordkeeping

University of New England will keep a written maintenance log that summarizes inspections, maintenance, and any corrective actions taken. The log shall include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediment or debris, the location where the sediment or debris was disposed after removal will be indicated. This log shall be made available to the City of Portland upon request.

UNE Center for Health Sciences  
Stevens Avenue, Portland, Maine

INSPECTION / MAINTENANCE LOG

SWALES, DITCHES, PAVED SURFACES  
AND RIPRAP APRONS

I: INSPECTED - C: CLEANED - S: SWEPT - R: REPAIRED

| DATE    | INITIALS | ACTION | COMMENT                                                                                        |
|---------|----------|--------|------------------------------------------------------------------------------------------------|
| 3/28/22 | GHI      | I, C   | EXAMPLE: removed sand along the edge of the road near lots 7 & 8. Heavy rain over the weekend. |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |
|         |          |        |                                                                                                |

UNE Center for Health Sciences  
Stevens Avenue, Portland, Maine

INSPECTION / MAINTENANCE LOG

OUTLET STRUCTURES, CATCH BASINS, AND DRAIN PIPES

I: INSPECTED - C: CLEANED - R: REPAIRED

| DATE    | INITIALS | ACTION | COMMENT                                                                                                    |
|---------|----------|--------|------------------------------------------------------------------------------------------------------------|
| 3/28/22 | JKL      | I, C   | EXAMPLE: Called ACME to clean the outlet structure in pond 1, cleaned debris from culvert inlet in pond 2. |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |
|         |          |        |                                                                                                            |

UNE Center for Health Sciences  
Stevens Avenue, Portland, Maine

INSPECTION / MAINTENANCE LOG

UNDERDRAINED SOIL FILTERS

I: INSPECTED - C: CLEANED - S: SWEEPED - R: REPAIRED

| DATE    | INITIALS | ACTION | COMMENT                                                                                               |
|---------|----------|--------|-------------------------------------------------------------------------------------------------------|
| 3/28/22 | RST      | I      | EXAMPLE: Cleared sediment and plant debris from inlet area, mowed filter area, crest, and sideslopes. |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |
|         |          |        |                                                                                                       |



| UNE Center for Health Sciences<br>Stevens Avenue, Portland, Maine        |                                                                                                                                          |           |             |        |           |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|--------|-----------|
| STORMWATER MANAGEMENT SYSTEM<br>MAINTENANCE PROGRAM<br>SUMMARY CHECKLIST |                                                                                                                                          |           |             |        |           |
| Item                                                                     | Commentary                                                                                                                               | Frequency |             |        |           |
|                                                                          |                                                                                                                                          | Month     | Semi-Annual | Annual | Long-Term |
| Pavement                                                                 | Review for damage and buildup of debris and sand.                                                                                        | X         | X Sweep     |        |           |
| Swales, Ditches, and Riprap Aprons                                       | Inspect for debris accumulation, erosion and excessive vegetation. Mow monthly, remove debris, repair and revegetate any area of erosion | X Mow     |             | X      |           |
| Outlet Structures, Catch Basins, and Drain Pipes                         | Inspect for sediment buildup in pipe. Flush and remove as required.                                                                      |           |             | X      |           |
| Underdrained Soil Filter                                                 | Mow twice per year. Inspect for erosion.                                                                                                 |           | X           |        |           |

## **Appendix F Drainage Plans**

I1.0 – Pre Development Impervious Area Plan

I2.0 – Post Development Impervious Area Plan

R1.0 – Pre Development Pollutant Loading Plan

R2.0 – Post Development Pollutant Loading Plan

D1.0 – Pre Development Drainage Plan

D2.0 – Post Development Drainage Plan

D3.0 – Stormwater Treatment Plan

|                                                                                       |                                                                                       |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |
| <p>TRUE NORTH:</p>                                                                    | <p>04-29-2022</p>                                                                     |

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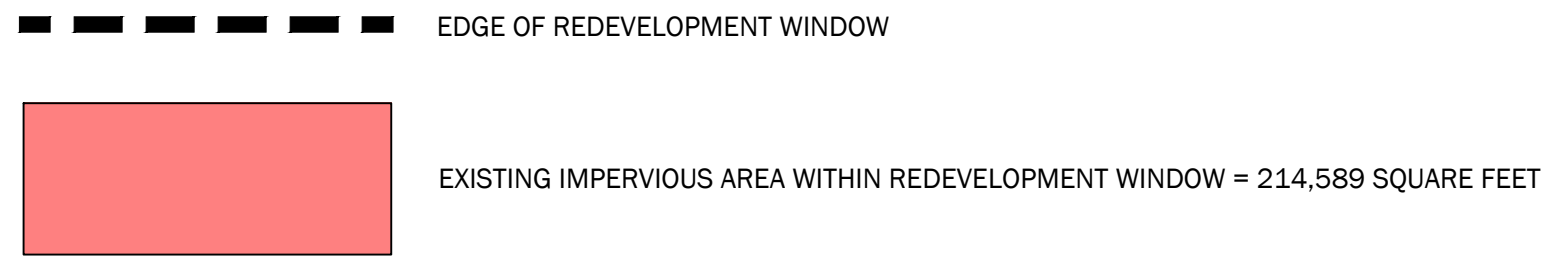
SHEET TITLE:

| Grade Level | Percentage |
|-------------|------------|
| Grade 1     | 10         |
| Grade 2     | 20         |
| Grade 3     | 30         |
| Grade 4     | 40         |
| Grade 5     | 50         |
| Grade 6     | 60         |
| Grade 7     | 70         |
| Grade 8     | 80         |
| Grade 9     | 90         |
| Grade 10    | 100        |
| Grade 11    | 110        |
| Grade 12    | 120        |

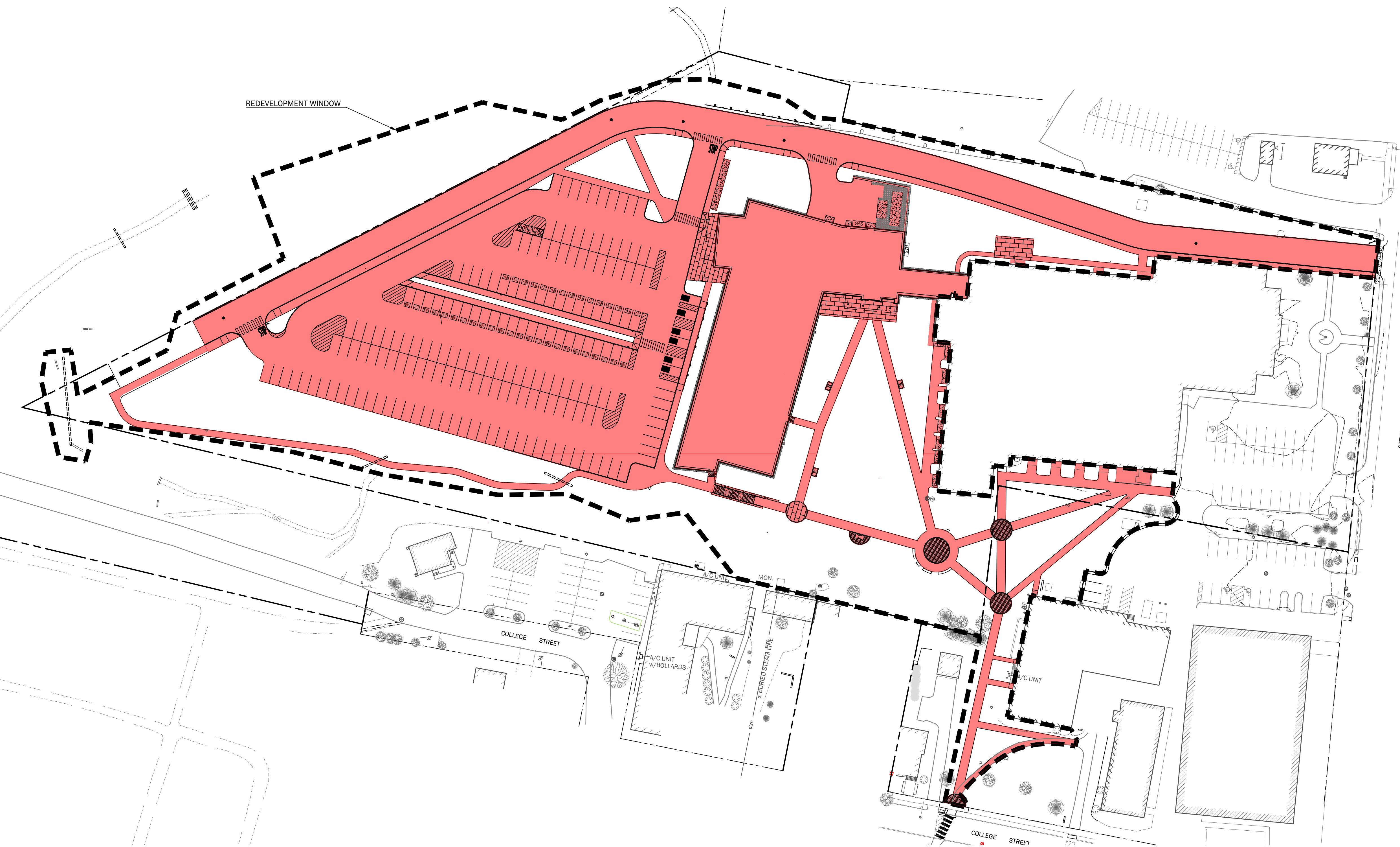
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--- EDGE OF REDEVELOPMENT WINDOW

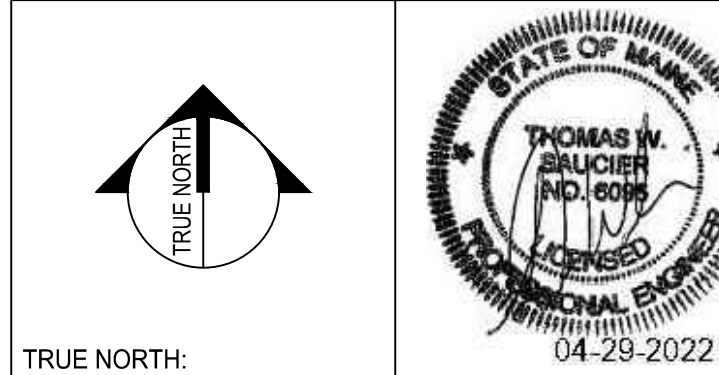
PROPOSED IMPERVIOUS AREA WITHIN REDEVELOPMENT WINDOW = 171,482 SQUARE FEET

NET DEDUCTION OF IMPERVIOUS AREA WITHIN REDEVELOPMENT WINDOW = 214,589 SF - 171,482 SF = 43,107 SQUARE FEET

| REV | DESCRIPTION | DATE |
|-----|-------------|------|
|-----|-------------|------|

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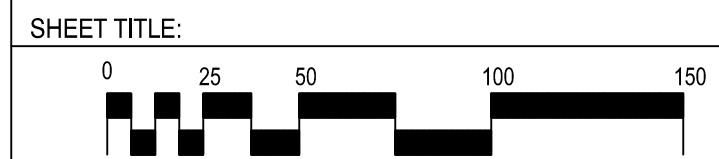
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POST DEVELOPMENT  
IMPERVIOUS AREA PLAN



|                  |            |             |       |
|------------------|------------|-------------|-------|
| PROJECT MANAGER: | KD         | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TWS        |             |       |
| JOB CAPTAIN:     | ECC        |             |       |
| DRAWN BY:        | TNL        |             |       |
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| TABLE 1<br>Existing Stormwater Redevelopment Calculations<br>UNE COM Building |                   |              |                  |
|-------------------------------------------------------------------------------|-------------------|--------------|------------------|
| Land Use                                                                      | Pollutant Ranking | Area (Acres) | Weighted Average |
| Roads with Idling<br>High Use Parking Lots                                    | 5                 | 0.0          | 0.0              |
| Other Roads<br>Medium Use Parking<br>Lots                                     | 4                 | 4.6          | 18.4             |
| Other Parking Lots<br>Flat Asphalt Roofs<br>Industrial Roofs                  | 3                 | 0.0          | 0.0              |
| Other Rooftops<br>Bikeways/Lawns<br>Pedestrian Pavement                       | 2                 | 1.1          | 2.2              |
| Non-grass Landscaped<br>areas<br>Stormwater Facilities                        | 1                 | 0.1          | 0.1              |
| Meadows<br>Forest                                                             | 0                 | 1.4          | 0.0              |
| Total Redevelopment Area (A)                                                  |                   | 7.2          |                  |
| Existing Impact Rating (EIA)                                                  |                   |              | 20.7             |
| Existing Pollutant Ranking (EPR) =                                            |                   | EIA/A =      | 2.86             |



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**PRE DEVELOPMENT  
POLLUTANT LOADING PLAN**

SHEET TITLE:

SCALE: 1" = 50'

PROJECT MANAGER: KD PROJECT NO: 21004

A/E OF RECORD: TWS

JOB CAPTAIN: ECC

DRAWN BY: TNL

SMRT FILE: R1.0:21004 SHEET No. 21004

**R1.0**

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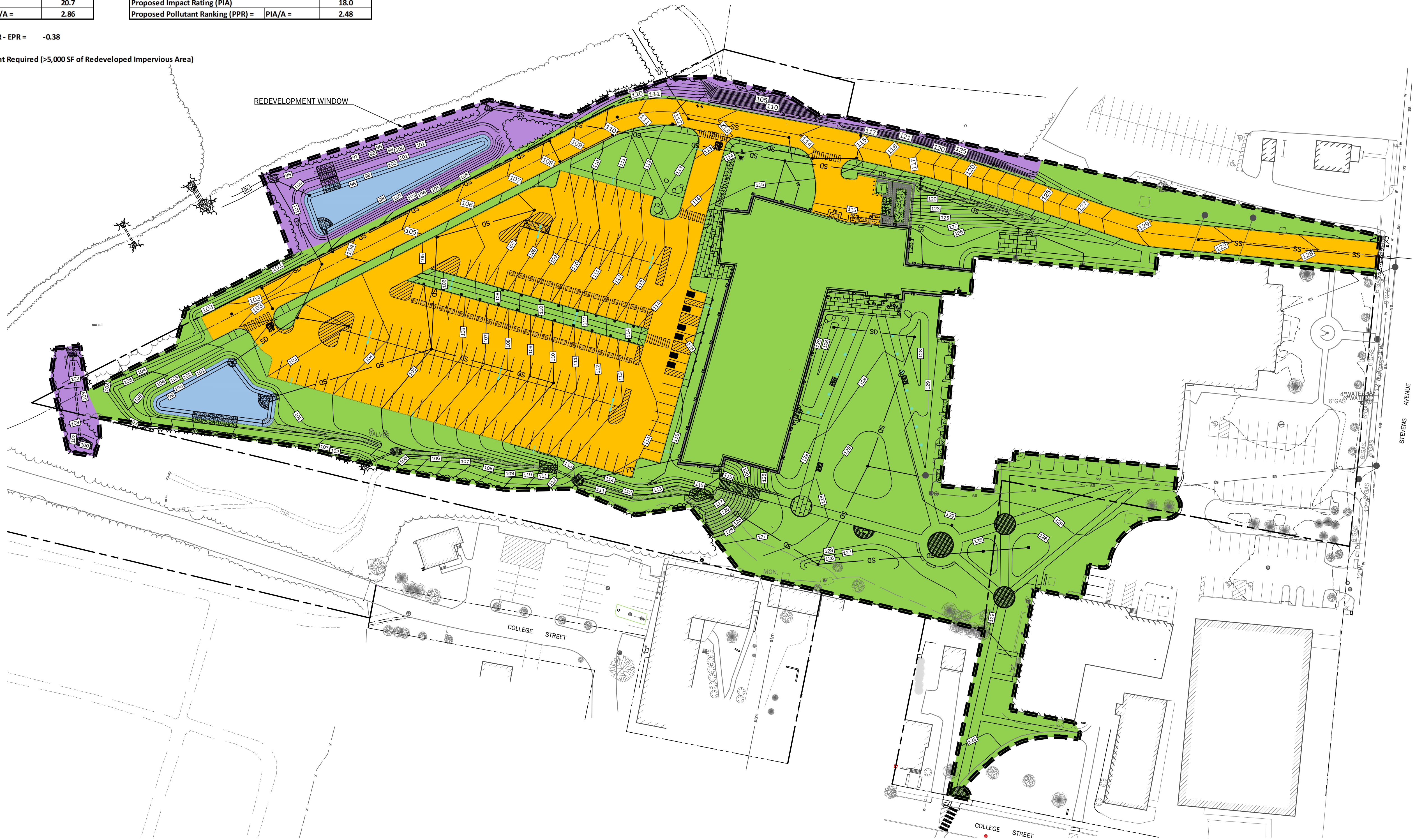


| TABLE 1<br>Existing Stormwater Redevelopment Calculations<br>UNE COM Building |                   |              |                  |
|-------------------------------------------------------------------------------|-------------------|--------------|------------------|
| Land Use                                                                      | Pollutant Ranking | Area (Acres) | Weighted Average |
| Roads with Idling<br>High Use Parking Lots                                    | 5                 | 0.0          | 0.0              |
| Other Roads<br>Medium Use Parking<br>Lots                                     | 4                 | 4.6          | 18.4             |
| Other Parking Lots<br>Flat Asphalt Roofs<br>Industrial Roofs                  | 3                 | 0.0          | 0.0              |
| Other Rooftops<br>Bikeways/Lawns<br>Pedestrian Pavement                       | 2                 | 1.1          | 2.2              |
| Non-grass Landscaped<br>areas<br>Stormwater Facilities                        | 1                 | 0.1          | 0.1              |
| Meadows<br>Forest                                                             | 0                 | 1.4          | 0.0              |
| Total Redevelopment Area (A)                                                  |                   | 7.2          |                  |
| Existing Impact Rating (EIA)                                                  |                   |              | 20.7             |
| Existing Pollutant Ranking (EPR) =                                            |                   | EIA/A =      | 2.86             |

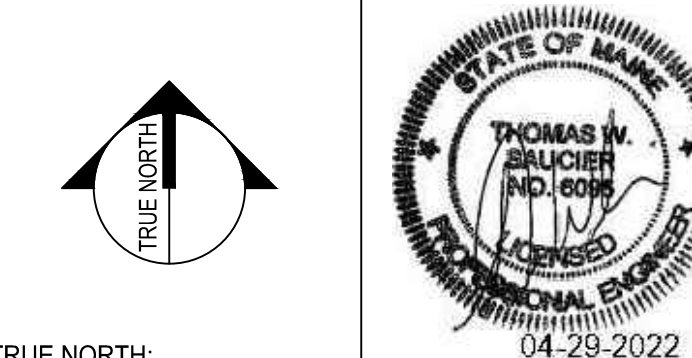
| TABLE 2<br>Proposed Stormwater Redevelopment Calculations<br>UNE COM Building |                   |              |                  |
|-------------------------------------------------------------------------------|-------------------|--------------|------------------|
| Land Use                                                                      | Pollutant Ranking | Area (Acres) | Weighted Average |
| Roads with Idling<br>High Use Parking Lots                                    | 5                 | 0.0          | 0.0              |
| Other Roads<br>Medium Use Parking<br>Lots                                     | 4                 | 2.3          | 9.3              |
| Other Parking Lots<br>Flat Asphalt Roofs<br>Industrial Roofs                  | 3                 | 0.0          | 0.0              |
| Other Rooftops<br>Bikeways/Lawns<br>Pedestrian Pavement                       | 2                 | 4.2          | 8.4              |
| Non-grass Landscaped<br>areas<br>Stormwater Facilities                        | 1                 | 0.2          | 0.2              |
| Meadows<br>Forest                                                             | 0                 | 0.5          | 0.0              |
| Total Redevelopment Area (A)                                                  |                   | 7.2          |                  |
| Proposed Impact Rating (PIA)                                                  |                   |              | 18.0             |
| Proposed Pollutant Ranking (PPR) =                                            |                   | PIA/A =      | 2.48             |

Ranked Impact Change (RIC) = PPR - EPR = -0.38

RIC < 0.0 => 50% Impervious Area Treatment Required (>5,000 SF of Redeveloped Impervious Area)



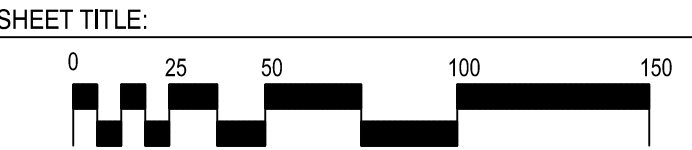
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POST DEVELOPMENT  
POLLUTANT LOADING PLAN

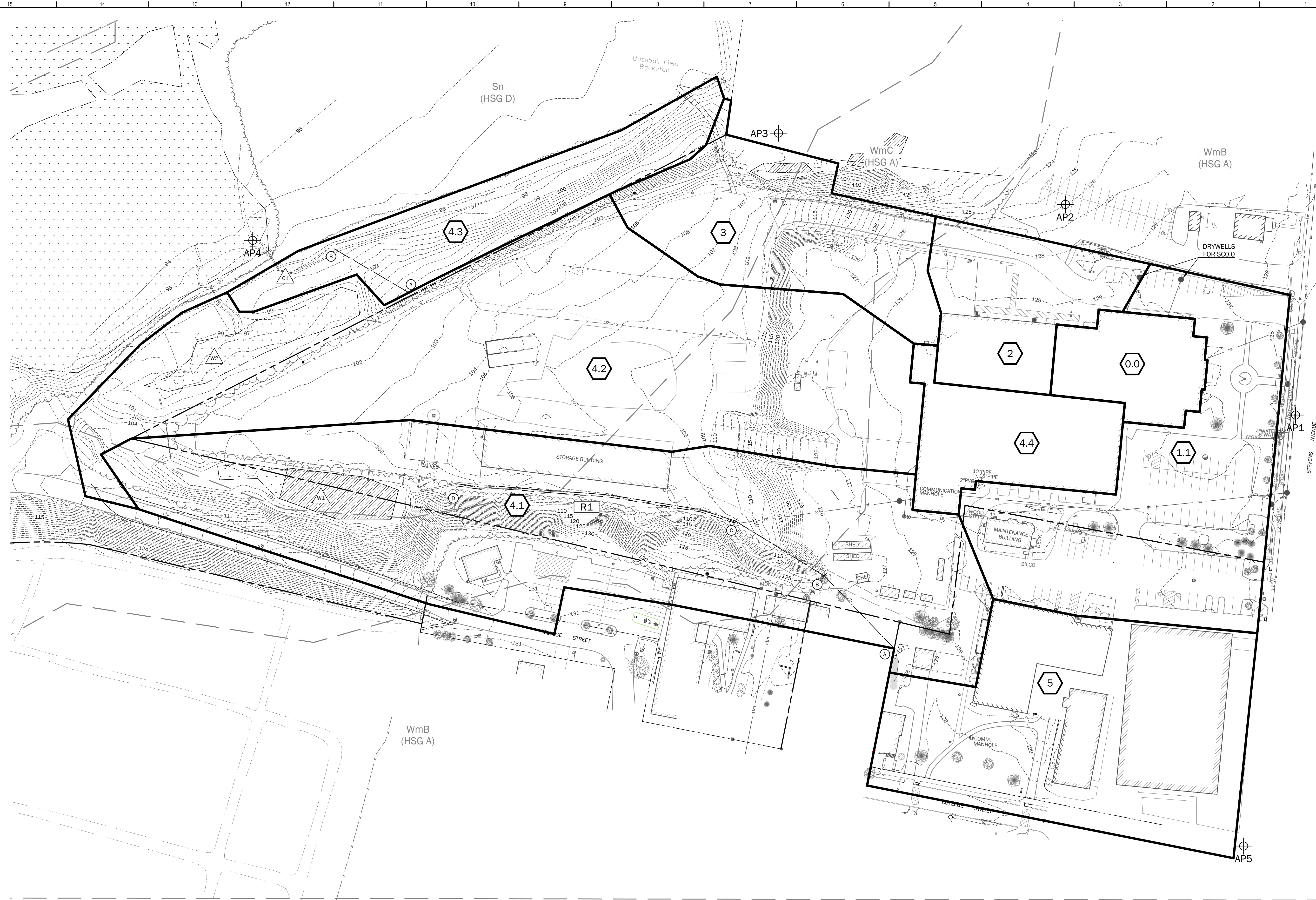


SCALE: 1" = 50'  
PROJECT MANAGER: KD PROJECT NO: 21004  
A/E OF RECORD: TWS  
JOB CAPTAIN: ECC  
DRAWN BY: TNL  
SMRT FILE: R2.0:21004 SHEET No. R2.0

R2.0

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|                    |             |        |       |                           |
|--------------------|-------------|--------|-------|---------------------------|
| Tc FLOW LINE DATA: |             |        |       |                           |
| SUBCATCHMENT       | 4.1         |        |       |                           |
| SEGMENT            | TIME (MIN.) | LENGTH | SLOPE | FLOW TYPE                 |
| AB                 | 12.4        | 110'   | 0.014 | SHEET FLOW                |
| BC                 | 0.9         | 110    | 0.160 | SHALLOW CONCENTRATED FLOW |
| CD                 | 0.5         | 300    | 0.017 | TRAP FLOW                 |
|                    |             |        |       |                           |
| SUBCATCHMENT       | 4.3         |        |       |                           |
| SEGMENT            | TIME (MIN.) | LENGTH | SLOPE | FLOW TYPE                 |
| AB                 | 10.0        | 80'    | 0.090 | SHEET FLOW                |

Tc FOR ALL REMAINING SUBCATCHMENTS = 5 MINUTES.

SOIL NOTES

SOIL TYPES AND BOUNDARIES OBTAINED FROM SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE. WEB SOIL SURVEY, AVAILABLE ONLINE AT THE FOLLOWING LINK: [HTTP://WEBSOILSURVEY.SC.EGOV.USDA.GOV/](http://websoilsurvey.sc.egov.usda.gov/). ACCESSED 9/9/2021.

**DRAINAGE LEGEND**

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT DESIGNATION
- TIME OF CONCENTRATION FLOW
- REACH
- REACH DESIGNATION
- ANALYSIS POINT
- POND TEXT



| REV | DESCRIPTION | DATE |
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**PRE DEVELOPMENT  
DRAINAGE PLAN**

SHEET TITLE:

SCALE: 1" = 50'

|                  |            |             |       |
|------------------|------------|-------------|-------|
| PROJECT MANAGER: | KD         | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TWS        |             |       |
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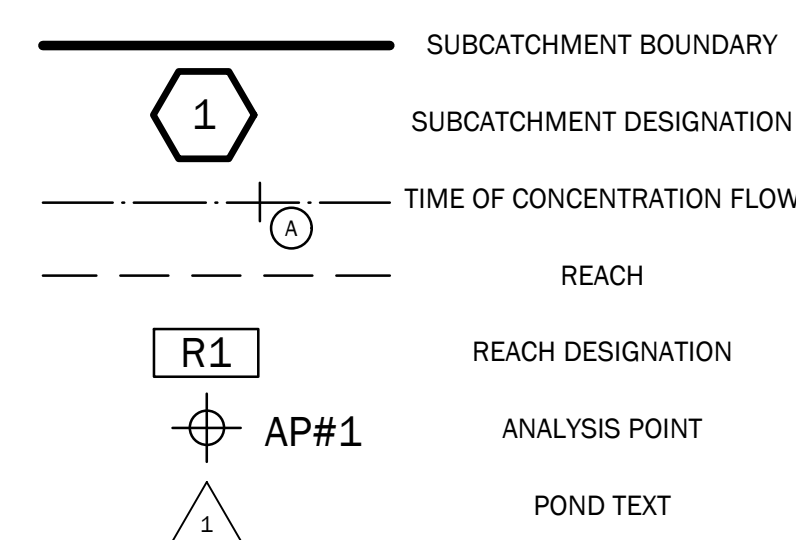




Tc FOR ALL REMAINING SUBCATCHMENTS = 5 MINUTES

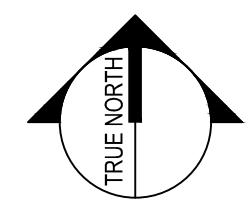
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### DRAINAGE LEGEND

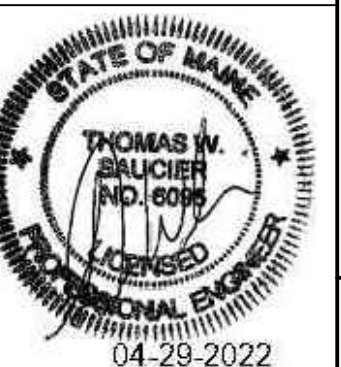


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| REV | DESCRIPTION | DATE |
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4-29-2022



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## POST DEVELOPMENT DRAINAGE PLAN

SHEET TITLE:



SCALE: 1" = 50'

|                  |    |             |       |
|------------------|----|-------------|-------|
| PROJECT MANAGER: | KD | PROJECT NO: | 21004 |
|------------------|----|-------------|-------|

|                |     |
|----------------|-----|
| A/E OF RECORD: | TWS |
|----------------|-----|

|              |     |
|--------------|-----|
| JOB CAPTAIN: | ECC |
|--------------|-----|

|           |     |
|-----------|-----|
| DRAWN BY: | TNL |
|-----------|-----|

|            |            |           |                           |
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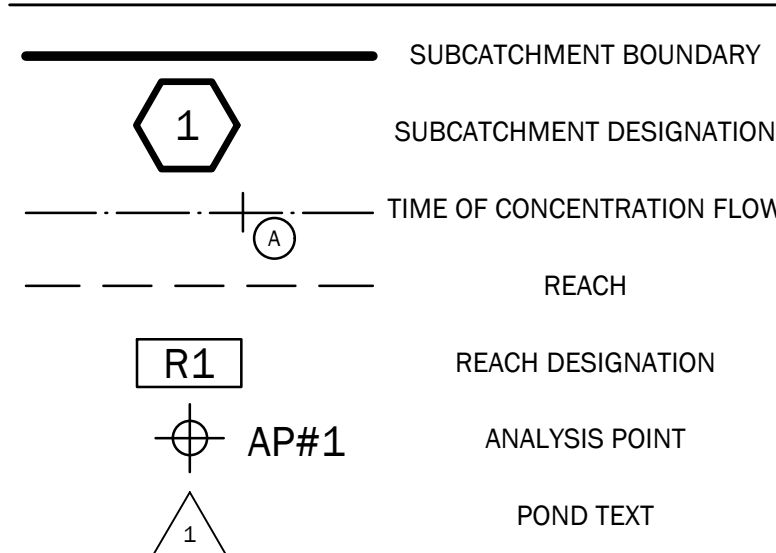


Table 2  
Water Quality Calculations

| Subcatchment Area                              | Impervious Area (SF) | Landscaped Area (SF) | Developed Area (SF) | Filter Area Required <sup>1</sup> (SF) | Filter Area Provided (SF) | Water Quality Volume Required <sup>2</sup> (CF) | Water Quality Volume Provided (CF) | Sediment Forebay Volume required <sup>3</sup> (CF) | Sediment Forebay Volume Provided (CF) | BMP               |
|------------------------------------------------|----------------------|----------------------|---------------------|----------------------------------------|---------------------------|-------------------------------------------------|------------------------------------|----------------------------------------------------|---------------------------------------|-------------------|
| TREATED AREAS                                  |                      |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.3                                            | 37,812               | 11,495               | 49,307              | 2,322                                  | 3,092                     | 3,850                                           | 5,951                              | 48                                                 | 61                                    | Soil Filter (SF1) |
| 4.6                                            | 0                    | 10,062               | 10,062              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.4                                            | 24,710               | 1,319                | 26,029              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| 4.5                                            | 21,831               | 1,361                | 23,192              | 2,739                                  | 2,831                     | 4,543                                           | 5,131                              | 61                                                 | 61                                    | Soil Filter (SF2) |
| 4.11                                           | 1,556                | 14,005               | 15,561              |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| TOTAL TREATED                                  | 85,909               | 38,242               | 124,151             |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| TOTAL REDEVELOPED IMPERVIOUS AREA <sup>4</sup> | 171,482              |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |
| PERCENT REDEVELOPED IMPERVIOUS AREA TREATED    | 50.1%                |                      |                     |                                        |                           |                                                 |                                    |                                                    |                                       |                   |

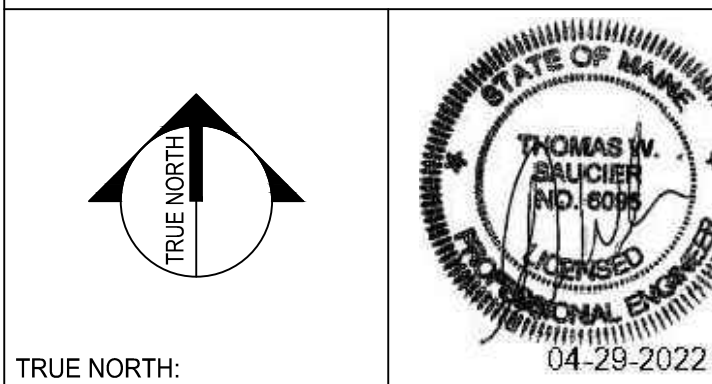
Notes:  
1. Filter area required is calculated at 5% of contributing impervious area and 2% of contributing landscaped area.  
2. Water quality volume required is calculated as 1" over the contributing impervious area plus 0.4" over the contributing landscaped area.  
3. Sediment Volume Required is calculated as Sanded Area (acres) x 500lbs/acre x 90 lbs/CF x 10 storms/year.  
4. See Sheet I2.0 for Total Redeveloped Impervious Area.

DRAINAGE LEGEND



REV DESCRIPTION DATE

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STORMWATER TREATMENT PLAN

SHEET TITLE:  
0 25 50 100 150  
SCALE: 1" = 50'  
PROJECT MANAGER: KD PROJECT NO: 21004  
A/E OF RECORD: TWS  
JOB CAPTAIN: ECC  
DRAWN BY: TNL  
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Department of Public Works  
Christopher C. Branch, P.E.  
Director



Date: March 23, 2022

Re: Wastewater Capacity Authorization

Address: 780 Stevens Avenue

Applicant: University of New England – Site Design Associates- Tom Saucier, P.E.

Planner: Matthew Grooms

| Estimate of Anticipated Wastewater Flows                                                   |             |                 |                          |                       |
|--------------------------------------------------------------------------------------------|-------------|-----------------|--------------------------|-----------------------|
| Development                                                                                | Unit Size   | Number of Units | Gallons per Day per Unit | Total Gallons per Day |
| <b>Existing Flow to Remain</b>                                                             |             |                 |                          |                       |
| Vacant                                                                                     |             |                 |                          |                       |
| <b>Proposed Flow</b>                                                                       |             |                 |                          |                       |
| Employees at place of employment with showers                                              | # Employees | 130             | 20 GPD                   | 2600                  |
| University - Lecture Hall – Class Room                                                     | Student     | 440             | 10 GPD                   | 4400                  |
| <b>Net Change</b>                                                                          |             |                 |                          | <b>+ 7,000</b>        |
| *Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition |             |                 |                          |                       |

Comments:

The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

If the City can be of further assistance, please contact me at all 874-8840 or [brad@portlandmaine.gov](mailto:brad@portlandmaine.gov)

Sincerely,

A handwritten signature in dark ink that reads "Bradley A. Roland".

Bradley A. Roland, P.E.,  
Senior Project Engineer



# Submittal Spec Sheet

Dynamically Generated

Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AA

Qty:

## RSX2 LED Area Luminaire

Up to 31,000 lumens



### Product Submittal Description:

RSX Area Size 2, LED, Package 1, 4000K, IES type III asymmetric, 120-277V, Square pole mounting, Textured black, super durable



The product images shown are for illustration purposes only and may not be an exact representation of the product.

[IES Files](#)

[BIM Models](#)

[Full Spec Sheet](#)

Product Webpage: [www.acuitybrands.com/products/detail/885181](http://www.acuitybrands.com/products/detail/885181)

Warranty: [www.acuitybrands.com/support/warranty/terms-and-conditions](http://www.acuitybrands.com/support/warranty/terms-and-conditions)

Model #: RSX2 LED P1 40K R3 MVOLT SPA DBLBXD ✓

| Series*       |                                     | Lamp Type* |                                                  | LED Configuration* |                                    | Correlated Color Temperature* |                     |
|---------------|-------------------------------------|------------|--------------------------------------------------|--------------------|------------------------------------|-------------------------------|---------------------|
| RSX2          | RSX Area Size 2                     | LED        | LED                                              | P1                 | Package 1                          | 30K                           | 3000K               |
|               |                                     |            |                                                  | P2                 | Package 2                          | 40K                           | 4000K               |
|               |                                     |            |                                                  | P3                 | Package 3                          | 50K                           | 5000K               |
|               |                                     |            |                                                  | P4                 | Package 4                          |                               |                     |
|               |                                     |            |                                                  | P5                 | Package 5                          |                               |                     |
|               |                                     |            |                                                  | P6                 | Package 6                          |                               |                     |
| Distribution* |                                     |            |                                                  | Voltage*           |                                    | Bird Deterrent                |                     |
| AFR           | Auto front row distribution         | R5S        | Type V, square                                   | 120                | 120V                               | BS                            | Bird spikes         |
| AFRL90        | Auto front row left rotated optics  |            |                                                  | 208                | 208V                               |                               |                     |
| AFRR90        | Auto front row right rotated optics |            |                                                  | 240                | 240V                               |                               |                     |
| R2            | IES type II                         |            |                                                  | 277                | 277V                               |                               |                     |
| R3            | IES type III asymmetric             |            |                                                  | 347                | 347V                               |                               |                     |
| R3S           | Type III short                      |            |                                                  | 480                | 480V                               |                               |                     |
| R4            | IES type IV forward throw           |            |                                                  | HVOLT              | 347-480V                           |                               |                     |
| R4S           | Type IV short                       |            |                                                  | MVOLT              | 120-277V                           |                               |                     |
| R5            | Type V distribution                 |            |                                                  | XVOLT              | XVOLT                              |                               |                     |
| Shielding     |                                     | Mounting   |                                                  | Mounting Option    |                                    | Mounting Option               |                     |
| EGFV          | External glare full visor shield    | AARP       | Adjustable tilt arm round pole                   | WBASC              | Wall mount bracket surface conduit | IS                            | Integral Slipfitter |
| EGS           | External Glare Shield               | AASP       | Adjustable tilt arm square pole                  |                    |                                    |                               |                     |
| HS            | House-side shield                   | AAWB       | Adjustable tilt arm wall bracket                 |                    |                                    |                               |                     |
|               |                                     | AAWSC      | Adjustable tilt arm wall bracket surface conduit |                    |                                    |                               |                     |
|               |                                     | MA         | Mast arm adaptor, integral                       |                    |                                    |                               |                     |
|               |                                     | RPA        | Round pole mounting                              |                    |                                    |                               |                     |
|               |                                     | SPA        | Square pole mounting                             |                    |                                    |                               |                     |
|               |                                     | WBA        | Wall mount bracket                               |                    |                                    |                               |                     |



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Page 1 of 2



# Submittal Spec Sheet

Dynamically Generated  
Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AA

Qty:

| Driver Configuration |                                                                                                         | Dimming Wires    |                                                                                                   | Dimmable/Controllable |                                          | Receptacle Type      |                                          |
|----------------------|---------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------|----------------------|------------------------------------------|
| DS                   | Dual switching; Provides 50/50 luminaire operation via two independent drivers on two separate circuits | DMG              | 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) | NLTAIR2               | Nlight air gen 2 controller              | PER7                 | Seven-wire receptacle only (no controls) |
| Photocell            |                                                                                                         | Internal Control |                                                                                                   | Surge Protection      |                                          | Field Adjustable     |                                          |
| PE                   | Photocell, buttontype                                                                                   | PIRHN            | Motion/ambient sensor 15-30FT- Networked                                                          | SPD20KV               | Additional surge protection 20KV         | FAO                  | Field adjustable output                  |
| PEX                  | Photocell, buttontype, external threaded adjustable                                                     |                  |                                                                                                   |                       |                                          |                      |                                          |
| Fusing               |                                                                                                         | Conduit Entry    |                                                                                                   | Finish*               |                                          | Assembled in America |                                          |
| DF                   | Double Fuse                                                                                             | CE34             | Conduit entry 3/4IN NPT                                                                           | DBLBXD                | Textured black, super durable            | BAA                  | Buy American Act                         |
| SF                   | Single Fuse                                                                                             |                  |                                                                                                   | DBLXD                 | Black finish, super durable              |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBTXD                | Textured dark bronze, super durable      |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBXD                 | Dark bronze finish, super durable        |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNATXD                | Textured natural aluminum, super durable |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNAXD                 | Natural aluminum finish, super durable   |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHGXD                | Textured white, super durable            |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHXD                 | White, super durable                     |                      |                                          |

This is a dynamic specification sheet that is based on certain selections made by the user. All results generated are for informational purposes only. The user should validate the results with its agency sales representative to determine whether the product has been configured correctly before ordering. Acuity Brands Lighting is not responsible for any loss resulting from product configuration errors.

Not all versions of the product are available with all options.

Specifications subject to change without notice.

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.

See the full specification sheet at the product page link above for full product information and detailed ordering information.

Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.

Visit: <http://www.acuitybrandslighting.com/library/ll/documents/specsheets/acrylic-polycarbonate-compatibility.pdf> for Acrylic-Polycarbonate Compatibility table for suitable uses.

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# Submittal Spec Sheet

Dynamically Generated  
Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AB

Qty:

## RSX2 LED Area Luminaire

Up to 31,000 lumens



### Product Submittal Description:

RSX Area Size 2, LED, Package 1, 4000K, IES type IV forward throw, 120-277V, Square pole mounting, Textured black, super durable



The product images shown are for illustration purposes only and may not be an exact representation of the product.

[IES Files](#)

[BIM Models](#)

[Full Spec Sheet](#)

Product Webpage: [www.acuitybrands.com/products/detail/885181](http://www.acuitybrands.com/products/detail/885181)

Warranty: [www.acuitybrands.com/support/warranty/terms-and-conditions](http://www.acuitybrands.com/support/warranty/terms-and-conditions)

Model #: RSX2 LED P1 40K R4 MVOLT SPA DBLBXD ✓

| Series*       |                                     | Lamp Type* |                                                  | LED Configuration* |                                    | Correlated Color Temperature* |                     |
|---------------|-------------------------------------|------------|--------------------------------------------------|--------------------|------------------------------------|-------------------------------|---------------------|
| RSX2          | RSX Area Size 2                     | LED        | LED                                              | P1                 | Package 1                          | 30K                           | 3000K               |
|               |                                     |            |                                                  | P2                 | Package 2                          | 40K                           | 4000K               |
|               |                                     |            |                                                  | P3                 | Package 3                          | 50K                           | 5000K               |
|               |                                     |            |                                                  | P4                 | Package 4                          |                               |                     |
|               |                                     |            |                                                  | P5                 | Package 5                          |                               |                     |
|               |                                     |            |                                                  | P6                 | Package 6                          |                               |                     |
| Distribution* |                                     |            |                                                  | Voltage*           |                                    | Bird Deterrent                |                     |
| AFR           | Auto front row distribution         | R5S        | Type V, square                                   | 120                | 120V                               | BS                            | Bird spikes         |
| AFRL90        | Auto front row left rotated optics  |            |                                                  | 208                | 208V                               |                               |                     |
| AFRR90        | Auto front row right rotated optics |            |                                                  | 240                | 240V                               |                               |                     |
| R2            | IES type II                         |            |                                                  | 277                | 277V                               |                               |                     |
| R3            | IES type III asymmetric             |            |                                                  | 347                | 347V                               |                               |                     |
| R3S           | Type III short                      |            |                                                  | 480                | 480V                               |                               |                     |
| R4            | IES type IV forward throw           |            |                                                  | HVOLT              | 347-480V                           |                               |                     |
| R4S           | Type IV short                       |            |                                                  | MVOLT              | 120-277V                           |                               |                     |
| R5            | Type V distribution                 |            |                                                  | XVOLT              | XVOLT                              |                               |                     |
| Shielding     |                                     | Mounting   |                                                  |                    |                                    | Mounting Option               |                     |
| EGFV          | External glare full visor shield    | AARP       | Adjustable tilt arm round pole                   | WBASC              | Wall mount bracket surface conduit | IS                            | Integral Slipfitter |
| EGS           | External Glare Shield               | AASP       | Adjustable tilt arm square pole                  |                    |                                    |                               |                     |
| HS            | House-side shield                   | AAWB       | Adjustable tilt arm wall bracket                 |                    |                                    |                               |                     |
|               |                                     | AAWSC      | Adjustable tilt arm wall bracket surface conduit |                    |                                    |                               |                     |
|               |                                     | MA         | Mast arm adaptor, integral                       |                    |                                    |                               |                     |
|               |                                     | RPA        | Round pole mounting                              |                    |                                    |                               |                     |
|               |                                     | SPA        | Square pole mounting                             |                    |                                    |                               |                     |
|               |                                     | WBA        | Wall mount bracket                               |                    |                                    |                               |                     |



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# Submittal Spec Sheet

Dynamically Generated  
Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AB

Qty:

| Driver Configuration |                                                                                                         | Dimming Wires    |                                                                                                   | Dimmable/Controllable |                                          | Receptacle Type      |                                          |
|----------------------|---------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------|----------------------|------------------------------------------|
| DS                   | Dual switching; Provides 50/50 luminaire operation via two independent drivers on two separate circuits | DMG              | 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) | NLTAIR2               | Nlight air gen 2 controller              | PER7                 | Seven-wire receptacle only (no controls) |
| Photocell            |                                                                                                         | Internal Control |                                                                                                   | Surge Protection      |                                          | Field Adjustable     |                                          |
| PE                   | Photocell, buttontype                                                                                   | PIRHN            | Motion/ambient sensor 15-30FT- Networked                                                          | SPD20KV               | Additional surge protection 20KV         | FAO                  | Field adjustable output                  |
| PEX                  | Photocell, buttontype, external threaded adjustable                                                     |                  |                                                                                                   |                       |                                          |                      |                                          |
| Fusing               |                                                                                                         | Conduit Entry    |                                                                                                   | Finish*               |                                          | Assembled in America |                                          |
| DF                   | Double Fuse                                                                                             | CE34             | Conduit entry 3/4IN NPT                                                                           | DBLBXD                | Textured black, super durable            | BAA                  | Buy American Act                         |
| SF                   | Single Fuse                                                                                             |                  |                                                                                                   | DBLXD                 | Black finish, super durable              |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBTXD                | Textured dark bronze, super durable      |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBXD                 | Dark bronze finish, super durable        |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNATXD                | Textured natural aluminum, super durable |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNAXD                 | Natural aluminum finish, super durable   |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHGXD                | Textured white, super durable            |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHXD                 | White, super durable                     |                      |                                          |

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Not all versions of the product are available with all options.

Specifications subject to change without notice.

Actual performance may differ as a result of end-user environment and application.

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See the full specification sheet at the product page link above for full product information and detailed ordering information.

Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.

Visit: <http://www.acuitybrandslighting.com/library/ll/documents/specsheets/acrylic-polycarbonate-compatibility.pdf> for Acrylic-Polycarbonate Compatibility table for suitable uses.

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# Submittal Spec Sheet

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Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AC

Qty:

## RSX2 LED Area Luminaire

Up to 31,000 lumens



### Product Submittal Description:

RSX Area Size 2, LED, Package 1, 4000K, IES type II, 120-277V,  
Square pole mounting, Textured black, super durable



The product images shown are for illustration purposes only and may not be an exact representation of the product.

[IES Files](#)

[BIM Models](#)

[Full Spec Sheet](#)

Product Webpage: [www.acuitybrands.com/products/detail/885181](http://www.acuitybrands.com/products/detail/885181)

Warranty: [www.acuitybrands.com/support/warranty/terms-and-conditions](http://www.acuitybrands.com/support/warranty/terms-and-conditions)

Model #: RSX2 LED P1 40K R2 MVOLT SPA DBLBXD ✓

| Series*       |                                     | Lamp Type* |                                                  | LED Configuration* |                                    | Correlated Color Temperature* |                     |
|---------------|-------------------------------------|------------|--------------------------------------------------|--------------------|------------------------------------|-------------------------------|---------------------|
| RSX2          | RSX Area Size 2                     | LED        | LED                                              | P1                 | Package 1                          | 30K                           | 3000K               |
|               |                                     |            |                                                  | P2                 | Package 2                          | 40K                           | 4000K               |
|               |                                     |            |                                                  | P3                 | Package 3                          | 50K                           | 5000K               |
|               |                                     |            |                                                  | P4                 | Package 4                          |                               |                     |
|               |                                     |            |                                                  | P5                 | Package 5                          |                               |                     |
|               |                                     |            |                                                  | P6                 | Package 6                          |                               |                     |
| Distribution* |                                     |            |                                                  | Voltage*           |                                    | Bird Deterrent                |                     |
| AFR           | Auto front row distribution         | R5S        | Type V, square                                   | 120                | 120V                               | BS                            | Bird spikes         |
| AFRL90        | Auto front row left rotated optics  |            |                                                  | 208                | 208V                               |                               |                     |
| AFRR90        | Auto front row right rotated optics |            |                                                  | 240                | 240V                               |                               |                     |
| R2            | IES type II                         |            |                                                  | 277                | 277V                               |                               |                     |
| R3            | IES type III asymmetric             |            |                                                  | 347                | 347V                               |                               |                     |
| R3S           | Type III short                      |            |                                                  | 480                | 480V                               |                               |                     |
| R4            | IES type IV forward throw           |            |                                                  | HVOLT              | 347-480V                           |                               |                     |
| R4S           | Type IV short                       |            |                                                  | MVOLT              | 120-277V                           |                               |                     |
| R5            | Type V distribution                 |            |                                                  | XVOLT              | XVOLT                              |                               |                     |
| Shielding     |                                     | Mounting   |                                                  |                    |                                    | Mounting Option               |                     |
| EGFV          | External glare full visor shield    | AARP       | Adjustable tilt arm round pole                   | WBASC              | Wall mount bracket surface conduit | IS                            | Integral Slipfitter |
| EGS           | External Glare Shield               | AASP       | Adjustable tilt arm square pole                  |                    |                                    |                               |                     |
| HS            | House-side shield                   | AAWB       | Adjustable tilt arm wall bracket                 |                    |                                    |                               |                     |
|               |                                     | AAWSC      | Adjustable tilt arm wall bracket surface conduit |                    |                                    |                               |                     |
|               |                                     | MA         | Mast arm adaptor, integral                       |                    |                                    |                               |                     |
|               |                                     | RPA        | Round pole mounting                              |                    |                                    |                               |                     |
|               |                                     | SPA        | Square pole mounting                             |                    |                                    |                               |                     |
|               |                                     | WBA        | Wall mount bracket                               |                    |                                    |                               |                     |



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# Submittal Spec Sheet

Dynamically Generated  
Series: RSX2

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: AC

Qty:

| Driver Configuration |                                                                                                         | Dimming Wires    |                                                                                                   | Dimmable/Controllable |                                          | Receptacle Type      |                                          |
|----------------------|---------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------|----------------------|------------------------------------------|
| DS                   | Dual switching; Provides 50/50 luminaire operation via two independent drivers on two separate circuits | DMG              | 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) | NLTAIR2               | Nlight air gen 2 controller              | PER7                 | Seven-wire receptacle only (no controls) |
| Photocell            |                                                                                                         | Internal Control |                                                                                                   | Surge Protection      |                                          | Field Adjustable     |                                          |
| PE                   | Photocell, buttontype                                                                                   | PIRHN            | Motion/ambient sensor 15-30FT- Networked                                                          | SPD20KV               | Additional surge protection 20KV         | FAO                  | Field adjustable output                  |
| PEX                  | Photocell, buttontype, external threaded adjustable                                                     |                  |                                                                                                   |                       |                                          |                      |                                          |
| Fusing               |                                                                                                         | Conduit Entry    |                                                                                                   | Finish*               |                                          | Assembled in America |                                          |
| DF                   | Double Fuse                                                                                             | CE34             | Conduit entry 3/4IN NPT                                                                           | DBLBXD                | Textured black, super durable            | BAA                  | Buy American Act                         |
| SF                   | Single Fuse                                                                                             |                  |                                                                                                   | DBLXD                 | Black finish, super durable              |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBTXD                | Textured dark bronze, super durable      |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DDBXD                 | Dark bronze finish, super durable        |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNATXD                | Textured natural aluminum, super durable |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DNAXD                 | Natural aluminum finish, super durable   |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHGXD                | Textured white, super durable            |                      |                                          |
|                      |                                                                                                         |                  |                                                                                                   | DWHXD                 | White, super durable                     |                      |                                          |

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Not all versions of the product are available with all options.

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Actual performance may differ as a result of end-user environment and application.

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See the full specification sheet at the product page link above for full product information and detailed ordering information.

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Visit: <http://www.acuitybrandslighting.com/library/ll/documents/specsheets/acrylic-polycarbonate-compatibility.pdf> for Acrylic-Polycarbonate Compatibility table for suitable uses.

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# Submittal Spec Sheet

Dynamically Generated

Series: DSXB

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: BB

Qty:

## D-Series Bollard

D-Series Bollard

### Product Submittal Description:

D-Series LED bollard, LED, 12 LEDs, Gen C, 350mA driver, 4000K, Asymmetric, 120-277V, Bollard 36IN height, Textured black, super durable



The product images shown are for illustration purposes only and may not be an exact representation of the product.

[IES Files](#)

[BIM Models](#)

[Full Spec Sheet](#)

Product Webpage: [www.acuitybrands.com/products/detail/229085](http://www.acuitybrands.com/products/detail/229085)

Warranty: [www.acuitybrands.com/support/warranty/terms-and-conditions](http://www.acuitybrands.com/support/warranty/terms-and-conditions)

Model #: DSXB LED 12C 350 40K ASY MVOLT H36 DBLBXD ✓

| Series*                       |                           | Lamp Type*    |                       | LED Configuration* |                | Driver*                |                                                                                                   |
|-------------------------------|---------------------------|---------------|-----------------------|--------------------|----------------|------------------------|---------------------------------------------------------------------------------------------------|
| DSXB                          | D-Series LED bollard      | LED           | LED                   | 12C                | 12 LEDs, Gen C | 350                    | 350mA driver                                                                                      |
|                               |                           |               |                       | 16C                | 16 LEDs, Gen C | 450                    | 450mA                                                                                             |
|                               |                           |               |                       |                    |                | 530                    | 530mA driver                                                                                      |
|                               |                           |               |                       |                    |                | 700                    | 700mA driver                                                                                      |
| Correlated Color Temperature* |                           | Distribution* |                       | Voltage*           |                | Dimming Wires          |                                                                                                   |
| 30K                           | 3000K                     | ASY           | Asymmetric            | 120                | 120V           | DMG                    | 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) |
| 40K                           | 4000K                     | SYM           | Symmetric             | 208                | 208V           |                        |                                                                                                   |
| 50K                           | 5000K                     |               |                       | 240                | 240V           |                        |                                                                                                   |
| AMBPC                         | Amber, Phosphor Converted |               |                       | 277                | 277V           |                        |                                                                                                   |
|                               |                           |               |                       | 347                | 347V           |                        |                                                                                                   |
|                               |                           |               |                       | MVOLT              | 120-277V       |                        |                                                                                                   |
| Receptacle Type               |                           | Photocell     |                       | Fusing             |                | Emergency Battery Pack |                                                                                                   |
| FG                            | Festoon with ground fault | PE            | Photocell, buttontype | DF                 | Double Fuse    | ELCW                   | Emergency battery backup, Cold weather                                                            |
|                               |                           |               |                       | SF                 | Single Fuse    |                        |                                                                                                   |



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# Submittal Spec Sheet

Dynamically Generated  
Series: DSXB

Date: 5/2/2022

Project: UNE ACHS Building

Group/Type: BB

Qty:

| Height |                     | Finish* |                                          |        |                                   | Less Anchor Bolts |                                                      |
|--------|---------------------|---------|------------------------------------------|--------|-----------------------------------|-------------------|------------------------------------------------------|
| H24    | Bollard 24IN height | DBLBXD  | Textured black, super durable            | DSPDXD | Textured dark grey, super durable | L/AB              | Less anchor bolts                                    |
| H30    | Bollard 30IN height | DBLXD   | Black finish, super durable              | DTGXD  | Tennis green, super durable       | L/AB4             | Less anchor bolts for 4 bolt pattern on LED bollards |
| H36    | Bollard 36IN height | DDBTXD  | Textured dark bronze, super durable      | DWHGXD | Textured white, super durable     |                   |                                                      |
|        |                     | DDBXD   | Dark bronze finish, super durable        | DWHXD  | White, super durable              |                   |                                                      |
|        |                     | DGCXD   | Charcoal grey, super durable             |        |                                   |                   |                                                      |
|        |                     | DGRHDXD | Dark green, RAL6012, super durable       |        |                                   |                   |                                                      |
|        |                     | DMBXD   | Medium bronze, super durable             |        |                                   |                   |                                                      |
|        |                     | DNATXD  | Textured natural aluminum, super durable |        |                                   |                   |                                                      |
|        |                     | DNAXD   | Natural aluminum finish, super durable   |        |                                   |                   |                                                      |

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February 28, 2022

Tom Saucier, P.E.  
Site Design Associates  
23 Whitney Way  
Topsham, Maine 04086

RE: SR#502606 772 Stevens Avenue, PO

Dear Mr. Saucier:

The Portland Water District Internal Review Team has met, discussed and ruled on your recent appeal to our decision to serve the proposed development at 772 Stevens Avenue, Portland. The Team has decided the following:

The Portland Water District will allow construction of a public water main within an easement, with terms acceptable to PWD, on the University of New England (UNE) campus to serve multiple UNE buildings. PWD will work with the development team to ensure that all horizontal and vertical separation requirements between water and adjacent utilities and subsurface features are met prior to plan approval. Water services to UNE buildings shall meet the minimum standard requirements as outlined in the PWD Terms & Conditions.

Should you disagree with this determination, you may further appeal this case to the Portland Water District Board of Trustees. The request must be made in writing to the Portland Water District c/o Board of Trustees. The Board of Trustees case appeals are scheduled at the discretion of the President of the Board.

If you choose not to appeal further, please continue to work with the Portland Water District MEANS group in order to advance the project.

Sincerely,  
Portland Water District

A handwritten signature in black ink, appearing to read 'Robert Bartels', written in a cursive style.

Robert Bartels, PE  
Senior Project Engineer

**TRAFFIC IMPACT STUDY  
COLLEGE OF OSTEOPATHIC MEDICINE  
UNIVERSITY OF NEW ENGLAND  
PORTLAND, MAINE**

**May 5, 2022**



**Prepared for:**

*Diane W. Morabito*

**UNIVERSITY OF NEW ENGLAND**



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## INTRODUCTION

The purpose of this report is to summarize the information requested by the City of Portland regarding a planned relocation of the College of Osteopathic Medicine (COM) to the Portland campus of the University of New England (UNE). The relocation of this program from the Biddeford campus to the Portland campus off Stevens Avenue will result in an additional 400 students on the Portland campus. The campus location is shown on the map in Figure 1.

It is understood that the Portland campus currently serves 1,198 students (fall of 2021). The COM program move would result in an additional 400 students on the Portland campus. Given this, the current enrollment of 1,198 students would grow to 1,598 students.

Construction of the new COM building is expected to begin as soon as permits are issued with occupancy planned for summer of 2024. Hence, 2024 was selected as the study year for traffic analysis purposes.

## TRIP GENERATION ANALYSIS

The number of trips to be generated by the proposed student increase due to the COM program was estimated utilizing the most recent Institute of Transportation Engineers (ITE) "Trip Generation" 11<sup>th</sup> edition report. This newest edition is based upon the largest and most current database and is the best information regarding trip making trends and is used as the basis for state traffic permitting in Maine. Land use code (LUC) 550 – University/College was used on the basis of student population. The results for the existing 1,198 and proposed 1,598 student populations are summarized in the table below:

| <u>Time Period</u>               | <b>ITE TRIP GENERATION – one-way trip ends</b> |                 |                 |
|----------------------------------|------------------------------------------------|-----------------|-----------------|
|                                  | <u>Existing</u>                                | <u>Proposed</u> | <u>Increase</u> |
| Daily                            | 1,870                                          | 2,494           | 624             |
| AM – Adjacent Street & Generator | 179                                            | 240             | 61              |
| Entering                         | 139                                            | 187             | 48              |
| Exiting                          | 40                                             | 53              | 13              |
| PM – Adjacent Street & Generator | 179                                            | 240             | 61              |
| Entering                         | 58                                             | 77              | 19              |
| Exiting                          | 121                                            | 163             | 42              |

As seen above, the proposed 400 student increase is expected to generate 61 new one-way trips during both the AM and PM peak hours.

## PERMITTING REQUIREMENTS

UNE last obtained a traffic movement permit (TMP) in 2008 for the College of Pharmacy (COP) when overall enrollment was 735 students. The TMP was issued for 300 new COP students bringing total enrollment to 1,035. Since that time UNE obtained City of Portland approval in 2012 to locate the College of Dental Medicine on the campus, which was projected to add an additional 138 students for a total enrollment of 1,173. A TMP was not required for the College of Dental Medicine since new trip generation was under 100 trips.

Currently, the college is looking to expand enrollment to 1,598 to accommodate the 400 student COM program. Since the last TMP was issued for 1,035 students the 563-student enrollment increase must be evaluated to determine if a TMP is required. Trip generation analysis was similarly performed for the previously approved 1,035 student population and the 1,598 proposed with the COM program. The results are summarized below:

| <u>Time Period</u>               | <b>ITE TRIP GENERATION – one-way trip ends</b> |                          |                 |
|----------------------------------|------------------------------------------------|--------------------------|-----------------|
|                                  | Permitted<br><u>1,035</u>                      | Proposed<br><u>1,598</u> | <u>Increase</u> |
| Daily                            | 1,614                                          | 2,494                    | 880             |
| AM – Adjacent Street & Generator | 155                                            | 240                      | 85              |
| Entering                         | 121                                            | 187                      | 66              |
| Exiting                          | 34                                             | 53                       | 19              |
| PM – Adjacent Street & Generator | 155                                            | 240                      | 85              |
| Entering                         | 49                                             | 77                       | 28              |
| Exiting                          | 106                                            | 163                      | 57              |

As can be seen above, the increase in trips from the previously permitted 1,035 students to the proposed 1,598 students is 85 new one-way trips. Given that this is less than 100, a TMP should not be required for the currently proposed COM program. A TMP will likely be required for any additional future development on the UNE campus which is expected to increase student population.

## TRAFFIC VOLUMES

Turning movement/classification counts were conducted by Accurate Counts on September 21, 2021 during the AM (7:00 – 9:00 AM) and PM (3:00 – 6:00) peak hour periods at the following study area intersections, as determined at a preliminary meeting with City staff:



| <u>Stevens/Forest Avenue Intersection Description</u> | <u>AM Peak Hour</u> | <u>PM Peak Hour</u> |
|-------------------------------------------------------|---------------------|---------------------|
| Signalized Walton Street & Stevens Avenue             | 7:30-8:30           | 4:30-5:30           |
| Unsignalized Finley Center Drive & Stevens Avenue     | 7:30-8:30           | 4:30-5:30           |
| Unsignalized College Street & Stevens Avenue          | 7:30-8:30           | 4:30-5:30           |
| Unsignalized Poland Street & UNE Drive                | 7:30-8:30           | 4:30-5:30           |
| Signalized Forest Avenue, Stevens Avenue & Bishop     | 7:30-8:30           | 4:30-5:30           |
| Signalized Forest Avenue and Allen Avenue             | 7:30-8:30           | 4:30-5:30           |
| Unsignalized Warren Avenue & Bishop Street Ext.       | 7:15-8:15           | 4:00-5:00           |

As seen above, the AM and PM peak hours consistently occurred from 7:30 – 8:30 AM and 4:30 – 5:30 PM with the exception of the Warren Avenue & Bishop Street Extension intersection, which was slightly offset. Hence, these are the analysis periods for the study. The signalized Forest Avenue intersections of Stevens/Bishop and Allen are commonly referred to collectively as Morrill's Corner. Since the counts were performed under peak conditions for the school year no seasonal factoring was required. The 2021 AM and PM peak hour volumes for the adjacent street system, the analysis periods, are shown in Figure 2.

Existing average annual daily traffic (AADT) data for the vicinity of the campus was obtained from "Traffic Volume Counts, 2019, 2014 and 2012 Annual Reports", published by MaineDOT as well as the current MaineDOT interactive traffic map. This data is summarized below:

| <u>Location</u>                      | <b>Average Annual Daily Traffic</b> |             |             |             |             |
|--------------------------------------|-------------------------------------|-------------|-------------|-------------|-------------|
|                                      | <u>2008</u>                         | <u>2010</u> | <u>2013</u> | <u>2016</u> | <u>2019</u> |
| Bishop Street, west of Forest Avenue | ---                                 | ---         | 1650        | ---         | ---         |
| Walton Street, west of Forest Avenue | ---                                 | 2800        | 3120        | 2580        | ---         |
| Forest Avenue, nw of Warren Avenue   | 20020                               | 19010       | 19820       | 18140       | ---         |
| Forest Avenue, no. of Arbor Street   |                                     |             | 24500       | 22140       | 22570       |
| Forest Avenue, no. of Walton Street  | ---                                 | ---         | 21830       | ---         | ---         |
| Forest Avenue, so. of Walton Street  | ---                                 | ---         | 21710       | ---         | ---         |
| Stevens Avenue, so. of Walton Street | ---                                 | 12510       | 11680       | 11620       | ---         |
| Stevens Avenue, no. of Walton Street | ---                                 | 11170       | 10980       | 11180       | ---         |
| Stevens Avenue, so. of Forest Avenue | ---                                 | 10360       | 10050       | 11230       | ---         |
| Warren Avenue, sw of Forest Avenue   | 13370                               | 11560       | 13130       | 11390       | 12380       |

As demonstrated above, traffic volumes in the vicinity of the campus have generally declined over the most recent 2013 to 2019 period. Only two locations showed positive growth, both on Stevens Avenue. The average annual growth on Stevens Avenue was 0.5 %. This 0.5 % annual growth rate was conservatively used for the entire study area to project the recent 2021 volumes to base 2024 volumes.

In terms of other approved developments, which need to be considered in the future traffic analysis, the City Planner identified:

- 844 Stevens Avenue – 21 residential units and 800 S.F. office
- 1207 Stevens Avenue - Sweet Dirt – 2,000 S.F. Marijuana Sales Shop
- Stevens Square – 140 Additional Senior Dwelling Units

The trips for 844 and 1207 Stevens Avenue were estimated using the 11<sup>th</sup> edition ITE report, since no traffic studies have been performed. 844 Stevens is projected to generate 9 AM peak hour trips (3 in and 6 out) and 14 PM peak hour trips (8 in and 6 out). Sweet Dirt is projected to generate 21 AM (11 in and 10 out) and 38 PM (19 in and 19 out) peak hour trips based upon LUC 882 – Marijuana Dispensary. The trips for Stevens Square were obtained from information contained in “Stevens Square, Trip Generation and Parking Demand” memorandum, prepared by Sewall and dated 11/9/2021. Stevens Square will generate 28 AM peak hour trips (10 in and 18 out) and 36 PM peak hour trips (20 in and 16 out). The Stevens Square trips were assigned based upon trip assignment patterns of the original Traffic Impact Study, prepared by Maine Traffic Resources. The 844 Stevens and Sweet Dirt trips were assigned to the study area based upon the existing travel patterns since no traffic studies were performed. The other development trips are shown in Figures 3 and 4 for the AM and PM peak hours.

The projected 2024 No Build volumes, considering both the 0.5 % annual traffic growth rate and the trips generated by the three other area development projects, are shown in Figure 5.

The trip assignments for the 61 new AM and PM peak hour trips were assigned based upon the existing university travel patterns revealed by the fall 2021 counts at the primary college access drives. These peak hour patterns are as follows:

| <u>Peak Hour Period</u> | <u>Trip Type</u> | <u>To/From North</u> | <u>To/From South</u> | <u>To/From West</u> | <u>To/From East</u> |
|-------------------------|------------------|----------------------|----------------------|---------------------|---------------------|
| AM Peak Hour            | Entering         | 42 %                 | 42 %                 | 15 %                | 1 %                 |
| AM Peak Hour            | Exiting          | 39 %                 | 46 %                 | 15 %                | 0 %                 |
| PM Peak Hour            | Entering         | 42 %                 | 42 %                 | 11 %                | 5%                  |
| PM Peak Hour            | Exiting          | 41 %                 | 43 %                 | 14 %                | 2 %                 |

It is understood that the COM program will be assigned parking in the planned A1 lot, which would be accessed by the campus drive north of Innovation Hall. Given that the Bishop Street lot is a free lot some students would be expected to park there. The percentage of trips assigned to Bishop Street, versus the A1 lot, was based upon the overall

percentage of all campus trips utilizing the Bishop Street lot. The new COM trips were then assigned to the other study intersections based upon the existing traffic patterns recorded during the counts. The resulting trip assignments are shown in Figure 6. The projected 2024 Build volumes, allowing for annual traffic growth, the three other development projects, and for the 400 student COM program are shown in Figure 7.

### CAPACITY ANALYSIS

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for signalized intersections is based upon the average control or signal delay per vehicle. These criteria are defined in the following table excerpted from the 2010 "Highway Capacity Manual":

#### **Signalized Intersection Level of Service**

| <u>LOS</u> | <u>Delay Range</u> |
|------------|--------------------|
| A          | < = 10.0 seconds   |
| B          | > 10.0 and <= 20.0 |
| C          | > 20.0 and <= 35.0 |
| D          | > 35.0 and <= 55.0 |
| E          | > 55.0 and <= 80.0 |
| F          | > 80.0             |

The level of service for unsignalized intersections is based upon average control delay per vehicle for each minor, opposed movement, as defined in the following table:

#### **Unsignalized Intersection Level of Service**

| <u>LOS</u> | <u>Delay Range</u> |
|------------|--------------------|
| A          | < = 10.0 seconds   |
| B          | > 10.0 and <= 15.0 |
| C          | > 15.0 and <= 25.0 |
| D          | > 25.0 and <= 35.0 |
| E          | > 35.0 and <= 50.0 |
| F          | > 50.0             |

### SIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was calculated for the signalized study area intersections for base 2021 and projected 2024 No Build and Build conditions using Synchro 11 and SimTraffic. The existing signal timings and phasings were previously obtained from the City of Portland. Both signals are running under adaptive control, which was best simulated by optimizing timings. The average of the results of five (5) SimTraffic runs are provided in the appendix and are summarized in the following table for the AM and PM analysis periods:

| <b>Stevens Avenue, Forest Avenue &amp; Bishop Street</b> |                      |                          |                       |
|----------------------------------------------------------|----------------------|--------------------------|-----------------------|
| <b>AM Peak Hour Level of Service</b>                     |                      |                          |                       |
| <u>Approach/Lane</u>                                     | <u>Base<br/>2021</u> | <u>No Build<br/>2024</u> | <u>Build<br/>2024</u> |
| <b>Eastbound Bishop Street</b>                           | <b>E (67.7)</b>      | <b>E (67.2)</b>          | <b>E (71.6)</b>       |
| Northbound Forest Through/Left                           | D (44.0)             | D (50.4)                 | D (50.2)              |
| Northbound Forest Through                                | D (54.1)             | E (66.9)                 | E (63.0)              |
| <b>Northbound Forest Overall</b>                         | <b>D (49.3)</b>      | <b>E (58.8)</b>          | <b>E (56.8)</b>       |
| Southbound Forest Through                                | D (51.4)             | D (49.6)                 | D (50.9)              |
| Southbound Forest Right                                  | E (58.2)             | E (55.2)                 | E (58.7)              |
| <b>Southbound Forest Overall</b>                         | <b>D (54.4)</b>      | <b>D (52.0)</b>          | <b>D (54.3)</b>       |
| Stevens Left                                             | D (42.6)             | D (44.8)                 | D (47.8)              |
| Stevens Left/Right                                       | E (66.6)             | E (71.6)                 | E (79.4)              |
| <b>Stevens Overall</b>                                   | <b>D (54.8)</b>      | <b>E (57.8)</b>          | <b>E (63.2)</b>       |
| <b>Intersection Overall</b>                              | <b>D (54.0)</b>      | <b>E (55.8)</b>          | <b>E (57.7)</b>       |
| <b>PM Peak Hour Level of Service</b>                     |                      |                          |                       |
| <u>Approach/Lane</u>                                     | <u>Base<br/>2021</u> | <u>No Build<br/>2024</u> | <u>Build<br/>2024</u> |
| <b>Eastbound Bishop Street</b>                           | <b>D (41.0)</b>      | <b>D (40.0)</b>          | <b>D (40.7)</b>       |
| Northbound Forest Throughs/Left                          | D (37.3)             | D (48.4)                 | D (52.9)              |
| Northbound Forest Through                                | C (24.1)             | C (35.0)                 | D (37.1)              |
| <b>Northbound Forest Overall</b>                         | <b>C (29.0)</b>      | <b>D (40.3)</b>          | <b>D (43.0)</b>       |
| Southbound Forest Through                                | B (17.5)             | B (18.5)                 | B (19.3)              |
| Southbound Forest Right                                  | B (16.8)             | B (18.9)                 | B (18.5)              |
| <b>Southbound Forest Overall</b>                         | <b>B (17.2)</b>      | <b>B (18.7)</b>          | <b>B (19.0)</b>       |
| Stevens Left                                             | C (30.3)             | C (29.7)                 | C (30.4)              |
| Stevens Lefts/Right                                      | D (42.7)             | D (46.2)                 | D (46.1)              |
| <b>Stevens Overall</b>                                   | <b>D (36.6)</b>      | <b>D (37.8)</b>          | <b>D (38.1)</b>       |
| <b>Intersection Overall</b>                              | <b>C (25.9)</b>      | <b>C (30.2)</b>          | <b>C (31.4)</b>       |

As seen in the preceding table, the intersection of Forest Avenue, Stevens Avenue and Bishop Street currently is experiencing some capacity constraints, with the greatest constraints occurring in the AM peak hour. During the AM peak hour under 2024 No Build volumes, the Bishop Street, northbound Forest, and Stevens Avenue approaches are all expected to operate at LOS “E” with the overall intersection also at “E”. The proposed COM relocation is not expected to significantly impact the intersection since the same LOS “E” is projected for the constrained approaches as well as the overall intersection. Delay at the intersection is expected to increase by less than 2 seconds due to the additional COM trips.

During the PM peak hour no capacity concerns were identified by the analysis with all approaches operating at LOS “D” or better. The intersection will operate at LOS “C” overall during the PM peak hour under both 2024 No Build and Build volumes. The recent “Portland – South Portland Smart Corridor Plan”, completed in 2019 found similar capacity constraints.

| <b>Allen Avenue &amp; Forest Avenue</b> |                            |                                |                             |
|-----------------------------------------|----------------------------|--------------------------------|-----------------------------|
| <b>AM Peak Hour Level of Service</b>    |                            |                                |                             |
| <u>Approach/Lane</u>                    | <u>Base</u><br><u>2021</u> | <u>No Build</u><br><u>2024</u> | <u>Build</u><br><u>2024</u> |
| Eastbound Driveway Left                 | C (23.0)                   | C (27.2)                       | C (33.5)                    |
| Eastbound Driveway Through              | D (50.3)                   | D (48.2)                       | D (46.6)                    |
| Eastbound Driveway Right                | F (87.2)                   | F (76.6)                       | F (85.2)                    |
| <b>Eastbound Driveway</b>               | <b>E (65.5)</b>            | <b>E (60.5)</b>                | <b>E (66.6)</b>             |
| Westbound Allen Ave Left                | F (334.7)                  | F (333.4)                      | F (334.0)                   |
| Westbound Allen Ave Left/Through        | F (242.7)                  | F (266.4)                      | F (247.3)                   |
| Westbound Allen Ave Right               | A (6.8)                    | A (8.2)                        | A (7.4)                     |
| <b>Westbound Allen Ave</b>              | <b>F (186.3)</b>           | <b>F (190.8)</b>               | <b>F (189.6)</b>            |
| Northbound Forest Left                  | E (61.9)                   | E (56.3)                       | D (51.9)                    |
| Northbound Forest Through               | C (28.4)                   | C (31.5)                       | C (34.5)                    |
| Northbound Forest Through               | D (40.8)                   | D (43.4)                       | D (45.5)                    |
| Northbound Forest Right                 | A (9.7)                    | A (9.9)                        | A (9.7)                     |
| <b>Northbound Forest Overall</b>        | <b>C (25.0)</b>            | <b>C (27.0)</b>                | <b>C (28.3)</b>             |
| Southbound Forest Left                  | D (54.3)                   | D (53.7)                       | E (57.9)                    |
| Southbound Forest Through               | F (334.4)                  | F (327.2)                      | F (336.6)                   |
| Southbound Forest Through/Right         | F (215.2)                  | F (205.9)                      | F (219.9)                   |
| <b>Southbound Forest Overall</b>        | <b>F (236.7)</b>           | <b>F (229.9)</b>               | <b>F (236.9)</b>            |
| <b>Intersection Overall</b>             | <b>F (145.8)</b>           | <b>F (143.3)</b>               | <b>F (146.2)</b>            |



| <u>Approach/Lane</u>             | <b>PM Peak Hour Level of Service</b> |                 |                 |
|----------------------------------|--------------------------------------|-----------------|-----------------|
|                                  | Base                                 | No Build        | Build           |
|                                  | <u>2021</u>                          | <u>2024</u>     | <u>2024</u>     |
| Eastbound Driveway Left          | C (32.2)                             | C (31.8)        | C (29.5)        |
| Eastbound Driveway Through       | D (44.2)                             | D (47.6)        | D (43.8)        |
| Eastbound Driveway Right         | A (9.5)                              | A (9.8)         | A (9.4)         |
| <b>Eastbound Driveway</b>        | <b>C (30.2)</b>                      | <b>C (31.7)</b> | <b>C (29.9)</b> |
| Westbound Allen Ave Left         | C (29.2)                             | C (31.0)        | C (32.0)        |
| Westbound Allen Ave Left/Through | D (53.4)                             | D (41.9)        | D (48.7)        |
| Westbound Allen Ave Right        | B (11.4)                             | A (9.0)         | B (11.1)        |
| <b>Westbound Allen Ave</b>       | <b>C (25.7)</b>                      | <b>C (23.0)</b> | <b>C (24.8)</b> |
| Northbound Forest Left           | D (48.0)                             | D (39.2)        | D (43.2)        |
| Northbound Forest Through        | C (29.5)                             | C (34.2)        | C (29.7)        |
| Northbound Forest Through        | D (42.0)                             | D (49.8)        | D (45.1)        |
| Northbound Forest Right          | C (25.8)                             | C (28.6)        | C (25.3)        |
| <b>Northbound Forest Overall</b> | <b>C (32.5)</b>                      | <b>D (37.1)</b> | <b>C (33.0)</b> |
| Southbound Forest Left           | D (44.5)                             | D (48.9)        | E (73.6)        |
| Southbound Forest Through        | C (20.5)                             | C (24.6)        | E (61.6)        |
| Southbound Forest Through/Right  | B (12.9)                             | B (13.0)        | C (27.3)        |
| <b>Southbound Forest Overall</b> | <b>C (25.6)</b>                      | <b>C (28.8)</b> | <b>D (54.5)</b> |
| <b>Intersection Overall</b>      | <b>C (28.6)</b>                      | <b>C (30.9)</b> | <b>D (38.3)</b> |

As seen in the preceding tables, there are also existing constraints at the intersection of Forest Avenue and Allen Avenue during the AM peak hour. Both the westbound Allen Avenue approach and the southbound Forest Avenue operate at LOS “F”. Similar LOS and delays are projected for both No Build and Build conditions demonstrating the UNE project will have little impact on this intersection during the AM period.

During the PM peak hour there are also fewer constraints at this intersection with most lanes projected to operate at acceptable levels under 2024 Build volumes. The city has a planned improvement project at the Morrill’s Corner intersections. The planned improvements, based upon the Smart Corridor Plan, would be expected to address the existing capacity constraints. This analysis has demonstrated that the additional UNE trips will not have significant impacts on Morrill’s Corner operations.

UNE has previously contributed a \$ 29,000 impact fee to the city specifically for Morrill’s Corner improvements. This fee was required as part of the 2008 approval for the College of Pharmacy.

| Stevens Avenue & Walton Street<br>AM Peak Hour Level of Service |                     |                         |                      |
|-----------------------------------------------------------------|---------------------|-------------------------|----------------------|
| <u>Approach/Lane</u>                                            | Base<br><u>2021</u> | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Westbound Walton Left                                           | D (39.0)            | D (40.3)                | D (41.1)             |
| Westbound Walton Right                                          | A (4.9)             | A (5.4)                 | A (6.7)              |
| <b>Westbound Walton Overall</b>                                 | <b>C (27.6)</b>     | <b>C (27.7)</b>         | <b>C (28.7)</b>      |
| <b>Northbound Stevens Overall</b>                               | <b>A (9.2)</b>      | <b>B (10.3)</b>         | <b>B (10.6)</b>      |
| Southbound Stevens Left                                         | B (11.5)            | B (12.9)                | B (13.2)             |
| Southbound Stevens Through                                      | A (9.2)             | B (10.4)                | A (9.6)              |
| <b>Southbound Stevens Overall</b>                               | <b>A (9.4)</b>      | <b>B (10.6)</b>         | <b>A (9.8)</b>       |
| <b>Intersection Overall</b>                                     | <b>B (12.9)</b>     | <b>B (13.9)</b>         | <b>B (13.9)</b>      |

| PM Peak Hour Level of Service     |                     |                         |                       |
|-----------------------------------|---------------------|-------------------------|-----------------------|
| <u>Approach/Lane</u>              | Base<br><u>2021</u> | No Build<br><u>2024</u> | Build<br><u>20234</u> |
| Westbound Walton Left             | D (53.5)            | D (47.1)                | D (51.9)              |
| Westbound Walton Right            | A (6.3)             | A (7.5)                 | A (7.1)               |
| <b>Westbound Walton Overall</b>   | <b>D (40.0)</b>     | <b>D (35.9)</b>         | <b>D (39.2)</b>       |
| <b>Northbound Stevens Overall</b> | <b>B (15.7)</b>     | <b>C (21.7)</b>         | <b>C (20.5)</b>       |
| Southbound Stevens Left           | B (18.1)            | B (19.3)                | C (20.8)              |
| Southbound Stevens Through        | B (11.7)            | B (11.9)                | B (12.2)              |
| <b>Southbound Stevens Overall</b> | <b>B (12.8)</b>     | <b>B (13.1)</b>         | <b>B (13.7)</b>       |
| <b>Intersection Overall</b>       | <b>B (18.4)</b>     | <b>C (20.4)</b>         | <b>C (20.6)</b>       |

As seen above, there are no capacity concerns at the signalized intersection of Stevens Avenue and Walton Street under projected 2024 No Build and Build volumes. All lanes are projected to operate at LOS "D" or better, during both peak hours, indicating that the intersection has the ability to accommodate the additional traffic from the relocation of the COM program to the Portland campus.

### UNSIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was similarly determined for the unsignalized study area intersections for 2021 and projected 2024 No Build and Build conditions using Synchro 11 and SimTraffic. The average of the results of five (5) SimTraffic runs are provided in the appendix and are summarized in the following tables:

#### **Warren Avenue & Bishop Street Extension**

##### **AM Peak Hour LOS**

| <u>Approach/Lane</u>                  | Base<br><u>2021</u> | No Build<br><u>2024</u> | Build<br><u>2024</u> |
|---------------------------------------|---------------------|-------------------------|----------------------|
| Eastbound Warren Through/Right        | A (2.8)             | A (2.8)                 | A (2.9)              |
| Westbound Warren Left/Through         | A (3.3)             | A (3.6)                 | A (3.0)              |
| Northbound Bishop St. Ext. Left/Right | C (18.3)            | C (16.1)                | C (18.4)             |
| <b>Intersection Overall</b>           | <b>A (3.5)</b>      | <b>A (3.6)</b>          | <b>A (3.5)</b>       |

##### **PM Peak Hour LOS**

| <u>Approach/Lane</u>                  | Base<br><u>2021</u> | No Build<br><u>2024</u> | Build<br><u>2024</u> |
|---------------------------------------|---------------------|-------------------------|----------------------|
| Eastbound Warren Through/Right        | A (1.8)             | A (1.8)                 | A (1.8)              |
| Westbound Warren Left/Through         | A (1.3)             | A (1.2)                 | A (1.7)              |
| Northbound Bishop St. Ext. Left/Right | C (16.4)            | C (16.1)                | C (17.3)             |
| <b>Intersection Overall</b>           | <b>A (2.7)</b>      | <b>A (2.5)</b>          | <b>A (2.8)</b>       |

As seen in the preceding tables, the unsignalized Bishop Street Extension approach to Warren Avenue operates at a good level of service during both peak hour periods under Build volumes. As a result, there are no capacity concerns at this intersection.

#### **Stevens Avenue & College Street**

##### **AM Peak Hour LOS**

| <u>Approach/Lane</u>        | Base<br><u>2021</u> | No Build<br><u>2024</u> | Build<br><u>2024</u> |
|-----------------------------|---------------------|-------------------------|----------------------|
| Eastbound College Street    | B (11.3)            | B (15.7)                | A (5.9)              |
| Northbound Stevens Avenue   | A (1.5)             | A (1.6)                 | A (1.4)              |
| Southbound Stevens Avenue   | A (1.3)             | A (1.2)                 | A (1.2)              |
| <b>Intersection Overall</b> | <b>A (1.5)</b>      | <b>A (1.5)</b>          | <b>A (1.4)</b>       |

| <u>Approach/Lane</u>        | <b>PM Peak Hour LOS</b> |                         |                      |
|-----------------------------|-------------------------|-------------------------|----------------------|
|                             | Base<br><u>2021</u>     | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Eastbound College Street    | B (10.8)                | B (11.4)                | B (11.5)             |
| Northbound Stevens Avenue   | A (0.8)                 | A (0.9)                 | A (0.8)              |
| Southbound Stevens Avenue   | A (0.7)                 | A (0.8)                 | A (0.8)              |
| <b>Intersection Overall</b> | <b>A (1.6)</b>          | <b>A (1.6)</b>          | <b>A (1.6)</b>       |

| <b>Stevens Avenue &amp; Finley Center Drive</b> |                         |                         |                      |
|-------------------------------------------------|-------------------------|-------------------------|----------------------|
| <u>Approach/Lane</u>                            | <b>AM Peak Hour LOS</b> |                         |                      |
|                                                 | Base<br><u>2021</u>     | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Eastbound Finley Center Drive                   | A (5.1)                 | A (4.4)                 | A (4.7)              |
| Northbound Stevens Avenue                       | A (2.9)                 | A (2.9)                 | A (2.9)              |
| Southbound Stevens Avenue                       | A (1.3)                 | A (1.3)                 | A (1.2)              |
| <b>Intersection Overall</b>                     | <b>A (2.2)</b>          | <b>A (2.1)</b>          | <b>A (2.2)</b>       |

| <u>Approach/Lane</u>          | <b>PM Peak Hour LOS</b> |                         |                      |
|-------------------------------|-------------------------|-------------------------|----------------------|
|                               | Base<br><u>2021</u>     | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Eastbound Finley Center Drive | A (9.5)                 | A (9.6)                 | B (10.7)             |
| Northbound Stevens Avenue     | A (2.5)                 | A (2.7)                 | A (2.6)              |
| Southbound Stevens Avenue     | A (1.1)                 | A (1.1)                 | A (1.1)              |
| <b>Intersection Overall</b>   | <b>A (2.0)</b>          | <b>A (2.1)</b>          | <b>A (2.1)</b>       |

| <b>Stevens Avenue, UNE Driveway &amp; Poland Street</b> |                         |                         |                      |
|---------------------------------------------------------|-------------------------|-------------------------|----------------------|
| <u>Approach/Lane</u>                                    | <b>AM Peak Hour LOS</b> |                         |                      |
|                                                         | Base<br><u>2021</u>     | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Eastbound UNE Driveway                                  | B (12.4)                | B (15.0)                | B (10.1)             |
| Westbound Poland Street                                 | A (8.1)                 | A (10.2)                | B (11.1)             |
| Northbound Stevens Avenue                               | A (1.3)                 | A (1.0)                 | A (1.8)              |
| Southbound Stevens Avenue                               | A (3.0)                 | A (2.8)                 | A (3.2)              |
| <b>Intersection Overall</b>                             | <b>A (2.5)</b>          | <b>A (2.4)</b>          | <b>A (3.0)</b>       |

| <u>Approach/Lane</u>        | <b>PM Peak Hour LOS</b> |                         |                      |
|-----------------------------|-------------------------|-------------------------|----------------------|
|                             | Base<br><u>2021</u>     | No Build<br><u>2024</u> | Build<br><u>2024</u> |
| Eastbound UNE Driveway      | A (9.6)                 | A (8.6)                 | B (10.6)             |
| Westbound Poland Street     | B (10.1)                | B (11.4)                | B (11.2)             |
| Northbound Stevens Avenue   | A (0.8)                 | A (0.8)                 | A (1.0)              |
| Southbound Stevens Avenue   | A (2.5)                 | A (2.5)                 | A (2.6)              |
| <b>Intersection Overall</b> | <b>A (1.9)</b>          | <b>A (2.0)</b>          | <b>A (2.4)</b>       |

As seen in the preceding tables, all major university drive intersections currently operate at good levels of service, “B” or better, during both peak hours. The LOS is projected to remain at good levels through 2024 Build conditions with the COM program relocated to Portland. Hence, there are no capacity concerns regarding operations at these access intersections.

## [SAFETY ANALYSIS](#)

### [ACCIDENT REVIEW](#)

The Maine Department of Transportation uses two criteria to determine high crash locations (HCLs). The first is the critical rate factor (CRF), which is a measure of the accident rate. A CRF greater than one indicates a location which has a higher than expected crash rate. The expected rate is calculated as a statewide average of similar facilities.

The second criterion, which must also be met, is based upon the number of accidents that occur at a particular location. Eight or more accidents must occur over the three-year study period for the location to be considered a high crash location. Accident data was obtained from MaineDOT for the vicinity of the campus within the study area outlined at the staff meeting. The CRF and number of accidents are summarized by location for the most recent three-year period, 2018 to 2020, in the tables on the following page:



| <u>Stevens Avenue Location Description</u>                              | <u># of Acc.</u> | <u>CRF</u>  |
|-------------------------------------------------------------------------|------------------|-------------|
| Intersection of Walton Street                                           | 1                | 0.06        |
| Between Walton and St. Joseph's Streets                                 | 1                | 0.29        |
| Intersection of St. Joseph's Street                                     | 2                | 0.39        |
| Between St. Joseph's and Elmwood Streets                                | 2                | 0.39        |
| Between Elmwood and Waverly Streets                                     | 1                | 0.25        |
| Intersection of Waverly Street                                          | 5                | 1.05        |
| Intersection of College Street                                          | 0                | ---         |
| Between College and Poland Streets                                      | 1                | 0.27        |
| Between Poland and Arbor Streets                                        | 4                | 0.71        |
| Intersection of Arbor Street                                            | 2                | 0.42        |
| <b>Between Arbor Street and 0.03 mile south of Forest Avenue/Bishop</b> | <b>8</b>         | <b>1.23</b> |
| 0.03 mile south of Forest Avenue/Bishop Street                          | 1                | 0.21        |
| <i>Intersection of Forest Avenue and Bishop Street</i>                  | 33               | 0.89        |

| <u>Forest Avenue Location Description</u>                | <u># of Acc.</u> | <u>CRF</u>  |
|----------------------------------------------------------|------------------|-------------|
| <b>Between Bishop Street and slip to Allen Avenue</b>    | <b>12</b>        | <b>1.64</b> |
| <b>Intersection of Allen Avenue and McDonald's Drive</b> | <b>48</b>        | <b>1.26</b> |

| <u>Warren Avenue Location Description</u>        | <u># of Acc.</u> | <u>CRF</u> |
|--------------------------------------------------|------------------|------------|
| Intersection of Bishop Street Extension          | 1                | 0.20       |
| Between Bishop Street Extension and Hicks Street | 6                | 0.36       |
| Intersection of Hicks Street                     | 2                | 0.35       |
| Between Hicks Street and Forest Avenue           | 3                | 0.24       |

| <u>Bishop Street Location Description</u>  | <u># of Acc.</u> | <u>CRF</u> |
|--------------------------------------------|------------------|------------|
| Between Mayfield Street and 0.22 mile west | 2                | 0.57       |

As seen above, there are three high crash locations within the vicinity of the UNE campus, highlighted in bold print. One additional location (in italics) is approaching the high crash criteria. As a result, collision diagrams were requested from MaineDOT to determine if there are any accident patterns or trends, which may indicate a potentially correctable safety deficiency. These diagrams are included in the appendix and are evaluated as follows:

Stevens Avenue Between Arbor Street and 0.03 mile south of Forest Avenue/Bishop

Three crashes occurred in 2018, two in 2019 and three in 2020. One was a rear-end collision as a vehicle turned, attributed to speed. One crash occurred as a vehicle improperly backed from a drive into traffic. One sideswipe occurred when a parked vehicle pulled into traffic, typical of on-street parking locations. One angle collision occurred when a vehicle exited a drive. A single vehicle hit a parked vehicle, attributed to reckless driving. One bicyclist was hit crossing Stevens, which was attributed to bicyclist error. There were two pedestrian accidents, one attributed to pedestrian error and one which was a hit and run. It appears that these pedestrian and bicyclist accidents occurred in the middle of the link and not at a crosswalk location. Given that there are marked crosswalks on the north side of Arbor Street and at Bishop/Forest, which are only 600' apart, no additional crosswalks are recommended since crosswalks would be closer than the 400' MaineDOT standard and removal of on-street parking would also be required.

Forest Avenue Between Bishop Street and slip to Allen Avenue

There were seven accidents in 2018, three in 2019 and two in 2020. Six of the crashes were rear-end collisions; four northbound and two southbound, mostly attributed to following too close, which are generally considered uncorrectable. There were two sideswipe type collisions, typical of multi-lane facilities. The remaining four crashes were angles with vehicles entering or exiting the ScrubaDub driveway. Access management is recommended as properties redevelop along this segment of Forest Avenue to reduce the number of conflict points and turning movements.

Intersection of Forest Avenue and Bishop Street

There were 17 accidents in 2018, 8 in 2019 and 8 in 2020. Approximately half (17) of the crashes were rear end collisions, typical of signalized approaches. Most of the rear-ends were attributed to following too closely. Adaptive traffic signal control was implemented at this intersection in 2019. It appears that rear-ends have been reduced significantly since it was activated since only two rear-ends occurred in 2020 and 11 had occurred in 2018. There were 11 angle collisions, all involving left turns on or off Forest Avenue. There were three sideswipe type collisions, typical of multi-lane approaches. There was one head on collision due to OUI. Lastly, one pedestrian was struck on Forest Avenue, which was attributed to pedestrian error. The general decline in yearly accidents appears to confirm that the adaptive signal control has reduced accident potential.

Intersection of Allen Avenue, Forest Avenue and McDonald's Drive

There were 22 crashes in 2018, 17 in 2019 and 9 in 2020. The majority of the accidents were rear-end collisions on the signalized intersection approaches, 27 in total. These are typical of signalized intersections and are generally considered uncorrectable. However, again, the adaptive signal control appears to have reduced yearly collisions since it was activated in 2019. There were 7 angle collisions, due to red light running and failure to yield. Five of these angle collisions occurred in 2018, prior to adaptive control. Twelve were sideswipe collisions due to failure to keep in lane, typical of high-volume multilane facilities. There was a single pedestrian accident, attributed to intoxication of the pedestrian. There was a head single head on type collision on Forest Avenue. There is no pattern of correctable type collisions evident from the diagram. Accident potential overall appears to have been reduced due to the activation of adaptive control in 2019.

## SUMMARY AND RECOMMENDATIONS

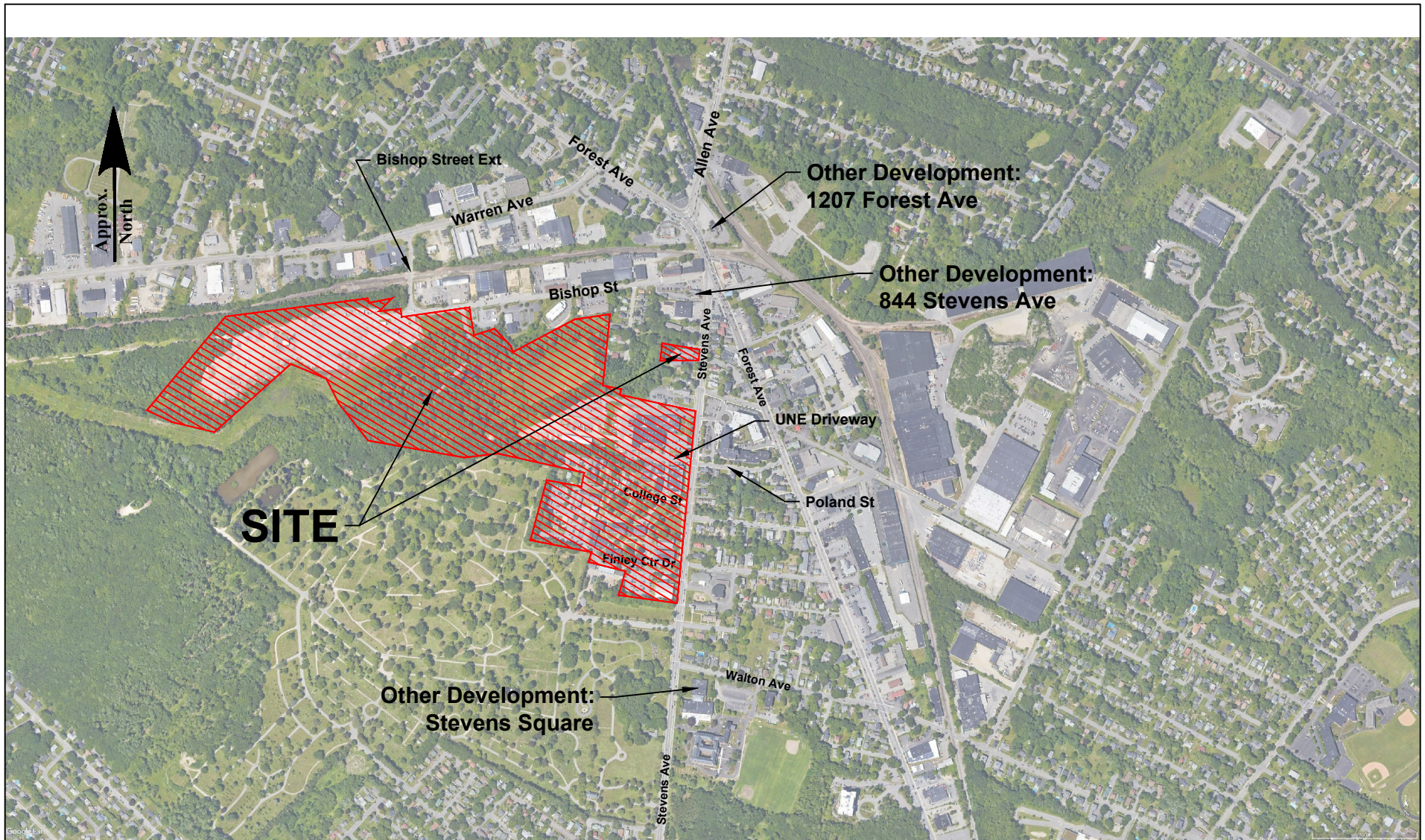
Traffic analysis was performed for the relocation of the College of Osteopathic Medicine to the UNE Portland campus. This relocation is expected to generate 61 new one-way trips during both the AM and PM peak hours to the campus. An analysis of new trip generation since the last TMP was issued to the University in 2008 shows that a TMP is not required for this program nor for previous enrollment growth.

Based upon the capacity analyses, there are existing capacity constraints at the Morrill's corner intersections. The analysis indicates that the greatest constraints occur during the AM peak hour. The analyses show that the proposed additional trips from the relocation of the COM program to Portland will not have significant impacts on either of these signalized intersections. It is understood that the City of Portland has planned an improvement project for Morrill's Corner that is expected to address the capacity constraints, which will be based upon the "Portland – South Portland Smart Corridor Plan". The small number of new UNE trips at Morrill's Corner are not expected to impact the capacity improvements, based upon the minimal number of new lane hour trips shown by the trip assignments. UNE previously contributed a \$ 29,000 impact fee for future improvements at Morrill's Corner as part of the College of Pharmacy approval.

All other signalized and unsignalized study area intersections are expected to operate at acceptable levels of service under 2024 Build volumes. The additional peak hour trips should have no significant impact off site based upon the analyses. All university drives are expected to function at good levels of service with no capacity concerns.

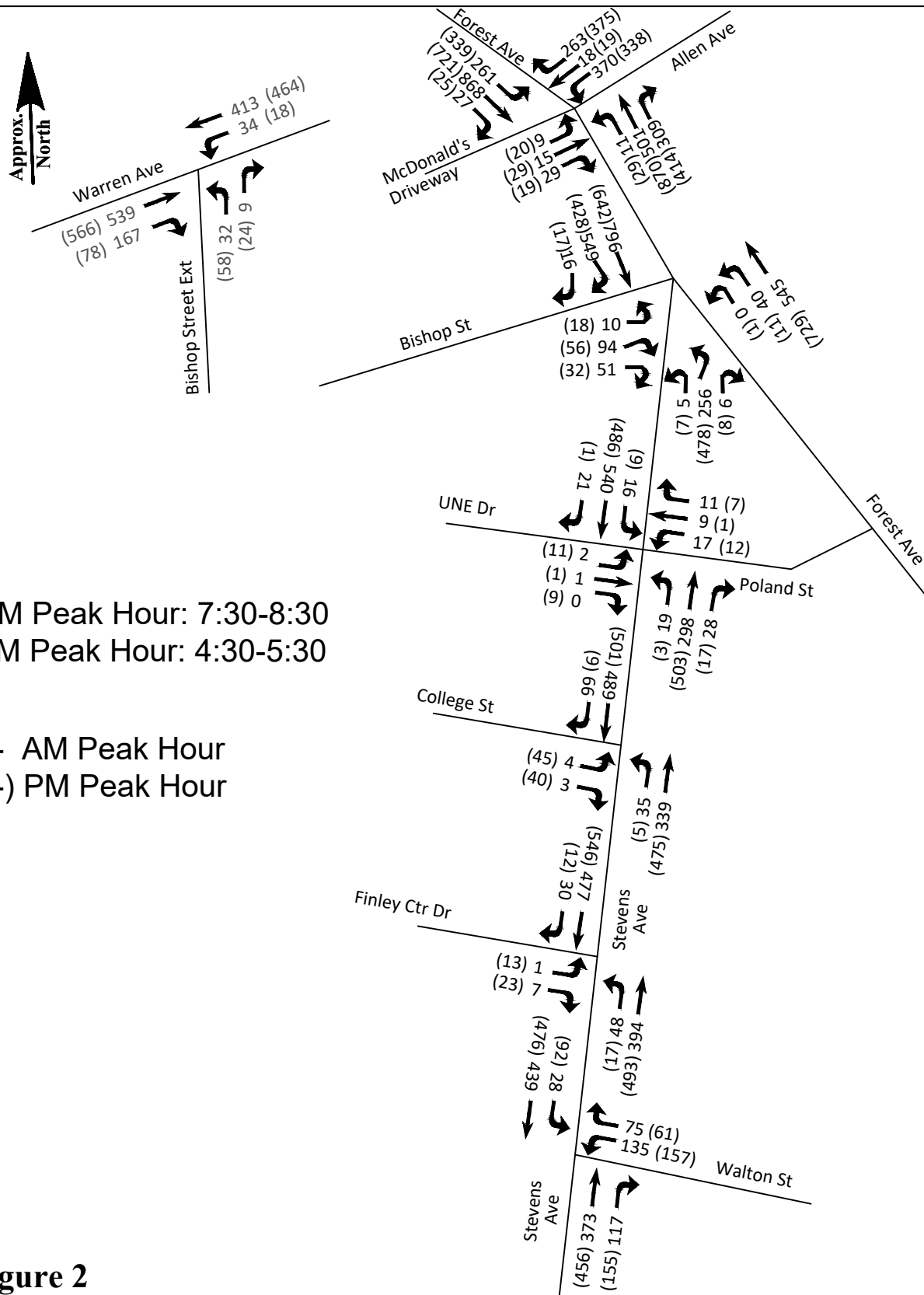
In terms of safety, there are three high crash locations within the study area. One additional intersection is approaching the high crash criteria. Collision diagrams were obtained and evaluated for all four locations. The implementation of adaptive signal control at the Morrill's Corner intersections in 2019 appears to have reduced accident potential at both intersections based upon the yearly numbers. No correctable accident patterns were identified at the other two link locations, but access management is recommended as properties along Forest Avenue redevelop.





**Figure 1**  
**Site Location Map**  
**University of New England**  
**Portland, Maine**





AM Peak Hour: 7:30-8:30  
 PM Peak Hour: 4:30-5:30

-- AM Peak Hour  
 (--) PM Peak Hour

**Figure 2**

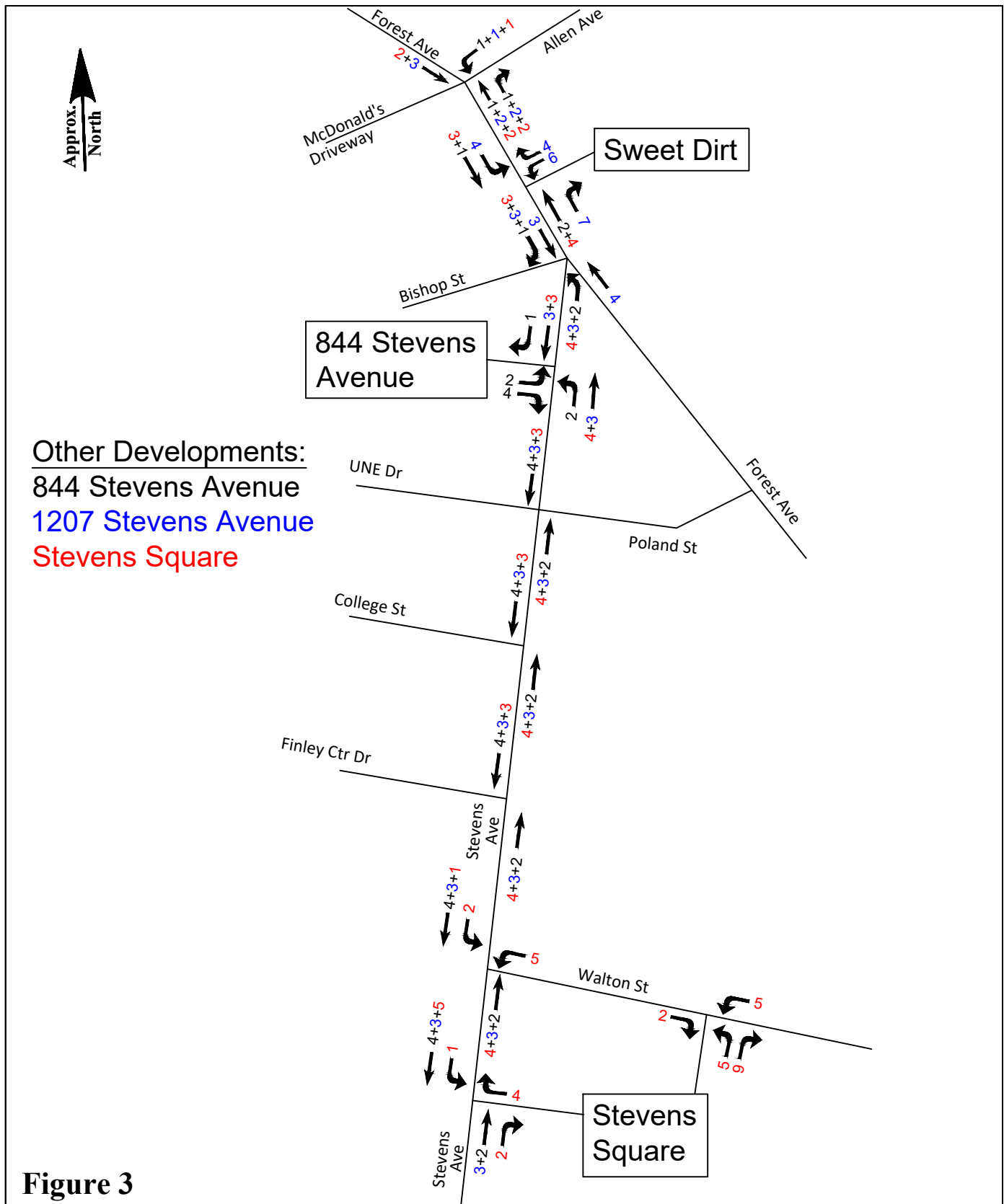
**2021 Base Volumes**

**University of New England**

**Portland, Maine**



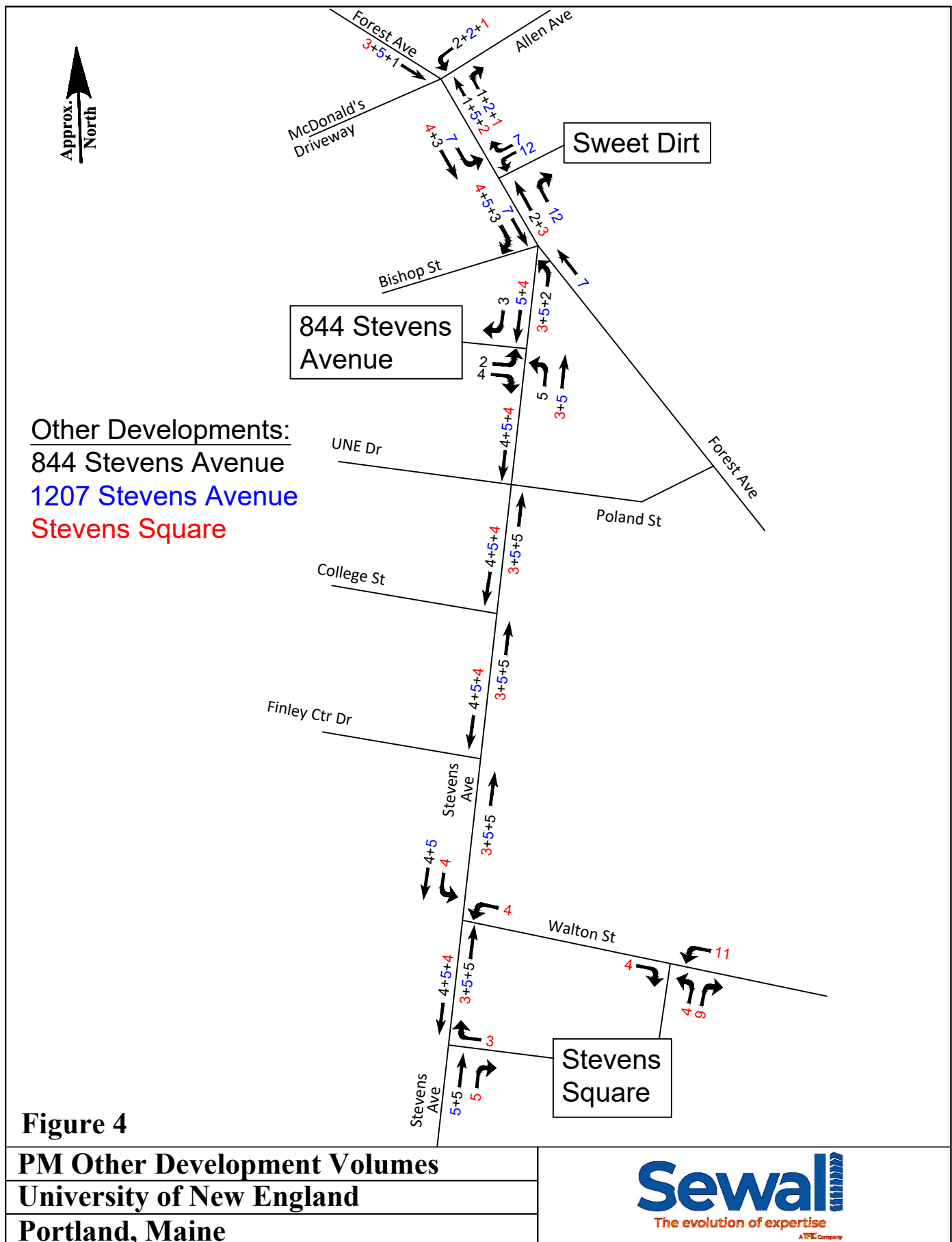


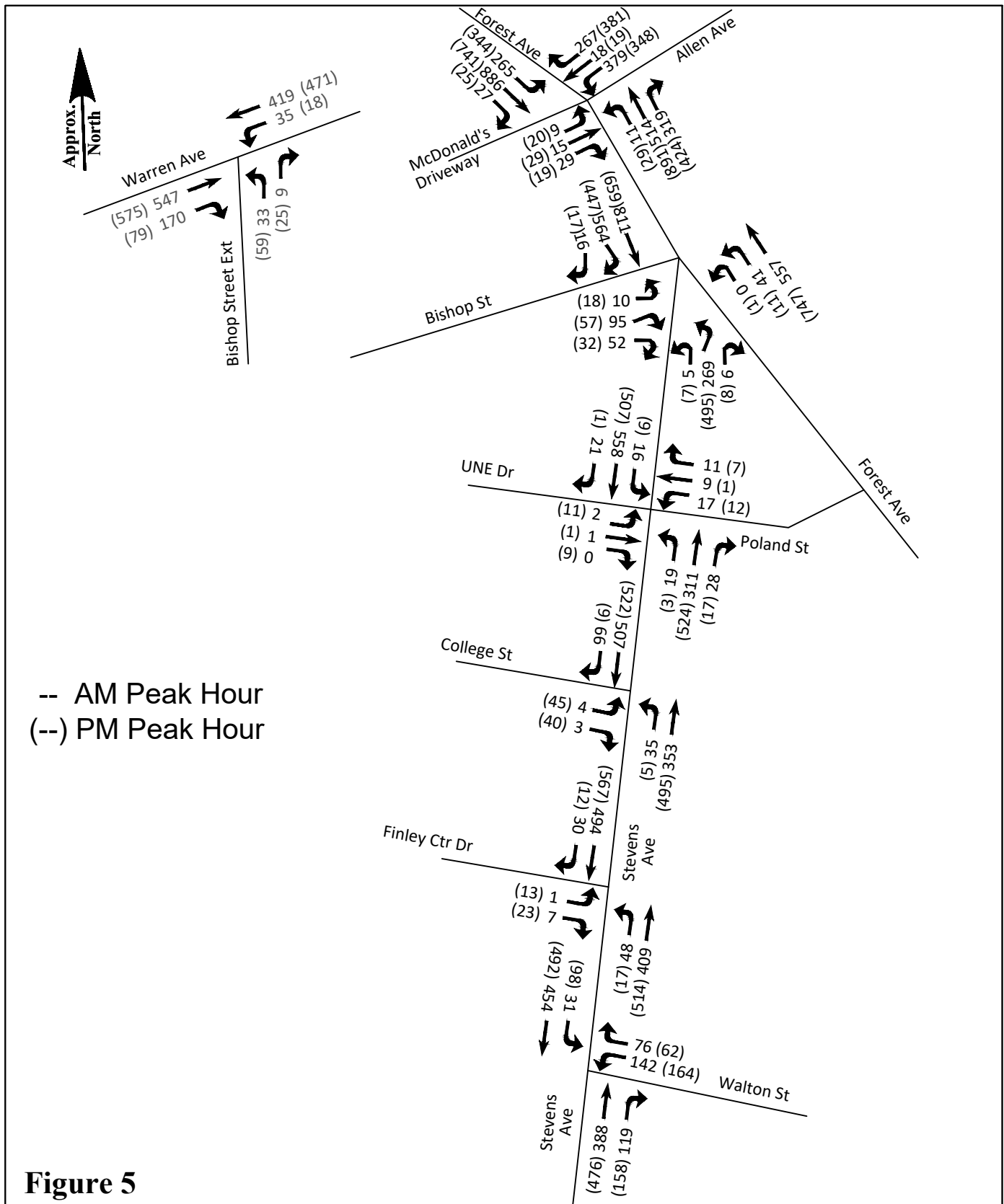


**Figure 3**

**AM Other Development Volumes**  
**University of New England**  
**Portland, Maine**





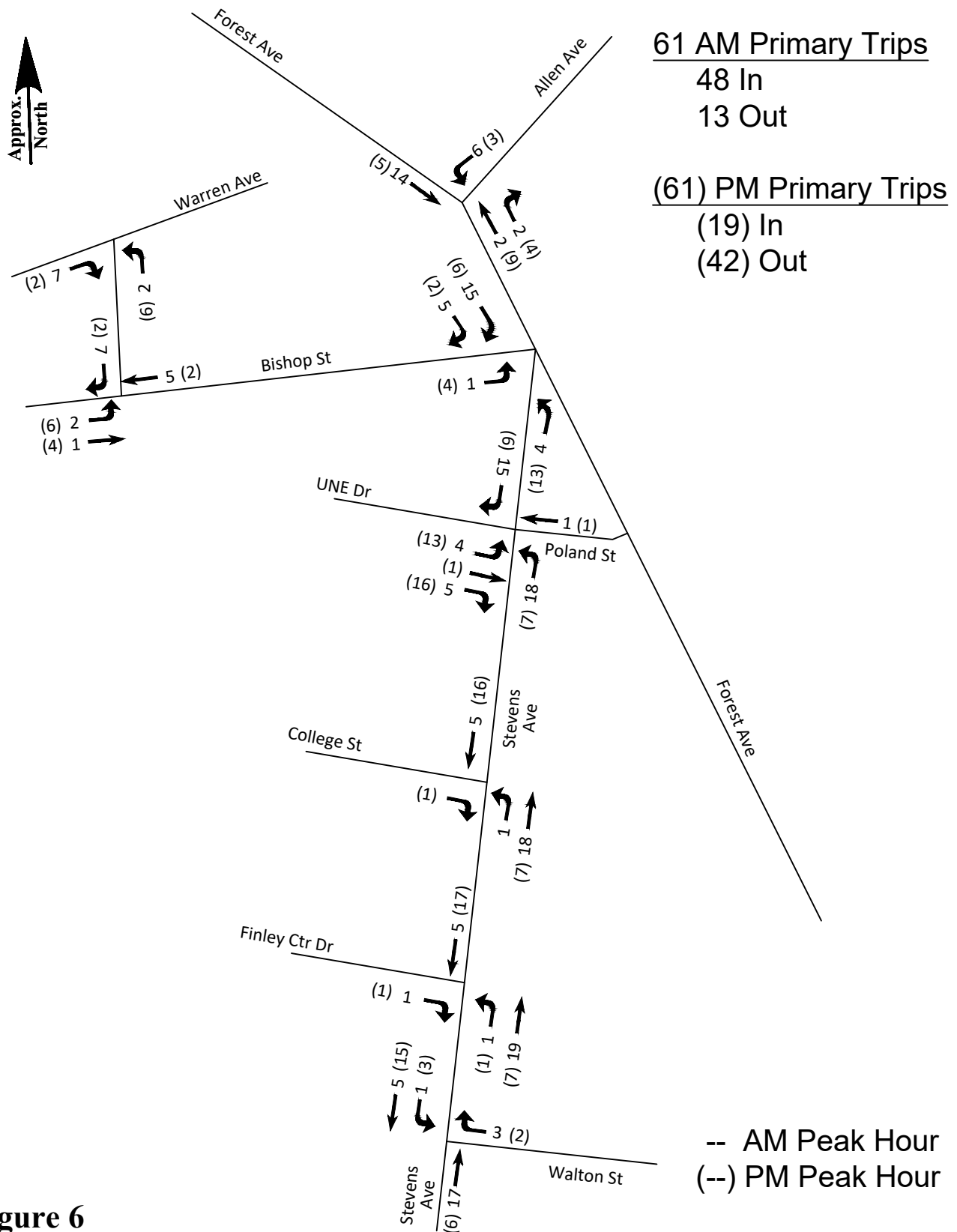


**Figure 5**

**2024 No Build Volumes**

**University of New England**

**Portland, Maine**



**Figure 6**

**AM & PM Trip Assignments**  
**University of New England**  
**Portland, Maine**



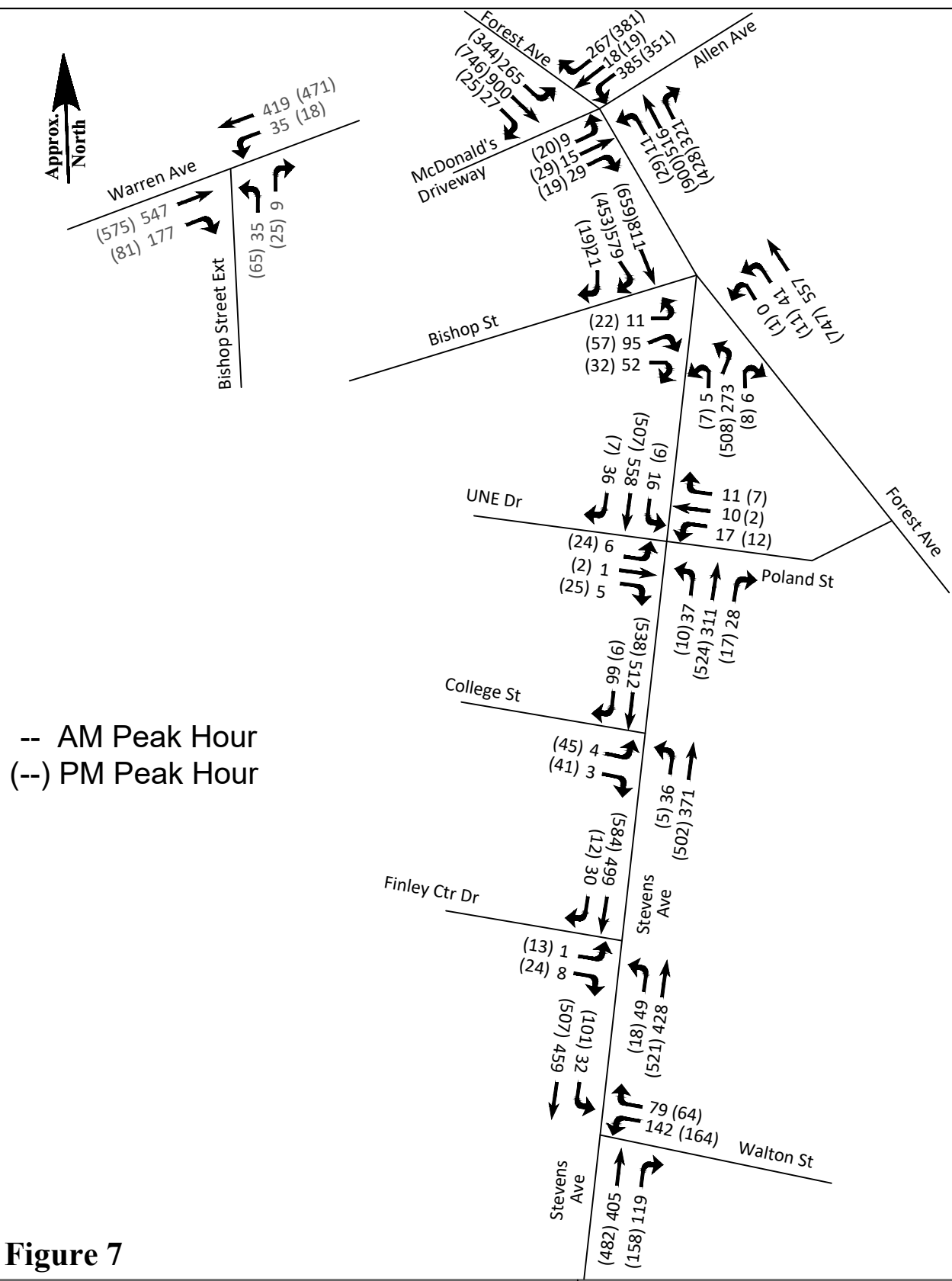


Figure 7

2024 Build Volumes

University of New England

Portland, Maine





## **APPENDIX**

Turning Movement Counts

Capacity Analysis

Accident Data

# Accurate Counts

978-664-2565

N/S Street : Forest Avenue  
E/W Street : Allen Avenue / Driveway  
City/State : Portland, ME  
Weather : Clear

File Name : 19050001  
Site Code : 19050001  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Forest Ave<br>From North |      |       | Allen Ave<br>From East |      |       | Forest Ave<br>From South |      |       | Dwy<br>From West |      |       | Int. Total |
|-------------|--------------------------|------|-------|------------------------|------|-------|--------------------------|------|-------|------------------|------|-------|------------|
| Start Time  | Left                     | Thru | Right | Left                   | Thru | Right | Left                     | Thru | Right | Left             | Thru | Right |            |
| 07:00 AM    | 45                       | 179  | 4     | 67                     | 1    | 53    | 5                        | 104  | 50    | 2                | 1    | 5     | 516        |
| 07:15 AM    | 38                       | 185  | 5     | 87                     | 8    | 85    | 2                        | 100  | 42    | 2                | 2    | 8     | 564        |
| 07:30 AM    | 49                       | 226  | 7     | 97                     | 5    | 89    | 3                        | 120  | 60    | 4                | 3    | 4     | 667        |
| 07:45 AM    | 63                       | 200  | 11    | 84                     | 6    | 60    | 2                        | 129  | 79    | 3                | 4    | 13    | 654        |
| Total       | 195                      | 790  | 27    | 335                    | 20   | 287   | 12                       | 453  | 231   | 11               | 10   | 30    | 2401       |
| 08:00 AM    | 76                       | 229  | 3     | 93                     | 4    | 72    | 5                        | 145  | 102   | 0                | 3    | 6     | 738        |
| 08:15 AM    | 73                       | 213  | 6     | 96                     | 3    | 42    | 1                        | 107  | 68    | 2                | 5    | 6     | 622        |
| 08:30 AM    | 51                       | 221  | 2     | 80                     | 3    | 59    | 4                        | 135  | 70    | 1                | 4    | 3     | 633        |
| 08:45 AM    | 47                       | 207  | 1     | 96                     | 5    | 93    | 4                        | 137  | 59    | 1                | 1    | 5     | 656        |
| Total       | 247                      | 870  | 12    | 365                    | 15   | 266   | 14                       | 524  | 299   | 4                | 13   | 20    | 2649       |
| Grand Total | 442                      | 1660 | 39    | 700                    | 35   | 553   | 26                       | 977  | 530   | 15               | 23   | 50    | 5050       |
| Apprch %    | 20.6                     | 77.5 | 1.8   | 54.3                   | 2.7  | 42.9  | 1.7                      | 63.7 | 34.6  | 17               | 26.1 | 56.8  |            |
| Total %     | 8.8                      | 32.9 | 0.8   | 13.9                   | 0.7  | 11    | 0.5                      | 19.3 | 10.5  | 0.3              | 0.5  | 1     |            |
| Cars        | 431                      | 1611 | 39    | 689                    | 35   | 534   | 26                       | 939  | 512   | 15               | 23   | 50    | 4904       |
| % Cars      | 97.5                     | 97   | 100   | 98.4                   | 100  | 96.6  | 100                      | 96.1 | 96.6  | 100              | 100  | 100   | 97.1       |
| Trucks      | 11                       | 49   | 0     | 11                     | 0    | 19    | 0                        | 38   | 18    | 0                | 0    | 0     | 146        |
| % Trucks    | 2.5                      | 3    | 0     | 1.6                    | 0    | 3.4   | 0                        | 3.9  | 3.4   | 0                | 0    | 0     | 2.9        |

|                                                            | Forest Ave<br>From North |      |       |            | Allen Ave<br>From East |      |       |            | Forest Ave<br>From South |      |       |            | Dwy<br>From West |      |       |            |            |
|------------------------------------------------------------|--------------------------|------|-------|------------|------------------------|------|-------|------------|--------------------------|------|-------|------------|------------------|------|-------|------------|------------|
| Start Time                                                 | Left                     | Thru | Right | App. Total | Left                   | Thru | Right | App. Total | Left                     | Thru | Right | App. Total | Left             | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                          |      |       |            |                        |      |       |            |                          |      |       |            |                  |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                          |      |       |            |                        |      |       |            |                          |      |       |            |                  |      |       |            |            |
| 07:30 AM                                                   | 49                       | 226  | 7     | 282        | 97                     | 5    | 89    | 191        | 3                        | 120  | 60    | 183        | 4                | 3    | 4     | 11         | 667        |
| 07:45 AM                                                   | 63                       | 200  | 11    | 274        | 84                     | 6    | 60    | 150        | 2                        | 129  | 79    | 210        | 3                | 4    | 13    | 20         | 654        |
| 08:00 AM                                                   | 76                       | 229  | 3     | 308        | 93                     | 4    | 72    | 169        | 5                        | 145  | 102   | 252        | 0                | 3    | 6     | 9          | 738        |
| 08:15 AM                                                   | 73                       | 213  | 6     | 292        | 96                     | 3    | 42    | 141        | 1                        | 107  | 68    | 176        | 2                | 5    | 6     | 13         | 622        |
| Total Volume                                               | 261                      | 868  | 27    | 1156       | 370                    | 18   | 263   | 651        | 11                       | 501  | 309   | 821        | 9                | 15   | 29    | 53         | 2681       |
| % App. Total                                               | 22.6                     | 75.1 | 2.3   |            | 56.8                   | 2.8  | 40.4  |            | 1.3                      | 61   | 37.6  |            | 17               | 28.3 | 54.7  |            |            |
| PHF                                                        | .859                     | .948 | .614  | .938       | .954                   | .750 | .739  | .852       | .550                     | .864 | .757  | .814       | .563             | .750 | .558  | .663       | .908       |
| Cars                                                       | 253                      | 842  | 27    | 1122       | 366                    | 18   | 256   | 640        | 11                       | 488  | 298   | 797        | 9                | 15   | 29    | 53         | 2612       |
| % Cars                                                     | 96.9                     | 97.0 | 100   | 97.1       | 98.9                   | 100  | 97.3  | 98.3       | 100                      | 97.4 | 96.4  | 97.1       | 100              | 100  | 100   | 100        | 97.4       |
| Trucks                                                     | 8                        | 26   | 0     | 34         | 4                      | 0    | 7     | 11         | 0                        | 13   | 11    | 24         | 0                | 0    | 0     | 0          | 69         |
| % Trucks                                                   | 3.1                      | 3.0  | 0     | 2.9        | 1.1                    | 0    | 2.7   | 1.7        | 0                        | 2.6  | 3.6   | 2.9        | 0                | 0    | 0     | 0          | 2.6        |

# Accurate Counts

978-664-2565

N/S Street : Forest Avenue  
E/W Street : Allen Avenue / Driveway  
City/State : Portland, ME  
Weather : Clear

File Name : 19050001  
Site Code : 19050001  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks - Bikes Peds

|              | Forest Ave<br>From North |      |       | Allen Ave<br>From East |      |       | Forest Ave<br>From South |      |       | Dwy<br>From West |      |       | Int. Total |
|--------------|--------------------------|------|-------|------------------------|------|-------|--------------------------|------|-------|------------------|------|-------|------------|
| Start Time   | Left                     | Thru | Right | Left                   | Thru | Right | Left                     | Thru | Right | Left             | Thru | Right |            |
| 03:00 PM     | 71                       | 149  | 6     | 103                    | 3    | 92    | 4                        | 206  | 88    | 4                | 6    | 8     | 740        |
| 03:15 PM     | 67                       | 154  | 8     | 83                     | 2    | 72    | 2                        | 210  | 102   | 5                | 6    | 5     | 716        |
| 03:30 PM     | 69                       | 166  | 5     | 83                     | 6    | 96    | 2                        | 209  | 83    | 5                | 2    | 3     | 729        |
| 03:45 PM     | 68                       | 173  | 5     | 77                     | 5    | 94    | 4                        | 208  | 102   | 5                | 3    | 3     | 747        |
| Total        | 275                      | 642  | 24    | 346                    | 16   | 354   | 12                       | 833  | 375   | 19               | 17   | 19    | 2932       |
| 04:00 PM     | 77                       | 175  | 8     | 80                     | 3    | 93    | 3                        | 200  | 109   | 7                | 7    | 3     | 765        |
| 04:15 PM     | 72                       | 187  | 4     | 73                     | 3    | 99    | 4                        | 218  | 101   | 3                | 6    | 2     | 772        |
| 04:30 PM     | 75                       | 189  | 7     | 77                     | 5    | 104   | 10                       | 229  | 92    | 5                | 7    | 3     | 803        |
| 04:45 PM     | 86                       | 169  | 6     | 88                     | 6    | 65    | 9                        | 226  | 121   | 4                | 5    | 5     | 790        |
| Total        | 310                      | 720  | 25    | 318                    | 17   | 361   | 26                       | 873  | 423   | 19               | 25   | 13    | 3130       |
| 05:00 PM     | 88                       | 164  | 5     | 99                     | 3    | 117   | 4                        | 200  | 102   | 4                | 10   | 3     | 799        |
| 05:15 PM     | 90                       | 199  | 7     | 74                     | 5    | 89    | 6                        | 215  | 99    | 7                | 7    | 8     | 806        |
| 05:30 PM     | 69                       | 169  | 5     | 64                     | 4    | 72    | 4                        | 227  | 114   | 3                | 5    | 4     | 740        |
| 05:45 PM     | 65                       | 155  | 5     | 69                     | 3    | 69    | 11                       | 206  | 104   | 6                | 8    | 7     | 708        |
| Total        | 312                      | 687  | 22    | 306                    | 15   | 347   | 25                       | 848  | 419   | 20               | 30   | 22    | 3053       |
| Grand Total  | 897                      | 2049 | 71    | 970                    | 48   | 1062  | 63                       | 2554 | 1217  | 58               | 72   | 54    | 9115       |
| Apprch %     | 29.7                     | 67.9 | 2.4   | 46.6                   | 2.3  | 51.1  | 1.6                      | 66.6 | 31.7  | 31.5             | 39.1 | 29.3  |            |
| Total %      | 9.8                      | 22.5 | 0.8   | 10.6                   | 0.5  | 11.7  | 0.7                      | 28   | 13.4  | 0.6              | 0.8  | 0.6   |            |
| Cars         | 881                      | 2008 | 71    | 956                    | 48   | 1043  | 63                       | 2509 | 1189  | 58               | 71   | 54    | 8951       |
| % Cars       | 98.2                     | 98   | 100   | 98.6                   | 100  | 98.2  | 100                      | 98.2 | 97.7  | 100              | 98.6 | 100   | 98.2       |
| Trucks       | 14                       | 28   | 0     | 9                      | 0    | 19    | 0                        | 37   | 19    | 0                | 0    | 0     | 126        |
| % Trucks     | 1.6                      | 1.4  | 0     | 0.9                    | 0    | 1.8   | 0                        | 1.4  | 1.6   | 0                | 0    | 0     | 1.4        |
| Bikes Peds   | 2                        | 13   | 0     | 5                      | 0    | 0     | 0                        | 8    | 9     | 0                | 1    | 0     | 38         |
| % Bikes Peds | 0.2                      | 0.6  | 0     | 0.5                    | 0    | 0     | 0                        | 0.3  | 0.7   | 0                | 1.4  | 0     | 0.4        |

|                                                            | Forest Ave<br>From North |      |       |            | Allen Ave<br>From East |      |       |            | Forest Ave<br>From South |      |       |            | Dwy<br>From West |      |       |            |            |
|------------------------------------------------------------|--------------------------|------|-------|------------|------------------------|------|-------|------------|--------------------------|------|-------|------------|------------------|------|-------|------------|------------|
| Start Time                                                 | Left                     | Thru | Right | App. Total | Left                   | Thru | Right | App. Total | Left                     | Thru | Right | App. Total | Left             | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                          |      |       |            |                        |      |       |            |                          |      |       |            |                  |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                          |      |       |            |                        |      |       |            |                          |      |       |            |                  |      |       |            |            |
| 04:30 PM                                                   | 75                       | 189  | 7     | 271        | 77                     | 5    | 104   | 186        | 10                       | 229  | 92    | 331        | 5                | 7    | 3     | 15         | 803        |
| 04:45 PM                                                   | 86                       | 169  | 6     | 261        | 88                     | 6    | 65    | 159        | 9                        | 226  | 121   | 356        | 4                | 5    | 5     | 14         | 790        |
| 05:00 PM                                                   | 88                       | 164  | 5     | 257        | 99                     | 3    | 117   | 219        | 4                        | 200  | 102   | 306        | 4                | 10   | 3     | 17         | 799        |
| 05:15 PM                                                   | 90                       | 199  | 7     | 296        | 74                     | 5    | 89    | 168        | 6                        | 215  | 99    | 320        | 7                | 7    | 8     | 22         | 806        |
| Total Volume                                               | 339                      | 721  | 25    | 1085       | 338                    | 19   | 375   | 732        | 29                       | 870  | 414   | 1313       | 20               | 29   | 19    | 68         | 3198       |
| % App. Total                                               | 31.2                     | 66.5 | 2.3   |            | 46.2                   | 2.6  | 51.2  |            | 2.2                      | 66.3 | 31.5  |            | 29.4             | 42.6 | 27.9  |            |            |
| PHF                                                        | .942                     | .906 | .893  | .916       | .854                   | .792 | .801  | .836       | .725                     | .950 | .855  | .922       | .714             | .725 | .594  | .773       | .992       |
| Cars                                                       | 333                      | 711  | 25    | 1069       | 336                    | 19   | 373   | 728        | 29                       | 855  | 408   | 1292       | 20               | 29   | 19    | 68         | 3157       |
| % Cars                                                     | 98.2                     | 98.6 | 100   | 98.5       | 99.4                   | 100  | 99.5  | 99.5       | 100                      | 98.3 | 98.6  | 98.4       | 100              | 100  | 100   | 100        | 98.7       |
| Trucks                                                     | 5                        | 7    | 0     | 12         | 1                      | 0    | 2     | 3          | 0                        | 11   | 3     | 14         | 0                | 0    | 0     | 0          | 29         |
| % Trucks                                                   | 1.5                      | 1.0  | 0     | 1.1        | 0.3                    | 0    | 0.5   | 0.4        | 0                        | 1.3  | 0.7   | 1.1        | 0                | 0    | 0     | 0          | 0.9        |
| Bikes Peds                                                 | 1                        | 3    | 0     | 4          | 1                      | 0    | 0     | 1          | 0                        | 4    | 3     | 7          | 0                | 0    | 0     | 0          | 12         |
| % Bikes Peds                                               | 0.3                      | 0.4  | 0     | 0.4        | 0.3                    | 0    | 0     | 0.1        | 0                        | 0.5  | 0.7   | 0.5        | 0                | 0    | 0     | 0          | 0.4        |

# Accurate Counts

978-664-2565

N/S Street : Forest Avenue  
E/W Street : Dwy / Stevens Ave / Bishop St  
City/State : Portland, ME  
Weather : Clear

File Name : 19050002  
Site Code : 19050002  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Forest Ave<br>From North |      |       |       | Dwy<br>From East |      |       |       | Forest Ave<br>From South |       |      |       | Stevens Ave<br>From West |      |      |       | Bishop St<br>From Northwest |       |       |       | Int. Total |
|-------------|--------------------------|------|-------|-------|------------------|------|-------|-------|--------------------------|-------|------|-------|--------------------------|------|------|-------|-----------------------------|-------|-------|-------|------------|
| Start Time  | Left                     | Thru | Right | Hd Rt | Left             | Thru | Br Rt | Right | Left                     | Br Lt | Thru | Right | Hd Lt                    | Left | Thru | Right | Hd Lt                       | Br Lt | Br Rt | Hd Rt |            |
| 07:00 AM    | 2                        | 179  | 70    | 8     | 1                | 1    | 0     | 3     | 0                        | 4     | 115  | 6     | 3                        | 33   | 0    | 0     | 1                           | 0     | 8     | 8     | 442        |
| 07:15 AM    | 5                        | 180  | 93    | 10    | 5                | 0    | 0     | 4     | 1                        | 10    | 103  | 4     | 1                        | 41   | 1    | 0     | 1                           | 2     | 16    | 8     | 485        |
| 07:30 AM    | 0                        | 213  | 138   | 3     | 3                | 1    | 0     | 1     | 0                        | 10    | 123  | 5     | 2                        | 54   | 2    | 0     | 0                           | 0     | 20    | 11    | 586        |
| 07:45 AM    | 3                        | 182  | 140   | 6     | 1                | 0    | 0     | 6     | 0                        | 14    | 138  | 3     | 0                        | 67   | 0    | 0     | 3                           | 0     | 24    | 19    | 606        |
| Total       | 10                       | 754  | 441   | 27    | 10               | 2    | 0     | 14    | 1                        | 38    | 479  | 18    | 6                        | 195  | 3    | 0     | 5                           | 2     | 68    | 46    | 2119       |
| 08:00 AM    | 2                        | 213  | 154   | 4     | 0                | 1    | 1     | 0     | 0                        | 10    | 170  | 0     | 1                        | 70   | 0    | 5     | 1                           | 0     | 29    | 19    | 680        |
| 08:15 AM    | 5                        | 188  | 117   | 3     | 3                | 0    | 0     | 4     | 0                        | 6     | 114  | 5     | 2                        | 65   | 1    | 1     | 6                           | 1     | 21    | 2     | 544        |
| 08:30 AM    | 3                        | 193  | 110   | 6     | 3                | 2    | 0     | 3     | 0                        | 10    | 153  | 4     | 1                        | 60   | 1    | 0     | 3                           | 0     | 16    | 7     | 575        |
| 08:45 AM    | 7                        | 205  | 96    | 6     | 3                | 1    | 0     | 7     | 1                        | 9     | 128  | 5     | 0                        | 45   | 1    | 3     | 5                           | 1     | 12    | 7     | 542        |
| Total       | 17                       | 799  | 477   | 19    | 9                | 4    | 1     | 14    | 1                        | 35    | 565  | 14    | 4                        | 240  | 3    | 9     | 15                          | 2     | 78    | 35    | 2341       |
| Grand Total | 27                       | 1553 | 918   | 46    | 19               | 6    | 1     | 28    | 2                        | 73    | 1044 | 32    | 10                       | 435  | 6    | 9     | 20                          | 4     | 146   | 81    | 4460       |
| Apprch %    | 1.1                      | 61   | 36.1  | 1.8   | 35.2             | 11.1 | 1.9   | 51.9  | 0.2                      | 6.3   | 90.7 | 2.8   | 2.2                      | 94.6 | 1.3  | 2     | 8                           | 1.6   | 58.2  | 32.3  |            |
| Total %     | 0.6                      | 34.8 | 20.6  | 1     | 0.4              | 0.1  | 0     | 0.6   | 0                        | 1.6   | 23.4 | 0.7   | 0.2                      | 9.8  | 0.1  | 0.2   | 0.4                         | 0.1   | 3.3   | 1.8   |            |
| Cars        | 27                       | 1507 | 908   | 45    | 19               | 6    | 1     | 28    | 2                        | 70    | 1006 | 32    | 10                       | 421  | 6    | 8     | 13                          | 4     | 145   | 79    | 4337       |
| % Cars      | 100                      | 97   | 98.9  | 97.8  | 100              | 100  | 100   | 100   | 100                      | 95.9  | 96.4 | 100   | 100                      | 96.8 | 100  | 88.9  | 65                          | 100   | 99.3  | 97.5  | 97.2       |
| Trucks      | 0                        | 46   | 10    | 1     | 0                | 0    | 0     | 0     | 0                        | 3     | 38   | 0     | 0                        | 14   | 0    | 1     | 7                           | 0     | 1     | 2     | 123        |
| % Trucks    | 0                        | 3    | 1.1   | 2.2   | 0                | 0    | 0     | 0     | 0                        | 4.1   | 3.6  | 0     | 0                        | 3.2  | 0    | 11.1  | 35                          | 0     | 0.7   | 2.5   | 2.8        |

|                                                            | Forest Ave<br>From North |      |       |       |            | Dwy<br>From East |      |       |       |            | Forest Ave<br>From South |       |      |       |            | Stevens Ave<br>From West |      |      |       |            | Bishop St<br>From Northwest |       |       |       |            |            |
|------------------------------------------------------------|--------------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------------------|-------|------|-------|------------|--------------------------|------|------|-------|------------|-----------------------------|-------|-------|-------|------------|------------|
| Start Time                                                 | Left                     | Thru | Right | Hd Rt | App. Total | Left             | Thru | Br Rt | Right | App. Total | Left                     | Br Lt | Thru | Right | App. Total | Hd Lt                    | Left | Thru | Right | App. Total | Hd Lt                       | Br Lt | Br Rt | Hd Rt | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                          |      |       |       |            |                  |      |       |       |            |                          |       |      |       |            |                          |      |      |       |            |                             |       |       |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                          |      |       |       |            |                  |      |       |       |            |                          |       |      |       |            |                          |      |      |       |            |                             |       |       |       |            |            |
| 07:30 AM                                                   | 0                        | 213  | 138   | 3     | 354        | 3                | 1    | 0     | 1     | 5          | 0                        | 10    | 123  | 5     | 138        | 2                        | 54   | 2    | 0     | 58         | 0                           | 0     | 20    | 11    | 31         | 586        |
| 07:45 AM                                                   | 3                        | 182  | 140   | 6     | 331        | 1                | 0    | 0     | 6     | 7          | 0                        | 14    | 138  | 3     | 155        | 0                        | 67   | 0    | 0     | 67         | 3                           | 0     | 24    | 19    | 46         | 606        |
| 08:00 AM                                                   | 2                        | 213  | 154   | 4     | 373        | 0                | 1    | 1     | 0     | 2          | 0                        | 10    | 170  | 0     | 180        | 1                        | 70   | 0    | 5     | 76         | 1                           | 0     | 29    | 19    | 49         | 680        |
| 08:15 AM                                                   | 5                        | 188  | 117   | 3     | 313        | 3                | 0    | 0     | 4     | 7          | 0                        | 6     | 114  | 5     | 125        | 2                        | 65   | 1    | 1     | 69         | 6                           | 1     | 21    | 2     | 30         | 544        |
| Total Volume                                               | 10                       | 796  | 549   | 16    | 1371       | 7                | 2    | 1     | 11    | 21         | 0                        | 40    | 545  | 13    | 598        | 5                        | 256  | 3    | 6     | 270        | 10                          | 1     | 94    | 51    | 156        | 2416       |
| % App. Total                                               | 0.7                      | 58.1 | 40    | 1.2   |            | 33.3             | 9.5  | 4.8   | 52.4  |            | 0                        | 6.7   | 91.1 | 2.2   |            | 1.9                      | 94.8 | 1.1  | 2.2   |            | 6.4                         | 0.6   | 60.3  | 32.7  |            |            |
| PHF                                                        | .500                     | .934 | .891  | .667  | .919       | .583             | .500 | .250  | .458  | .750       | .000                     | .714  | .801 | .650  | .831       | .625                     | .914 | .375 | .300  | .888       | .417                        | .250  | .810  | .671  | .796       | .888       |
| Cars                                                       | 10                       | 774  | 542   | 16    | 1342       | 7                | 2    | 1     | 11    | 21         | 0                        | 38    | 530  | 13    | 581        | 5                        | 249  | 3    | 5     | 262        | 5                           | 1     | 93    | 50    | 149        | 2355       |
| % Cars                                                     | 100                      | 97.2 | 98.7  | 100   | 97.9       | 100              | 100  | 100   | 100   | 100        | 0                        | 95.0  | 97.2 | 100   | 97.2       | 100                      | 97.3 | 100  | 83.3  | 97.0       | 50.0                        | 100   | 98.9  | 98.0  | 95.5       | 97.5       |
| Trucks                                                     | 0                        | 22   | 7     | 0     | 29         | 0                | 0    | 0     | 0     | 0          | 0                        | 2     | 15   | 0     | 17         | 0                        | 7    | 0    | 1     | 8          | 5                           | 0     | 1     | 1     | 7          | 61         |
| % Trucks                                                   | 0                        | 2.8  | 1.3   | 0     | 2.1        | 0                | 0    | 0     | 0     | 0          | 0                        | 5.0   | 2.8  | 0     | 2.8        | 0                        | 2.7  | 0    | 16.7  | 3.0        | 50.0                        | 0     | 1.1   | 2.0   | 4.5        | 2.5        |

# Accurate Counts

978-664-2565

N/S Street : Forest Avenue  
 E/W Street : Dwy / Stevens Ave / Bishop St  
 City/State : Portland, ME  
 Weather : Clear

File Name : 19050002  
 Site Code : 19050002  
 Start Date : 9/21/2021  
 Page No : 1

## Groups Printed- Cars - Trucks

|             | Forest Ave<br>From North |      |       |       | Dwy<br>From East |      |       |       | Forest Ave<br>From South |       |      |       | Stevens Ave<br>From West |      |      |       | Bishop St<br>From Northwest |       |       |       | Int. Total |
|-------------|--------------------------|------|-------|-------|------------------|------|-------|-------|--------------------------|-------|------|-------|--------------------------|------|------|-------|-----------------------------|-------|-------|-------|------------|
| Start Time  | Left                     | Thru | Right | Hd Rt | Left             | Thru | Br Rt | Right | Left                     | Br Lt | Thru | Right | Hd Lt                    | Left | Thru | Right | Hd Lt                       | Br Lt | Br Rt | Hd Rt |            |
| 03:00 PM    | 6                        | 160  | 84    | 4     | 8                | 1    | 0     | 1     | 0                        | 2     | 192  | 15    | 1                        | 96   | 1    | 1     | 3                           | 1     | 22    | 5     | 603        |
| 03:15 PM    | 4                        | 166  | 82    | 1     | 2                | 1    | 2     | 3     | 0                        | 7     | 223  | 11    | 2                        | 84   | 2    | 2     | 1                           | 0     | 12    | 1     | 606        |
| 03:30 PM    | 16                       | 148  | 85    | 2     | 5                | 1    | 0     | 6     | 0                        | 5     | 175  | 11    | 0                        | 91   | 4    | 1     | 3                           | 0     | 9     | 6     | 568        |
| 03:45 PM    | 8                        | 162  | 96    | 2     | 4                | 1    | 2     | 3     | 0                        | 2     | 193  | 14    | 0                        | 99   | 2    | 7     | 4                           | 2     | 4     | 6     | 611        |
| Total       | 34                       | 636  | 347   | 9     | 19               | 4    | 4     | 13    | 0                        | 16    | 783  | 51    | 3                        | 370  | 9    | 11    | 11                          | 3     | 47    | 18    | 2388       |
| 04:00 PM    | 3                        | 165  | 74    | 1     | 2                | 3    | 0     | 10    | 0                        | 7     | 194  | 7     | 1                        | 115  | 3    | 6     | 4                           | 1     | 16    | 8     | 620        |
| 04:15 PM    | 3                        | 135  | 110   | 4     | 1                | 0    | 2     | 9     | 0                        | 5     | 156  | 11    | 0                        | 129  | 4    | 4     | 0                           | 0     | 11    | 5     | 589        |
| 04:30 PM    | 6                        | 162  | 112   | 8     | 8                | 0    | 0     | 8     | 0                        | 3     | 172  | 9     | 3                        | 105  | 4    | 2     | 4                           | 1     | 20    | 10    | 637        |
| 04:45 PM    | 8                        | 168  | 94    | 2     | 1                | 1    | 2     | 7     | 0                        | 2     | 210  | 10    | 0                        | 121  | 2    | 0     | 4                           | 0     | 12    | 4     | 648        |
| Total       | 20                       | 630  | 390   | 15    | 12               | 4    | 4     | 34    | 0                        | 17    | 732  | 37    | 4                        | 470  | 13   | 12    | 12                          | 2     | 59    | 27    | 2494       |
| 05:00 PM    | 7                        | 140  | 98    | 3     | 6                | 0    | 0     | 6     | 1                        | 4     | 167  | 14    | 2                        | 116  | 6    | 4     | 5                           | 1     | 17    | 10    | 607        |
| 05:15 PM    | 3                        | 172  | 124   | 4     | 3                | 2    | 1     | 7     | 0                        | 2     | 180  | 13    | 2                        | 136  | 7    | 2     | 5                           | 0     | 7     | 8     | 678        |
| 05:30 PM    | 6                        | 137  | 107   | 2     | 5                | 0    | 2     | 10    | 0                        | 3     | 171  | 9     | 1                        | 132  | 5    | 3     | 5                           | 0     | 11    | 2     | 611        |
| 05:45 PM    | 6                        | 139  | 79    | 9     | 3                | 1    | 0     | 11    | 0                        | 7     | 203  | 10    | 0                        | 80   | 4    | 5     | 2                           | 2     | 15    | 3     | 579        |
| Total       | 22                       | 588  | 408   | 18    | 17               | 3    | 3     | 34    | 1                        | 16    | 721  | 46    | 5                        | 464  | 22   | 14    | 17                          | 3     | 50    | 23    | 2475       |
| Grand Total | 76                       | 1854 | 1145  | 42    | 48               | 11   | 11    | 81    | 1                        | 49    | 2236 | 134   | 12                       | 1304 | 44   | 37    | 40                          | 8     | 156   | 68    | 7357       |
| Apprch %    | 2.4                      | 59.5 | 36.7  | 1.3   | 31.8             | 7.3  | 7.3   | 53.6  | 0                        | 2     | 92.4 | 5.5   | 0.9                      | 93.3 | 3.1  | 2.6   | 14.7                        | 2.9   | 57.4  | 25    |            |
| Total %     | 1                        | 25.2 | 15.6  | 0.6   | 0.7              | 0.1  | 0.1   | 1.1   | 0                        | 0.7   | 30.4 | 1.8   | 0.2                      | 17.7 | 0.6  | 0.5   | 0.5                         | 0.1   | 2.1   | 0.9   |            |
| Cars        | 76                       | 1827 | 1134  | 41    | 48               | 11   | 11    | 81    | 1                        | 46    | 2190 | 134   | 12                       | 1287 | 43   | 37    | 31                          | 8     | 156   | 68    | 7242       |
| % Cars      | 100                      | 98.5 | 99    | 97.6  | 100              | 100  | 100   | 100   | 100                      | 93.9  | 97.9 | 100   | 100                      | 98.7 | 97.7 | 100   | 77.5                        | 100   | 100   | 100   | 98.4       |
| Trucks      | 0                        | 27   | 11    | 1     | 0                | 0    | 0     | 0     | 0                        | 3     | 46   | 0     | 0                        | 17   | 1    | 0     | 9                           | 0     | 0     | 0     | 115        |
| % Trucks    | 0                        | 1.5  | 1     | 2.4   | 0                | 0    | 0     | 0     | 0                        | 6.1   | 2.1  | 0     | 0                        | 1.3  | 2.3  | 0     | 22.5                        | 0     | 0     | 0     | 1.6        |

|                                                            | Forest Ave<br>From North |      |       |       |            | Dwy<br>From East |      |       |       |            | Forest Ave<br>From South |       |      |       |            | Stevens Ave<br>From West |      |      |       |            | Bishop St<br>From Northwest |       |       |       |            |            |
|------------------------------------------------------------|--------------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------------------|-------|------|-------|------------|--------------------------|------|------|-------|------------|-----------------------------|-------|-------|-------|------------|------------|
| Start Time                                                 | Left                     | Thru | Right | Hd Rt | App. Total | Left             | Thru | Br Rt | Right | App. Total | Left                     | Br Lt | Thru | Right | App. Total | Hd Lt                    | Left | Thru | Right | App. Total | Hd Lt                       | Br Lt | Br Rt | Hd Rt | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                          |      |       |       |            |                  |      |       |       |            |                          |       |      |       |            |                          |      |      |       |            |                             |       |       |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                          |      |       |       |            |                  |      |       |       |            |                          |       |      |       |            |                          |      |      |       |            |                             |       |       |       |            |            |
| 04:30 PM                                                   | 6                        | 162  | 112   | 8     | 288        | 8                | 0    | 0     | 8     | 16         | 0                        | 3     | 172  | 9     | 184        | 3                        | 105  | 4    | 2     | 114        | 4                           | 1     | 20    | 10    | 35         | 637        |
| 04:45 PM                                                   | 8                        | 168  | 94    | 2     | 272        | 1                | 1    | 2     | 7     | 11         | 0                        | 2     | 210  | 10    | 222        | 0                        | 121  | 2    | 0     | 123        | 4                           | 0     | 12    | 4     | 20         | 648        |
| 05:00 PM                                                   | 7                        | 140  | 98    | 3     | 248        | 6                | 0    | 0     | 6     | 12         | 1                        | 4     | 167  | 14    | 186        | 2                        | 116  | 6    | 4     | 128        | 5                           | 1     | 17    | 10    | 33         | 607        |
| 05:15 PM                                                   | 3                        | 172  | 124   | 4     | 303        | 3                | 2    | 1     | 7     | 13         | 0                        | 2     | 180  | 13    | 195        | 2                        | 136  | 7    | 2     | 147        | 5                           | 0     | 7     | 8     | 20         | 678        |
| Total Volume                                               | 24                       | 642  | 428   | 17    | 1111       | 18               | 3    | 3     | 28    | 52         | 1                        | 11    | 729  | 46    | 787        | 7                        | 478  | 19   | 8     | 512        | 18                          | 2     | 56    | 32    | 108        | 2570       |
| % App. Total                                               | 2.2                      | 57.8 | 38.5  | 1.5   |            | 34.6             | 5.8  | 5.8   | 53.8  |            | 0.1                      | 1.4   | 92.6 | 5.8   |            | 1.4                      | 93.4 | 3.7  | 1.6   |            | 16.7                        | 1.9   | 51.9  | 29.6  |            |            |
| PHF                                                        | .750                     | .933 | .863  | .531  | .917       | .563             | .375 | .375  | .875  | .813       | .250                     | .688  | .868 | .821  | .886       | .583                     | .879 | .679 | .500  | .871       | .900                        | .500  | .700  | .800  | .771       | .948       |
| Cars                                                       | 24                       | 636  | 427   | 17    | 1104       | 18               | 3    | 3     | 28    | 52         | 1                        | 10    | 718  | 46    | 775        | 7                        | 475  | 18   | 8     | 508        | 14                          | 2     | 56    | 32    | 104        | 2543       |
| % Cars                                                     | 100                      | 99.1 | 99.8  | 100   | 99.4       | 100              | 100  | 100   | 100   | 100        | 100                      | 90.9  | 98.5 | 100   | 98.5       | 100                      | 99.4 | 94.7 | 100   | 99.2       | 77.8                        | 100   | 100   | 100   | 96.3       | 98.9       |
| Trucks                                                     | 0                        | 6    | 1     | 0     | 7          | 0                | 0    | 0     | 0     | 0          | 0                        | 1     | 11   | 0     | 12         | 0                        | 3    | 1    | 0     | 4          | 4                           | 0     | 0     | 0     | 4          | 27         |
| % Trucks                                                   | 0                        | 0.9  | 0.2   | 0     | 0.6        | 0                | 0    | 0     | 0     | 0          | 0                        | 9.1   | 1.5  | 0     | 1.5        | 0                        | 0.6  | 5.3  | 0     | 0.8        | 22.2                        | 0     | 0     | 0     | 3.7        | 1.1        |

# Accurate Counts

978-664-2565

N/S Street : Bishop Street Extension  
E/W Street : Warren Avenue  
City/State : Portland, ME  
Weather : Clear

File Name : 19050003  
Site Code : 19050003  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Warren Ave<br>From East |      | Bishop St Ext.<br>From South |       | Warren Ave<br>From West |       |            |
|-------------|-------------------------|------|------------------------------|-------|-------------------------|-------|------------|
| Start Time  | Left                    | Thru | Left                         | Right | Thru                    | Right | Int. Total |
| 07:00 AM    | 6                       | 63   | 7                            | 3     | 85                      | 19    | 183        |
| 07:15 AM    | 5                       | 110  | 4                            | 0     | 106                     | 36    | 261        |
| 07:30 AM    | 8                       | 107  | 12                           | 1     | 138                     | 66    | 332        |
| 07:45 AM    | 10                      | 119  | 12                           | 3     | 128                     | 41    | 313        |
| Total       | 29                      | 399  | 35                           | 7     | 457                     | 162   | 1089       |
| 08:00 AM    | 9                       | 104  | 2                            | 2     | 147                     | 30    | 294        |
| 08:15 AM    | 7                       | 83   | 6                            | 3     | 126                     | 30    | 255        |
| 08:30 AM    | 11                      | 101  | 8                            | 0     | 105                     | 17    | 242        |
| 08:45 AM    | 4                       | 123  | 6                            | 1     | 118                     | 26    | 278        |
| Total       | 31                      | 411  | 22                           | 6     | 496                     | 103   | 1069       |
| Grand Total | 60                      | 810  | 57                           | 13    | 953                     | 265   | 2158       |
| Apprch %    | 6.9                     | 93.1 | 81.4                         | 18.6  | 78.2                    | 21.8  |            |
| Total %     | 2.8                     | 37.5 | 2.6                          | 0.6   | 44.2                    | 12.3  |            |
| Cars        | 57                      | 775  | 55                           | 13    | 906                     | 262   | 2068       |
| % Cars      | 95                      | 95.7 | 96.5                         | 100   | 95.1                    | 98.9  | 95.8       |
| Trucks      | 3                       | 35   | 2                            | 0     | 47                      | 3     | 90         |
| % Trucks    | 5                       | 4.3  | 3.5                          | 0     | 4.9                     | 1.1   | 4.2        |

|                                                            | Warren Ave<br>From East |            |            | Bishop St Ext.<br>From South |          |            | Warren Ave<br>From West |           |            |            |
|------------------------------------------------------------|-------------------------|------------|------------|------------------------------|----------|------------|-------------------------|-----------|------------|------------|
| Start Time                                                 | Left                    | Thru       | App. Total | Left                         | Right    | App. Total | Thru                    | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                         |            |            |                              |          |            |                         |           |            |            |
| Peak Hour for Entire Intersection Begins at 07:15 AM       |                         |            |            |                              |          |            |                         |           |            |            |
| 07:15 AM                                                   | 5                       | 110        | 115        | 4                            | 0        | 4          | 106                     | 36        | 142        | 261        |
| 07:30 AM                                                   | 8                       | 107        | 115        | <b>12</b>                    | 1        | 13         | 138                     | <b>66</b> | <b>204</b> | <b>332</b> |
| 07:45 AM                                                   | <b>10</b>               | <b>119</b> | <b>129</b> | 12                           | <b>3</b> | <b>15</b>  | 128                     | 41        | 169        | 313        |
| 08:00 AM                                                   | 9                       | 104        | 113        | 2                            | 2        | 4          | <b>147</b>              | 30        | 177        | 294        |
| Total Volume                                               | 32                      | 440        | 472        | 30                           | 6        | 36         | 519                     | 173       | 692        | 1200       |
| % App. Total                                               | 6.8                     | 93.2       |            | 83.3                         | 16.7     |            | 75                      | 25        |            |            |
| PHF                                                        | .800                    | .924       | .915       | .625                         | .500     | .600       | .883                    | .655      | .848       | .904       |
| Cars                                                       | 30                      | 426        | 456        | 29                           | 6        | 35         | 491                     | 172       | 663        | 1154       |
| % Cars                                                     | 93.8                    | 96.8       | 96.6       | 96.7                         | 100      | 97.2       | 94.6                    | 99.4      | 95.8       | 96.2       |
| Trucks                                                     | 2                       | 14         | 16         | 1                            | 0        | 1          | 28                      | 1         | 29         | 46         |
| % Trucks                                                   | 6.3                     | 3.2        | 3.4        | 3.3                          | 0        | 2.8        | 5.4                     | 0.6       | 4.2        | 3.8        |



# Accurate Counts

978-664-2565

N/S Street : Bishop Street Extension  
E/W Street : Warren Avenue  
City/State : Portland, ME  
Weather : Clear

File Name : 19050003  
Site Code : 19050003  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Warren Ave<br>From East |      | Bishop St Ext.<br>From South |       | Warren Ave<br>From West |       |            |
|-------------|-------------------------|------|------------------------------|-------|-------------------------|-------|------------|
| Start Time  | Left                    | Thru | Left                         | Right | Thru                    | Right | Int. Total |
| 03:00 PM    | 7                       | 148  | 13                           | 4     | 132                     | 12    | 316        |
| 03:15 PM    | 4                       | 124  | 10                           | 2     | 133                     | 13    | 286        |
| 03:30 PM    | 3                       | 138  | 12                           | 4     | 144                     | 17    | 318        |
| 03:45 PM    | 3                       | 120  | 9                            | 2     | 128                     | 11    | 273        |
| Total       | 17                      | 530  | 44                           | 12    | 537                     | 53    | 1193       |
| 04:00 PM    | 5                       | 123  | 14                           | 6     | 154                     | 19    | 321        |
| 04:15 PM    | 5                       | 139  | 12                           | 6     | 134                     | 18    | 314        |
| 04:30 PM    | 2                       | 137  | 18                           | 7     | 140                     | 24    | 328        |
| 04:45 PM    | 6                       | 108  | 8                            | 5     | 150                     | 22    | 299        |
| Total       | 18                      | 507  | 52                           | 24    | 578                     | 83    | 1262       |
| 05:00 PM    | 2                       | 118  | 20                           | 4     | 152                     | 20    | 316        |
| 05:15 PM    | 8                       | 101  | 12                           | 8     | 124                     | 12    | 265        |
| 05:30 PM    | 11                      | 103  | 12                           | 6     | 105                     | 7     | 244        |
| 05:45 PM    | 4                       | 82   | 12                           | 1     | 94                      | 15    | 208        |
| Total       | 25                      | 404  | 56                           | 19    | 475                     | 54    | 1033       |
| Grand Total | 60                      | 1441 | 152                          | 55    | 1590                    | 190   | 3488       |
| Apprch %    | 4                       | 96   | 73.4                         | 26.6  | 89.3                    | 10.7  |            |
| Total %     | 1.7                     | 41.3 | 4.4                          | 1.6   | 45.6                    | 5.4   |            |
| Cars        | 52                      | 1412 | 150                          | 55    | 1557                    | 190   | 3416       |
| % Cars      | 86.7                    | 98   | 98.7                         | 100   | 97.9                    | 100   | 97.9       |
| Trucks      | 8                       | 29   | 2                            | 0     | 33                      | 0     | 72         |
| % Trucks    | 13.3                    | 2    | 1.3                          | 0     | 2.1                     | 0     | 2.1        |

|                                                            | Warren Ave<br>From East |            |            | Bishop St Ext.<br>From South |          |            | Warren Ave<br>From West |           |            |            |
|------------------------------------------------------------|-------------------------|------------|------------|------------------------------|----------|------------|-------------------------|-----------|------------|------------|
| Start Time                                                 | Left                    | Thru       | App. Total | Left                         | Right    | App. Total | Thru                    | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                         |            |            |                              |          |            |                         |           |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                         |            |            |                              |          |            |                         |           |            |            |
| 04:00 PM                                                   | 5                       | 123        | 128        | 14                           | 6        | 20         | <b>154</b>              | 19        | <b>173</b> | 321        |
| 04:15 PM                                                   | 5                       | <b>139</b> | <b>144</b> | 12                           | 6        | 18         | 134                     | 18        | 152        | 314        |
| 04:30 PM                                                   | 2                       | 137        | 139        | <b>18</b>                    | <b>7</b> | <b>25</b>  | 140                     | <b>24</b> | 164        | <b>328</b> |
| 04:45 PM                                                   | <b>6</b>                | 108        | 114        | 8                            | 5        | 13         | 150                     | 22        | 172        | 299        |
| Total Volume                                               | 18                      | 507        | 525        | 52                           | 24       | 76         | 578                     | 83        | 661        | 1262       |
| % App. Total                                               | 3.4                     | 96.6       |            | 68.4                         | 31.6     |            | 87.4                    | 12.6      |            |            |
| PHF                                                        | .750                    | .912       | .911       | .722                         | .857     | .760       | .938                    | .865      | .955       | .962       |
| Cars                                                       | 17                      | 493        | 510        | 52                           | 24       | 76         | 568                     | 83        | 651        | 1237       |
| % Cars                                                     | 94.4                    | 97.2       | 97.1       | 100                          | 100      | 100        | 98.3                    | 100       | 98.5       | 98.0       |
| Trucks                                                     | 1                       | 14         | 15         | 0                            | 0        | 0          | 10                      | 0         | 10         | 25         |
| % Trucks                                                   | 5.6                     | 2.8        | 2.9        | 0                            | 0        | 0          | 1.7                     | 0         | 1.5        | 2.0        |

# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : Poland Street / UNE Drive  
City/State : Portland, ME  
Weather : Clear

File Name : 19050004  
Site Code : 19050004  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |      |       | Poland St<br>From East |      |       | Stevens Ave<br>From South |      |       | UNE Dr<br>From West |      |       | Int. Total |
|-------------|---------------------------|------|-------|------------------------|------|-------|---------------------------|------|-------|---------------------|------|-------|------------|
| Start Time  | Left                      | Thru | Right | Left                   | Thru | Right | Left                      | Thru | Right | Left                | Thru | Right |            |
| 07:00 AM    | 2                         | 71   | 2     | 3                      | 0    | 0     | 0                         | 44   | 2     | 0                   | 0    | 0     | 124        |
| 07:15 AM    | 1                         | 101  | 0     | 3                      | 0    | 2     | 0                         | 52   | 3     | 0                   | 0    | 1     | 163        |
| 07:30 AM    | 1                         | 121  | 6     | 2                      | 2    | 5     | 1                         | 70   | 4     | 1                   | 0    | 0     | 213        |
| 07:45 AM    | 6                         | 147  | 2     | 5                      | 1    | 4     | 7                         | 76   | 7     | 0                   | 0    | 0     | 255        |
| Total       | 10                        | 440  | 10    | 13                     | 3    | 11    | 8                         | 242  | 16    | 1                   | 0    | 1     | 755        |
| 08:00 AM    | 3                         | 154  | 7     | 3                      | 6    | 0     | 6                         | 73   | 12    | 1                   | 1    | 0     | 266        |
| 08:15 AM    | 6                         | 118  | 6     | 7                      | 0    | 2     | 5                         | 79   | 5     | 0                   | 0    | 0     | 228        |
| 08:30 AM    | 6                         | 115  | 1     | 4                      | 1    | 0     | 1                         | 64   | 8     | 0                   | 0    | 1     | 201        |
| 08:45 AM    | 4                         | 99   | 1     | 6                      | 0    | 1     | 1                         | 48   | 5     | 1                   | 0    | 2     | 168        |
| Total       | 19                        | 486  | 15    | 20                     | 7    | 3     | 13                        | 264  | 30    | 2                   | 1    | 3     | 863        |
| Grand Total | 29                        | 926  | 25    | 33                     | 10   | 14    | 21                        | 506  | 46    | 3                   | 1    | 4     | 1618       |
| Apprch %    | 3                         | 94.5 | 2.6   | 57.9                   | 17.5 | 24.6  | 3.7                       | 88.3 | 8     | 37.5                | 12.5 | 50    |            |
| Total %     | 1.8                       | 57.2 | 1.5   | 2                      | 0.6  | 0.9   | 1.3                       | 31.3 | 2.8   | 0.2                 | 0.1  | 0.2   |            |
| Cars        | 29                        | 910  | 25    | 33                     | 10   | 14    | 21                        | 488  | 46    | 3                   | 1    | 4     | 1584       |
| % Cars      | 100                       | 98.3 | 100   | 100                    | 100  | 100   | 100                       | 96.4 | 100   | 100                 | 100  | 100   | 97.9       |
| Trucks      | 0                         | 16   | 0     | 0                      | 0    | 0     | 0                         | 18   | 0     | 0                   | 0    | 0     | 34         |
| % Trucks    | 0                         | 1.7  | 0     | 0                      | 0    | 0     | 0                         | 3.6  | 0     | 0                   | 0    | 0     | 2.1        |

|                                                            | Stevens Ave<br>From North |      |       |            | Poland St<br>From East |      |       |            | Stevens Ave<br>From South |      |       |            | UNE Dr<br>From West |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                   | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |      |       |            |                        |      |       |            |                           |      |       |            |                     |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                           |      |       |            |                        |      |       |            |                           |      |       |            |                     |      |       |            |            |
| 07:30 AM                                                   | 1                         | 121  | 6     | 128        | 2                      | 2    | 5     | 9          | 1                         | 70   | 4     | 75         | 1                   | 0    | 0     | 1          | 213        |
| 07:45 AM                                                   | 6                         | 147  | 2     | 155        | 5                      | 1    | 4     | 10         | 7                         | 76   | 7     | 90         | 0                   | 0    | 0     | 0          | 255        |
| 08:00 AM                                                   | 3                         | 154  | 7     | 164        | 3                      | 6    | 0     | 9          | 6                         | 73   | 12    | 91         | 1                   | 1    | 0     | 2          | 266        |
| 08:15 AM                                                   | 6                         | 118  | 6     | 130        | 7                      | 0    | 2     | 9          | 5                         | 79   | 5     | 89         | 0                   | 0    | 0     | 0          | 228        |
| Total Volume                                               | 16                        | 540  | 21    | 577        | 17                     | 9    | 11    | 37         | 19                        | 298  | 28    | 345        | 2                   | 1    | 0     | 3          | 962        |
| % App. Total                                               | 2.8                       | 93.6 | 3.6   |            | 45.9                   | 24.3 | 29.7  |            | 5.5                       | 86.4 | 8.1   |            | 66.7                | 33.3 | 0     |            |            |
| PHF                                                        | .667                      | .877 | .750  | .880       | .607                   | .375 | .550  | .925       | .679                      | .943 | .583  | .948       | .500                | .250 | .000  | .375       | .904       |
| Cars                                                       | 16                        | 530  | 21    | 567        | 17                     | 9    | 11    | 37         | 19                        | 286  | 28    | 333        | 2                   | 1    | 0     | 3          | 940        |
| % Cars                                                     | 100                       | 98.1 | 100   | 98.3       | 100                    | 100  | 100   | 100        | 100                       | 96.0 | 100   | 96.5       | 100                 | 100  | 0     | 100        | 97.7       |
| Trucks                                                     | 0                         | 10   | 0     | 10         | 0                      | 0    | 0     | 0          | 0                         | 12   | 0     | 12         | 0                   | 0    | 0     | 0          | 22         |
| % Trucks                                                   | 0                         | 1.9  | 0     | 1.7        | 0                      | 0    | 0     | 0          | 0                         | 4.0  | 0     | 3.5        | 0                   | 0    | 0     | 0          | 2.3        |

# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : Poland Street / UNE Drive  
City/State : Portland, ME  
Weather : Clear

File Name : 19050004  
Site Code : 19050004  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |      |       | Poland St<br>From East |      |       | Stevens Ave<br>From South |      |       | UNE Dr<br>From West |      |       | Int. Total |
|-------------|---------------------------|------|-------|------------------------|------|-------|---------------------------|------|-------|---------------------|------|-------|------------|
| Start Time  | Left                      | Thru | Right | Left                   | Thru | Right | Left                      | Thru | Right | Left                | Thru | Right |            |
| 03:00 PM    | 3                         | 97   | 1     | 1                      | 1    | 0     | 0                         | 119  | 5     | 1                   | 1    | 1     | 230        |
| 03:15 PM    | 0                         | 87   | 0     | 6                      | 0    | 1     | 0                         | 79   | 0     | 2                   | 0    | 1     | 176        |
| 03:30 PM    | 1                         | 86   | 0     | 1                      | 0    | 0     | 0                         | 99   | 3     | 3                   | 0    | 0     | 193        |
| 03:45 PM    | 2                         | 115  | 0     | 2                      | 0    | 0     | 2                         | 99   | 2     | 3                   | 0    | 2     | 227        |
| Total       | 6                         | 385  | 1     | 10                     | 1    | 1     | 2                         | 396  | 10    | 9                   | 1    | 4     | 826        |
| 04:00 PM    | 5                         | 102  | 0     | 2                      | 0    | 0     | 0                         | 126  | 2     | 2                   | 0    | 0     | 239        |
| 04:15 PM    | 1                         | 122  | 0     | 2                      | 0    | 2     | 1                         | 111  | 3     | 2                   | 0    | 2     | 246        |
| 04:30 PM    | 1                         | 122  | 0     | 6                      | 1    | 3     | 2                         | 123  | 5     | 4                   | 0    | 5     | 272        |
| 04:45 PM    | 2                         | 107  | 0     | 4                      | 0    | 1     | 0                         | 142  | 4     | 3                   | 1    | 1     | 265        |
| Total       | 9                         | 453  | 0     | 14                     | 1    | 6     | 3                         | 502  | 14    | 11                  | 1    | 8     | 1022       |
| 05:00 PM    | 3                         | 119  | 0     | 2                      | 0    | 2     | 0                         | 114  | 1     | 2                   | 0    | 2     | 245        |
| 05:15 PM    | 3                         | 138  | 1     | 0                      | 0    | 1     | 1                         | 124  | 7     | 2                   | 0    | 1     | 278        |
| 05:30 PM    | 3                         | 118  | 0     | 2                      | 0    | 0     | 0                         | 133  | 1     | 0                   | 2    | 1     | 260        |
| 05:45 PM    | 1                         | 84   | 0     | 0                      | 0    | 2     | 2                         | 90   | 2     | 0                   | 0    | 0     | 181        |
| Total       | 10                        | 459  | 1     | 4                      | 0    | 5     | 3                         | 461  | 11    | 4                   | 2    | 4     | 964        |
| Grand Total | 25                        | 1297 | 2     | 28                     | 2    | 12    | 8                         | 1359 | 35    | 24                  | 4    | 16    | 2812       |
| Apprch %    | 1.9                       | 98   | 0.2   | 66.7                   | 4.8  | 28.6  | 0.6                       | 96.9 | 2.5   | 54.5                | 9.1  | 36.4  |            |
| Total %     | 0.9                       | 46.1 | 0.1   | 1                      | 0.1  | 0.4   | 0.3                       | 48.3 | 1.2   | 0.9                 | 0.1  | 0.6   |            |
| Cars        | 25                        | 1285 | 2     | 28                     | 2    | 12    | 8                         | 1343 | 35    | 24                  | 4    | 16    | 2784       |
| % Cars      | 100                       | 99.1 | 100   | 100                    | 100  | 100   | 100                       | 98.8 | 100   | 100                 | 100  | 100   | 99         |
| Trucks      | 0                         | 12   | 0     | 0                      | 0    | 0     | 0                         | 16   | 0     | 0                   | 0    | 0     | 28         |
| % Trucks    | 0                         | 0.9  | 0     | 0                      | 0    | 0     | 0                         | 1.2  | 0     | 0                   | 0    | 0     | 1          |

|                                                            | Stevens Ave<br>From North |      |       |            | Poland St<br>From East |      |       |            | Stevens Ave<br>From South |      |       |            | UNE Dr<br>From West |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                   | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                           |      |       |            |                        |      |       |            |                           |      |       |            |                     |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                           |      |       |            |                        |      |       |            |                           |      |       |            |                     |      |       |            |            |
| 04:30 PM                                                   | 1                         | 122  | 0     | 123        | 6                      | 1    | 3     | 10         | 2                         | 123  | 5     | 130        | 4                   | 0    | 5     | 9          | 272        |
| 04:45 PM                                                   | 2                         | 107  | 0     | 109        | 4                      | 0    | 1     | 5          | 0                         | 142  | 4     | 146        | 3                   | 1    | 1     | 5          | 265        |
| 05:00 PM                                                   | 3                         | 119  | 0     | 122        | 2                      | 0    | 2     | 4          | 0                         | 114  | 1     | 115        | 2                   | 0    | 2     | 4          | 245        |
| 05:15 PM                                                   | 3                         | 138  | 1     | 142        | 0                      | 0    | 1     | 1          | 1                         | 124  | 7     | 132        | 2                   | 0    | 1     | 3          | 278        |
| Total Volume                                               | 9                         | 486  | 1     | 496        | 12                     | 1    | 7     | 20         | 3                         | 503  | 17    | 523        | 11                  | 1    | 9     | 21         | 1060       |
| % App. Total                                               | 1.8                       | 98   | 0.2   |            | 60                     | 5    | 35    |            | 0.6                       | 96.2 | 3.3   |            | 52.4                | 4.8  | 42.9  |            |            |
| PHF                                                        | .750                      | .880 | .250  | .873       | .500                   | .250 | .583  | .500       | .375                      | .886 | .607  | .896       | .688                | .250 | .450  | .583       | .953       |
| Cars                                                       | 9                         | 484  | 1     | 494        | 12                     | 1    | 7     | 20         | 3                         | 500  | 17    | 520        | 11                  | 1    | 9     | 21         | 1055       |
| % Cars                                                     | 100                       | 99.6 | 100   | 99.6       | 100                    | 100  | 100   | 100        | 100                       | 99.4 | 100   | 99.4       | 100                 | 100  | 100   | 100        | 99.5       |
| Trucks                                                     | 0                         | 2    | 0     | 2          | 0                      | 0    | 0     | 0          | 0                         | 3    | 0     | 3          | 0                   | 0    | 0     | 0          | 5          |
| % Trucks                                                   | 0                         | 0.4  | 0     | 0.4        | 0                      | 0    | 0     | 0          | 0                         | 0.6  | 0     | 0.6        | 0                   | 0    | 0     | 0          | 0.5        |

# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : College Street  
City/State : Portland, ME  
Weather : Clear

File Name : 19050005  
Site Code : 19050005  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |       | Stevens Ave<br>From South |      | College St<br>From West |       |            |
|-------------|---------------------------|-------|---------------------------|------|-------------------------|-------|------------|
| Start Time  | Thru                      | Right | Left                      | Thru | Left                    | Right | Int. Total |
| 07:00 AM    | 66                        | 5     | 3                         | 48   | 0                       | 0     | 122        |
| 07:15 AM    | 95                        | 13    | 6                         | 54   | 1                       | 1     | 170        |
| 07:30 AM    | 99                        | 19    | 11                        | 74   | 0                       | 1     | 204        |
| 07:45 AM    | 132                       | 22    | 14                        | 90   | 0                       | 2     | 260        |
| Total       | 392                       | 59    | 34                        | 266  | 1                       | 4     | 756        |
| 08:00 AM    | 141                       | 14    | 5                         | 89   | 2                       | 0     | 251        |
| 08:15 AM    | 117                       | 11    | 5                         | 86   | 2                       | 0     | 221        |
| 08:30 AM    | 116                       | 3     | 2                         | 72   | 2                       | 0     | 195        |
| 08:45 AM    | 100                       | 6     | 4                         | 51   | 2                       | 0     | 163        |
| Total       | 474                       | 34    | 16                        | 298  | 8                       | 0     | 830        |
| Grand Total | 866                       | 93    | 50                        | 564  | 9                       | 4     | 1586       |
| Apprch %    | 90.3                      | 9.7   | 8.1                       | 91.9 | 69.2                    | 30.8  |            |
| Total %     | 54.6                      | 5.9   | 3.2                       | 35.6 | 0.6                     | 0.3   |            |
| Cars        | 847                       | 92    | 50                        | 548  | 8                       | 4     | 1549       |
| % Cars      | 97.8                      | 98.9  | 100                       | 97.2 | 88.9                    | 100   | 97.7       |
| Trucks      | 19                        | 1     | 0                         | 16   | 1                       | 0     | 37         |
| % Trucks    | 2.2                       | 1.1   | 0                         | 2.8  | 11.1                    | 0     | 2.3        |

|                                                            | Stevens Ave<br>From North |           |            | Stevens Ave<br>From South |           |            | College St<br>From West |          |            |            |
|------------------------------------------------------------|---------------------------|-----------|------------|---------------------------|-----------|------------|-------------------------|----------|------------|------------|
| Start Time                                                 | Thru                      | Right     | App. Total | Left                      | Thru      | App. Total | Left                    | Right    | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |           |            |                           |           |            |                         |          |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                           |           |            |                           |           |            |                         |          |            |            |
| 07:30 AM                                                   | 99                        | 19        | 118        | 11                        | 74        | 85         | 0                       | 1        | 1          | 204        |
| 07:45 AM                                                   | 132                       | <b>22</b> | 154        | <b>14</b>                 | <b>90</b> | <b>104</b> | 0                       | <b>2</b> | <b>2</b>   | <b>260</b> |
| 08:00 AM                                                   | <b>141</b>                | 14        | <b>155</b> | 5                         | 89        | 94         | <b>2</b>                | 0        | 2          | 251        |
| 08:15 AM                                                   | 117                       | 11        | 128        | 5                         | 86        | 91         | 2                       | 0        | 2          | 221        |
| Total Volume                                               | 489                       | 66        | 555        | 35                        | 339       | 374        | 4                       | 3        | 7          | 936        |
| % App. Total                                               | 88.1                      | 11.9      |            | 9.4                       | 90.6      |            | 57.1                    | 42.9     |            |            |
| PHF                                                        | .867                      | .750      | .895       | .625                      | .942      | .899       | .500                    | .375     | .875       | .900       |
| Cars                                                       | 477                       | 65        | 542        | 35                        | 329       | 364        | 3                       | 3        | 6          | 912        |
| % Cars                                                     | 97.5                      | 98.5      | 97.7       | 100                       | 97.1      | 97.3       | 75.0                    | 100      | 85.7       | 97.4       |
| Trucks                                                     | 12                        | 1         | 13         | 0                         | 10        | 10         | 1                       | 0        | 1          | 24         |
| % Trucks                                                   | 2.5                       | 1.5       | 2.3        | 0                         | 2.9       | 2.7        | 25.0                    | 0        | 14.3       | 2.6        |

**Accurate Counts**  
978-664-2565

N/S Street : Stevens Avenue  
E/W Street : College Street  
City/State : Portland, ME  
Weather : Clear

File Name : 19050005  
Site Code : 19050005  
Start Date : 9/21/2021  
Page No : 1

Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |       | Stevens Ave<br>From South |      | College St<br>From West |       |            |
|-------------|---------------------------|-------|---------------------------|------|-------------------------|-------|------------|
| Start Time  | Thru                      | Right | Left                      | Thru | Left                    | Right | Int. Total |
| 03:00 PM    | 97                        | 2     | 2                         | 120  | 7                       | 4     | 232        |
| 03:15 PM    | 91                        | 1     | 0                         | 74   | 5                       | 7     | 178        |
| 03:30 PM    | 89                        | 0     | 1                         | 97   | 6                       | 8     | 201        |
| 03:45 PM    | 113                       | 3     | 0                         | 101  | 1                       | 5     | 223        |
| Total       | 390                       | 6     | 3                         | 392  | 19                      | 24    | 834        |
| 04:00 PM    | 106                       | 1     | 0                         | 115  | 13                      | 18    | 253        |
| 04:15 PM    | 124                       | 2     | 2                         | 104  | 11                      | 10    | 253        |
| 04:30 PM    | 129                       | 2     | 0                         | 111  | 20                      | 16    | 278        |
| 04:45 PM    | 115                       | 0     | 3                         | 134  | 12                      | 10    | 274        |
| Total       | 474                       | 5     | 5                         | 464  | 56                      | 54    | 1058       |
| 05:00 PM    | 123                       | 2     | 1                         | 109  | 6                       | 7     | 248        |
| 05:15 PM    | 134                       | 5     | 1                         | 121  | 7                       | 7     | 275        |
| 05:30 PM    | 117                       | 2     | 3                         | 124  | 10                      | 6     | 262        |
| 05:45 PM    | 82                        | 1     | 4                         | 91   | 1                       | 8     | 187        |
| Total       | 456                       | 10    | 9                         | 445  | 24                      | 28    | 972        |
| Grand Total | 1320                      | 21    | 17                        | 1301 | 99                      | 106   | 2864       |
| Apprch %    | 98.4                      | 1.6   | 1.3                       | 98.7 | 48.3                    | 51.7  |            |
| Total %     | 46.1                      | 0.7   | 0.6                       | 45.4 | 3.5                     | 3.7   |            |
| Cars        | 1307                      | 21    | 17                        | 1286 | 99                      | 106   | 2836       |
| % Cars      | 99                        | 100   | 100                       | 98.8 | 100                     | 100   | 99         |
| Trucks      | 13                        | 0     | 0                         | 15   | 0                       | 0     | 28         |
| % Trucks    | 1                         | 0     | 0                         | 1.2  | 0                       | 0     | 1          |

|                                                            | Stevens Ave<br>From North |          |            | Stevens Ave<br>From South |            |            | College St<br>From West |           |            |            |
|------------------------------------------------------------|---------------------------|----------|------------|---------------------------|------------|------------|-------------------------|-----------|------------|------------|
| Start Time                                                 | Thru                      | Right    | App. Total | Left                      | Thru       | App. Total | Left                    | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                           |          |            |                           |            |            |                         |           |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                           |          |            |                           |            |            |                         |           |            |            |
| 04:30 PM                                                   | 129                       | 2        | 131        | 0                         | 111        | 111        | <b>20</b>               | <b>16</b> | <b>36</b>  | <b>278</b> |
| 04:45 PM                                                   | 115                       | 0        | 115        | <b>3</b>                  | <b>134</b> | <b>137</b> | 12                      | 10        | 22         | 274        |
| 05:00 PM                                                   | 123                       | 2        | 125        | 1                         | 109        | 110        | 6                       | 7         | 13         | 248        |
| 05:15 PM                                                   | <b>134</b>                | <b>5</b> | <b>139</b> | 1                         | 121        | 122        | 7                       | 7         | 14         | 275        |
| Total Volume                                               | 501                       | 9        | 510        | 5                         | 475        | 480        | 45                      | 40        | 85         | 1075       |
| % App. Total                                               | 98.2                      | 1.8      |            | 1                         | 99         |            | 52.9                    | 47.1      |            |            |
| PHF                                                        | .935                      | .450     | .917       | .417                      | .886       | .876       | .563                    | .625      | .590       | .967       |
| Cars                                                       | 499                       | 9        | 508        | 5                         | 473        | 478        | 45                      | 40        | 85         | 1071       |
| % Cars                                                     | 99.6                      | 100      | 99.6       | 100                       | 99.6       | 99.6       | 100                     | 100       | 100        | 99.6       |
| Trucks                                                     | 2                         | 0        | 2          | 0                         | 2          | 2          | 0                       | 0         | 0          | 4          |
| % Trucks                                                   | 0.4                       | 0        | 0.4        | 0                         | 0.4        | 0.4        | 0                       | 0         | 0          | 0.4        |

# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : UNE Drive  
City/State : Portland, ME  
Weather : Clear

File Name : 19050006  
Site Code : 19050006  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |       | Stevens Ave<br>From South |      | UNE Dr<br>From West |       |            |
|-------------|---------------------------|-------|---------------------------|------|---------------------|-------|------------|
| Start Time  | Thru                      | Right | Left                      | Thru | Left                | Right | Int. Total |
| 07:00 AM    | 63                        | 2     | 6                         | 50   | 0                   | 1     | 122        |
| 07:15 AM    | 81                        | 6     | 10                        | 63   | 0                   | 2     | 162        |
| 07:30 AM    | 94                        | 6     | 17                        | 88   | 0                   | 2     | 207        |
| 07:45 AM    | 127                       | 13    | 14                        | 104  | 1                   | 1     | 260        |
| Total       | 365                       | 27    | 47                        | 305  | 1                   | 6     | 751        |
| 08:00 AM    | 135                       | 8     | 11                        | 102  | 0                   | 0     | 256        |
| 08:15 AM    | 121                       | 3     | 6                         | 100  | 0                   | 4     | 234        |
| 08:30 AM    | 117                       | 1     | 6                         | 68   | 1                   | 0     | 193        |
| 08:45 AM    | 91                        | 9     | 7                         | 58   | 0                   | 2     | 167        |
| Total       | 464                       | 21    | 30                        | 328  | 1                   | 6     | 850        |
| Grand Total | 829                       | 48    | 77                        | 633  | 2                   | 12    | 1601       |
| Apprch %    | 94.5                      | 5.5   | 10.8                      | 89.2 | 14.3                | 85.7  |            |
| Total %     | 51.8                      | 3     | 4.8                       | 39.5 | 0.1                 | 0.7   |            |
| Cars        | 803                       | 48    | 77                        | 615  | 2                   | 12    | 1557       |
| % Cars      | 96.9                      | 100   | 100                       | 97.2 | 100                 | 100   | 97.3       |
| Trucks      | 26                        | 0     | 0                         | 18   | 0                   | 0     | 44         |
| % Trucks    | 3.1                       | 0     | 0                         | 2.8  | 0                   | 0     | 2.7        |

|                                                            | Stevens Ave<br>From North |       |            | Stevens Ave<br>From South |      |            | UNE Dr<br>From West |       |            |            |
|------------------------------------------------------------|---------------------------|-------|------------|---------------------------|------|------------|---------------------|-------|------------|------------|
| Start Time                                                 | Thru                      | Right | App. Total | Left                      | Thru | App. Total | Left                | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |       |            |                           |      |            |                     |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                           |       |            |                           |      |            |                     |       |            |            |
| 07:30 AM                                                   | 94                        | 6     | 100        | 17                        | 88   | 105        | 0                   | 2     | 2          | 207        |
| 07:45 AM                                                   | 127                       | 13    | 140        | 14                        | 104  | 118        | 1                   | 1     | 2          | 260        |
| 08:00 AM                                                   | 135                       | 8     | 143        | 11                        | 102  | 113        | 0                   | 0     | 0          | 256        |
| 08:15 AM                                                   | 121                       | 3     | 124        | 6                         | 100  | 106        | 0                   | 4     | 4          | 234        |
| Total Volume                                               | 477                       | 30    | 507        | 48                        | 394  | 442        | 1                   | 7     | 8          | 957        |
| % App. Total                                               | 94.1                      | 5.9   |            | 10.9                      | 89.1 |            | 12.5                | 87.5  |            |            |
| PHF                                                        | .883                      | .577  | .886       | .706                      | .947 | .936       | .250                | .438  | .500       | .920       |
| Cars                                                       | 460                       | 30    | 490        | 48                        | 384  | 432        | 1                   | 7     | 8          | 930        |
| % Cars                                                     | 96.4                      | 100   | 96.6       | 100                       | 97.5 | 97.7       | 100                 | 100   | 100        | 97.2       |
| Trucks                                                     | 17                        | 0     | 17         | 0                         | 10   | 10         | 0                   | 0     | 0          | 27         |
| % Trucks                                                   | 3.6                       | 0     | 3.4        | 0                         | 2.5  | 2.3        | 0                   | 0     | 0          | 2.8        |



# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : UNE Drive  
City/State : Portland, ME  
Weather : Clear

File Name : 19050006  
Site Code : 19050006  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |       | Stevens Ave<br>From South |      | UNE Dr<br>From West |       |            |
|-------------|---------------------------|-------|---------------------------|------|---------------------|-------|------------|
| Start Time  | Thru                      | Right | Left                      | Thru | Left                | Right | Int. Total |
| 03:00 PM    | 107                       | 1     | 0                         | 116  | 1                   | 2     | 227        |
| 03:15 PM    | 93                        | 0     | 2                         | 78   | 0                   | 2     | 175        |
| 03:30 PM    | 99                        | 1     | 3                         | 96   | 0                   | 6     | 205        |
| 03:45 PM    | 121                       | 2     | 2                         | 107  | 3                   | 4     | 239        |
| Total       | 420                       | 4     | 7                         | 397  | 4                   | 14    | 846        |
| 04:00 PM    | 121                       | 0     | 4                         | 98   | 6                   | 7     | 236        |
| 04:15 PM    | 131                       | 3     | 1                         | 113  | 1                   | 5     | 254        |
| 04:30 PM    | 144                       | 6     | 5                         | 115  | 3                   | 7     | 280        |
| 04:45 PM    | 124                       | 1     | 3                         | 141  | 4                   | 7     | 280        |
| Total       | 520                       | 10    | 13                        | 467  | 14                  | 26    | 1050       |
| 05:00 PM    | 131                       | 2     | 6                         | 113  | 3                   | 5     | 260        |
| 05:15 PM    | 147                       | 3     | 3                         | 124  | 3                   | 4     | 284        |
| 05:30 PM    | 122                       | 5     | 3                         | 112  | 3                   | 1     | 246        |
| 05:45 PM    | 84                        | 2     | 2                         | 95   | 3                   | 6     | 192        |
| Total       | 484                       | 12    | 14                        | 444  | 12                  | 16    | 982        |
| Grand Total | 1424                      | 26    | 34                        | 1308 | 30                  | 56    | 2878       |
| Apprch %    | 98.2                      | 1.8   | 2.5                       | 97.5 | 34.9                | 65.1  |            |
| Total %     | 49.5                      | 0.9   | 1.2                       | 45.4 | 1                   | 1.9   |            |
| Cars        | 1410                      | 26    | 34                        | 1292 | 30                  | 56    | 2848       |
| % Cars      | 99                        | 100   | 100                       | 98.8 | 100                 | 100   | 99         |
| Trucks      | 14                        | 0     | 0                         | 16   | 0                   | 0     | 30         |
| % Trucks    | 1                         | 0     | 0                         | 1.2  | 0                   | 0     | 1          |

|                                                            | Stevens Ave<br>From North |          |            | Stevens Ave<br>From South |            |            | UNE Dr<br>From West |          |            |            |
|------------------------------------------------------------|---------------------------|----------|------------|---------------------------|------------|------------|---------------------|----------|------------|------------|
| Start Time                                                 | Thru                      | Right    | App. Total | Left                      | Thru       | App. Total | Left                | Right    | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1 |                           |          |            |                           |            |            |                     |          |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                           |          |            |                           |            |            |                     |          |            |            |
| 04:30 PM                                                   | 144                       | <b>6</b> | <b>150</b> | 5                         | 115        | 120        | 3                   | <b>7</b> | 10         | 280        |
| 04:45 PM                                                   | 124                       | 1        | 125        | 3                         | <b>141</b> | <b>144</b> | <b>4</b>            | 7        | <b>11</b>  | 280        |
| 05:00 PM                                                   | 131                       | 2        | 133        | <b>6</b>                  | 113        | 119        | 3                   | 5        | 8          | 260        |
| 05:15 PM                                                   | <b>147</b>                | 3        | 150        | 3                         | 124        | 127        | 3                   | 4        | 7          | <b>284</b> |
| Total Volume                                               | 546                       | 12       | 558        | 17                        | 493        | 510        | 13                  | 23       | 36         | 1104       |
| % App. Total                                               | 97.8                      | 2.2      |            | 3.3                       | 96.7       |            | 36.1                | 63.9     |            |            |
| PHF                                                        | .929                      | .500     | .930       | .708                      | .874       | .885       | .813                | .821     | .818       | .972       |
| Cars                                                       | 544                       | 12       | 556        | 17                        | 491        | 508        | 13                  | 23       | 36         | 1100       |
| % Cars                                                     | 99.6                      | 100      | 99.6       | 100                       | 99.6       | 99.6       | 100                 | 100      | 100        | 99.6       |
| Trucks                                                     | 2                         | 0        | 2          | 0                         | 2          | 2          | 0                   | 0        | 0          | 4          |
| % Trucks                                                   | 0.4                       | 0        | 0.4        | 0                         | 0.4        | 0.4        | 0                   | 0        | 0          | 0.4        |

# Accurate Counts

978-664-2565

N/S Street : Stevens Avenue  
E/W Street : Walton Street  
City/State : Portland, ME  
Weather : Clear

File Name : 19050007  
Site Code : 19050007  
Start Date : 9/21/2021  
Page No : 1

## Groups Printed- Cars - Trucks

|             | Stevens Ave<br>From North |      | Walton St<br>From East |       | Stevens Ave<br>From South |       |            |
|-------------|---------------------------|------|------------------------|-------|---------------------------|-------|------------|
| Start Time  | Left                      | Thru | Left                   | Right | Thru                      | Right | Int. Total |
| 07:00 AM    | 1                         | 59   | 7                      | 5     | 51                        | 20    | 143        |
| 07:15 AM    | 4                         | 69   | 13                     | 18    | 63                        | 13    | 180        |
| 07:30 AM    | 4                         | 87   | 24                     | 25    | 84                        | 26    | 250        |
| 07:45 AM    | 9                         | 119  | 41                     | 22    | 95                        | 28    | 314        |
| Total       | 18                        | 334  | 85                     | 70    | 293                       | 87    | 887        |
| 08:00 AM    | 4                         | 121  | 45                     | 11    | 104                       | 37    | 322        |
| 08:15 AM    | 11                        | 112  | 25                     | 17    | 90                        | 26    | 281        |
| 08:30 AM    | 13                        | 111  | 22                     | 10    | 63                        | 21    | 240        |
| 08:45 AM    | 10                        | 83   | 17                     | 10    | 59                        | 20    | 199        |
| Total       | 38                        | 427  | 109                    | 48    | 316                       | 104   | 1042       |
| Grand Total | 56                        | 761  | 194                    | 118   | 609                       | 191   | 1929       |
| Apprch %    | 6.9                       | 93.1 | 62.2                   | 37.8  | 76.1                      | 23.9  |            |
| Total %     | 2.9                       | 39.5 | 10.1                   | 6.1   | 31.6                      | 9.9   |            |
| Cars        | 56                        | 736  | 193                    | 118   | 594                       | 186   | 1883       |
| % Cars      | 100                       | 96.7 | 99.5                   | 100   | 97.5                      | 97.4  | 97.6       |
| Trucks      | 0                         | 25   | 1                      | 0     | 15                        | 5     | 46         |
| % Trucks    | 0                         | 3.3  | 0.5                    | 0     | 2.5                       | 2.6   | 2.4        |

|                                                            | Stevens Ave<br>From North |            |            | Walton St<br>From East |           |            | Stevens Ave<br>From South |           |            |            |
|------------------------------------------------------------|---------------------------|------------|------------|------------------------|-----------|------------|---------------------------|-----------|------------|------------|
| Start Time                                                 | Left                      | Thru       | App. Total | Left                   | Right     | App. Total | Thru                      | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |            |            |                        |           |            |                           |           |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                           |            |            |                        |           |            |                           |           |            |            |
| 07:30 AM                                                   | 4                         | 87         | 91         | 24                     | <b>25</b> | 49         | 84                        | 26        | 110        | 250        |
| 07:45 AM                                                   | 9                         | 119        | <b>128</b> | 41                     | 22        | <b>63</b>  | 95                        | 28        | 123        | 314        |
| 08:00 AM                                                   | 4                         | <b>121</b> | 125        | <b>45</b>              | 11        | 56         | <b>104</b>                | <b>37</b> | <b>141</b> | <b>322</b> |
| 08:15 AM                                                   | <b>11</b>                 | 112        | 123        | 25                     | 17        | 42         | 90                        | 26        | 116        | 281        |
| Total Volume                                               | 28                        | 439        | 467        | 135                    | 75        | 210        | 373                       | 117       | 490        | 1167       |
| % App. Total                                               | 6                         | 94         |            | 64.3                   | 35.7      |            | 76.1                      | 23.9      |            |            |
| PHF                                                        | .636                      | .907       | .912       | .750                   | .750      | .833       | .897                      | .791      | .869       | .906       |
| Cars                                                       | 28                        | 423        | 451        | 134                    | 75        | 209        | 363                       | 114       | 477        | 1137       |
| % Cars                                                     | 100                       | 96.4       | 96.6       | 99.3                   | 100       | 99.5       | 97.3                      | 97.4      | 97.3       | 97.4       |
| Trucks                                                     | 0                         | 16         | 16         | 1                      | 0         | 1          | 10                        | 3         | 13         | 30         |
| % Trucks                                                   | 0                         | 3.6        | 3.4        | 0.7                    | 0         | 0.5        | 2.7                       | 2.6       | 2.7        | 2.6        |

**Accurate Counts**  
978-664-2565

N/S Street : Stevens Avenue  
E/W Street : Walton Street  
City/State : Portland, ME  
Weather : Clear

File Name : 19050007  
Site Code : 19050007  
Start Date : 9/21/2021  
Page No : 1

**Groups Printed- Cars - Trucks**

|             | Stevens Ave<br>From North |      | Walton St<br>From East |       | Stevens Ave<br>From South |       |            |
|-------------|---------------------------|------|------------------------|-------|---------------------------|-------|------------|
| Start Time  | Left                      | Thru | Left                   | Right | Thru                      | Right | Int. Total |
| 03:00 PM    | 8                         | 97   | 31                     | 6     | 110                       | 30    | 282        |
| 03:15 PM    | 6                         | 99   | 28                     | 3     | 76                        | 29    | 241        |
| 03:30 PM    | 12                        | 87   | 32                     | 6     | 92                        | 27    | 256        |
| 03:45 PM    | 9                         | 128  | 22                     | 1     | 110                       | 32    | 302        |
| Total       | 35                        | 411  | 113                    | 16    | 388                       | 118   | 1081       |
| 04:00 PM    | 13                        | 116  | 21                     | 3     | 107                       | 27    | 287        |
| 04:15 PM    | 18                        | 122  | 23                     | 7     | 103                       | 29    | 302        |
| 04:30 PM    | 22                        | 127  | 36                     | 19    | 102                       | 32    | 338        |
| 04:45 PM    | 19                        | 104  | 40                     | 12    | 131                       | 46    | 352        |
| Total       | 72                        | 469  | 120                    | 41    | 443                       | 134   | 1279       |
| 05:00 PM    | 21                        | 130  | 44                     | 13    | 118                       | 35    | 361        |
| 05:15 PM    | 30                        | 115  | 37                     | 17    | 105                       | 42    | 346        |
| 05:30 PM    | 16                        | 118  | 32                     | 14    | 101                       | 18    | 299        |
| 05:45 PM    | 7                         | 86   | 31                     | 7     | 86                        | 31    | 248        |
| Total       | 74                        | 449  | 144                    | 51    | 410                       | 126   | 1254       |
| Grand Total | 181                       | 1329 | 377                    | 108   | 1241                      | 378   | 3614       |
| Apprch %    | 12                        | 88   | 77.7                   | 22.3  | 76.7                      | 23.3  |            |
| Total %     | 5                         | 36.8 | 10.4                   | 3     | 34.3                      | 10.5  |            |
| Cars        | 181                       | 1316 | 375                    | 108   | 1224                      | 377   | 3581       |
| % Cars      | 100                       | 99   | 99.5                   | 100   | 98.6                      | 99.7  | 99.1       |
| Trucks      | 0                         | 13   | 2                      | 0     | 17                        | 1     | 33         |
| % Trucks    | 0                         | 1    | 0.5                    | 0     | 1.4                       | 0.3   | 0.9        |

|                                                            | Stevens Ave<br>From North |            |            | Walton St<br>From East |           |            | Stevens Ave<br>From South |           |            |            |
|------------------------------------------------------------|---------------------------|------------|------------|------------------------|-----------|------------|---------------------------|-----------|------------|------------|
| Start Time                                                 | Left                      | Thru       | App. Total | Left                   | Right     | App. Total | Thru                      | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                           |            |            |                        |           |            |                           |           |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                           |            |            |                        |           |            |                           |           |            |            |
| 04:30 PM                                                   | 22                        | 127        | 149        | 36                     | <b>19</b> | 55         | 102                       | 32        | 134        | 338        |
| 04:45 PM                                                   | 19                        | 104        | 123        | 40                     | 12        | 52         | <b>131</b>                | <b>46</b> | <b>177</b> | 352        |
| 05:00 PM                                                   | 21                        | <b>130</b> | <b>151</b> | <b>44</b>              | 13        | <b>57</b>  | 118                       | 35        | 153        | <b>361</b> |
| 05:15 PM                                                   | <b>30</b>                 | 115        | 145        | 37                     | 17        | 54         | 105                       | 42        | 147        | 346        |
| Total Volume                                               | 92                        | 476        | 568        | 157                    | 61        | 218        | 456                       | 155       | 611        | 1397       |
| % App. Total                                               | 16.2                      | 83.8       |            | 72                     | 28        |            | 74.6                      | 25.4      |            |            |
| PHF                                                        | .767                      | .915       | .940       | .892                   | .803      | .956       | .870                      | .842      | .863       | .967       |
| Cars                                                       | 92                        | 474        | 566        | 157                    | 61        | 218        | 454                       | 154       | 608        | 1392       |
| % Cars                                                     | 100                       | 99.6       | 99.6       | 100                    | 100       | 100        | 99.6                      | 99.4      | 99.5       | 99.6       |
| Trucks                                                     | 0                         | 2          | 2          | 0                      | 0         | 0          | 2                         | 1         | 3          | 5          |
| % Trucks                                                   | 0                         | 0.4        | 0.4        | 0                      | 0         | 0          | 0.4                       | 0.6       | 0.5        | 0.4        |

# Sewall

40 Forest Falls Drive  
Yarmouth, ME 04096

TITLE: UNE Bishop Street Lot  
TOWN: Portland  
COUNTER: JM  
WEATHER: Cloudy

File Name : PortlandBishopLotAM2022  
Site Code : 06522777  
Start Date : 2/2/2022  
Page No : 1

## Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

|                      | Bishop St. Ext.<br>Southbound |      |      |      |            | Bishop Street<br>Westbound |      |      |      |            | Northbound |      |      |      |            | UNE Parking Lot<br>Eastbound |      |      |      |            |            |
|----------------------|-------------------------------|------|------|------|------------|----------------------------|------|------|------|------------|------------|------|------|------|------------|------------------------------|------|------|------|------------|------------|
| Start Time           | Right                         | Thru | Left | Peds | App. Total | Right                      | Thru | Left | Peds | App. Total | Right      | Thru | Left | Peds | App. Total | Right                        | Thru | Left | Peds | App. Total | Int. Total |
| 07:00 AM             | 8                             | 0    | 12   | 0    | 20         | 8                          | 6    | 0    | 0    | 14         | 0          | 0    | 0    | 0    | 0          | 0                            | 4    | 0    | 0    | 4          | 38         |
| 07:15 AM             | 18                            | 0    | 30   | 0    | 48         | 5                          | 6    | 0    | 0    | 11         | 0          | 0    | 0    | 0    | 0          | 0                            | 4    | 1    | 0    | 5          | 64         |
| 07:30 AM             | 32                            | 0    | 42   | 0    | 74         | 3                          | 14   | 0    | 0    | 17         | 0          | 0    | 0    | 0    | 0          | 0                            | 2    | 0    | 0    | 2          | 93         |
| 07:45 AM             | 11                            | 0    | 44   | 0    | 55         | 9                          | 4    | 0    | 0    | 13         | 0          | 0    | 0    | 0    | 0          | 0                            | 2    | 1    | 0    | 3          | 71         |
| Total                | 69                            | 0    | 128  | 0    | 197        | 25                         | 30   | 0    | 0    | 55         | 0          | 0    | 0    | 0    | 0          | 0                            | 12   | 2    | 0    | 14         | 266        |
| 08:00 AM             | 8                             | 0    | 27   | 0    | 35         | 6                          | 4    | 0    | 0    | 10         | 0          | 0    | 0    | 0    | 0          | 0                            | 3    | 1    | 0    | 4          | 49         |
| 08:15 AM             | 11                            | 0    | 36   | 0    | 47         | 12                         | 7    | 0    | 0    | 19         | 0          | 0    | 0    | 0    | 0          | 0                            | 4    | 2    | 0    | 6          | 72         |
| 08:30 AM             | 14                            | 0    | 18   | 0    | 32         | 13                         | 9    | 0    | 0    | 22         | 0          | 0    | 0    | 0    | 0          | 0                            | 4    | 1    | 0    | 5          | 59         |
| 08:45 AM             | 5                             | 0    | 23   | 0    | 28         | 3                          | 2    | 0    | 0    | 5          | 0          | 0    | 0    | 0    | 0          | 0                            | 3    | 0    | 0    | 3          | 36         |
| Total                | 38                            | 0    | 104  | 0    | 142        | 34                         | 22   | 0    | 0    | 56         | 0          | 0    | 0    | 0    | 0          | 0                            | 14   | 4    | 0    | 18         | 216        |
| Grand Total          | 107                           | 0    | 232  | 0    | 339        | 59                         | 52   | 0    | 0    | 111        | 0          | 0    | 0    | 0    | 0          | 0                            | 26   | 6    | 0    | 32         | 482        |
| Apprch %             | 31.6                          | 0    | 68.4 | 0    |            | 53.2                       | 46.8 | 0    | 0    |            | 0          | 0    | 0    | 0    | 0          | 0                            | 81.2 | 18.8 | 0    |            |            |
| Total %              | 22.2                          | 0    | 48.1 | 0    | 70.3       | 12.2                       | 10.8 | 0    | 0    | 23         | 0          | 0    | 0    | 0    | 0          | 0                            | 5.4  | 1.2  | 0    | 6.6        |            |
| Passenger Vehicles   | 103                           | 0    | 231  | 0    | 334        | 58                         | 49   | 0    | 0    | 107        | 0          | 0    | 0    | 0    | 0          | 0                            | 24   | 2    | 0    | 26         | 467        |
| % Passenger Vehicles | 96.3                          | 0    | 99.6 | 0    | 98.5       | 98.3                       | 94.2 | 0    | 0    | 96.4       | 0          | 0    | 0    | 0    | 0          | 0                            | 92.3 | 33.3 | 0    | 81.2       | 96.9       |
| Light Trucks         | 4                             | 0    | 1    | 0    | 5          | 1                          | 3    | 0    | 0    | 4          | 0          | 0    | 0    | 0    | 0          | 0                            | 2    | 4    | 0    | 6          | 15         |
| % Light Trucks       | 3.7                           | 0    | 0.4  | 0    | 1.5        | 1.7                        | 5.8  | 0    | 0    | 3.6        | 0          | 0    | 0    | 0    | 0          | 0                            | 7.7  | 66.7 | 0    | 18.8       | 3.1        |
| Heavy Trucks         | 0                             | 0    | 0    | 0    | 0          | 0                          | 0    | 0    | 0    | 0          | 0          | 0    | 0    | 0    | 0          | 0                            | 0    | 0    | 0    | 0          | 0          |
| % Heavy Trucks       | 0                             | 0    | 0    | 0    | 0          | 0                          | 0    | 0    | 0    | 0          | 0          | 0    | 0    | 0    | 0          | 0                            | 0    | 0    | 0    | 0          | 0          |

Note: 9 entering and 10 exiting vehicles in AM were the shuttle bus

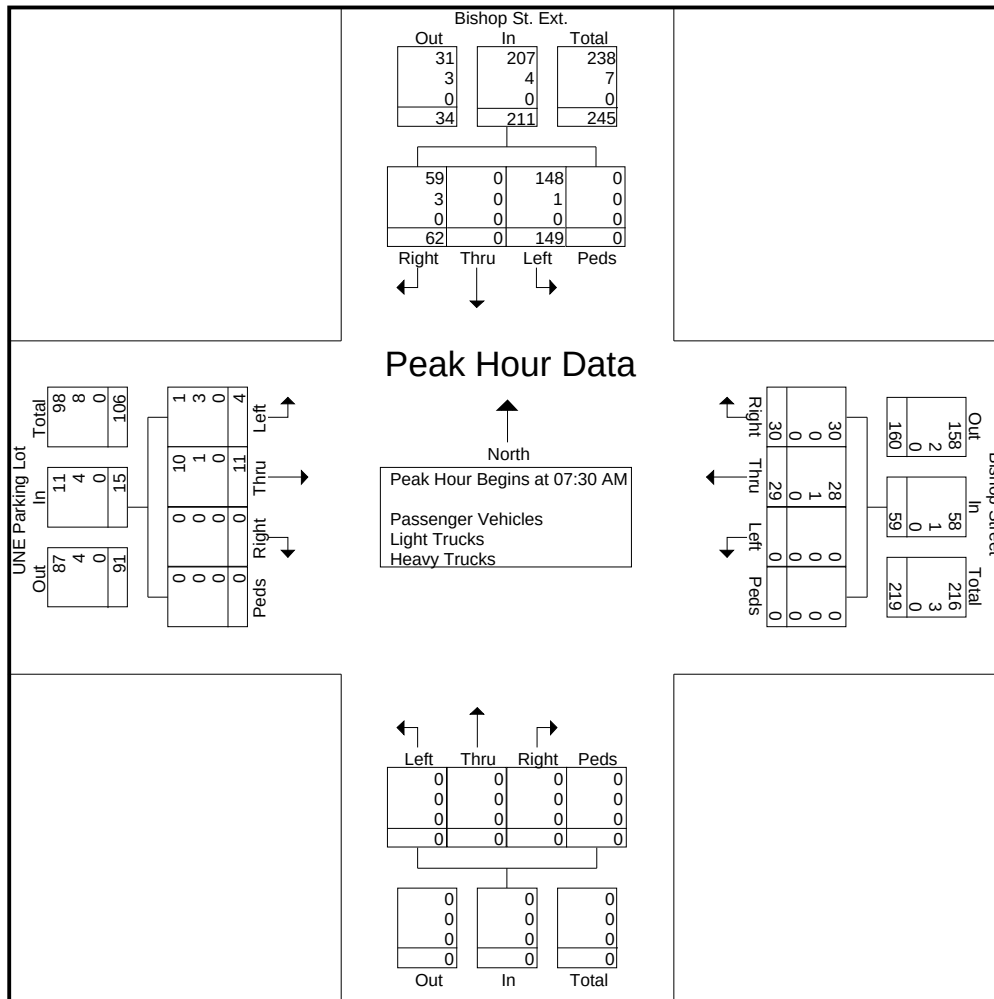
# Sewall

40 Forest Falls Drive  
Yarmouth, ME 04096

TITLE: UNE Bishop Street Lot  
TOWN: Portland  
COUNTER: JM  
WEATHER: Cloudy

File Name : PortlandBishopLotAM2022  
Site Code : 06522777  
Start Date : 2/2/2022  
Page No : 2

|                      | Bishop St. Ext. Southbound |       |      |       |            | Bishop Street Westbound |       |      |       |            | Northbound |       |      |       |            | UNE Parking Lot Eastbound |       |      |       |            |            |
|----------------------|----------------------------|-------|------|-------|------------|-------------------------|-------|------|-------|------------|------------|-------|------|-------|------------|---------------------------|-------|------|-------|------------|------------|
| Start Time           | Rig ht                     | Thr u | Left | Ped s | App. Total | Rig ht                  | Thr u | Left | Ped s | App. Total | Rig ht     | Thr u | Left | Ped s | App. Total | Rig ht                    | Thr u | Left | Ped s | App. Total | Int. Total |
| 07:30 AM             | 32                         | 0     | 42   | 0     | 74         | 3                       | 14    | 0    | 0     | 17         | 0          | 0     | 0    | 0     | 0          | 0                         | 2     | 0    | 0     | 2          | 93         |
| 07:45 AM             | 11                         | 0     | 44   | 0     | 55         | 9                       | 4     | 0    | 0     | 13         | 0          | 0     | 0    | 0     | 0          | 0                         | 2     | 1    | 0     | 3          | 71         |
| 08:00 AM             | 8                          | 0     | 27   | 0     | 35         | 6                       | 4     | 0    | 0     | 10         | 0          | 0     | 0    | 0     | 0          | 0                         | 3     | 1    | 0     | 4          | 49         |
| 08:15 AM             | 11                         | 0     | 36   | 0     | 47         | 12                      | 7     | 0    | 0     | 19         | 0          | 0     | 0    | 0     | 0          | 0                         | 4     | 2    | 0     | 6          | 72         |
| Total Volume         | 62                         | 0     | 149  | 0     | 211        | 30                      | 29    | 0    | 0     | 59         | 0          | 0     | 0    | 0     | 0          | 0                         | 11    | 4    | 0     | 15         | 285        |
| % App. Total         | 29.4                       | 0     | 70.6 | 0     |            | 50.8                    | 49.2  | 0    | 0     |            | 0          | 0     | 0    | 0     | 0          | 0                         | 73.3  | 26.7 | 0     |            |            |
| PHF                  | .484                       | .000  | .847 | .000  | .713       | .625                    | .518  | .000 | .000  | .776       | .000       | .000  | .000 | .000  | .000       | .000                      | .688  | .500 | .000  | .625       | .766       |
| Passenger Vehicles   | 59                         | 0     | 148  | 0     | 207        | 30                      | 28    | 0    | 0     | 58         | 0          | 0     | 0    | 0     | 0          | 0                         | 10    | 1    | 0     | 11         | 276        |
| % Passenger Vehicles | 95.2                       | 0     | 99.3 | 0     | 98.1       | 100                     | 96.6  | 0    | 0     | 98.3       | 0          | 0     | 0    | 0     | 0          | 0                         | 90.9  | 25.0 | 0     | 73.3       | 96.8       |
| Light Trucks         | 3                          | 0     | 1    | 0     | 4          | 0                       | 1     | 0    | 0     | 1          | 0          | 0     | 0    | 0     | 0          | 0                         | 1     | 3    | 0     | 4          | 9          |
| % Light Trucks       | 4.8                        | 0     | 0.7  | 0     | 1.9        | 0                       | 3.4   | 0    | 0     | 1.7        | 0          | 0     | 0    | 0     | 0          | 0                         | 9.1   | 75.0 | 0     | 26.7       | 3.2        |
| Heavy Trucks         | 0                          | 0     | 0    | 0     | 0          | 0                       | 0     | 0    | 0     | 0          | 0          | 0     | 0    | 0     | 0          | 0                         | 0     | 0    | 0     | 0          | 0          |
| % Heavy Trucks       | 0                          | 0     | 0    | 0     | 0          | 0                       | 0     | 0    | 0     | 0          | 0          | 0     | 0    | 0     | 0          | 0                         | 0     | 0    | 0     | 0          | 0          |



# Sewall

40 Forest Falls Drive  
Yarmouth, ME 04096

TITLE:  
TOWN:  
COUNTER:  
WEATHER:

File Name : PortlandBishopLotPM2022  
Site Code : 52233253  
Start Date : 2/2/2022  
Page No : 1

## Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

|                      | Bishop St Ext Southbound |      |      |      |            | Bishop Street Westbound |      |      |      |            | Northbound |      |      |      |            | UNE Parking Lot Eastbound |      |      |      |            |            |
|----------------------|--------------------------|------|------|------|------------|-------------------------|------|------|------|------------|------------|------|------|------|------------|---------------------------|------|------|------|------------|------------|
| Start Time           | Right                    | Thru | Left | Peds | App. Total | Right                   | Thru | Left | Peds | App. Total | Right      | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Int. Total |
| 03:30 PM             | 0                        | 0    | 11   | 0    | 11         | 14                      | 2    | 0    | 0    | 16         | 0          | 0    | 0    | 0    | 0          | 0                         | 6    | 9    | 0    | 15         | 42         |
| 03:45 PM             | 1                        | 0    | 28   | 0    | 29         | 20                      | 3    | 0    | 0    | 23         | 0          | 0    | 0    | 0    | 0          | 0                         | 4    | 2    | 0    | 6          | 58         |
| Total                | 1                        | 0    | 39   | 0    | 40         | 34                      | 5    | 0    | 0    | 39         | 0          | 0    | 0    | 0    | 0          | 0                         | 10   | 11   | 0    | 21         | 100        |
| 04:00 PM             | 0                        | 0    | 19   | 0    | 19         | 18                      | 1    | 0    | 0    | 19         | 0          | 0    | 0    | 0    | 0          | 0                         | 5    | 4    | 0    | 9          | 47         |
| 04:15 PM             | 1                        | 0    | 20   | 0    | 21         | 21                      | 1    | 0    | 0    | 22         | 0          | 0    | 0    | 0    | 0          | 0                         | 2    | 1    | 0    | 3          | 46         |
| 04:30 PM             | 0                        | 0    | 21   | 0    | 21         | 20                      | 3    | 0    | 0    | 23         | 0          | 0    | 0    | 0    | 0          | 0                         | 6    | 13   | 0    | 19         | 63         |
| 04:45 PM             | 2                        | 0    | 35   | 0    | 37         | 12                      | 2    | 0    | 0    | 14         | 0          | 0    | 0    | 0    | 0          | 0                         | 8    | 3    | 0    | 11         | 62         |
| Total                | 3                        | 0    | 95   | 0    | 98         | 71                      | 7    | 0    | 0    | 78         | 0          | 0    | 0    | 0    | 0          | 0                         | 21   | 21   | 0    | 42         | 218        |
| 05:00 PM             | 1                        | 0    | 19   | 0    | 20         | 13                      | 2    | 0    | 0    | 15         | 0          | 0    | 0    | 0    | 0          | 0                         | 5    | 3    | 0    | 8          | 43         |
| 05:15 PM             | 0                        | 0    | 28   | 0    | 28         | 12                      | 3    | 0    | 0    | 15         | 0          | 0    | 0    | 0    | 0          | 0                         | 4    | 3    | 0    | 7          | 50         |
| Grand Total          | 5                        | 0    | 181  | 0    | 186        | 130                     | 17   | 0    | 0    | 147        | 0          | 0    | 0    | 0    | 0          | 0                         | 40   | 38   | 0    | 78         | 411        |
| Apprch %             | 2.7                      | 0    | 97.3 | 0    |            | 88.4                    | 11.6 | 0    | 0    |            | 0          | 0    | 0    | 0    | 0          | 0                         | 51.3 | 48.7 | 0    |            |            |
| Total %              | 1.2                      | 0    | 44   | 0    | 45.3       | 31.6                    | 4.1  | 0    | 0    | 35.8       | 0          | 0    | 0    | 0    | 0          | 0                         | 9.7  | 9.2  | 0    | 19         |            |
| Passenger Vehicles   | 5                        | 0    | 180  | 0    | 185        | 128                     | 17   | 0    | 0    | 145        | 0          | 0    | 0    | 0    | 0          | 0                         | 39   | 38   | 0    | 77         | 407        |
| % Passenger Vehicles | 100                      | 0    | 99.4 | 0    | 99.5       | 98.5                    | 100  | 0    | 0    | 98.6       | 0          | 0    | 0    | 0    | 0          | 0                         | 97.5 | 100  | 0    | 98.7       | 99         |
| Light Trucks         | 0                        | 0    | 1    | 0    | 1          | 1                       | 0    | 0    | 0    | 1          | 0          | 0    | 0    | 0    | 0          | 0                         | 1    | 0    | 0    | 1          | 3          |
| % Light Trucks       | 0                        | 0    | 0.6  | 0    | 0.5        | 0.8                     | 0    | 0    | 0    | 0.7        | 0          | 0    | 0    | 0    | 0          | 0                         | 2.5  | 0    | 0    | 1.3        | 0.7        |
| Heavy Trucks         | 0                        | 0    | 0    | 0    | 0          | 1                       | 0    | 0    | 0    | 1          | 0          | 0    | 0    | 0    | 0          | 0                         | 0    | 0    | 0    | 0          | 1          |
| % Heavy Trucks       | 0                        | 0    | 0    | 0    | 0          | 0.8                     | 0    | 0    | 0    | 0.7        | 0          | 0    | 0    | 0    | 0          | 0                         | 0    | 0    | 0    | 0          | 0.2        |

Group 1 Seasonal Adjustment Factor: 1.13/ 0.90 = 1.26

Note: 15 entering and 14 exiting vehicles were UNE Shuttle



# Sewall

40 Forest Falls Drive  
Yarmouth, ME 04096

TITLE:  
TOWN:  
COUNTER:  
WEATHER:

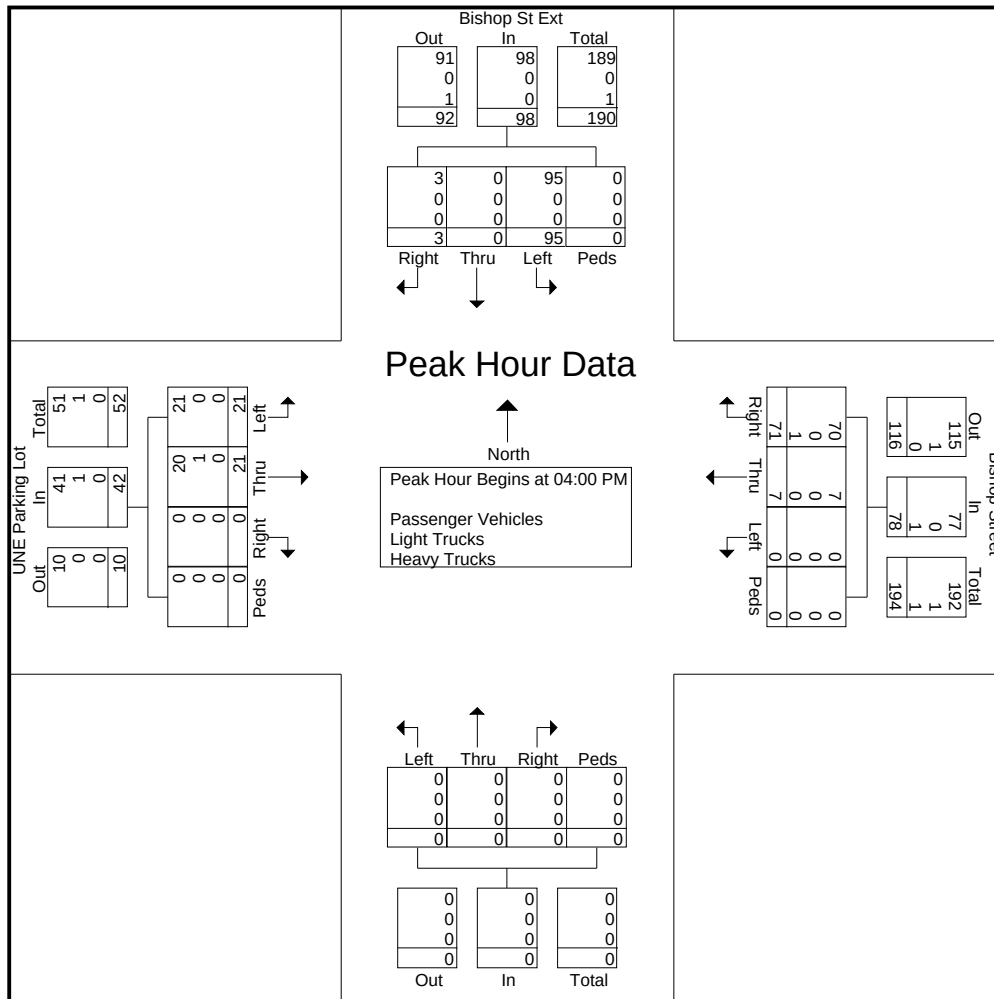
File Name : PortlandBishopLotPM2022  
Site Code : 52233253  
Start Date : 2/2/2022  
Page No : 2

|            | Bishop St Ext Southbound |       |      |       |            | Bishop Street Westbound |       |      |       |            | Northbound |       |      |       |            | UNE Parking Lot Eastbound |       |      |       |            |            |
|------------|--------------------------|-------|------|-------|------------|-------------------------|-------|------|-------|------------|------------|-------|------|-------|------------|---------------------------|-------|------|-------|------------|------------|
| Start Time | Rig ht                   | Thr u | Left | Ped s | App. Total | Rig ht                  | Thr u | Left | Ped s | App. Total | Rig ht     | Thr u | Left | Ped s | App. Total | Rig ht                    | Thr u | Left | Ped s | App. Total | Int. Total |

Peak Hour Analysis From 03:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

|                      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 04:00 PM             | 0    | 0    | 19   | 0    | 19   | 18   | 1    | 0    | 0    | 19   | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 4    | 0    | 9    | 47   |
| 04:15 PM             | 1    | 0    | 20   | 0    | 21   | 21   | 1    | 0    | 0    | 22   | 0    | 0    | 0    | 0    | 0    | 0    | 2    | 1    | 0    | 3    | 46   |
| 04:30 PM             | 0    | 0    | 21   | 0    | 21   | 20   | 3    | 0    | 0    | 23   | 0    | 0    | 0    | 0    | 0    | 0    | 6    | 13   | 0    | 19   | 63   |
| 04:45 PM             | 2    | 0    | 35   | 0    | 37   | 12   | 2    | 0    | 0    | 14   | 0    | 0    | 0    | 0    | 0    | 0    | 8    | 3    | 0    | 11   | 62   |
| Total Volume         | 3    | 0    | 95   | 0    | 98   | 71   | 7    | 0    | 0    | 78   | 0    | 0    | 0    | 0    | 0    | 0    | 21   | 21   | 0    | 42   | 218  |
| % App. Total         | 3.1  | 0    | 96.9 | 0    |      | 91   | 9    | 0    | 0    |      | 0    | 0    | 0    | 0    |      | 0    | 50   | 50   | 0    |      |      |
| PHF                  | .375 | .000 | .679 | .000 | .662 | .845 | .583 | .000 | .000 | .848 | .000 | .000 | .000 | .000 | .000 | .000 | .656 | .404 | .000 | .553 | .865 |
| Passenger Vehicles   | 3    | 0    | 95   | 0    | 98   | 70   | 7    | 0    | 0    | 77   | 0    | 0    | 0    | 0    | 0    | 0    | 20   | 21   | 0    | 41   | 216  |
| % Passenger Vehicles | 100  | 0    | 100  | 0    | 100  | 98.6 | 100  | 0    | 0    | 98.7 | 0    | 0    | 0    | 0    | 0    | 0    | 95.2 | 100  | 0    | 97.6 | 99.1 |
| Light Trucks         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 1    | 1    |
| % Light Trucks       | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 4.8  | 0    | 0    | 2.4  | 0.5  |
| Heavy Trucks         | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    |
| % Heavy Trucks       | 0    | 0    | 0    | 0    | 0    | 1.4  | 0    | 0    | 0    | 1.3  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0.5  |



### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4235  | 4290  | 4286  | 4280  | 4370  | 4292  |
| Vehs Exited             | 4129  | 4187  | 4160  | 4222  | 4227  | 4184  |
| Starting Vehs           | 139   | 127   | 136   | 138   | 130   | 129   |
| Ending Vehs             | 245   | 230   | 262   | 196   | 273   | 236   |
| Travel Distance (mi)    | 2213  | 2213  | 2231  | 2231  | 2246  | 2227  |
| Travel Time (hr)        | 448.7 | 376.4 | 360.0 | 310.4 | 379.9 | 375.1 |
| Total Delay (hr)        | 368.3 | 295.8 | 278.7 | 229.1 | 297.9 | 294.0 |
| Total Stops             | 4931  | 5006  | 5293  | 4802  | 5498  | 5104  |
| Fuel Used (gal)         | 159.1 | 142.8 | 139.2 | 127.7 | 143.6 | 142.5 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4235  | 4290  | 4286  | 4280  | 4370  | 4292  |
| Vehs Exited          | 4129  | 4187  | 4160  | 4222  | 4227  | 4184  |
| Starting Vehs        | 139   | 127   | 136   | 138   | 130   | 129   |
| Ending Vehs          | 245   | 230   | 262   | 196   | 273   | 236   |
| Travel Distance (mi) | 2213  | 2213  | 2231  | 2231  | 2246  | 2227  |
| Travel Time (hr)     | 448.7 | 376.4 | 360.0 | 310.4 | 379.9 | 375.1 |
| Total Delay (hr)     | 368.3 | 295.8 | 278.7 | 229.1 | 297.9 | 294.0 |
| Total Stops          | 4931  | 5006  | 5293  | 4802  | 5498  | 5104  |
| Fuel Used (gal)      | 159.1 | 142.8 | 139.2 | 127.7 | 143.6 | 142.5 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.5 |
| Total Del/Veh (s)  | 2.8 | 3.3 | 17.8 | 3.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | LT   | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 9.1  |
| Total Del/Veh (s)  | 67.2 | 44.0 | 54.1 | 51.4 | 58.2 | 42.6 | 66.6 | 54.0 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB  | SB   | SB  | All  |
|--------------------|------|-----|-----|------|-----|------|
| Movements Served   | L    | R   | TR  | L    | T   |      |
| Denied Del/Veh (s) |      |     |     |      |     | 0.4  |
| Total Del/Veh (s)  | 39.0 | 4.9 | 9.2 | 11.5 | 9.2 | 12.9 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 11.3 | 1.5 | 1.3 | 1.5 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 5.1 | 2.9 | 1.3 | 2.2 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB   | WB    | WB    | WB  | NB   | NB   | NB   | NB  | SB   | SB    |
|--------------------|------|------|------|-------|-------|-----|------|------|------|-----|------|-------|
| Movements Served   | L    | T    | R    | L     | LT    | R   | L    | T    | T    | R   | L    | T     |
| Denied Del/Veh (s) |      |      |      |       |       |     |      |      |      |     |      |       |
| Total Del/Veh (s)  | 23.0 | 50.3 | 87.2 | 334.7 | 242.7 | 6.8 | 61.9 | 28.4 | 40.8 | 9.7 | 54.3 | 334.4 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB    | All   |
|--------------------|-------|-------|
| Movements Served   | TR    |       |
| Denied Del/Veh (s) |       | 210.1 |
| Total Del/Veh (s)  | 215.2 | 145.8 |

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18: Stevens Ave & UNE Drive/Poland St Performance by lane

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| Lane               | EB   | WB  | NB  | SB  | All |
|--------------------|------|-----|-----|-----|-----|
| Movements Served   | LTR  | LTR | LTR | LTR |     |
| Denied Del/Veh (s) |      |     |     |     | 0.0 |
| Total Del/Veh (s)  | 12.4 | 8.1 | 1.2 | 3.0 | 2.5 |

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Total Network Performance

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|                    |  |  |       |  |  |
|--------------------|--|--|-------|--|--|
|                    |  |  |       |  |  |
| Denied Del/Veh (s) |  |  | 122.5 |  |  |
| Total Del/Veh (s)  |  |  | 109.9 |  |  |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 19  | 202  | 66  |
| Average Queue (ft)    | 1   | 46   | 23  |
| 95th Queue (ft)       | 12  | 138  | 53  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 238  | 292 | 335 | 283 | 275 | 180  | 217  |
| Average Queue (ft)    | 128  | 191 | 228 | 268 | 259 | 80   | 131  |
| 95th Queue (ft)       | 216  | 278 | 321 | 280 | 287 | 153  | 201  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 58  | 46  |      |      |
| Queuing Penalty (veh) |      |     |     | 366 | 290 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 213  | 90  | 280 | 149 | 284 |
| Average Queue (ft)    | 99   | 51  | 121 | 17  | 99  |
| 95th Queue (ft)       | 177  | 106 | 236 | 66  | 234 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 24   | 0   |     |     | 5   |
| Queuing Penalty (veh) | 18   | 1   |     |     | 1   |

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Intersection: 9: Stevens Ave & College St

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 38  | 108 |
| Average Queue (ft)    | 8   | 21  |
| 95th Queue (ft)       | 30  | 70  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

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Intersection: 10: Stevens Ave & Finley Ctr Dr

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| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 30  | 149 | 4   |
| Average Queue (ft)    | 5   | 27  | 0   |
| 95th Queue (ft)       | 24  | 90  | 3   |
| Link Distance (ft)    | 529 | 539 | 411 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 21 | 51 | 74 | 771 | 805 | 225 | 83 | 243 | 259 | 100 | 275 | 1008 |
| Average Queue (ft)    | 3  | 13 | 30 | 539 | 505 | 99  | 6  | 106 | 122 | 63  | 223 | 922  |
| 95th Queue (ft)       | 15 | 39 | 69 | 967 | 996 | 273 | 41 | 234 | 272 | 138 | 357 | 1212 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) |    | 0  | 7  | 19  | 27  |     |    | 0   | 1   |     |     | 74   |
| Queuing Penalty (veh) |    | 0  | 0  | 0   | 0   |     |    | 2   | 5   |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 20  | 2   |    | 17  | 12  | 6   | 3   | 72   |
| Queuing Penalty (veh) |    |    |    |     | 53  | 4   |    | 2   | 38  | 15  | 14  | 187  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 1002 |
| Average Queue (ft)    | 901  |
| 95th Queue (ft)       | 1267 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 52   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 24  | 42  | 75  | 79   |
| Average Queue (ft)    | 1   | 22  | 8   | 8    |
| 95th Queue (ft)       | 11  | 43  | 40  | 45   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 995

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 47.0  | 23.5 | 19.5 | 39.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 51.7  | 18.8 | 17.8 | 40.8 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 29   | 50   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.6   | 60.5  | 11.5  | 21.5  | 61.9  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 87    | 3     | 3     | 55    | 3     |
| Cycles @ Minimum (%) | 8     | 0     | 8     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 45    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 20.3  | 25.7  | 13.5 | 22.5  | 18.0  | 28.0  | 18.0  | 18.0 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 19.5  | 36.1  | 19.0 | 20.4  | 7.4   | 52.7  | 6.5   | 35.4 |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 17    | 0     | 0    | 31    | 76    | 0     | 88    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 40    | 100   | 97   | 46    | 0     | 100   | 0     | 66   |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4235  | 4290  | 4286  | 4280  | 4370  | 4292  |
| Vehs Exited             | 4129  | 4187  | 4160  | 4222  | 4227  | 4184  |
| Starting Vehs           | 139   | 127   | 136   | 138   | 130   | 129   |
| Ending Vehs             | 245   | 230   | 262   | 196   | 273   | 236   |
| Travel Distance (mi)    | 2213  | 2213  | 2231  | 2231  | 2246  | 2227  |
| Travel Time (hr)        | 448.7 | 376.4 | 360.0 | 310.4 | 379.9 | 375.1 |
| Total Delay (hr)        | 368.3 | 295.8 | 278.7 | 229.1 | 297.9 | 294.0 |
| Total Stops             | 4931  | 5006  | 5293  | 4802  | 5498  | 5104  |
| Fuel Used (gal)         | 159.1 | 142.8 | 139.2 | 127.7 | 143.6 | 142.5 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4235  | 4290  | 4286  | 4280  | 4370  | 4292  |
| Vehs Exited          | 4129  | 4187  | 4160  | 4222  | 4227  | 4184  |
| Starting Vehs        | 139   | 127   | 136   | 138   | 130   | 129   |
| Ending Vehs          | 245   | 230   | 262   | 196   | 273   | 236   |
| Travel Distance (mi) | 2213  | 2213  | 2231  | 2231  | 2246  | 2227  |
| Travel Time (hr)     | 448.7 | 376.4 | 360.0 | 310.4 | 379.9 | 375.1 |
| Total Delay (hr)     | 368.3 | 295.8 | 278.7 | 229.1 | 297.9 | 294.0 |
| Total Stops          | 4931  | 5006  | 5293  | 4802  | 5498  | 5104  |
| Fuel Used (gal)      | 159.1 | 142.8 | 139.2 | 127.7 | 143.6 | 142.5 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.6 | 0.4 | 0.1  | 0.5 |
| Total Del/Veh (s)  | 2.8 | 3.3 | 18.3 | 3.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2  | 0.0  | 18.0 | 0.0  | 9.1  |
| Total Del/Veh (s)  | 67.7 | 49.3 | 54.4 | 54.8 | 54.0 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB  | SB  | All  |
|--------------------|------|-----|-----|------|
| Denied Del/Veh (s) | 1.1  | 0.4 | 0.0 | 0.4  |
| Total Del/Veh (s)  | 27.6 | 9.2 | 9.4 | 12.9 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 11.3 | 1.5 | 1.3 | 1.5 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 5.1 | 2.9 | 1.3 | 2.2 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB    | NB   | SB    | All   |
|--------------------|------|-------|------|-------|-------|
| Denied Del/Veh (s) | 2.1  | 73.2  | 0.1  | 446.1 | 210.1 |
| Total Del/Veh (s)  | 65.5 | 186.3 | 25.0 | 236.7 | 145.8 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB   | WB  | NB  | SB  | All |
|--------------------|------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 12.4 | 7.9 | 1.2 | 3.0 | 2.5 |

#### Total Network Performance

|                    |       |
|--------------------|-------|
| Denied Del/Veh (s) | 122.5 |
| Total Del/Veh (s)  | 109.9 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 19  | 202  | 66  |
| Average Queue (ft)    | 1   | 46   | 23  |
| 95th Queue (ft)       | 12  | 138  | 53  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 238  | 292 | 335 | 283 | 275 | 180  | 217  |
| Average Queue (ft)    | 128  | 191 | 228 | 268 | 259 | 80   | 131  |
| 95th Queue (ft)       | 216  | 278 | 321 | 280 | 287 | 153  | 201  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 58  | 46  |      |      |
| Queuing Penalty (veh) |      |     |     | 366 | 290 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 213  | 90  | 280 | 149 | 284 |
| Average Queue (ft)    | 99   | 51  | 121 | 17  | 99  |
| 95th Queue (ft)       | 177  | 106 | 236 | 66  | 234 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 24   | 0   |     |     | 5   |
| Queuing Penalty (veh) | 18   | 1   |     |     | 1   |



Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 38  | 108 |
| Average Queue (ft)    | 8   | 21  |
| 95th Queue (ft)       | 30  | 70  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 30  | 149 | 4   |
| Average Queue (ft)    | 5   | 27  | 0   |
| 95th Queue (ft)       | 24  | 90  | 3   |
| Link Distance (ft)    | 529 | 539 | 411 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Queuing and Blocking Report  
2021 Base AM

03/24/2022

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 21 | 51 | 74 | 771 | 805 | 225 | 83 | 243 | 259 | 100 | 275 | 1008 |
| Average Queue (ft)    | 3  | 13 | 30 | 539 | 505 | 99  | 6  | 106 | 122 | 63  | 223 | 922  |
| 95th Queue (ft)       | 15 | 39 | 69 | 967 | 996 | 273 | 41 | 234 | 272 | 138 | 357 | 1212 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) |    | 0  | 7  | 19  | 27  |     |    | 0   | 1   |     |     | 74   |
| Queuing Penalty (veh) |    | 0  | 0  | 0   | 0   |     |    | 2   | 5   |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 20  | 2   |    | 17  | 12  | 6   | 3   | 72   |
| Queuing Penalty (veh) |    |    |    |     | 53  | 4   |    | 2   | 38  | 15  | 14  | 187  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 1002 |
| Average Queue (ft)    | 901  |
| 95th Queue (ft)       | 1267 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 52   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 24  | 42  | 75  | 79   |
| Average Queue (ft)    | 1   | 22  | 8   | 8    |
| 95th Queue (ft)       | 11  | 43  | 40  | 45   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 995

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 47.0  | 23.5 | 19.5 | 39.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 51.7  | 18.8 | 17.8 | 40.8 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 29   | 50   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.6   | 60.5  | 11.5  | 21.5  | 61.9  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 87    | 3     | 3     | 55    | 3     |
| Cycles @ Minimum (%) | 8     | 0     | 8     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 45    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 20.3  | 25.7  | 13.5 | 22.5  | 18.0  | 28.0  | 18.0  | 18.0 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 19.5  | 36.1  | 19.0 | 20.4  | 7.4   | 52.7  | 6.5   | 35.4 |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 17    | 0     | 0    | 31    | 76    | 0     | 88    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 40    | 100   | 97   | 46    | 0     | 100   | 0     | 66   |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5013  | 5049  | 5115  | 4994  | 4959  | 5026  |
| Vehs Exited             | 5008  | 5064  | 5124  | 4971  | 4937  | 5020  |
| Starting Vehs           | 162   | 156   | 157   | 119   | 147   | 145   |
| Ending Vehs             | 167   | 141   | 148   | 142   | 169   | 149   |
| Travel Distance (mi)    | 2733  | 2714  | 2779  | 2712  | 2684  | 2725  |
| Travel Time (hr)        | 158.7 | 157.2 | 161.3 | 160.6 | 155.6 | 158.7 |
| Total Delay (hr)        | 59.3  | 59.1  | 60.5  | 62.2  | 57.9  | 59.8  |
| Total Stops             | 5348  | 5095  | 5445  | 5366  | 5112  | 5273  |
| Fuel Used (gal)         | 105.3 | 104.7 | 106.9 | 105.6 | 103.4 | 105.2 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5013  | 5049  | 5115  | 4994  | 4959  | 5026  |
| Vehs Exited          | 5008  | 5064  | 5124  | 4971  | 4937  | 5020  |
| Starting Vehs        | 162   | 156   | 157   | 119   | 147   | 145   |
| Ending Vehs          | 167   | 141   | 148   | 142   | 169   | 149   |
| Travel Distance (mi) | 2733  | 2714  | 2779  | 2712  | 2684  | 2725  |
| Travel Time (hr)     | 158.7 | 157.2 | 161.3 | 160.6 | 155.6 | 158.7 |
| Total Delay (hr)     | 59.3  | 59.1  | 60.5  | 62.2  | 57.9  | 59.8  |
| Total Stops          | 5348  | 5095  | 5445  | 5366  | 5112  | 5273  |
| Fuel Used (gal)      | 105.3 | 104.7 | 106.9 | 105.6 | 103.4 | 105.2 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.3 | 16.4 | 2.7 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | <LT  | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 0.1  |
| Total Del/Veh (s)  | 40.6 | 37.3 | 24.1 | 17.5 | 16.8 | 30.3 | 42.7 | 25.9 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB   | SB   | SB   | All  |
|--------------------|------|-----|------|------|------|------|
| Movements Served   | L    | R   | TR   | L    | T    |      |
| Denied Del/Veh (s) |      |     |      |      |      | 0.4  |
| Total Del/Veh (s)  | 53.5 | 6.3 | 15.7 | 18.1 | 11.7 | 18.4 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 10.7 | 0.8 | 0.7 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 9.5 | 2.5 | 1.1 | 2.0 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB  | WB   | WB   | WB   | NB   | NB   | NB   | NB   | SB   | SB   |
|--------------------|------|------|-----|------|------|------|------|------|------|------|------|------|
| Movements Served   | L    | T    | R   | L    | LT   | R    | L    | T    | T    | R    | L    | T    |
| Denied Del/Veh (s) |      |      |     |      |      |      |      |      |      |      |      |      |
| Total Del/Veh (s)  | 32.2 | 44.2 | 9.5 | 29.2 | 53.4 | 11.4 | 48.0 | 29.5 | 42.0 | 25.8 | 44.5 | 20.5 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB   | All  |
|--------------------|------|------|
| Movements Served   | TR   |      |
| Denied Del/Veh (s) |      | 1.2  |
| Total Del/Veh (s)  | 12.9 | 28.6 |



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18: Stevens Ave & UNE Drive/Poland St Performance by lane

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| Lane               | EB  | WB   | NB  | SB  | All |
|--------------------|-----|------|-----|-----|-----|
| Movements Served   | LTR | LTR  | LTR | LTR |     |
| Denied Del/Veh (s) |     |      |     |     | 0.0 |
| Total Del/Veh (s)  | 9.6 | 10.1 | 0.8 | 2.5 | 1.9 |

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Total Network Performance

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|                    |      |
|--------------------|------|
| Denied Del/Veh (s) | 1.1  |
| Total Del/Veh (s)  | 40.6 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 23  | 82   | 85  |
| Average Queue (ft)    | 1   | 13   | 38  |
| 95th Queue (ft)       | 10  | 54   | 71  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 193  | 272 | 312 | 277 | 271 | 222  | 276  |
| Average Queue (ft)    | 71   | 143 | 170 | 198 | 153 | 107  | 147  |
| 95th Queue (ft)       | 142  | 247 | 283 | 311 | 258 | 176  | 228  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 5   | 1   |      |      |
| Queuing Penalty (veh) |      |     |     | 27  | 5   |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB | NB  | SB  | SB  |
|-----------------------|------|----|-----|-----|-----|
| Directions Served     | L    | R  | TR  | L   | T   |
| Maximum Queue (ft)    | 298  | 90 | 378 | 148 | 348 |
| Average Queue (ft)    | 135  | 39 | 190 | 63  | 133 |
| 95th Queue (ft)       | 253  | 96 | 332 | 136 | 291 |
| Link Distance (ft)    | 1307 |    | 736 |     | 539 |
| Upstream Blk Time (%) |      |    |     |     |     |
| Queuing Penalty (veh) |      |    |     |     |     |
| Storage Bay Dist (ft) |      | 65 |     | 125 |     |
| Storage Blk Time (%)  | 33   | 0  |     | 0   | 7   |
| Queuing Penalty (veh) | 20   | 1  |     | 0   | 7   |

Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 85  | 78  |
| Average Queue (ft)    | 37  | 5   |
| 95th Queue (ft)       | 67  | 35  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 48  | 146 |
| Average Queue (ft)    | 22  | 14  |
| 95th Queue (ft)       | 48  | 69  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L   | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 57 | 59 | 43 | 326 | 483 | 225 | 100 | 261 | 267 | 100 | 274 | 443 |
| Average Queue (ft)    | 15 | 22 | 15 | 117 | 141 | 87  | 20  | 177 | 199 | 90  | 198 | 170 |
| 95th Queue (ft)       | 41 | 52 | 40 | 285 | 394 | 246 | 77  | 278 | 305 | 130 | 288 | 340 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |     | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 1  | 1  | 0  |     |     |     |     | 2   | 5   |     |     |     |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |     | 10  | 30  |     |     |     |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75  |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 12  | 0   | 32  | 19  | 19  | 6   | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 23  | 1   | 9   | 80  | 82  | 21  | 3   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 308 |
| Average Queue (ft)    | 103 |
| 95th Queue (ft)       | 210 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 44  | 33  | 34  | 97   |
| Average Queue (ft)    | 15  | 14  | 2   | 9    |
| 95th Queue (ft)       | 41  | 37  | 20  | 51   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 319

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 32.0  | 22.0 | 19.5  | 32.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 45.3  | 18.9 | 11.3  | 45.3 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 13    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 53   | 5     | 100  |
| Cycles with Peds (%) | 0     | 3    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 3.0   | 22.0  | 23.0  | 14.0  | 30.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.1   | 59.9  | 13.3  | 21.8  | 67.7  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 58    | 20    | 20    | 60    | 21    |
| Cycles @ Minimum (%) | 27    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 9     | 80    | 9     | 16    | 79    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 18.5  | 28.5  | 7.0   | 18.0  | 5.7   | 41.3  | 6.9   | 18.1 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 18.8  | 30.3  | 16.1  | 17.8  | 6.0   | 48.4  | 6.8   | 24.1 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 7     | 0     | 3     | 42    | 49    | 0     | 64    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 63    | 100   | 90    | 42    | 31    | 100   | 10    | 74   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0



### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5013  | 5049  | 5115  | 4994  | 4959  | 5026  |
| Vehs Exited             | 5008  | 5064  | 5124  | 4971  | 4937  | 5020  |
| Starting Vehs           | 162   | 156   | 157   | 119   | 147   | 145   |
| Ending Vehs             | 167   | 141   | 148   | 142   | 169   | 149   |
| Travel Distance (mi)    | 2733  | 2714  | 2779  | 2712  | 2684  | 2725  |
| Travel Time (hr)        | 158.7 | 157.2 | 161.3 | 160.6 | 155.6 | 158.7 |
| Total Delay (hr)        | 59.3  | 59.1  | 60.5  | 62.2  | 57.9  | 59.8  |
| Total Stops             | 5348  | 5095  | 5445  | 5366  | 5112  | 5273  |
| Fuel Used (gal)         | 105.3 | 104.7 | 106.9 | 105.6 | 103.4 | 105.2 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5013  | 5049  | 5115  | 4994  | 4959  | 5026  |
| Vehs Exited          | 5008  | 5064  | 5124  | 4971  | 4937  | 5020  |
| Starting Vehs        | 162   | 156   | 157   | 119   | 147   | 145   |
| Ending Vehs          | 167   | 141   | 148   | 142   | 169   | 149   |
| Travel Distance (mi) | 2733  | 2714  | 2779  | 2712  | 2684  | 2725  |
| Travel Time (hr)     | 158.7 | 157.2 | 161.3 | 160.6 | 155.6 | 158.7 |
| Total Delay (hr)     | 59.3  | 59.1  | 60.5  | 62.2  | 57.9  | 59.8  |
| Total Stops          | 5348  | 5095  | 5445  | 5366  | 5112  | 5273  |
| Fuel Used (gal)      | 105.3 | 104.7 | 106.9 | 105.6 | 103.4 | 105.2 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.5 | 0.3 | 0.2  | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.3 | 16.4 | 2.7 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  |
| Total Del/Veh (s)  | 41.0 | 29.0 | 17.2 | 36.6 | 25.9 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.8  | 0.5  | 0.0  | 0.4  |
| Total Del/Veh (s)  | 40.0 | 15.7 | 12.8 | 18.4 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 10.8 | 0.8 | 0.7 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 9.5 | 2.5 | 1.1 | 2.0 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.3  | 1.9  | 0.8  | 1.2  | 1.2  |
| Total Del/Veh (s)  | 30.2 | 25.7 | 32.5 | 25.6 | 28.6 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB  | WB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 |
| Total Del/Veh (s)  | 9.6 | 9.5 | 0.8 | 2.5 | 1.9 |

#### Total Network Performance

|                    |      |
|--------------------|------|
| Denied Del/Veh (s) | 1.1  |
| Total Del/Veh (s)  | 40.6 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 23  | 82   | 85  |
| Average Queue (ft)    | 1   | 13   | 38  |
| 95th Queue (ft)       | 10  | 54   | 71  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 193  | 272 | 312 | 277 | 271 | 222  | 276  |
| Average Queue (ft)    | 71   | 143 | 170 | 198 | 153 | 107  | 147  |
| 95th Queue (ft)       | 142  | 247 | 283 | 311 | 258 | 176  | 228  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 5   | 1   |      |      |
| Queuing Penalty (veh) |      |     |     | 27  | 5   |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB | NB  | SB  | SB  |
|-----------------------|------|----|-----|-----|-----|
| Directions Served     | L    | R  | TR  | L   | T   |
| Maximum Queue (ft)    | 298  | 90 | 378 | 148 | 348 |
| Average Queue (ft)    | 135  | 39 | 190 | 63  | 133 |
| 95th Queue (ft)       | 253  | 96 | 332 | 136 | 291 |
| Link Distance (ft)    | 1307 |    | 736 |     | 539 |
| Upstream Blk Time (%) |      |    |     |     |     |
| Queuing Penalty (veh) |      |    |     |     |     |
| Storage Bay Dist (ft) |      | 65 |     | 125 |     |
| Storage Blk Time (%)  | 33   | 0  |     | 0   | 7   |
| Queuing Penalty (veh) | 20   | 1  |     | 0   | 7   |

Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 85  | 78  |
| Average Queue (ft)    | 37  | 5   |
| 95th Queue (ft)       | 67  | 35  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 48  | 146 |
| Average Queue (ft)    | 22  | 14  |
| 95th Queue (ft)       | 48  | 69  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L   | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 57 | 59 | 43 | 326 | 483 | 225 | 100 | 261 | 267 | 100 | 274 | 443 |
| Average Queue (ft)    | 15 | 22 | 15 | 117 | 141 | 87  | 20  | 177 | 199 | 90  | 198 | 170 |
| 95th Queue (ft)       | 41 | 52 | 40 | 285 | 394 | 246 | 77  | 278 | 305 | 130 | 288 | 340 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |     | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 1  | 1  | 0  |     |     |     |     | 2   | 5   |     |     |     |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |     | 10  | 30  |     |     |     |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75  |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 12  | 0   | 32  | 19  | 19  | 6   | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 23  | 1   | 9   | 80  | 82  | 21  | 3   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 308 |
| Average Queue (ft)    | 103 |
| 95th Queue (ft)       | 210 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 44  | 33  | 34  | 97   |
| Average Queue (ft)    | 15  | 14  | 2   | 9    |
| 95th Queue (ft)       | 41  | 37  | 20  | 51   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 319

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 32.0  | 22.0 | 19.5  | 32.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 45.3  | 18.9 | 11.3  | 45.3 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 13    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 53   | 5     | 100  |
| Cycles with Peds (%) | 0     | 3    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 3.0   | 22.0  | 23.0  | 14.0  | 30.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.1   | 59.9  | 13.3  | 21.8  | 67.7  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 58    | 20    | 20    | 60    | 21    |
| Cycles @ Minimum (%) | 27    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 9     | 80    | 9     | 16    | 79    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 18.5  | 28.5  | 7.0   | 18.0  | 5.7   | 41.3  | 6.9   | 18.1 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 18.8  | 30.3  | 16.1  | 17.8  | 6.0   | 48.4  | 6.8   | 24.1 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 7     | 0     | 3     | 42    | 49    | 0     | 64    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 63    | 100   | 90    | 42    | 31    | 100   | 10    | 74   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4333  | 4430  | 4374  | 4248  | 4229  | 4323  |
| Vehs Exited             | 4225  | 4333  | 4277  | 4169  | 4151  | 4233  |
| Starting Vehs           | 146   | 146   | 148   | 137   | 140   | 143   |
| Ending Vehs             | 254   | 243   | 245   | 216   | 218   | 229   |
| Travel Distance (mi)    | 2264  | 2308  | 2289  | 2232  | 2213  | 2261  |
| Travel Time (hr)        | 432.7 | 418.4 | 385.3 | 336.6 | 387.4 | 392.1 |
| Total Delay (hr)        | 350.6 | 334.6 | 302.2 | 255.4 | 306.8 | 309.9 |
| Total Stops             | 5440  | 5505  | 5519  | 5217  | 5244  | 5383  |
| Fuel Used (gal)         | 156.6 | 155.1 | 146.2 | 133.7 | 145.1 | 147.3 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4333  | 4430  | 4374  | 4248  | 4229  | 4323  |
| Vehs Exited          | 4225  | 4333  | 4277  | 4169  | 4151  | 4233  |
| Starting Vehs        | 146   | 146   | 148   | 137   | 140   | 143   |
| Ending Vehs          | 254   | 243   | 245   | 216   | 218   | 229   |
| Travel Distance (mi) | 2264  | 2308  | 2289  | 2232  | 2213  | 2261  |
| Travel Time (hr)     | 432.7 | 418.4 | 385.3 | 336.6 | 387.4 | 392.1 |
| Total Delay (hr)     | 350.6 | 334.6 | 302.2 | 255.4 | 306.8 | 309.9 |
| Total Stops          | 5440  | 5505  | 5519  | 5217  | 5244  | 5383  |
| Fuel Used (gal)      | 156.6 | 155.1 | 146.2 | 133.7 | 145.1 | 147.3 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.5 |
| Total Del/Veh (s)  | 2.8 | 3.6 | 15.7 | 3.6 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | LT   | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 7.2  |
| Total Del/Veh (s)  | 66.7 | 50.4 | 66.9 | 49.6 | 55.2 | 44.8 | 71.6 | 55.8 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB   | SB   | SB   | All  |
|--------------------|------|-----|------|------|------|------|
| Movements Served   | L    | R   | TR   | L    | T    |      |
| Denied Del/Veh (s) |      |     |      |      |      | 0.4  |
| Total Del/Veh (s)  | 40.3 | 5.4 | 10.3 | 12.9 | 10.4 | 13.9 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 13.5 | 1.6 | 1.2 | 1.5 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 4.4 | 2.9 | 1.3 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB   | WB    | WB    | WB  | NB   | NB   | NB   | NB  | SB   | SB    |
|--------------------|------|------|------|-------|-------|-----|------|------|------|-----|------|-------|
| Movements Served   | L    | T    | R    | L     | LT    | R   | L    | T    | T    | R   | L    | T     |
| Denied Del/Veh (s) |      |      |      |       |       |     |      |      |      |     |      |       |
| Total Del/Veh (s)  | 27.2 | 48.2 | 76.6 | 333.4 | 266.4 | 8.2 | 56.3 | 31.5 | 43.4 | 9.9 | 53.7 | 327.2 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB    | All   |
|--------------------|-------|-------|
| Movements Served   | TR    |       |
| Denied Del/Veh (s) |       | 222.0 |
| Total Del/Veh (s)  | 205.9 | 143.3 |

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18: Stevens Ave & UNE Drive/Poland St Performance by lane

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| Lane               | EB   | WB  | NB  | SB  | All |
|--------------------|------|-----|-----|-----|-----|
| Movements Served   | LTR  | LTR | LTR | LTR |     |
| Denied Del/Veh (s) |      |     |     |     | 0.0 |
| Total Del/Veh (s)  | 15.0 | 9.9 | 1.0 | 2.8 | 2.4 |

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Total Network Performance

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|                    |  |  |       |  |  |
|--------------------|--|--|-------|--|--|
|                    |  |  |       |  |  |
| Denied Del/Veh (s) |  |  | 130.8 |  |  |
| Total Del/Veh (s)  |  |  | 110.9 |  |  |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 19  | 274  | 72  |
| Average Queue (ft)    | 1   | 43   | 25  |
| 95th Queue (ft)       | 10  | 147  | 52  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 224  | 362 | 434 | 284 | 273 | 189  | 245  |
| Average Queue (ft)    | 132  | 212 | 255 | 268 | 254 | 86   | 136  |
| 95th Queue (ft)       | 213  | 333 | 387 | 280 | 300 | 160  | 216  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 57  | 41  |      |      |
| Queuing Penalty (veh) |      |     |     | 369 | 264 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 214  | 90  | 311 | 87  | 343 |
| Average Queue (ft)    | 95   | 49  | 127 | 20  | 109 |
| 95th Queue (ft)       | 169  | 102 | 252 | 71  | 254 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 23   | 0   |     | 0   | 5   |
| Queuing Penalty (veh) | 18   | 0   |     | 0   | 2   |

Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 33  | 122 | 4   |
| Average Queue (ft)    | 6   | 23  | 0   |
| 95th Queue (ft)       | 26  | 88  | 3   |
| Link Distance (ft)    | 662 | 411 | 225 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 30  | 170 |
| Average Queue (ft)    | 6   | 29  |
| 95th Queue (ft)       | 26  | 97  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 38 | 46 | 73 | 816 | 815 | 225 | 66 | 249 | 260 | 100 | 275 | 1009 |
| Average Queue (ft)    | 6  | 13 | 33 | 543 | 528 | 113 | 4  | 121 | 137 | 65  | 238 | 941  |
| 95th Queue (ft)       | 24 | 39 | 69 | 928 | 991 | 286 | 31 | 255 | 288 | 141 | 358 | 1162 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) | 0  | 0  | 4  | 12  | 28  |     |    | 1   | 2   |     |     | 75   |
| Queuing Penalty (veh) | 0  | 0  | 0  | 0   | 0   |     |    | 3   | 8   |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 21  | 3   |    | 18  | 13  | 6   | 6   | 73   |
| Queuing Penalty (veh) |    |    |    |     | 57  | 7   |    | 2   | 43  | 15  | 26  | 193  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 1011 |
| Average Queue (ft)    | 923  |
| 95th Queue (ft)       | 1208 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 46   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 30  | 51  | 58  | 38   |
| Average Queue (ft)    | 2   | 21  | 7   | 4    |
| 95th Queue (ft)       | 15  | 46  | 37  | 26   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 1007

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 46.0  | 25.5 | 19.5 | 38.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 52.6  | 18.8 | 17.7 | 39.8 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 25   | 54   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.8   | 60.0  | 11.7  | 21.9  | 62.1  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 82    | 3     | 8     | 53    | 3     |
| Cycles @ Minimum (%) | 16    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 47    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8     |
|----------------------|-------|-------|------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL  |
| Maximum Green (s)    | 20.5  | 25.5  | 13.7 | 22.3  | 18.0  | 28.0  | 18.0  | 18.0  |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None  |
| Avg. Green (s)       | 20.2  | 35.0  | 18.4 | 18.9  | 7.2   | 52.1  | 12.2  | 34.7  |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | -0.01 |
| Cycles Skipped (%)   | 14    | 0     | 0    | 23    | 71    | 0     | 82    | 3     |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0     |
| Cycles Maxed Out (%) | 37    | 100   | 100  | 49    | 0     | 100   | 3     | 60    |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

## Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4333  | 4430  | 4374  | 4248  | 4229  | 4323  |
| Vehs Exited             | 4225  | 4333  | 4277  | 4169  | 4151  | 4233  |
| Starting Vehs           | 146   | 146   | 148   | 137   | 140   | 143   |
| Ending Vehs             | 254   | 243   | 245   | 216   | 218   | 229   |
| Travel Distance (mi)    | 2264  | 2308  | 2289  | 2232  | 2213  | 2261  |
| Travel Time (hr)        | 432.7 | 418.4 | 385.3 | 336.6 | 387.4 | 392.1 |
| Total Delay (hr)        | 350.6 | 334.6 | 302.2 | 255.4 | 306.8 | 309.9 |
| Total Stops             | 5440  | 5505  | 5519  | 5217  | 5244  | 5383  |
| Fuel Used (gal)         | 156.6 | 155.1 | 146.2 | 133.7 | 145.1 | 147.3 |

## Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

## Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4333  | 4430  | 4374  | 4248  | 4229  | 4323  |
| Vehs Exited          | 4225  | 4333  | 4277  | 4169  | 4151  | 4233  |
| Starting Vehs        | 146   | 146   | 148   | 137   | 140   | 143   |
| Ending Vehs          | 254   | 243   | 245   | 216   | 218   | 229   |
| Travel Distance (mi) | 2264  | 2308  | 2289  | 2232  | 2213  | 2261  |
| Travel Time (hr)     | 432.7 | 418.4 | 385.3 | 336.6 | 387.4 | 392.1 |
| Total Delay (hr)     | 350.6 | 334.6 | 302.2 | 255.4 | 306.8 | 309.9 |
| Total Stops          | 5440  | 5505  | 5519  | 5217  | 5244  | 5383  |
| Fuel Used (gal)      | 156.6 | 155.1 | 146.2 | 133.7 | 145.1 | 147.3 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.6 | 0.4 | 0.1  | 0.5 |
| Total Del/Veh (s)  | 2.8 | 3.6 | 16.1 | 3.6 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2  | 0.0  | 14.5 | 0.0  | 7.2  |
| Total Del/Veh (s)  | 67.2 | 58.8 | 52.0 | 57.8 | 55.8 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 1.1  | 0.4  | 0.0  | 0.4  |
| Total Del/Veh (s)  | 27.7 | 10.3 | 10.6 | 13.9 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 15.7 | 1.6 | 1.2 | 1.5 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 4.4 | 2.9 | 1.3 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB    | NB   | SB    | All   |
|--------------------|------|-------|------|-------|-------|
| Denied Del/Veh (s) | 1.1  | 43.3  | 0.0  | 486.7 | 222.0 |
| Total Del/Veh (s)  | 60.5 | 190.8 | 27.0 | 229.9 | 143.3 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB   | WB   | NB  | SB  | All |
|--------------------|------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 10.0 | 10.2 | 1.0 | 2.8 | 2.4 |

#### Total Network Performance

|                    |       |
|--------------------|-------|
| Denied Del/Veh (s) | 130.8 |
| Total Del/Veh (s)  | 110.9 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 19  | 274  | 72  |
| Average Queue (ft)    | 1   | 43   | 25  |
| 95th Queue (ft)       | 10  | 147  | 52  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 224  | 362 | 434 | 284 | 273 | 189  | 245  |
| Average Queue (ft)    | 132  | 212 | 255 | 268 | 254 | 86   | 136  |
| 95th Queue (ft)       | 213  | 333 | 387 | 280 | 300 | 160  | 216  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 57  | 41  |      |      |
| Queuing Penalty (veh) |      |     |     | 369 | 264 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 214  | 90  | 311 | 87  | 343 |
| Average Queue (ft)    | 95   | 49  | 127 | 20  | 109 |
| 95th Queue (ft)       | 169  | 102 | 252 | 71  | 254 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 23   | 0   |     | 0   | 5   |
| Queuing Penalty (veh) | 18   | 0   |     | 0   | 2   |



Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 33  | 122 | 4   |
| Average Queue (ft)    | 6   | 23  | 0   |
| 95th Queue (ft)       | 26  | 88  | 3   |
| Link Distance (ft)    | 662 | 411 | 225 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 30  | 170 |
| Average Queue (ft)    | 6   | 29  |
| 95th Queue (ft)       | 26  | 97  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 38 | 46 | 73 | 816 | 815 | 225 | 66 | 249 | 260 | 100 | 275 | 1009 |
| Average Queue (ft)    | 6  | 13 | 33 | 543 | 528 | 113 | 4  | 121 | 137 | 65  | 238 | 941  |
| 95th Queue (ft)       | 24 | 39 | 69 | 928 | 991 | 286 | 31 | 255 | 288 | 141 | 358 | 1162 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) | 0  | 0  | 4  | 12  | 28  |     |    | 1   | 2   |     |     | 75   |
| Queuing Penalty (veh) | 0  | 0  | 0  | 0   | 0   |     |    | 3   | 8   |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 21  | 3   |    | 18  | 13  | 6   | 6   | 73   |
| Queuing Penalty (veh) |    |    |    |     | 57  | 7   |    | 2   | 43  | 15  | 26  | 193  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 1011 |
| Average Queue (ft)    | 923  |
| 95th Queue (ft)       | 1208 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 46   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 30  | 51  | 58  | 38   |
| Average Queue (ft)    | 2   | 21  | 7   | 4    |
| 95th Queue (ft)       | 15  | 46  | 37  | 26   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 1007

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 46.0  | 25.5 | 19.5 | 38.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 52.6  | 18.8 | 17.7 | 39.8 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 25   | 54   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.8   | 60.0  | 11.7  | 21.9  | 62.1  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 82    | 3     | 8     | 53    | 3     |
| Cycles @ Minimum (%) | 16    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 47    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8     |
|----------------------|-------|-------|------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL  |
| Maximum Green (s)    | 20.5  | 25.5  | 13.7 | 22.3  | 18.0  | 28.0  | 18.0  | 18.0  |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None  |
| Avg. Green (s)       | 20.2  | 35.0  | 18.4 | 18.9  | 7.2   | 52.1  | 12.2  | 34.7  |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | -0.01 |
| Cycles Skipped (%)   | 14    | 0     | 0    | 23    | 71    | 0     | 82    | 3     |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0     |
| Cycles Maxed Out (%) | 37    | 100   | 100  | 49    | 0     | 100   | 3     | 60    |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

## Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5162  | 5136  | 5318  | 5312  | 5218  | 5229  |
| Vehs Exited             | 5107  | 5088  | 5247  | 5264  | 5200  | 5182  |
| Starting Vehs           | 144   | 136   | 118   | 148   | 156   | 136   |
| Ending Vehs             | 199   | 184   | 189   | 196   | 174   | 183   |
| Travel Distance (mi)    | 2786  | 2808  | 2895  | 2895  | 2827  | 2842  |
| Travel Time (hr)        | 175.7 | 161.8 | 176.1 | 175.8 | 170.0 | 171.9 |
| Total Delay (hr)        | 74.4  | 59.9  | 70.3  | 70.4  | 67.2  | 68.4  |
| Total Stops             | 5904  | 5552  | 6087  | 5988  | 5670  | 5839  |
| Fuel Used (gal)         | 110.1 | 107.9 | 113.5 | 113.7 | 110.6 | 111.2 |

## Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

## Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5162  | 5136  | 5318  | 5312  | 5218  | 5229  |
| Vehs Exited          | 5107  | 5088  | 5247  | 5264  | 5200  | 5182  |
| Starting Vehs        | 144   | 136   | 118   | 148   | 156   | 136   |
| Ending Vehs          | 199   | 184   | 189   | 196   | 174   | 183   |
| Travel Distance (mi) | 2786  | 2808  | 2895  | 2895  | 2827  | 2842  |
| Travel Time (hr)     | 175.7 | 161.8 | 176.1 | 175.8 | 170.0 | 171.9 |
| Total Delay (hr)     | 74.4  | 59.9  | 70.3  | 70.4  | 67.2  | 68.4  |
| Total Stops          | 5904  | 5552  | 6087  | 5988  | 5670  | 5839  |
| Fuel Used (gal)      | 110.1 | 107.9 | 113.5 | 113.7 | 110.6 | 111.2 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.2 | 16.1 | 2.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | <LT  | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 0.1  |
| Total Del/Veh (s)  | 40.0 | 48.4 | 35.0 | 18.5 | 18.9 | 29.7 | 46.2 | 30.2 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB   | SB   | SB   | All  |
|--------------------|------|-----|------|------|------|------|
| Movements Served   | L    | R   | TR   | L    | T    |      |
| Denied Del/Veh (s) |      |     |      |      |      | 0.4  |
| Total Del/Veh (s)  | 47.1 | 7.5 | 21.7 | 19.3 | 11.9 | 20.4 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 11.4 | 0.9 | 0.8 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 9.6 | 2.7 | 1.1 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB  | WB   | WB   | WB  | NB   | NB   | NB   | NB   | SB   | SB   |
|--------------------|------|------|-----|------|------|-----|------|------|------|------|------|------|
| Movements Served   | L    | T    | R   | L    | LT   | R   | L    | T    | T    | R    | L    | T    |
| Denied Del/Veh (s) |      |      |     |      |      |     |      |      |      |      |      |      |
| Total Del/Veh (s)  | 31.8 | 47.6 | 9.8 | 31.0 | 41.9 | 9.0 | 39.2 | 34.2 | 49.8 | 28.6 | 48.9 | 24.6 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB   | All  |
|--------------------|------|------|
| Movements Served   | TR   |      |
| Denied Del/Veh (s) |      | 1.3  |
| Total Del/Veh (s)  | 13.0 | 30.9 |



18: Stevens Ave & UNE Drive/Poland St Performance by lane

| Lane               | EB  | WB   | NB  | SB  | All |
|--------------------|-----|------|-----|-----|-----|
| Movements Served   | LTR | LTR  | LTR | LTR |     |
| Denied Del/Veh (s) |     |      |     |     | 0.0 |
| Total Del/Veh (s)  | 8.6 | 10.9 | 0.8 | 2.5 | 2.0 |

Total Network Performance

|                    |      |
|--------------------|------|
| Denied Del/Veh (s) | 1.2  |
| Total Del/Veh (s)  | 44.8 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 9   | 87   | 105 |
| Average Queue (ft)    | 0   | 12   | 35  |
| 95th Queue (ft)       | 4   | 49   | 69  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 163  | 378 | 423 | 277 | 266 | 217  | 270  |
| Average Queue (ft)    | 73   | 183 | 214 | 203 | 177 | 110  | 156  |
| 95th Queue (ft)       | 137  | 345 | 385 | 308 | 270 | 192  | 238  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 6   | 2   |      |      |
| Queuing Penalty (veh) |      |     |     | 31  | 9   |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB | NB  | SB  | SB  |
|-----------------------|------|----|-----|-----|-----|
| Directions Served     | L    | R  | TR  | L   | T   |
| Maximum Queue (ft)    | 268  | 90 | 527 | 149 | 384 |
| Average Queue (ft)    | 131  | 46 | 238 | 58  | 143 |
| 95th Queue (ft)       | 231  | 99 | 452 | 121 | 304 |
| Link Distance (ft)    | 1307 |    | 736 |     | 539 |
| Upstream Blk Time (%) |      |    |     |     |     |
| Queuing Penalty (veh) |      |    |     |     |     |
| Storage Bay Dist (ft) |      | 65 |     | 125 |     |
| Storage Blk Time (%)  | 32   | 1  |     | 0   | 8   |
| Queuing Penalty (veh) | 20   | 1  |     | 1   | 7   |

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Intersection: 9: Stevens Ave & College St

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 84  | 132 |
| Average Queue (ft)    | 36  | 7   |
| 95th Queue (ft)       | 67  | 52  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

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Intersection: 10: Stevens Ave & Finley Ctr Dr

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| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 57  | 137 | 10  |
| Average Queue (ft)    | 26  | 18  | 0   |
| 95th Queue (ft)       | 50  | 80  | 7   |
| Link Distance (ft)    | 529 | 539 | 411 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 56 | 69 | 33 | 214 | 352 | 221 | 99 | 278 | 271 | 100 | 275 | 607 |
| Average Queue (ft)    | 10 | 21 | 13 | 103 | 129 | 80  | 15 | 202 | 221 | 95  | 217 | 220 |
| 95th Queue (ft)       | 34 | 53 | 37 | 177 | 292 | 237 | 66 | 297 | 306 | 121 | 306 | 473 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 0  | 1  | 0  |     |     |     |    | 4   | 9   |     |     |     |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |    | 23  | 55  |     |     |     |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 7   | 0  | 37  | 24  | 25  | 13  | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 14  | 0  | 11  | 102 | 113 | 49  | 2   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 500 |
| Average Queue (ft)    | 139 |
| 95th Queue (ft)       | 352 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 48  | 54  | 36  | 86   |
| Average Queue (ft)    | 18  | 16  | 2   | 8    |
| 95th Queue (ft)       | 45  | 43  | 18  | 46   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 440

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 32.0  | 20.0 | 21.5  | 32.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 44.8  | 18.4 | 12.1  | 44.8 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 8     | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 68   | 5     | 100  |
| Cycles with Peds (%) | 0     | 0    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 20.0  | 22.0  | 14.0  | 31.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.8   | 53.7  | 13.2  | 21.5  | 60.2  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 52    | 14    | 16    | 60    | 16    |
| Cycles @ Minimum (%) | 22    | 0     | 7     | 0     | 0     |
| Cycles Maxed Out (%) | 4     | 86    | 9     | 14    | 84    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 19.5  | 27.5  | 7.0   | 18.0  | 5.7   | 41.3  | 6.9   | 18.1 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 20.0  | 30.2  | 16.8  | 17.8  | 6.2   | 49.4  | 6.6   | 24.7 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 7     | 0     | 3     | 51    | 51    | 0     | 77    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 60    | 100   | 92    | 33    | 28    | 100   | 5     | 67   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0



### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5162  | 5136  | 5318  | 5312  | 5218  | 5229  |
| Vehs Exited             | 5107  | 5088  | 5247  | 5264  | 5200  | 5182  |
| Starting Vehs           | 144   | 136   | 118   | 148   | 156   | 136   |
| Ending Vehs             | 199   | 184   | 189   | 196   | 174   | 183   |
| Travel Distance (mi)    | 2786  | 2808  | 2895  | 2895  | 2827  | 2842  |
| Travel Time (hr)        | 175.7 | 161.8 | 176.1 | 175.8 | 170.0 | 171.9 |
| Total Delay (hr)        | 74.4  | 59.9  | 70.3  | 70.4  | 67.2  | 68.4  |
| Total Stops             | 5904  | 5552  | 6087  | 5988  | 5670  | 5839  |
| Fuel Used (gal)         | 110.1 | 107.9 | 113.5 | 113.7 | 110.6 | 111.2 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5162  | 5136  | 5318  | 5312  | 5218  | 5229  |
| Vehs Exited          | 5107  | 5088  | 5247  | 5264  | 5200  | 5182  |
| Starting Vehs        | 144   | 136   | 118   | 148   | 156   | 136   |
| Ending Vehs          | 199   | 184   | 189   | 196   | 174   | 183   |
| Travel Distance (mi) | 2786  | 2808  | 2895  | 2895  | 2827  | 2842  |
| Travel Time (hr)     | 175.7 | 161.8 | 176.1 | 175.8 | 170.0 | 171.9 |
| Total Delay (hr)     | 74.4  | 59.9  | 70.3  | 70.4  | 67.2  | 68.4  |
| Total Stops          | 5904  | 5552  | 6087  | 5988  | 5670  | 5839  |
| Fuel Used (gal)      | 110.1 | 107.9 | 113.5 | 113.7 | 110.6 | 111.2 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.5 | 0.4 | 0.1  | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.2 | 16.1 | 2.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2  | 0.0  | 0.2  | 0.0  | 0.1  |
| Total Del/Veh (s)  | 40.0 | 40.3 | 18.7 | 37.8 | 30.2 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.9  | 0.5  | 0.0  | 0.4  |
| Total Del/Veh (s)  | 35.9 | 21.6 | 13.1 | 20.4 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 11.2 | 0.9 | 0.8 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 9.4 | 2.7 | 1.1 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.1  | 1.8  | 1.0  | 1.3  | 1.3  |
| Total Del/Veh (s)  | 31.7 | 23.0 | 37.1 | 28.8 | 30.9 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB  | WB   | NB  | SB  | All |
|--------------------|-----|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.1  | 0.0 | 0.1 | 0.0 |
| Total Del/Veh (s)  | 8.6 | 11.4 | 0.8 | 2.5 | 2.0 |

#### Total Network Performance

|                    |      |
|--------------------|------|
| Denied Del/Veh (s) | 1.2  |
| Total Del/Veh (s)  | 44.8 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 9   | 87   | 105 |
| Average Queue (ft)    | 0   | 12   | 35  |
| 95th Queue (ft)       | 4   | 49   | 69  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 163  | 378 | 423 | 277 | 266 | 217  | 270  |
| Average Queue (ft)    | 73   | 183 | 214 | 203 | 177 | 110  | 156  |
| 95th Queue (ft)       | 137  | 345 | 385 | 308 | 270 | 192  | 238  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 6   | 2   |      |      |
| Queuing Penalty (veh) |      |     |     | 31  | 9   |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB | NB  | SB  | SB  |
|-----------------------|------|----|-----|-----|-----|
| Directions Served     | L    | R  | TR  | L   | T   |
| Maximum Queue (ft)    | 268  | 90 | 527 | 149 | 384 |
| Average Queue (ft)    | 131  | 46 | 238 | 58  | 143 |
| 95th Queue (ft)       | 231  | 99 | 452 | 121 | 304 |
| Link Distance (ft)    | 1307 |    | 736 |     | 539 |
| Upstream Blk Time (%) |      |    |     |     |     |
| Queuing Penalty (veh) |      |    |     |     |     |
| Storage Bay Dist (ft) |      | 65 |     | 125 |     |
| Storage Blk Time (%)  | 32   | 1  |     | 0   | 8   |
| Queuing Penalty (veh) | 20   | 1  |     | 1   | 7   |

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Intersection: 9: Stevens Ave & College St

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 84  | 132 |
| Average Queue (ft)    | 36  | 7   |
| 95th Queue (ft)       | 67  | 52  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

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Intersection: 10: Stevens Ave & Finley Ctr Dr

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| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 57  | 137 | 10  |
| Average Queue (ft)    | 26  | 18  | 0   |
| 95th Queue (ft)       | 50  | 80  | 7   |
| Link Distance (ft)    | 529 | 539 | 411 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 56 | 69 | 33 | 214 | 352 | 221 | 99 | 278 | 271 | 100 | 275 | 607 |
| Average Queue (ft)    | 10 | 21 | 13 | 103 | 129 | 80  | 15 | 202 | 221 | 95  | 217 | 220 |
| 95th Queue (ft)       | 34 | 53 | 37 | 177 | 292 | 237 | 66 | 297 | 306 | 121 | 306 | 473 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 0  | 1  | 0  |     |     |     |    | 4   | 9   |     |     |     |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |    | 23  | 55  |     |     |     |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 7   | 0  | 37  | 24  | 25  | 13  | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 14  | 0  | 11  | 102 | 113 | 49  | 2   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 500 |
| Average Queue (ft)    | 139 |
| 95th Queue (ft)       | 352 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 48  | 54  | 36  | 86   |
| Average Queue (ft)    | 18  | 16  | 2   | 8    |
| 95th Queue (ft)       | 45  | 43  | 18  | 46   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 440

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 32.0  | 20.0 | 21.5  | 32.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 44.8  | 18.4 | 12.1  | 44.8 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 8     | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 68   | 5     | 100  |
| Cycles with Peds (%) | 0     | 0    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 20.0  | 22.0  | 14.0  | 31.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.8   | 53.7  | 13.2  | 21.5  | 60.2  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 52    | 14    | 16    | 60    | 16    |
| Cycles @ Minimum (%) | 22    | 0     | 7     | 0     | 0     |
| Cycles Maxed Out (%) | 4     | 86    | 9     | 14    | 84    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 19.5  | 27.5  | 7.0   | 18.0  | 5.7   | 41.3  | 6.9   | 18.1 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 20.0  | 30.2  | 16.8  | 17.8  | 6.2   | 49.4  | 6.6   | 24.7 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 7     | 0     | 3     | 51    | 51    | 0     | 77    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 60    | 100   | 92    | 33    | 28    | 100   | 5     | 67   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4441  | 4423  | 4443  | 4404  | 4432  | 4432  |
| Vehs Exited             | 4355  | 4306  | 4369  | 4310  | 4305  | 4329  |
| Starting Vehs           | 131   | 130   | 160   | 123   | 132   | 131   |
| Ending Vehs             | 217   | 247   | 234   | 217   | 259   | 233   |
| Travel Distance (mi)    | 2326  | 2331  | 2319  | 2291  | 2283  | 2310  |
| Travel Time (hr)        | 420.9 | 396.6 | 400.9 | 405.7 | 428.2 | 410.5 |
| Total Delay (hr)        | 335.9 | 311.4 | 316.4 | 322.2 | 345.2 | 326.2 |
| Total Stops             | 5551  | 5635  | 5784  | 5247  | 5324  | 5511  |
| Fuel Used (gal)         | 155.3 | 150.2 | 150.9 | 150.9 | 156.5 | 152.7 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4441  | 4423  | 4443  | 4404  | 4432  | 4432  |
| Vehs Exited          | 4355  | 4306  | 4369  | 4310  | 4305  | 4329  |
| Starting Vehs        | 131   | 130   | 160   | 123   | 132   | 131   |
| Ending Vehs          | 217   | 247   | 234   | 217   | 259   | 233   |
| Travel Distance (mi) | 2326  | 2331  | 2319  | 2291  | 2283  | 2310  |
| Travel Time (hr)     | 420.9 | 396.6 | 400.9 | 405.7 | 428.2 | 410.5 |
| Total Delay (hr)     | 335.9 | 311.4 | 316.4 | 322.2 | 345.2 | 326.2 |
| Total Stops          | 5551  | 5635  | 5784  | 5247  | 5324  | 5511  |
| Fuel Used (gal)      | 155.3 | 150.2 | 150.9 | 150.9 | 156.5 | 152.7 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.5 |
| Total Del/Veh (s)  | 2.9 | 3.0 | 18.0 | 3.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | LT   | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 10.9 |
| Total Del/Veh (s)  | 71.6 | 50.2 | 63.0 | 50.9 | 58.7 | 47.8 | 79.4 | 57.7 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB   | SB   | SB  | All  |
|--------------------|------|-----|------|------|-----|------|
| Movements Served   | L    | R   | TR   | L    | T   |      |
| Denied Del/Veh (s) |      |     |      |      |     | 0.4  |
| Total Del/Veh (s)  | 41.1 | 6.7 | 10.6 | 13.2 | 9.6 | 13.9 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 5.9 | 1.4 | 1.2 | 1.4 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Movements Served   | LR  | LT  | TR  |     |
| Denied Del/Veh (s) |     |     |     | 0.0 |
| Total Del/Veh (s)  | 4.7 | 2.9 | 1.2 | 2.2 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB   | WB    | WB    | WB  | NB   | NB   | NB   | NB  | SB   | SB    |
|--------------------|------|------|------|-------|-------|-----|------|------|------|-----|------|-------|
| Movements Served   | L    | T    | R    | L     | LT    | R   | L    | T    | T    | R   | L    | T     |
| Denied Del/Veh (s) |      |      |      |       |       |     |      |      |      |     |      |       |
| Total Del/Veh (s)  | 33.5 | 46.6 | 85.2 | 334.0 | 247.3 | 7.4 | 51.9 | 34.5 | 45.5 | 9.7 | 57.9 | 336.6 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB    | All   |
|--------------------|-------|-------|
| Movements Served   | TR    |       |
| Denied Del/Veh (s) |       | 232.1 |
| Total Del/Veh (s)  | 219.9 | 146.2 |

18: Stevens Ave & UNE Drive/Poland St Performance by lane

| Lane               | EB   | WB   | NB  | SB  | All |
|--------------------|------|------|-----|-----|-----|
| Movements Served   | LTR  | LTR  | LTR | LTR |     |
| Denied Del/Veh (s) |      |      |     |     | 0.0 |
| Total Del/Veh (s)  | 10.1 | 11.1 | 1.8 | 3.2 | 3.0 |

Total Network Performance

|                    |       |
|--------------------|-------|
| Denied Del/Veh (s) | 136.1 |
| Total Del/Veh (s)  | 111.9 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 32  | 155  | 68  |
| Average Queue (ft)    | 2   | 38   | 26  |
| 95th Queue (ft)       | 14  | 107  | 56  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 278  | 320 | 373 | 281 | 273 | 218  | 261  |
| Average Queue (ft)    | 149  | 205 | 244 | 267 | 260 | 99   | 153  |
| 95th Queue (ft)       | 241  | 295 | 344 | 280 | 293 | 188  | 240  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 58  | 48  |      |      |
| Queuing Penalty (veh) |      |     |     | 382 | 314 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 198  | 90  | 335 | 83  | 305 |
| Average Queue (ft)    | 95   | 53  | 140 | 18  | 103 |
| 95th Queue (ft)       | 163  | 104 | 276 | 55  | 236 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 25   | 1   |     |     | 5   |
| Queuing Penalty (veh) | 20   | 2   |     |     | 2   |

Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 29  | 111 | 9   |
| Average Queue (ft)    | 4   | 20  | 0   |
| 95th Queue (ft)       | 21  | 77  | 5   |
| Link Distance (ft)    | 662 | 411 | 225 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 30  | 131 |
| Average Queue (ft)    | 7   | 26  |
| 95th Queue (ft)       | 28  | 86  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 33 | 51 | 75 | 812 | 810 | 225 | 80 | 257 | 267 | 100 | 275 | 1011 |
| Average Queue (ft)    | 5  | 10 | 32 | 561 | 535 | 119 | 8  | 133 | 144 | 64  | 242 | 930  |
| 95th Queue (ft)       | 22 | 35 | 75 | 897 | 955 | 292 | 49 | 271 | 300 | 140 | 351 | 1204 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) | 0  | 0  | 8  | 14  | 26  |     |    | 1   | 2   |     |     | 74   |
| Queuing Penalty (veh) | 0  | 0  | 0  | 0   | 0   |     |    | 6   | 10  |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 24  | 3   |    | 20  | 15  | 7   | 7   | 72   |
| Queuing Penalty (veh) |    |    |    |     | 65  | 6   |    | 2   | 48  | 17  | 32  | 190  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 999  |
| Average Queue (ft)    | 920  |
| 95th Queue (ft)       | 1211 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 45   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 35  | 59  | 120 | 91   |
| Average Queue (ft)    | 9   | 23  | 22  | 8    |
| 95th Queue (ft)       | 32  | 49  | 83  | 44   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 1097

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 48.0  | 23.5 | 18.5 | 39.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 51.4  | 20.1 | 17.5 | 40.0 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 46   | 71   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.5   | 62.3  | 11.4  | 21.3  | 63.7  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 87    | 3     | 5     | 58    | 3     |
| Cycles @ Minimum (%) | 8     | 0     | 8     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 42    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 20.5  | 25.5  | 13.7 | 22.3  | 18.0  | 28.0  | 18.0  | 18.0 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 19.9  | 34.1  | 19.9 | 21.0  | 6.6   | 51.1  | 8.2   | 36.4 |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 17    | 0     | 0    | 31    | 74    | 0     | 86    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 49    | 100   | 100  | 51    | 0     | 100   | 0     | 74   |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

### Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 4441  | 4423  | 4443  | 4404  | 4432  | 4432  |
| Vehs Exited             | 4355  | 4306  | 4369  | 4310  | 4305  | 4329  |
| Starting Vehs           | 131   | 130   | 160   | 123   | 132   | 131   |
| Ending Vehs             | 217   | 247   | 234   | 217   | 259   | 233   |
| Travel Distance (mi)    | 2326  | 2331  | 2319  | 2291  | 2283  | 2310  |
| Travel Time (hr)        | 420.9 | 396.6 | 400.9 | 405.7 | 428.2 | 410.5 |
| Total Delay (hr)        | 335.9 | 311.4 | 316.4 | 322.2 | 345.2 | 326.2 |
| Total Stops             | 5551  | 5635  | 5784  | 5247  | 5324  | 5511  |
| Fuel Used (gal)         | 155.3 | 150.2 | 150.9 | 150.9 | 156.5 | 152.7 |

### Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

### Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 4441  | 4423  | 4443  | 4404  | 4432  | 4432  |
| Vehs Exited          | 4355  | 4306  | 4369  | 4310  | 4305  | 4329  |
| Starting Vehs        | 131   | 130   | 160   | 123   | 132   | 131   |
| Ending Vehs          | 217   | 247   | 234   | 217   | 259   | 233   |
| Travel Distance (mi) | 2326  | 2331  | 2319  | 2291  | 2283  | 2310  |
| Travel Time (hr)     | 420.9 | 396.6 | 400.9 | 405.7 | 428.2 | 410.5 |
| Total Delay (hr)     | 335.9 | 311.4 | 316.4 | 322.2 | 345.2 | 326.2 |
| Total Stops          | 5551  | 5635  | 5784  | 5247  | 5324  | 5511  |
| Fuel Used (gal)      | 155.3 | 150.2 | 150.9 | 150.9 | 156.5 | 152.7 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.6 | 0.4 | 0.1  | 0.5 |
| Total Del/Veh (s)  | 2.9 | 3.0 | 18.4 | 3.5 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2  | 0.0  | 21.9 | 0.0  | 10.9 |
| Total Del/Veh (s)  | 71.2 | 56.8 | 54.3 | 63.2 | 57.7 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB   | SB  | All  |
|--------------------|------|------|-----|------|
| Denied Del/Veh (s) | 1.0  | 0.4  | 0.0 | 0.4  |
| Total Del/Veh (s)  | 28.7 | 10.6 | 9.8 | 13.9 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 5.9 | 1.4 | 1.2 | 1.4 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB  | NB  | SB  | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 4.7 | 2.9 | 1.2 | 2.2 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB    | NB   | SB    | All   |
|--------------------|------|-------|------|-------|-------|
| Denied Del/Veh (s) | 1.4  | 42.1  | 0.1  | 511.9 | 232.1 |
| Total Del/Veh (s)  | 66.6 | 189.6 | 28.3 | 236.9 | 146.2 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB  | WB   | NB  | SB  | All |
|--------------------|-----|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 9.3 | 11.1 | 1.8 | 3.2 | 3.0 |

#### Total Network Performance

|                    |       |
|--------------------|-------|
| Denied Del/Veh (s) | 136.1 |
| Total Del/Veh (s)  | 111.9 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 32  | 155  | 68  |
| Average Queue (ft)    | 2   | 38   | 26  |
| 95th Queue (ft)       | 14  | 107  | 56  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | LT  | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 278  | 320 | 373 | 281 | 273 | 218  | 261  |
| Average Queue (ft)    | 149  | 205 | 244 | 267 | 260 | 99   | 153  |
| 95th Queue (ft)       | 241  | 295 | 344 | 280 | 293 | 188  | 240  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 58  | 48  |      |      |
| Queuing Penalty (veh) |      |     |     | 382 | 314 |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 198  | 90  | 335 | 83  | 305 |
| Average Queue (ft)    | 95   | 53  | 140 | 18  | 103 |
| 95th Queue (ft)       | 163  | 104 | 276 | 55  | 236 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     |     |     |     |
| Queuing Penalty (veh) |      |     |     |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 25   | 1   |     |     | 5   |
| Queuing Penalty (veh) | 20   | 2   |     |     | 2   |



Intersection: 9: Stevens Ave & College St

| Movement              | EB  | NB  | SB  |
|-----------------------|-----|-----|-----|
| Directions Served     | LR  | LT  | TR  |
| Maximum Queue (ft)    | 29  | 111 | 9   |
| Average Queue (ft)    | 4   | 20  | 0   |
| 95th Queue (ft)       | 21  | 77  | 5   |
| Link Distance (ft)    | 662 | 411 | 225 |
| Upstream Blk Time (%) |     |     |     |
| Queuing Penalty (veh) |     |     |     |
| Storage Bay Dist (ft) |     |     |     |
| Storage Blk Time (%)  |     |     |     |
| Queuing Penalty (veh) |     |     |     |

Intersection: 10: Stevens Ave & Finley Ctr Dr

| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 30  | 131 |
| Average Queue (ft)    | 7   | 26  |
| 95th Queue (ft)       | 28  | 86  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB | NB  | NB  | NB  | SB  | SB   |
|-----------------------|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|------|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L  | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 33 | 51 | 75 | 812 | 810 | 225 | 80 | 257 | 267 | 100 | 275 | 1011 |
| Average Queue (ft)    | 5  | 10 | 32 | 561 | 535 | 119 | 8  | 133 | 144 | 64  | 242 | 930  |
| 95th Queue (ft)       | 22 | 35 | 75 | 897 | 955 | 292 | 49 | 271 | 300 | 140 | 351 | 1204 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |    | 248 | 248 |     |     | 962  |
| Upstream Blk Time (%) | 0  | 0  | 8  | 14  | 26  |     |    | 1   | 2   |     |     | 74   |
| Queuing Penalty (veh) | 0  | 0  | 0  | 0   | 0   |     |    | 6   | 10  |     |     | 0    |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75 |     |     | 75  | 250 |      |
| Storage Blk Time (%)  |    |    |    |     | 24  | 3   |    | 20  | 15  | 7   | 7   | 72   |
| Queuing Penalty (veh) |    |    |    |     | 65  | 6   |    | 2   | 48  | 17  | 32  | 190  |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | TR   |
| Maximum Queue (ft)    | 999  |
| Average Queue (ft)    | 920  |
| 95th Queue (ft)       | 1211 |
| Link Distance (ft)    | 962  |
| Upstream Blk Time (%) | 45   |
| Queuing Penalty (veh) | 0    |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 35  | 59  | 120 | 91   |
| Average Queue (ft)    | 9   | 23  | 22  | 8    |
| 95th Queue (ft)       | 32  | 49  | 83  | 44   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 1097

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 4    | 5    | 6    |
|----------------------|-------|------|------|------|
| Movement(s) Served   | SBT   | EBL  | NEL  | NBTL |
| Maximum Green (s)    | 48.0  | 23.5 | 18.5 | 39.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0  | 10.0 |
| Recall               | C-Max | None | None | Max  |
| Avg. Green (s)       | 51.4  | 20.1 | 17.5 | 40.0 |
| g/C Ratio            | NA    | NA   | NA   | NA   |
| Cycles Skipped (%)   | 0     | 0    | 0    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0    | 0    |
| Cycles Maxed Out (%) | 100   | 46   | 71   | 100  |
| Cycles with Peds (%) | 0     | 0    | 0    | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 18.0  | 34.0  | 14.0  | 29.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 5.5   | 62.3  | 11.4  | 21.3  | 63.7  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 87    | 3     | 5     | 58    | 3     |
| Cycles @ Minimum (%) | 8     | 0     | 8     | 0     | 0     |
| Cycles Maxed Out (%) | 0     | 97    | 0     | 0     | 97    |
| Cycles with Peds (%) | 0     | 0     | 0     | 42    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3    | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL  | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 20.5  | 25.5  | 13.7 | 22.3  | 18.0  | 28.0  | 18.0  | 18.0 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 19.9  | 34.1  | 19.9 | 21.0  | 6.6   | 51.1  | 8.2   | 36.4 |
| g/C Ratio            | -0.01 | NA    | NA   | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 17    | 0     | 0    | 31    | 74    | 0     | 86    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 49    | 100   | 100  | 51    | 0     | 100   | 0     | 74   |
| Cycles with Peds (%) | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

## Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5108  | 5253  | 5393  | 5257  | 5160  | 5232  |
| Vehs Exited             | 5077  | 5188  | 5370  | 5221  | 5158  | 5203  |
| Starting Vehs           | 158   | 131   | 162   | 152   | 149   | 146   |
| Ending Vehs             | 189   | 196   | 185   | 188   | 151   | 179   |
| Travel Distance (mi)    | 2770  | 2828  | 2935  | 2828  | 2802  | 2833  |
| Travel Time (hr)        | 163.5 | 166.7 | 191.0 | 215.7 | 176.7 | 182.7 |
| Total Delay (hr)        | 62.6  | 63.8  | 84.1  | 112.6 | 74.7  | 79.6  |
| Total Stops             | 5390  | 5603  | 6408  | 6723  | 5894  | 6002  |
| Fuel Used (gal)         | 107.3 | 109.4 | 118.2 | 122.9 | 111.9 | 113.9 |

## Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

## Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5108  | 5253  | 5393  | 5257  | 5160  | 5232  |
| Vehs Exited          | 5077  | 5188  | 5370  | 5221  | 5158  | 5203  |
| Starting Vehs        | 158   | 131   | 162   | 152   | 149   | 146   |
| Ending Vehs          | 189   | 196   | 185   | 188   | 151   | 179   |
| Travel Distance (mi) | 2770  | 2828  | 2935  | 2828  | 2802  | 2833  |
| Travel Time (hr)     | 163.5 | 166.7 | 191.0 | 215.7 | 176.7 | 182.7 |
| Total Delay (hr)     | 62.6  | 63.8  | 84.1  | 112.6 | 74.7  | 79.6  |
| Total Stops          | 5390  | 5603  | 6408  | 6723  | 5894  | 6002  |
| Fuel Used (gal)      | 107.3 | 109.4 | 118.2 | 122.9 | 111.9 | 113.9 |

#### 1: Bishop Street Ext. & Warren Ave Performance by lane

| Lane               | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Movements Served   | TR  | LT  | LR   |     |
| Denied Del/Veh (s) |     |     |      | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.7 | 17.1 | 2.8 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by lane

| Lane               | EB   | NB   | NB   | SB   | SB   | NE   | NE   | All  |
|--------------------|------|------|------|------|------|------|------|------|
| Movements Served   | LR>  | <LT  | T    | T    | R>   | <L   | LR   |      |
| Denied Del/Veh (s) |      |      |      |      |      |      |      | 0.1  |
| Total Del/Veh (s)  | 40.7 | 52.9 | 37.1 | 19.3 | 18.5 | 30.4 | 46.1 | 31.4 |

#### 5: Stevens Ave & Walton St Performance by lane

| Lane               | WB   | WB  | NB   | SB   | SB   | All  |
|--------------------|------|-----|------|------|------|------|
| Movements Served   | L    | R   | TR   | L    | T    |      |
| Denied Del/Veh (s) |      |     |      |      |      | 0.4  |
| Total Del/Veh (s)  | 51.9 | 7.1 | 20.5 | 20.8 | 12.2 | 20.6 |

#### 9: Stevens Ave & College St Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 11.5 | 0.8 | 0.8 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by lane

| Lane               | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Movements Served   | LR   | LT  | TR  |     |
| Denied Del/Veh (s) |      |     |     | 0.0 |
| Total Del/Veh (s)  | 10.7 | 2.6 | 1.1 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | EB   | EB   | EB  | WB   | WB   | WB   | NB   | NB   | NB   | NB   | SB   | SB   |
|--------------------|------|------|-----|------|------|------|------|------|------|------|------|------|
| Movements Served   | L    | T    | R   | L    | LT   | R    | L    | T    | T    | R    | L    | T    |
| Denied Del/Veh (s) |      |      |     |      |      |      |      |      |      |      |      |      |
| Total Del/Veh (s)  | 29.5 | 43.8 | 9.4 | 32.0 | 48.7 | 11.1 | 43.2 | 29.7 | 45.1 | 25.3 | 73.6 | 61.6 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by lane

| Lane               | SB   | All  |
|--------------------|------|------|
| Movements Served   | TR   |      |
| Denied Del/Veh (s) |      | 4.7  |
| Total Del/Veh (s)  | 27.3 | 38.3 |



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18: Stevens Ave & UNE Drive/Poland St Performance by lane

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| Lane               | EB   | WB   | NB  | SB  | All |
|--------------------|------|------|-----|-----|-----|
| Movements Served   | LTR  | LTR  | LTR | LTR |     |
| Denied Del/Veh (s) |      |      |     |     | 0.0 |
| Total Del/Veh (s)  | 10.4 | 10.7 | 1.0 | 2.6 | 2.4 |

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Total Network Performance

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|                    |  |  |      |  |  |
|--------------------|--|--|------|--|--|
|                    |  |  |      |  |  |
| Denied Del/Veh (s) |  |  | 3.3  |  |  |
| Total Del/Veh (s)  |  |  | 50.0 |  |  |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 4   | 154  | 81  |
| Average Queue (ft)    | 0   | 19   | 36  |
| 95th Queue (ft)       | 3   | 81   | 69  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 187  | 422 | 472 | 274 | 271 | 246  | 292  |
| Average Queue (ft)    | 76   | 185 | 220 | 196 | 161 | 119  | 162  |
| 95th Queue (ft)       | 145  | 400 | 456 | 301 | 271 | 203  | 252  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 6   | 2   |      |      |
| Queuing Penalty (veh) |      |     |     | 33  | 10  |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 305  | 90  | 532 | 149 | 324 |
| Average Queue (ft)    | 133  | 46  | 234 | 68  | 147 |
| 95th Queue (ft)       | 244  | 104 | 459 | 142 | 285 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     | 0   |     |     |
| Queuing Penalty (veh) |      |     | 0   |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 36   | 1   |     | 0   | 10  |
| Queuing Penalty (veh) | 23   | 1   |     | 1   | 10  |

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Intersection: 9: Stevens Ave & College St

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 76  | 79  |
| Average Queue (ft)    | 38  | 5   |
| 95th Queue (ft)       | 66  | 36  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

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Intersection: 10: Stevens Ave & Finley Ctr Dr

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 55  | 146 |
| Average Queue (ft)    | 25  | 18  |
| 95th Queue (ft)       | 51  | 80  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L   | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 52 | 63 | 47 | 376 | 482 | 225 | 100 | 262 | 267 | 100 | 275 | 744 |
| Average Queue (ft)    | 13 | 24 | 14 | 116 | 138 | 106 | 17  | 184 | 203 | 94  | 240 | 411 |
| 95th Queue (ft)       | 38 | 55 | 41 | 255 | 359 | 262 | 70  | 283 | 305 | 126 | 322 | 919 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |     | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 0  | 1  | 0  |     |     |     |     | 2   | 5   |     |     | 11  |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |     | 14  | 35  |     |     | 0   |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75  |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 11  | 0   | 33  | 22  | 22  | 34  | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 21  | 0   | 10  | 92  | 100 | 125 | 5   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 706 |
| Average Queue (ft)    | 328 |
| 95th Queue (ft)       | 863 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) | 5   |
| Queuing Penalty (veh) | 0   |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 58  | 46  | 91  | 123  |
| Average Queue (ft)    | 29  | 16  | 7   | 8    |
| 95th Queue (ft)       | 55  | 41  | 47  | 55   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 481

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 33.0  | 21.0 | 19.5  | 33.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 44.5  | 19.1 | 12.4  | 44.5 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 13    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 63   | 8     | 100  |
| Cycles with Peds (%) | 0     | 0    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 20.0  | 22.0  | 14.0  | 31.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.5   | 58.9  | 13.7  | 21.5  | 65.8  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 54    | 19    | 19    | 60    | 19    |
| Cycles @ Minimum (%) | 20    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 7     | 81    | 9     | 19    | 81    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 15.5  | 30.5  | 9.5   | 16.5  | 7.5   | 38.5  | 7.5   | 18.5 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 17.1  | 31.6  | 17.8  | 16.5  | 7.0   | 48.3  | 6.5   | 25.2 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 5     | 0     | 3     | 46    | 58    | 0     | 68    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 83    | 100   | 85    | 41    | 13    | 100   | 8     | 74   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0



## Summary of All Intervals

| Run Number              | 1     | 2     | 3     | 4     | 5     | Avg   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Start Time              | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  | 6:57  |
| End Time                | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  | 8:00  |
| Total Time (min)        | 63    | 63    | 63    | 63    | 63    | 63    |
| Time Recorded (min)     | 60    | 60    | 60    | 60    | 60    | 60    |
| # of Intervals          | 2     | 2     | 2     | 2     | 2     | 2     |
| # of Recorded Intervals | 1     | 1     | 1     | 1     | 1     | 1     |
| Vehs Entered            | 5108  | 5253  | 5393  | 5257  | 5160  | 5232  |
| Vehs Exited             | 5077  | 5188  | 5370  | 5221  | 5158  | 5203  |
| Starting Vehs           | 158   | 131   | 162   | 152   | 149   | 146   |
| Ending Vehs             | 189   | 196   | 185   | 188   | 151   | 179   |
| Travel Distance (mi)    | 2770  | 2828  | 2935  | 2828  | 2802  | 2833  |
| Travel Time (hr)        | 163.5 | 166.7 | 191.0 | 215.7 | 176.7 | 182.7 |
| Total Delay (hr)        | 62.6  | 63.8  | 84.1  | 112.6 | 74.7  | 79.6  |
| Total Stops             | 5390  | 5603  | 6408  | 6723  | 5894  | 6002  |
| Fuel Used (gal)         | 107.3 | 109.4 | 118.2 | 122.9 | 111.9 | 113.9 |

## Interval #0 Information Seeding

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 6:57 |
| End Time                            | 7:00 |
| Total Time (min)                    | 3    |
| Volumes adjusted by Growth Factors. |      |
| No data recorded this interval.     |      |

## Interval #1 Information Recording

|                                     |      |
|-------------------------------------|------|
| Start Time                          | 7:00 |
| End Time                            | 8:00 |
| Total Time (min)                    | 60   |
| Volumes adjusted by Growth Factors. |      |

| Run Number           | 1     | 2     | 3     | 4     | 5     | Avg   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Vehs Entered         | 5108  | 5253  | 5393  | 5257  | 5160  | 5232  |
| Vehs Exited          | 5077  | 5188  | 5370  | 5221  | 5158  | 5203  |
| Starting Vehs        | 158   | 131   | 162   | 152   | 149   | 146   |
| Ending Vehs          | 189   | 196   | 185   | 188   | 151   | 179   |
| Travel Distance (mi) | 2770  | 2828  | 2935  | 2828  | 2802  | 2833  |
| Travel Time (hr)     | 163.5 | 166.7 | 191.0 | 215.7 | 176.7 | 182.7 |
| Total Delay (hr)     | 62.6  | 63.8  | 84.1  | 112.6 | 74.7  | 79.6  |
| Total Stops          | 5390  | 5603  | 6408  | 6723  | 5894  | 6002  |
| Fuel Used (gal)      | 107.3 | 109.4 | 118.2 | 122.9 | 111.9 | 113.9 |

#### 1: Bishop Street Ext. & Warren Ave Performance by approach

| Approach           | EB  | WB  | NB   | All |
|--------------------|-----|-----|------|-----|
| Denied Del/Veh (s) | 0.5 | 0.4 | 0.1  | 0.4 |
| Total Del/Veh (s)  | 1.8 | 1.7 | 17.3 | 2.8 |

#### 4: Stevens Ave & Forest Ave & Bishop Street Performance by approach

| Approach           | EB   | NB   | SB   | NE   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.1  | 0.0  | 0.2  | 0.0  | 0.1  |
| Total Del/Veh (s)  | 40.7 | 43.0 | 19.0 | 38.1 | 31.4 |

#### 5: Stevens Ave & Walton St Performance by approach

| Approach           | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.9  | 0.6  | 0.0  | 0.4  |
| Total Del/Veh (s)  | 39.2 | 20.5 | 13.7 | 20.6 |

#### 9: Stevens Ave & College St Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 11.5 | 0.8 | 0.8 | 1.6 |

#### 10: Stevens Ave & Finley Ctr Dr Performance by approach

| Approach           | EB   | NB  | SB  | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.1  | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s)  | 10.7 | 2.6 | 1.1 | 2.1 |

#### 15: Forest Ave & McDonald's Driveway/Allen Ave Performance by approach

| Approach           | EB   | WB   | NB   | SB   | All  |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2  | 1.9  | 0.6  | 12.0 | 4.7  |
| Total Del/Veh (s)  | 29.9 | 24.8 | 33.0 | 54.5 | 38.3 |

#### 18: Stevens Ave & UNE Drive/Poland St Performance by approach

| Approach           | EB   | WB   | NB  | SB  | All |
|--------------------|------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.2  | 0.1  | 0.0 | 0.1 | 0.0 |
| Total Del/Veh (s)  | 10.6 | 11.2 | 1.0 | 2.6 | 2.4 |

#### Total Network Performance

|                    |      |
|--------------------|------|
| Denied Del/Veh (s) | 3.3  |
| Total Del/Veh (s)  | 50.0 |

Intersection: 1: Bishop Street Ext. & Warren Ave

| Movement              | EB  | WB   | NB  |
|-----------------------|-----|------|-----|
| Directions Served     | TR  | LT   | LR  |
| Maximum Queue (ft)    | 4   | 154  | 81  |
| Average Queue (ft)    | 0   | 19   | 36  |
| 95th Queue (ft)       | 3   | 81   | 69  |
| Link Distance (ft)    | 842 | 1022 | 466 |
| Upstream Blk Time (%) |     |      |     |
| Queuing Penalty (veh) |     |      |     |
| Storage Bay Dist (ft) |     |      |     |
| Storage Blk Time (%)  |     |      |     |
| Queuing Penalty (veh) |     |      |     |

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Movement              | EB   | NB  | NB  | SB  | SB  | NE   | NE   |
|-----------------------|------|-----|-----|-----|-----|------|------|
| Directions Served     | LR>  | <LT | T   | T   | R>  | <L   | LR   |
| Maximum Queue (ft)    | 187  | 422 | 472 | 274 | 271 | 246  | 292  |
| Average Queue (ft)    | 76   | 185 | 220 | 196 | 161 | 119  | 162  |
| 95th Queue (ft)       | 145  | 400 | 456 | 301 | 271 | 203  | 252  |
| Link Distance (ft)    | 1774 | 830 | 830 | 248 | 248 | 1107 | 1107 |
| Upstream Blk Time (%) |      |     |     | 6   | 2   |      |      |
| Queuing Penalty (veh) |      |     |     | 33  | 10  |      |      |
| Storage Bay Dist (ft) |      |     |     |     |     |      |      |
| Storage Blk Time (%)  |      |     |     |     |     |      |      |
| Queuing Penalty (veh) |      |     |     |     |     |      |      |

Intersection: 5: Stevens Ave & Walton St

| Movement              | WB   | WB  | NB  | SB  | SB  |
|-----------------------|------|-----|-----|-----|-----|
| Directions Served     | L    | R   | TR  | L   | T   |
| Maximum Queue (ft)    | 305  | 90  | 532 | 149 | 324 |
| Average Queue (ft)    | 133  | 46  | 234 | 68  | 147 |
| 95th Queue (ft)       | 244  | 104 | 459 | 142 | 285 |
| Link Distance (ft)    | 1307 |     | 736 |     | 539 |
| Upstream Blk Time (%) |      |     | 0   |     |     |
| Queuing Penalty (veh) |      |     | 0   |     |     |
| Storage Bay Dist (ft) |      | 65  |     | 125 |     |
| Storage Blk Time (%)  | 36   | 1   |     | 0   | 10  |
| Queuing Penalty (veh) | 23   | 1   |     | 1   | 10  |

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Intersection: 9: Stevens Ave & College St

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 76  | 79  |
| Average Queue (ft)    | 38  | 5   |
| 95th Queue (ft)       | 66  | 36  |
| Link Distance (ft)    | 662 | 411 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

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Intersection: 10: Stevens Ave & Finley Ctr Dr

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| Movement              | EB  | NB  |
|-----------------------|-----|-----|
| Directions Served     | LR  | LT  |
| Maximum Queue (ft)    | 55  | 146 |
| Average Queue (ft)    | 25  | 18  |
| 95th Queue (ft)       | 51  | 80  |
| Link Distance (ft)    | 529 | 539 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | EB | EB | EB | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB  |
|-----------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L  | T  | R  | L   | LT  | R   | L   | T   | T   | R   | L   | T   |
| Maximum Queue (ft)    | 52 | 63 | 47 | 376 | 482 | 225 | 100 | 262 | 267 | 100 | 275 | 744 |
| Average Queue (ft)    | 13 | 24 | 14 | 116 | 138 | 106 | 17  | 184 | 203 | 94  | 240 | 411 |
| 95th Queue (ft)       | 38 | 55 | 41 | 255 | 359 | 262 | 70  | 283 | 305 | 126 | 322 | 919 |
| Link Distance (ft)    | 60 | 60 | 60 | 789 | 789 |     |     | 248 | 248 |     |     | 962 |
| Upstream Blk Time (%) | 0  | 1  | 0  |     |     |     |     | 2   | 5   |     |     | 11  |
| Queuing Penalty (veh) | 0  | 0  | 0  |     |     |     |     | 14  | 35  |     |     | 0   |
| Storage Bay Dist (ft) |    |    |    |     |     | 200 | 75  |     |     | 75  | 250 |     |
| Storage Blk Time (%)  |    |    |    |     | 0   | 11  | 0   | 33  | 22  | 22  | 34  | 1   |
| Queuing Penalty (veh) |    |    |    |     | 1   | 21  | 0   | 10  | 92  | 100 | 125 | 5   |

Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Movement              | SB  |
|-----------------------|-----|
| Directions Served     | TR  |
| Maximum Queue (ft)    | 706 |
| Average Queue (ft)    | 328 |
| 95th Queue (ft)       | 863 |
| Link Distance (ft)    | 962 |
| Upstream Blk Time (%) | 5   |
| Queuing Penalty (veh) | 0   |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 18: Stevens Ave & UNE Drive/Poland St

| Movement              | EB  | WB  | NB  | SB   |
|-----------------------|-----|-----|-----|------|
| Directions Served     | LTR | LTR | LTR | LTR  |
| Maximum Queue (ft)    | 58  | 46  | 91  | 123  |
| Average Queue (ft)    | 29  | 16  | 7   | 8    |
| 95th Queue (ft)       | 55  | 41  | 47  | 55   |
| Link Distance (ft)    | 302 | 390 | 225 | 1107 |
| Upstream Blk Time (%) |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |
| Storage Bay Dist (ft) |     |     |     |      |
| Storage Blk Time (%)  |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |      |

Network Summary

Network wide Queuing Penalty: 481

Intersection: 4: Stevens Ave & Forest Ave & Bishop Street

| Phase                | 2     | 3    | 4     | 6    |
|----------------------|-------|------|-------|------|
| Movement(s) Served   | SBT   | NEL  | EBL   | NBTL |
| Maximum Green (s)    | 33.0  | 21.0 | 19.5  | 33.0 |
| Minimum Green (s)    | 10.0  | 5.0  | 5.0   | 10.0 |
| Recall               | C-Max | None | None  | Max  |
| Avg. Green (s)       | 44.5  | 19.1 | 12.4  | 44.5 |
| g/C Ratio            | NA    | NA   | -0.01 | NA   |
| Cycles Skipped (%)   | 0     | 0    | 13    | 0    |
| Cycles @ Minimum (%) | 0     | 0    | 0     | 0    |
| Cycles Maxed Out (%) | 100   | 63   | 8     | 100  |
| Cycles with Peds (%) | 0     | 0    | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Stevens Ave & Walton St

| Phase                | 1     | 2     | 3     | 4     | 6     |
|----------------------|-------|-------|-------|-------|-------|
| Movement(s) Served   | SBL   | NBT   | WBL   | Ped   | SBTL  |
| Maximum Green (s)    | 6.0   | 20.0  | 22.0  | 14.0  | 31.0  |
| Minimum Green (s)    | 5.0   | 10.0  | 5.0   | 4.0   | 10.0  |
| Recall               | None  | C-Max | None  | None  | C-Max |
| Avg. Green (s)       | 6.5   | 58.9  | 13.7  | 21.5  | 65.8  |
| g/C Ratio            | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Cycles Skipped (%)   | 54    | 19    | 19    | 60    | 19    |
| Cycles @ Minimum (%) | 20    | 0     | 5     | 0     | 0     |
| Cycles Maxed Out (%) | 7     | 81    | 9     | 19    | 81    |
| Cycles with Peds (%) | 0     | 0     | 0     | 40    | 0     |

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0



Intersection: 15: Forest Ave & McDonald's Driveway/Allen Ave

| Phase                | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8    |
|----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Movement(s) Served   | SBL   | NBT   | WBL   | EBTL  | NBL   | SBT   | EBL   | WBTL |
| Maximum Green (s)    | 15.5  | 30.5  | 9.5   | 16.5  | 7.5   | 38.5  | 7.5   | 18.5 |
| Minimum Green (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Recall               | None  | C-Max | None  | None  | None  | C-Max | None  | None |
| Avg. Green (s)       | 17.1  | 31.6  | 17.8  | 16.5  | 7.0   | 48.3  | 6.5   | 25.2 |
| g/C Ratio            | -0.01 | NA    | -0.01 | -0.01 | -0.01 | NA    | -0.01 | NA   |
| Cycles Skipped (%)   | 5     | 0     | 3     | 46    | 58    | 0     | 68    | 0    |
| Cycles @ Minimum (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |
| Cycles Maxed Out (%) | 83    | 100   | 85    | 41    | 13    | 100   | 8     | 74   |
| Cycles with Peds (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    |

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

# 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  
 Stevens Ave., Warren Ave., Forest Ave., Bishop St. Area

### REPORT PARAMETERS

Year 2018, Start Month 1 through Year 2020 End Month: 12

|                       |                                                    |                                                |                                                                                                                 |
|-----------------------|----------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Route: <b>0302X</b>   | Start Node: <b>16867</b><br>End Node: <b>16874</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input type="checkbox"/> Exclude First Node<br><input type="checkbox"/> Exclude Last Node                       |
| Route: <b>3200987</b> | Start Node: <b>13185</b><br>End Node: <b>13190</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input type="checkbox"/> Exclude First Node<br><input type="checkbox"/> Exclude Last Node                       |
| Route: <b>0560678</b> | Start Node: <b>13190</b><br>End Node: <b>16870</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input checked="" type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node |
| Route: <b>3209381</b> | Start Node: <b>16870</b><br>End Node: <b>66108</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input checked="" type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node |
| Route: <b>0560767</b> | Start Node: <b>15896</b><br>End Node: <b>16874</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node            |
| Route: <b>3210294</b> | Start Node: <b>16874</b><br>End Node: <b>71538</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input checked="" type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node |
| Route: <b>0560062</b> | Start Node: <b>11015</b><br>End Node: <b>16870</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node            |
| Route: <b>0561237</b> | Start Node: <b>11015</b><br>End Node: <b>18354</b> | Start Offset: <b>0</b><br>End Offset: <b>0</b> | <input checked="" type="checkbox"/> Exclude First Node<br><input checked="" type="checkbox"/> Exclude Last Node |

## Maine Department Of Transportation - Office of Safety, Crash Records Section

## Crash Summary I

| Nodes  |                |                                                 |     |               |   |          |           |           |    |                |                  |                       |               |      |      |  |
|--------|----------------|-------------------------------------------------|-----|---------------|---|----------|-----------|-----------|----|----------------|------------------|-----------------------|---------------|------|------|--|
| Node   | Route - MP     | Node Description                                | U/R | Total Crashes | K | Injury A | Crashes B | Crashes C | PD | Percent Injury | Annual M Ent-Veh | Crash Rate            | Critical Rate | CRF  |      |  |
| P16872 | 0302X - 2.27   | Int of ALLEN AV ENTRANCE TO MCDONALDS Z RD FORE | 9   | 48            | 0 | 0        | 1         | 14        | 33 | 31.3           | 11.113           | 1.44                  | 1.15          | 1.26 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.77          |      |      |  |
| 16867  | 0302X - 1.99   | Int of ADELAIDE ST FOREST AV READ ST            | 2   | 6             | 0 | 0        | 0         | 2         | 4  | 33.3           | 7.674            | 0.26                  | 0.34          | 0.00 | 0.77 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| 16868  | 0302X - 2.02   | Int of ARBOR ST FOREST AV                       | 2   | 5             | 0 | 0        | 0         | 0         | 5  | 0.0            | 7.104            | 0.23                  | 0.34          | 0.00 | 0.68 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| 16869  | 0302X - 2.10   | Int of FOREST AV MORRILL ST                     | 2   | 8             | 0 | 0        | 0         | 1         | 7  | 12.5           | 7.282            | 0.37                  | 0.34          | 1.08 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| 16870  | 0302X - 2.20   | Int of BISHOP ST FOREST AV STEVENS AV           | 9   | 33            | 0 | 1        | 4         | 7         | 21 | 36.4           | 10.762           | 1.02                  | 1.15          | 0.89 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.77          |      |      |  |
| 16873  | 0302X - 2.36   | Int of ELEANOR ST FOREST AV                     | 2   | 3             | 0 | 0        | 0         | 1         | 2  | 33.3           | 9.154            | 0.11                  | 0.32          | 0.00 | 0.34 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| A71535 | 0302X - 2.25   | Int of FOREST AV RD INV 3210293                 | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 0.000            | 0.00                  | 0.00          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| 16874  | 0302X - 2.41   | Int of FOREST AV MAGGIE LN WARREN AV            | 9   | 28            | 0 | 0        | 1         | 5         | 22 | 21.4           | 9.526            | 0.98                  | 1.18          | 0.83 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.77          |      |      |  |
| A71534 | 0302X - 2.29   | Int of FOREST AV RD INV 3210292                 | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 0.000            | 0.00                  | 0.00          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.15          |      |      |  |
| 13190  | 3200987 - 0.75 | Int of STEVENS AV, WALTON ST                    | 9   | 1             | 0 | 0        | 0         | 0         | 1  | 0.0            | 3.826            | 0.09                  | 1.39          | 0.00 | 0.06 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.77          |      |      |  |
| 13182  | 3200987 - 0.49 | Int of CROSBY ST STEVENS AV                     | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 3.446            | 0.00                  | 0.43          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13183  | 3200987 - 0.46 | Int of PERCIVAL ST STEVENS AV                   | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 3.323            | 0.00                  | 0.44          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13185  | 3200987 - 0.41 | Int of HARTLEY ST STEVENS AV                    | 2   | 2             | 0 | 0        | 0         | 0         | 2  | 0.0            | 3.283            | 0.20                  | 0.44          | 0.00 | 0.45 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13181  | 3200987 - 0.54 | Int of NEW ST STEVENS AV                        | 2   | 2             | 0 | 0        | 0         | 0         | 2  | 0.0            | 3.521            | 0.19                  | 0.43          | 0.00 | 0.44 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| P13196 | 0560678 - 0.19 | Int of STEVENS AV WAVERLY LN                    | 2   | 5             | 0 | 0        | 0         | 3         | 2  | 60.0           | 3.768            | 0.44                  | 0.42          | 1.05 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| A13198 | 0560678 - 0.21 | Int of COLLEGE ST STEVENS AV                    | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 0.000            | 0.00                  | 0.00          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13194  | 0560678 - 0.13 | Int of ELMWOOD STEVENS AV                       | 2   | 1             | 0 | 0        | 1         | 0         | 0  | 100.0          | 3.581            | 0.09                  | 0.43          | 0.00 | 0.21 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13192  | 0560678 - 0.05 | Int of ST JOSEPH ST STEVENS AV                  | 2   | 1             | 0 | 0        | 0         | 0         | 1  | 0.0            | 3.492            | 0.10                  | 0.43          | 0.00 | 0.23 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13200  | 0560678 - 0.35 | Int of ARBOR ST STEVENS AV                      | 2   | 2             | 0 | 1        | 0         | 0         | 1  | 50.0           | 3.640            | 0.18                  | 0.43          | 0.00 | 0.42 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 13199  | 0560678 - 0.26 | Int of POLAND ST STEVENS AV                     | 2   | 0             | 0 | 0        | 0         | 0         | 0  | 0.0            | 3.690            | 0.00                  | 0.42          | 0.00 |      |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 66108  | 0560678 - 0.46 | Non Int STEVENS AV                              | 2   | 1             | 0 | 0        | 0         | 0         | 1  | 0.0            | 3.573            | 0.09                  | 0.43          | 0.00 | 0.21 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |
| 18354  | 0560767 - 1.63 | Int of BISHOP ST EXT WARREN AV                  | 2   | 1             | 0 | 0        | 0         | 0         | 1  | 0.0            | 4.194            | 0.08                  | 0.41          | 0.00 | 0.20 |  |
|        |                |                                                 |     |               |   |          |           |           |    |                |                  | Statewide Crash Rate: | 0.16          |      |      |  |

## Crash Summary I

| Nodes             |                |                                       |              |                  |     |             |              |              |    |                   |                     |                       |                  |      |      |
|-------------------|----------------|---------------------------------------|--------------|------------------|-----|-------------|--------------|--------------|----|-------------------|---------------------|-----------------------|------------------|------|------|
| Node              | Route - MP     | Node Description                      | U/R          | Total<br>Crashes | K   | Injury<br>A | Crashes<br>B | Crashes<br>C | PD | Percent<br>Injury | Annual M<br>Ent-Veh | Crash Rate            | Critical<br>Rate | CRF  |      |
| 15896             | 0560767 - 1.31 | Int of HICKS ST WARREN AV             | 2            | 2                | 0   | 0           | 0            | 0            | 2  | 0.0               | 4.748               | 0.14                  | 0.40             | 0.00 | 0.35 |
|                   |                |                                       |              |                  |     |             |              |              |    |                   |                     | Statewide Crash Rate: | 0.16             |      |      |
| 71538             | 0560767 - 1.87 | Non Int WARREN AV                     | 2            | 0                | 0   | 0           | 0            | 0            | 0  | 0.0               | 3.890               | 0.00                  | 0.42             | 0.00 |      |
|                   |                |                                       |              |                  |     |             |              |              |    |                   |                     | Statewide Crash Rate: | 0.16             |      |      |
| 13208             | 0560062 - 0.31 | Int of BISHOP ST MAYFIELD ST          | 2            | 0                | 0   | 0           | 0            | 0            | 0  | 0.0               | 0.526               | 0.00                  | 0.63             | 0.00 |      |
|                   |                |                                       |              |                  |     |             |              |              |    |                   |                     | Statewide Crash Rate: | 0.15             |      |      |
| 17639             | 0560062 - 0.09 | 0508057 POR,BISHOP ST,,22W/O MAYFIELD | 2            | 0                | 0   | 0           | 0            | 0            | 0  | 0.0               | 0.363               | 0.00                  | 0.65             | 0.00 |      |
|                   |                |                                       |              |                  |     |             |              |              |    |                   |                     | Statewide Crash Rate: | 0.15             |      |      |
| 11015             | 0560062 - 0.03 | 0501427 POR,BISHOP ST,BISHOP ST EXT   | 2            | 0                | 0   | 0           | 0            | 0            | 0  | 0.0               | 0.352               | 0.00                  | 0.65             | 0.00 |      |
|                   |                |                                       |              |                  |     |             |              |              |    |                   |                     | Statewide Crash Rate: | 0.15             |      |      |
| Study Years: 3.00 |                |                                       | NODE TOTALS: |                  | 149 | 0           | 2            | 7            | 33 | 107               | 28.2                | 115.831               | 0.43             | 0.42 | 1.02 |

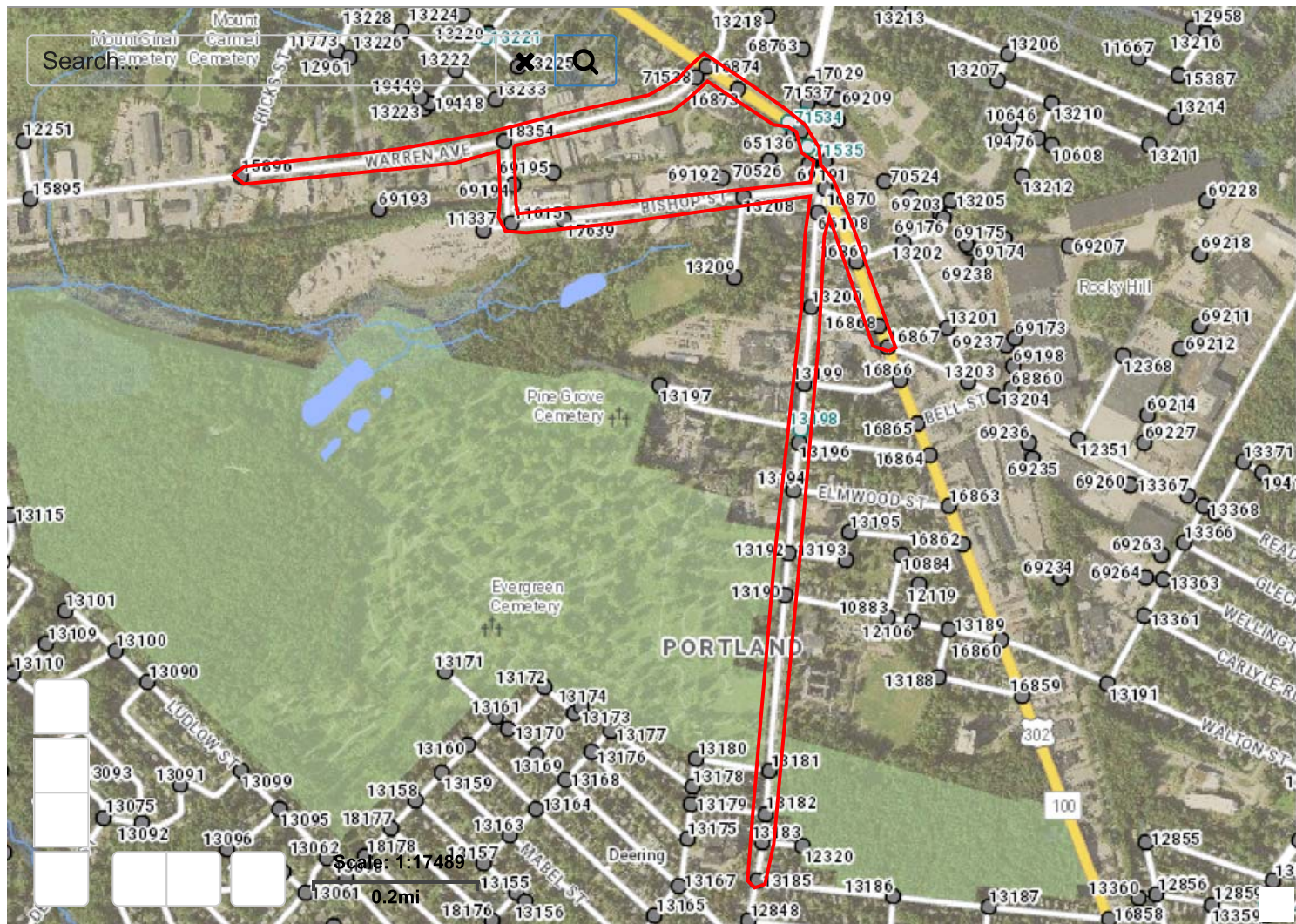
## Crash Summary I

| Sections                                                       |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                |                              |                  |        |      |
|----------------------------------------------------------------|----------|---------|-----------------------|----------------|-----------------------|------------------|----|----------|-----------|-----------|----|-------------------|----------------|------------------------------|------------------|--------|------|
| Start Node                                                     | End Node | Element | Offset<br>Begin - End | Route - MP     | Section U/R<br>Length | Total<br>Crashes | K  | Injury A | Crashes B | Crashes C | PD | Percent<br>Injury | Annual<br>HMVM | Crash Rate                   | Critical<br>Rate | CRF    |      |
| 16867                                                          | 16868    | 3118708 | 0 - 0.03              | 0302X - 1.99   | 0.03                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00212        | 0.00                         | 605.48           | 0.00   |      |
| Int of ADELAIDE ST FOREST AV READ ST<br>US 302                 |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 16868                                                          | 16869    | 3129283 | 0 - 0.08              | 0302X - 2.02   | 0.08                  | 2                | 12 | 0        | 1         | 0         | 1  | 10                | 16.7           | 0.00567                      | 705.10           | 471.42 | 1.50 |
| Int of ARBOR ST FOREST AV<br>US 302                            |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 16869                                                          | 16870    | 3106425 | 0 - 0.10              | 0302X - 2.10   | 0.10                  | 2                | 13 | 0        | 1         | 2         | 1  | 9                 | 30.8           | 0.00732                      | 592.13           | 443.59 | 1.33 |
| Int of FOREST AV MORRILL ST<br>US 302                          |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 16870                                                          | 71535    | 4047225 | 0 - 0.05              | 0302X - 2.20   | 0.05                  | 2                | 12 | 0        | 0         | 0         | 2  | 10                | 16.7           | 0.00503                      | 795.19           | 485.51 | 1.64 |
| Int of BISHOP ST FOREST AV STEVENS AV<br>US 302                |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 71535                                                          | 16872    | 4047226 | 0 - 0.02              | 0302X - 2.25   | 0.02                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00163        | 0.00                         | 647.60           | 0.00   |      |
| Int of FOREST AV RD INV 3210293<br>US 302                      |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 16872                                                          | 71534    | 4047135 | 0 - 0.02              | 0302X - 2.27   | 0.02                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00158        | 0.00                         | 652.74           | 0.00   |      |
| Int of ALLEN AV ENTRANCE TO MCDONALDS Z RD FOREST AV<br>US 302 |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 71534                                                          | 16873    | 4047136 | 0 - 0.07              | 0302X - 2.29   | 0.07                  | 2                | 12 | 0        | 0         | 1         | 1  | 10                | 16.7           | 0.00645                      | 620.51           | 457.12 | 1.36 |
| Int of FOREST AV RD INV 3210292<br>US 302                      |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 16873                                                          | 16874    | 3119258 | 0 - 0.05              | 0302X - 2.36   | 0.05                  | 2                | 9  | 0        | 0         | 1         | 2  | 6                 | 33.3           | 0.00454                      | 661.37           | 498.14 | 1.33 |
| Int of ELEANOR ST FOREST AV<br>US 302                          |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 212.77 |                  |        |      |
| 13183                                                          | 13185    | 3119201 | 0 - 0.05              | 3200987 - 0.41 | 0.05                  | 2                | 4  | 0        | 0         | 0         | 1  | 3                 | 25.0           | 0.00163                      | 815.76           | 689.63 | 1.18 |
| Int of PERCIVAL ST STEVENS AV<br>RD INV 3200987                |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13182                                                          | 13183    | 3130460 | 0 - 0.03              | 3200987 - 0.46 | 0.03                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00101        | 0.00                         | 779.42           | 0.00   |      |
| Int of CROSBY ST STEVENS AV<br>RD INV 3200987                  |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13181                                                          | 13182    | 3123618 | 0 - 0.05              | 3200987 - 0.49 | 0.05                  | 2                | 1  | 0        | 0         | 0         | 0  | 1                 | 0.0            | 0.00170                      | 196.46           | 683.00 | 0.00 |
| Int of NEW ST STEVENS AV<br>RD INV 3200987                     |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13181                                                          | 13190    | 187848  | 0 - 0.21              | 3200987 - 0.54 | 0.21                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00695        | 0.00                         | 479.24           | 0.00   |      |
| Int of NEW ST STEVENS AV<br>RD INV 3200987                     |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13190                                                          | 13192    | 187859  | 0 - 0.05              | 0560678 - 0    | 0.05                  | 2                | 1  | 0        | 0         | 0         | 0  | 1                 | 0.0            | 0.00170                      | 195.93           | 682.53 | 0.00 |
| Int of STEVENS AV, WALTON ST<br>RD INV 05 60678                |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13192                                                          | 13194    | 3118519 | 0 - 0.08              | 0560678 - 0.05 | 0.08                  | 2                | 2  | 0        | 0         | 1         | 0  | 1                 | 50.0           | 0.00285                      | 234.24           | 597.43 | 0.00 |
| Int of ST JOSEPH ST STEVENS AV<br>RD INV 05 60678              |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13194                                                          | 13196    | 3118901 | 0 - 0.06              | 0560678 - 0.13 | 0.06                  | 2                | 1  | 0        | 0         | 0         | 0  | 1                 | 0.0            | 0.00211                      | 158.17           | 645.69 | 0.00 |
| Int of ELMWOOD STEVENS AV<br>RD INV 05 60678                   |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13196                                                          | 13198    | 3118816 | 0 - 0.02              | 0560678 - 0.19 | 0.02                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00072        | 0.00                         | 842.82           | 0.00   |      |
| Int of STEVENS AV WAVERLY LN<br>RD INV 05 60678                |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13198                                                          | 13199    | 3130135 | 0 - 0.05              | 0560678 - 0.21 | 0.05                  | 2                | 1  | 0        | 0         | 0         | 0  | 1                 | 0.0            | 0.00184                      | 181.47           | 669.12 | 0.00 |
| Int of COLLEGE ST STEVENS AV<br>RD INV 05 60678                |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13199                                                          | 13200    | 3123933 | 0 - 0.09              | 0560678 - 0.26 | 0.09                  | 2                | 4  | 0        | 0         | 0         | 2  | 2                 | 50.0           | 0.00328                      | 406.98           | 576.29 | 0.00 |
| Int of POLAND ST STEVENS AV<br>RD INV 05 60678                 |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 13200                                                          | 66108    | 3129804 | 0 - 0.11              | 0560678 - 0.35 | 0.11                  | 2                | 8  | 0        | 0         | 1         | 3  | 4                 | 50.0           | 0.00394                      | 676.90           | 550.02 | 1.23 |
| Int of ARBOR ST STEVENS AV<br>RD INV 05 60678                  |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |
| 66108                                                          | 16870    | 3129805 | 0 - 0.03              | 0560678 - 0.46 | 0.03                  | 2                | 0  | 0        | 0         | 0         | 0  | 0.0               | 0.00054        | 0.00                         | 897.19           | 0.00   |      |
| Non Int STEVENS AV<br>RD INV 05 60678                          |          |         |                       |                |                       |                  |    |          |           |           |    |                   |                | Statewide Crash Rate: 231.67 |                  |        |      |

## Crash Summary I

| Sections                              |          |         |                       |                 |                       |                  |     |                |   |    |    |                   |                |                              |                  |         |           |
|---------------------------------------|----------|---------|-----------------------|-----------------|-----------------------|------------------|-----|----------------|---|----|----|-------------------|----------------|------------------------------|------------------|---------|-----------|
| Start Node                            | End Node | Element | Offset<br>Begin - End | Route - MP      | Section U/R<br>Length | Total<br>Crashes | K   | Injury Crashes |   |    |    | Percent<br>Injury | Annual<br>HMVM | Crash Rate                   | Critical<br>Rate | CRF     |           |
| 16870                                 | 66108    | 3139995 | 0 - 0.03              | 3209381 - 0     | 0.03                  | 2                | 0   | 0              | 0 | 0  | 0  | 0.0               | 0.00053        | 0.00                         | 898.97           | 0.00    |           |
| Int of BISHOP ST FOREST AV STEVENS AV |          |         |                       | RD INV 3209381  |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 231.67 |                  |         |           |
| 15896                                 | 18354    | 3105909 | 0 - 0.32              | 0560767 - 1.31  | 0.32                  | 2                | 6   | 0              | 0 | 2  | 0  | 4                 | 33.3           | 0.01330                      | 150.40           | 415.44  | 0.00 0.36 |
| Int of HICKS ST WARREN AV             |          |         |                       | RD INV 05 60767 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 231.67 |                  |         |           |
| 71538                                 | 18354    | 4047195 | 0 - 0.24              | 0560767 - 1.63  | 0.24                  | 2                | 3   | 0              | 1 | 0  | 0  | 2                 | 33.3           | 0.00934                      | 107.12           | 448.11  | 0.00 0.24 |
| Non Int WARREN AV                     |          |         |                       | RD INV 05 60767 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 231.67 |                  |         |           |
| 16874                                 | 71538    | 4047194 | 0 - 0.02              | 0560767 - 1.87  | 0.02                  | 2                | 0   | 0              | 0 | 0  | 0  | 0                 | 0.0            | 0.00039                      | 0.00             | 950.99  | 0.00      |
| Int of FOREST AV MAGGIE LN WARREN AV  |          |         |                       | RD INV 05 60767 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 231.67 |                  |         |           |
| 16874                                 | 71538    | 4047196 | 0 - 0.02              | 3210294 - 0     | 0.02                  | 2                | 0   | 0              | 0 | 0  | 0  | 0                 | 0.0            | 0.00039                      | 0.00             | 950.99  | 0.00      |
| Int of FOREST AV MAGGIE LN WARREN AV  |          |         |                       | RD INV 3210294  |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 231.67 |                  |         |           |
| 11015                                 | 17639    | 184811  | 0 - 0.06              | 0560062 - 0.03  | 0.06                  | 2                | 0   | 0              | 0 | 0  | 0  | 0                 | 0.0            | 0.00017                      | 0.00             | 1720.74 | 0.00      |
| 0501427 POR,BISHOP ST,BISHOP ST EXT   |          |         |                       | RD INV 05 60062 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 404.31 |                  |         |           |
| 13208                                 | 17639    | 187890  | 0 - 0.22              | 0560062 - 0.09  | 0.22                  | 2                | 2   | 0              | 0 | 0  | 1  | 1                 | 50.0           | 0.00099                      | 676.07           | 1187.62 | 0.00 0.57 |
| Int of BISHOP ST MAYFIELD ST          |          |         |                       | RD INV 05 60062 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 404.31 |                  |         |           |
| 13208                                 | 16870    | 5080564 | 0 - 0.10              | 0560062 - 0.31  | 0.10                  | 2                | 0   | 0              | 0 | 0  | 0  | 0                 | 0.0            | 0.00055                      | 0.00             | 1379.29 | 0.00      |
| Int of BISHOP ST MAYFIELD ST          |          |         |                       | RD INV 05 60062 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 404.31 |                  |         |           |
| 11015                                 | 18354    | 184812  | 0 - 0.10              | 0561237 - 0     | 0.10                  | 2                | 0   | 0              | 0 | 0  | 0  | 0                 | 0.0            | 0.00034                      | 0.00             | 1532.68 | 0.00      |
| 0501427 POR,BISHOP ST,BISHOP ST EXT   |          |         |                       | RD INV 05 61237 |                       |                  |     |                |   |    |    |                   |                | Statewide Crash Rate: 404.31 |                  |         |           |
| Study Years:                          |          | 3.00    |                       | Section Totals: |                       | 2.36             | 91  | 0              | 3 | 8  | 14 | 66                | 27.5           | 0.08858                      | 342.43           | 301.95  | 1.13      |
|                                       |          |         |                       | Grand Totals:   |                       | 2.36             | 240 | 0              | 5 | 15 | 47 | 173               | 27.9           | 0.08858                      | 903.11           | 428.86  | 2.11      |





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# H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

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COUNTY: CUMBERLAND

TOWN: PORTLAND

LOW NODE: 13200 HIGH NODE: 66108

REGION: 1

U/R: URBAN

DESCRIPTION: Stevens Ave from Arbour St to Forest Ave median

RTE # / RD #: 0560678 DATE DRAWN: 5/27/2021 DRAWN BY: BOB K

STUDY FROM: 1/1/2018

STUDY TO: 12/31/2020

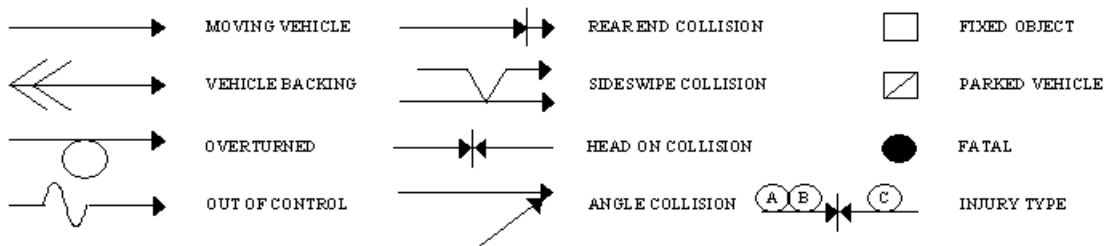
CRASH RATE: 676.9

CRF: 1.24

% INJURY: 50

TOTAL CRASHES: 8

## LEGEND



--- PATH OF: [P] PEDESTRIAN [B] BICYCLE [A] ANIMAL [S] SLED

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

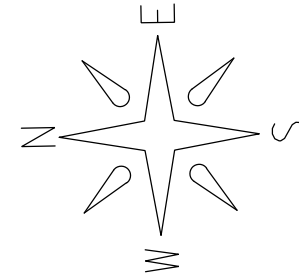
Portland  
Link: 13200-66108

Element: 3129804

Study Period: 2018-2020

# of Crashes: 8 / CRF: 1.24

Prepared by Office of Safety  
RFK3 5-27-21



66108

13200

#803

Stevens Ave.

64514 9-11-19 8:24A W/R Improper Pass

(C)

20839 8-1-19 4:18P D/CL Fail To Yield

(B)

(B)

22718 9-23-20 5:18P D/C Bicyclist error

35436 11-20-18 6:30P S/S Speed

27332 9-25-18 5:24P W/R Ped Error

(P)(C)

35446 11-25-18 5:05P  
W/R Reckless

21373 9-1-20 4:30P D/C Hit and run

(P)(C)

26765 11-4-20 1:10P D/C Improper backing

#824

#812

#808

#798

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# H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

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COUNTY: CUMBERLAND

TOWN: PORTLAND

LOW NODE: 16870 HIGH NODE: 71535

REGION: 1

U/R: URBAN

DESCRIPTION: Forest Ave from Bishop St to cut to Allen Ave

RTE # / RD #: 0100X

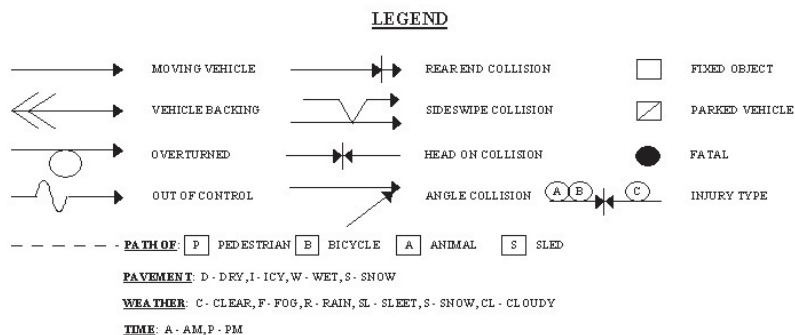
DATE DRAWN: 6/4/2021

DRAWN BY: BOB K

STUDY FROM: 1/1/2018

STUDY TO: 12/31/2020

CRASH RATE: 795.19 CRF: 1.64 % INJURY: 16.7 TOTAL CRASHES: 12



Scrub-A-Dub Auto Wash  
#1185

28001 11-10-20 5:45P D/C Follow too close

50797 5-3-19 11:07A D/CL Follow too close

62410 8-21-19 4:00P W/R Unknown

20033 8-11-20 2:55P D/C Follow too close

20756 7-30-18 5:00P  
D/C Other

(Fire Truck w/Lights-Sirens On)

28512 10-6-18 4:53P  
D/CL Fail to Yield

62062 8-15-19 3:50P D/C Fail to yield

23941 8-13-18 12:14P D/C Fail to Yield

12784 5-1-18 12:04P  
D/C Follow too Close

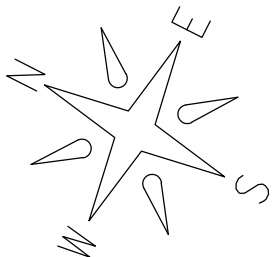
41244 12-12-18 2:31P  
D/C Follow too Close

6718 2-24-18 9:22A  
D/C Improper Turn

42201 10-30-18 3:27P D/CL Fail to Keep in Lane

Rte. 302/100/Forest Ave.

71535



Portland

Prepared by Office of Safety

RFK3 6-4-21

16870

Link: 16870-71535

Element: 4047225

Study Period: 2018-2020

# of Crashes: 12 / CRF: 1.64

---

# H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

---

COUNTY: CUMBERLAND

TOWN: PORTLAND

LOW NODE: 16870 HIGH NODE: 0000

REGION: 1

U/R: URBAN

DESCRIPTION: Jct of Forest Ave & Stevens Ave/Bishop St

RTE # / RD #: 0100X

DATE DRAWN: 3/14/2022 DRAWN BY: Michelle

STUDY FROM: 1/1/2018

STUDY TO: 12/31/2020

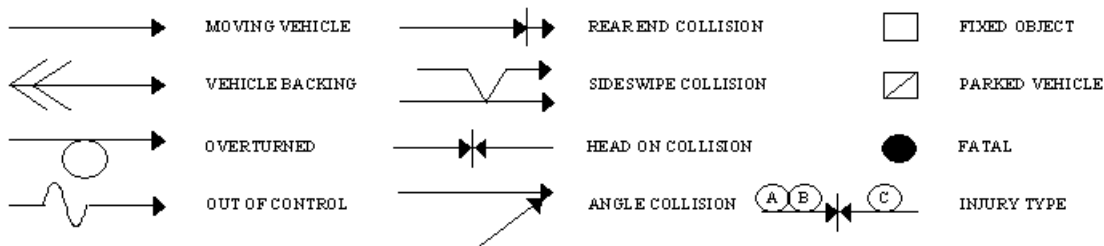
CRASH RATE: 1.02

CRF: 0.89

% INJURY: 36.4

TOTAL CRASHES: 33

## LEGEND



--- PATH OF: [P] PEDESTRIAN [B] BICYCLE [A] ANIMAL [S] SLED

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



Stevens Ave

Bishop St

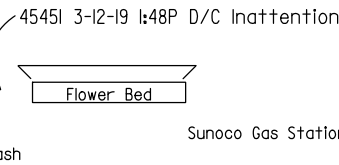
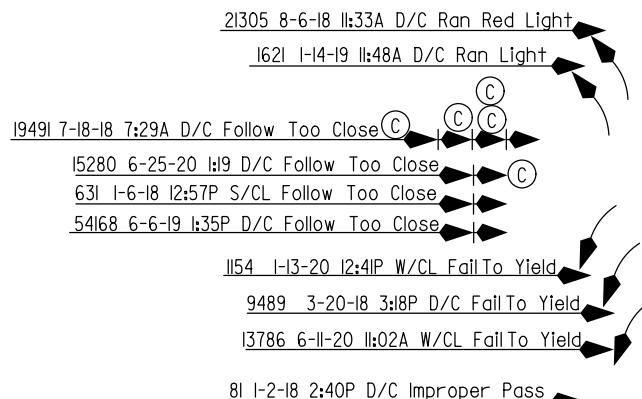
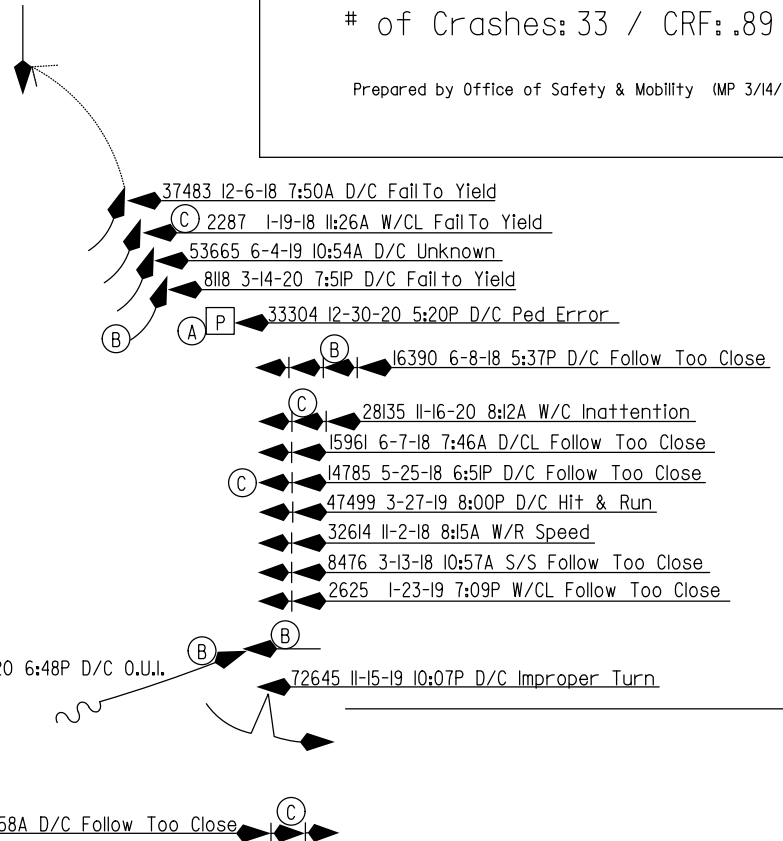
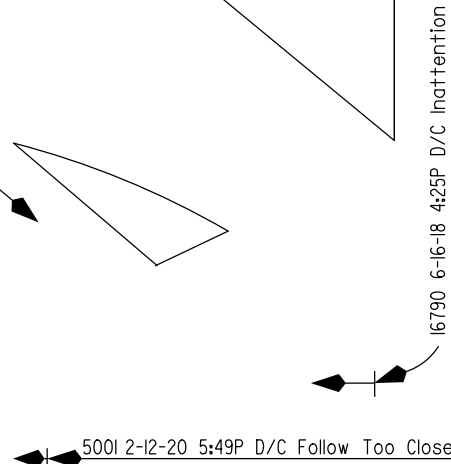
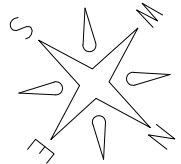
Portland

Node: I6870

Study Period: 2018-2020

# of Crashes: 33 / CRF: .89

Prepared by Office of Safety & Mobility (MP 3/14/22)



Forest Ave  
Rt 100 / 302

Flower Bed

Flower Bed

Rub-A-Dub Carwash

Sunoco Gas Station

 = Traffic Signal

---

# H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

---

COUNTY: CUMBERLAND

TOWN: PORTLAND

LOW NODE: 16872 HIGH NODE: 0000

REGION: 1

U/R: URBAN

DESCRIPTION: Int of Allen Ave and Forest Ave

RTE # / RD #: 0100S

DATE DRAWN: 5/4/2021

DRAWN BY: BOB K

STUDY FROM: 1/1/2018

STUDY TO: 12/31/2020

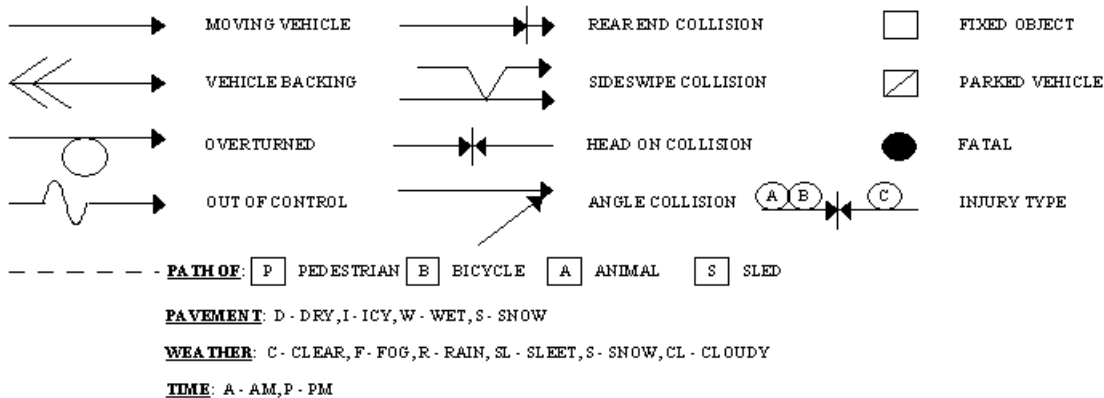
CRASH RATE: 1.44

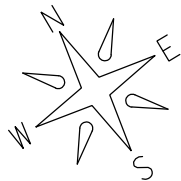
CRF: 1.26

% INJURY: 31.3

TOTAL CRASHES: 48

## LEGEND





Allen Ave.

Portland

Nodes: I6872(P)

71534(A) 71535(A) I7028(A)

Study Period: 2018-2020

# of Crashes: 48 /CRF: 1.26

Prepared by Office of Safety

RFK3 5-4-21

71534

I7028

71535

I6872

I5985 6-7-18 6:27P D/C Unknown



I3645 5-8-18 1:20P D/C  
Fail To Keep In Lane



I46859 3-23-19 12:36P D/C  
Improper Passing

I30227 10-22-18 1:55P D/C  
Fail To Keep In Lane

I31717 10-30-18 8:21A D/C Follow Too Close  
I2465 1-18-18 5:20P W/C Improper Turn

I9474 3-21-18 2:00P D/CL Follow Too Close

I65624 9-20-19 2:29P D/CL Follow Too Close

I30414 10-25-18 6:35P D/C Follow Too Close

I6447 2-19-18 1:20P W/C Fail To Keep In Lane

I2253 4-23-18 9:39A D/C  
Fail To Keep In Lane



I55115 6-17-19 11:58A D/C Speed

I74283 11-22-19 7:43A W/CL Hit & Run

I10637 4-5-18 12:00P D/C  
Follow Too Close

I1082 1-6-18 5:22P D/C Fail To Keep In Lane

I63146 8-23-19 2:06P D/C Follow Too Close

I43054 2-16-19 2:21P D/C Follow Too Close

I12329 4-25-18 7:24A D/CL Follow Too Close

I662 1-3-19 2:34P W/C Follow Too Close

I67921 10-11-19 11:59A D/C Speed

I14025 6-14-20 5:26P D/C Unknown

I20754 7-30-18 2:30P D/C Improper Pass

I2126 1-17-20 8:44A W/C Foot slipped

I55746 6-21-19 10:21A D/CL Follow Too Close

I69721 10-30-19 7:24A W/CL Follow Too Close

I41365 12-28-18 6:40A S/S Speed

I28907 10-11-18 7:22P W/R Fail To Yield

I61404 8-9-19 6:57P D/C Unknown

I1525 1-14-18 6:04P D/C Ran Red Light

I62525 8-22-19 7:52A D/CL Follow Too Close

I13269 6-4-20 10:50P D/C Ran Red Light

I48195 4-6-19 1:59P D/C Follow Too Close

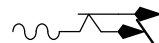
I14269 5-18-18 1:23P D/C Fail To Yield

I2998 1-25-20 11:41A W/CL  
Fail To Keep In Lane



I20338 8-27-20 9:28A D/CL Fail to keep in lane

I603 1-4-18 10:16A S/S Speed  
Plow Truck Hit Bus



I30444 12-5-20 10:22A W/R Fail to keep in lane



I20903 8-2-18 11:59A D/C  
Beat Yellow Light



I56241 6-23-19 6:00P D/C Follow Too Close

I980 1-10-19 3:00P D/C Hit & Run

I21304 8-6-18 12:39P D/C Improper Turn

I15829 7-4-20 3:47P D/C Follow too close



= Traffic Signal

McDonald's



INNOVATION FOR A HEALTHIER PLANET

# Transportation Demand Management Plan

*Updated April 2022*



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INNOVATION FOR A HEALTHIER PLANET

## Introduction

University of New England's Portland Campus has been a member of the Portland community and a provider of quality and inclusive education since its inception in 1831 as the Westbrook Seminary. The campus has been strategically transformed since its modest beginning, in both size and curriculum, to meet the secondary educational and work force needs of the Portland, Maine area and beyond.

## Purpose of the TDM Plan

University of New England's, UNE's, Transportation Demand Management Plan, in effect since 2010, is intended to provide a comprehensive strategy towards reducing the amount of single-occupancy vehicles coming to campus and seeks to promote multimodal accessibility to and from the University's Portland campus. UNE is continually updating the plan and is always considering enhancements to encourage more walking, cycling and public transportation use by its students, faculty and staff.

UNE believes that its promotion of alternative modes of transportation and success in transportation demand management has and will continue to positively impact the City's issues with traffic in and around the Morrill's Corner node and routes feeding to it.

UNE offers transportation alternatives designed to preserve the green spaces on campus and to reduce our carbon footprint, in concert with one of the University's Core Values; Stewardship of Our Planet.

## Mission, Vision and Core Values

The University of New England is directed by its Mission, Vision Statement and Core Values. These were utilized to create the Strategic Plan 2018-2023, *Our World, Our Future*.

### MISSION

The University of New England prepares students to thrive in a rapidly changing world and, in so doing, to improve the health of people, communities, and our planet.

### VISION

We will realize this mission by committing to a distinctive approach to education that will make UNE among the most experientially driven institutions of higher education in the nation. We will provide teaching and learning that conjoins problem-based and hands-on learning, liberal education, and professional training to immerse students in an educational experience that prepares them with:

- Habits of mind, such as cultural, quantitative, and information literacy, critical thinking, tolerance for ambiguity, and problem solving;
- Discipline-based knowledge in their chosen programs of study; and
- Professional competencies, including emotional intelligence, the ability to collaborate in diverse teams, communicate persuasively, and be a thoughtful leader.

We are an institution that challenges students to learn broadly, master their professional skills, and ask probing questions. In this way, they will prepare themselves for further study and successful careers, deeply rewarding lives, and meaningful contributions to their communities and the world.

## CORE VALUES

We are guided by the following values, essential to the culture of the UNE community.

*Student Centeredness* - We put the aspirations, needs, and success of our students at the center of all we do.

*Diversity, Inclusion, Connection* - We believe the benefits of a richly varied campus community arise not only from the diversity of its people but also from a sense of belonging and the context this creates to explore and celebrate differences in backgrounds, experiences, and perspectives, underpinned by a sense of cultural humility and a commitment to ethical ideals.

*Relentless Inquiry* - We take nothing for granted and view thoughtful—even uncomfortable—questioning as essential to the pursuit of knowledge, contribution to society, and a life worth living. Our commitment to University-wide academic freedom is fundamental to this value.

*Boundary Crossing* - Solutions to the complex and varied challenges we face in our personal and professional lives, our communities, and society will not be found in any single discipline, college, physical location, or individual. Thus, our ability to move easily across such boundaries in order to collaborate with colleagues makes us better problem solvers and more likely of success in whatever ventures we undertake.

*Learning Everywhere* - We believe that teaching and learning should occur beyond traditional classrooms and laboratories—in any place ripe for inquiry and experimentation, including clinics, environmental and field-study sites, online forums, libraries, museums, theaters, and places of civic engagement, among many others.

*Progressive Change* - We are not afraid to take thoughtful risks in the pursuit of our shared goals.

*Stewardship of Our Planet* - We recognize that the health of individuals, communities, and the natural environment is essential to the survival of the planet and its inhabitants and to a well-functioning society.

## Portland Campus History and Programs

Although UNE's 70 acre campus has always been located in the same geographic place, the neighborhood where it is located has been part of three different municipalities over the years: Westbrook (1831-1870), Deering (1871-1898), and Portland (1899-present). UNE itself has had five name changes – Westbrook Seminary, Westbrook Junior College, Westbrook College, the Westbrook College Campus of the University of New England, and its current name the Portland Campus of the University of New England.

In July 1996, Westbrook College and the University of New England in Biddeford merged, creating a larger, more diverse institution of higher learning. The merger took place under the original 1831 Westbrook College charter. When the documents were signed, the combined institutions became Westbrook College and Westbrook College changed its name to the University of New England.

Today the University of New England Portland Campus is home to three of the UNE's premier Colleges.

The Westbrook College of Health Professions (WCHP) is a model for interdisciplinary health and wellness. With students, faculty and staff working in graduate programs in Social Work, Physician Assistant, Occupational Therapy, Physical Therapy, Pharmacy and Nurse Anesthesia and with undergraduate students in Nursing and Dental Hygiene, the WCHP honors the academic legacy of Westbrook College.

In the fall of 2013, the College of Dental Medicine unveiled a state-of-the-art Oral Health Center, built on Stevens Avenue, as it welcomed its inaugural class of dental students on the Portland Campus.

The College of Professional Studies is the University's on-line college, whose faculty and staff are also located on the Portland Campus, but whose students do not travel to campus.

Additionally, UNE NORTH is housed at 1075 Forest Avenue. UNE NORTH – the Institute for North Atlantic Studies of the University of New England — connects researchers, educators, policymakers, and industry leaders from across Maine and the North Atlantic region to implement collaborative approaches to building resilient communities, healthy environments, and thriving economies.



#### FACILITIES

- 1 Finley Recreation Center
- 2 College of Pharmacy
- 3 Ludcke Auditorium
- 4 Coleman Dental Hygiene Building
- 5 Goddard Hall
- 6 Hersey Hall
- 6A Graduate Admissions
- 7 Blewett Hall
- 8 Parker Pavilion
- 9 WCHP Lecture Hall
- 10 Proctor Hall
- 11 Art Gallery
- 12 Alumni Hall
- 13 Abplanalp Library
- 14 Ginn Hall
- 15 McDougall Hall
- 16 Safety and Security/ Shuttle Terminal
- 17 Alexander Hall
- 18 Linnell Hall
- 19 Oral Health Center
- 20 Facilities Management
- 21 Innovation Hall
- 22 UNE North (see inset)
- 23 Gulliver's Field (see inset)

#### PARKING

- 3 Innovation Hall South: Patient Parking ONLY
- 4 Oral Health Center: Patient Parking ONLY
- 5 Behind Ginn/McDougall Halls
- 6 Behind Library
- 7 Behind Proctor Hall
- 8 Finley Recreation Center
- A Handicap Parking
- Additional UNE Parking Available (see inset)
- 1 812 Stevens Avenue
- 2 Innovation Hall Rear
- 9 Stevens Avenue Congregational Church (2 Middle Rows, Mon-Fri)
- 10 UNE North: 1075 Forest Avenue (South Side Only)
- 11 Bishop Street Extension Lot

The UNE Portland Campus is proud to be on the National Register of Historic Places (1977) and to be the original home of Westbrook Seminary (1831-1929), Westbrook Junior College (1929-1970), and Westbrook College (1970-1996).

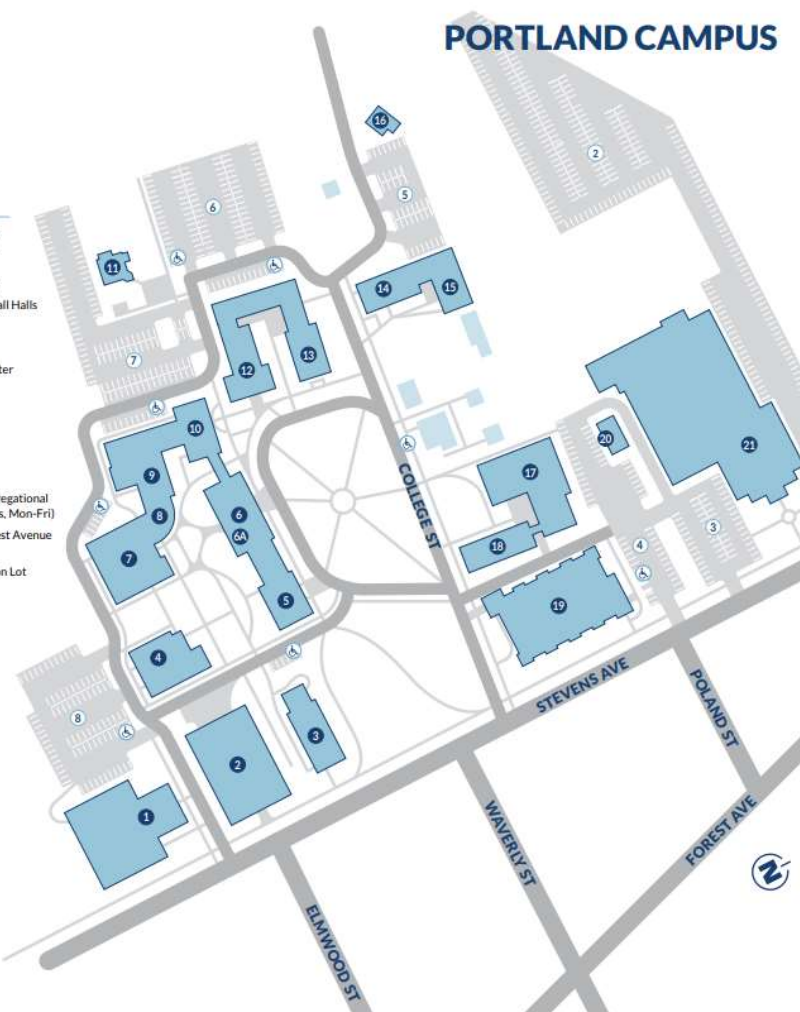
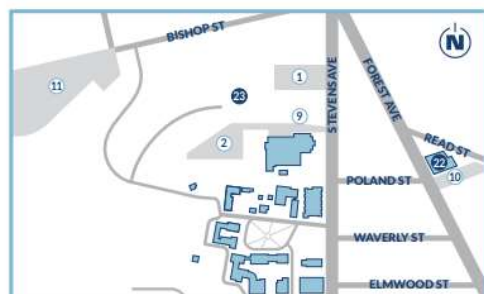


Figure 1 – Site Location Map

UNE's Portland Campus is essentially a graduate, commuter (non-residential) campus, supporting health professions programs. All of these academic programs require clinical experience towards the awarding of a degree. Each program has different clinical criteria, in regards to timing and duration, and thus the student population on campus can fluctuate during the course of an academic year as the students rotate into clinical settings. UNE has approximately 100 clinical affiliations, at 65 sites in Portland, and over 450 statewide. UNE

students generally complete their degree programming on either the Biddeford or Portland campus, and faculty and staff are generally assigned to one campus or the other. There is, however, some commuting between campuses that occurs.

## Facility Planning

University of New England continues to improve its ability to provide state of the art post-secondary and graduate studies in fields such as healthcare, dentistry and pharmacy in order to provide a highly skilled and much needed workforce to the City of Portland and local areas. UNE is Maine's leader in providing health care professionals. UNE has recently announced plans to consolidate its College of Osteopathic Medicine onto its Portland campus to improve its Inter-professional Education (IPE) model to provide an even better prepared and more robust workforce in the future.

The establishment of a unique, nationally recognized Institute for Professional Education and Practice in Portland can only be achieved with the relocation of the College of Osteopathic Medicine from its current home on the Biddeford campus to the Portland campus. This reorganization is UNE's highest priority which will establish a world-class academic healthcare campus in Portland, oriented around inter-professional education, and will allow UNE to strengthen its collaboration with clinical partners throughout Portland and the state. By introducing, strengthening and supporting Inter-professional Practice with hospitals and healthcare networks such as Maine General, Maine Health, Northern Light and others, UNE will develop a distributed teaching hospital model, using telemedicine and digital health technologies to transform healthcare access and delivery across Maine, with a particular focus on Maine's underserved, rural population.

In order to support the transformation discussed above, UNE will be building a new, state-of-the-art home for the College of Osteopathic Medicine on the Portland campus, creating a comprehensive, fully integrated educational institution that can efficiently and effectively tackle Maine's deepest healthcare problems through systemic, coordinated education and clinical practice. Moving the College of Osteopathic Medicine to the Portland campus also will afford the opportunity to repurpose spaces on the Biddeford campus to expand existing undergraduate programs and to develop new ones to address critical workforce needs for the State.

Additionally, anticipated short term improvements to the campus parking and parking access road will be undertaken in support of this project, and will positively impact the university's TDM Plan.

## Mobility Context

### Neighborhood Context

UNE's Portland campus is located in the Deering Center area of the City of Portland, along the northern end of Stevens Avenue. The campus abuts the 239 acre Evergreen Cemetery, a National Historic Landmark, which was established by the city in 1854. The campus serves, in many ways, as a transitional zone between areas with diverse character, land uses, and demographics. Along with Evergreen Cemetery, it is bordered by residential neighborhoods (Mayfield Street off of Bishop Street, Stevens Avenue and the streets off of Stevens Avenue: College Street, Poland Street, Waverly Street, Elmwood Street and St. Joseph Street), an assisted living and senior housing complex (Park Danforth) across Stevens Avenue, two churches: (Stevens Avenue Congregational Church and St. Joseph Catholic Church), a Catholic elementary school (St. Brigid), and several small businesses.



## Pedestrian Access

Pedestrian access is provided by numerous sidewalks both on campus and off campus. Sidewalks exist on both sides of Stevens Avenue and on both sides of Forest Avenue, as well as on the primary side streets between these arterials, including Poland Street, which allows access to UNE's property at 1075 Forest Avenue. There are crosswalks across Stevens Avenue and Forest Avenue in the vicinity of the campus at both signalized and un-signalized locations, including direct signalized access to UNE's property at 1075 Forest Avenue. These pedestrian facilities also provide contiguous pedestrian access to other educational facilities, namely Longfellow Elementary School, Lincoln Middle School, and Deering High School, as well as the local businesses frequented by UNE community members.

The Portland Trails network abuts the campus and could be utilized by some local community members to access the campus. UNE is working with Portland Trails to extend this network across the UNE campus as the new access road is developed, which would provide additional alternative pedestrian access to the campus. See Figure 2.

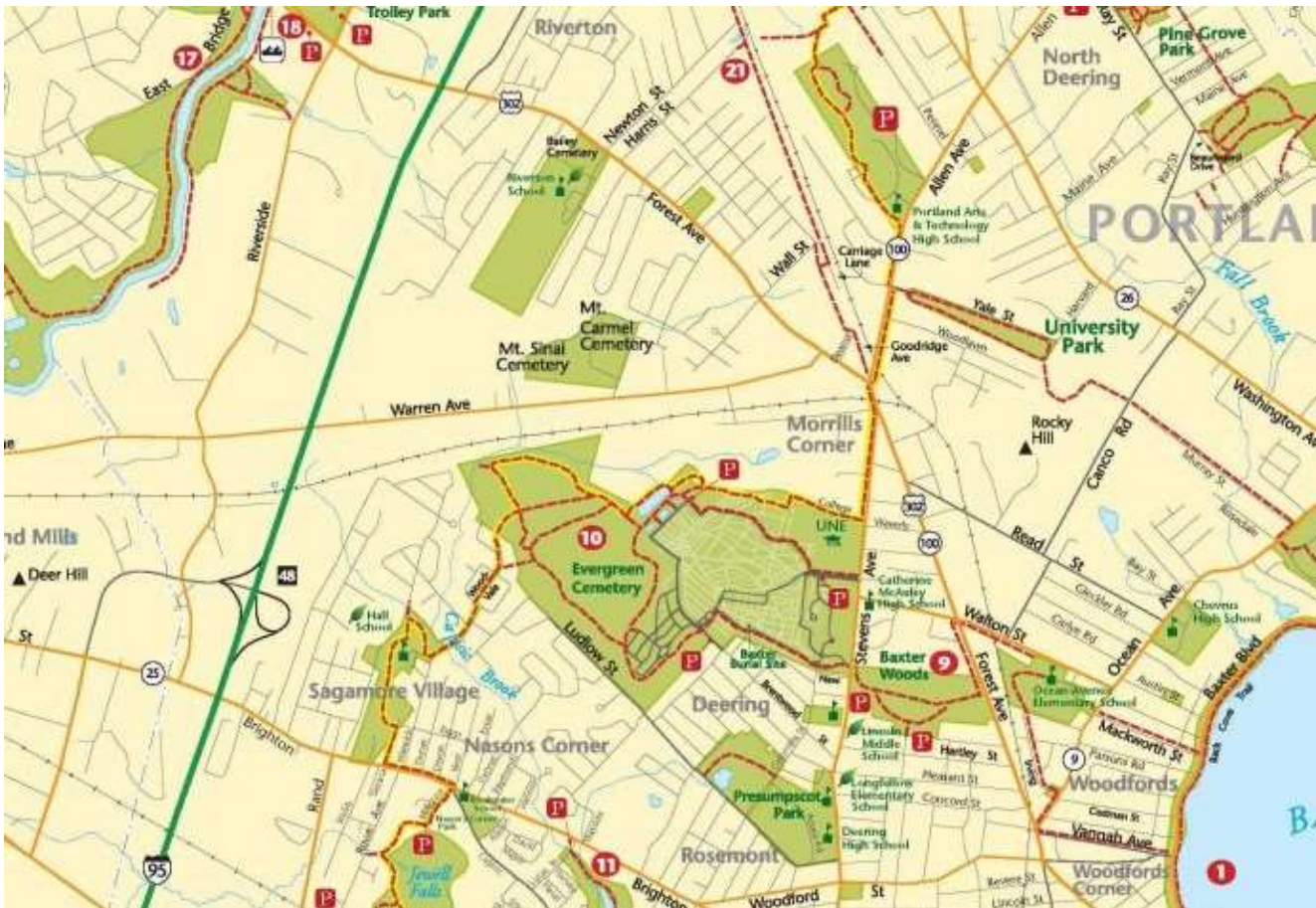


Figure 2 – Portland Trails trail map adjacent to the UNE Campus

Walkscore.com, a real estate website that evaluates walkability and transportation when choosing where to live, scores the Portland Campus as a 69 out of 100 and considers the campus location to be “Somewhat Walkable”, indicating “some errands can be accomplished on foot”. Their walking Travel Time Map, in Figure 3 below, illustrates this.

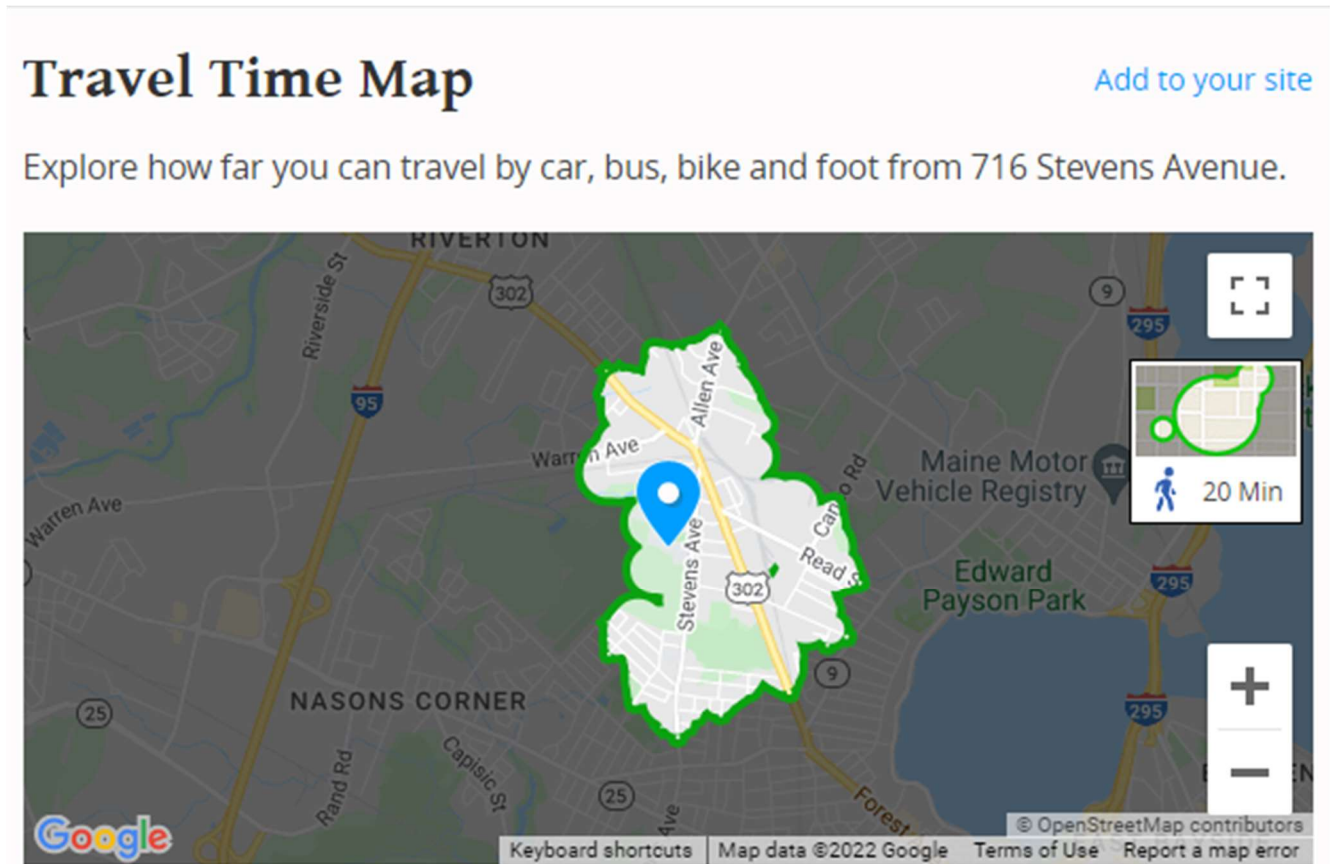


Figure 3 – Pedestrian Travel Time Map from Walkscore.com

Data analysis of current student and employee home addresses indicate 13% of the of the UNE Portland Campus community live within a walkable 1.5 miles radius and a bikeable 1.5 - 5 mile radius of the campus, as indicated in Figure 4 and Figure 5. A recent survey of faculty, students, and staff of the Portland campus revealed that 11.5% of the survey respondents walk to campus 1-9% of the time. Comments indicate that 31% of the survey respondents desire using an alternative mode of transportation, but are unable due to external commitments, such as work, daycare pickups and clinical requirements. Opportunities to increase the alternative modes of transportation percentage exist, and efforts will continue to be made to identify incentives that would increase these modes of commuting, including potential extension of the Portland Trails network through the campus, which might allow additional Deering Center or Riverton residents to more easily walk to campus.



## UNE Student & Employee Commute Distances

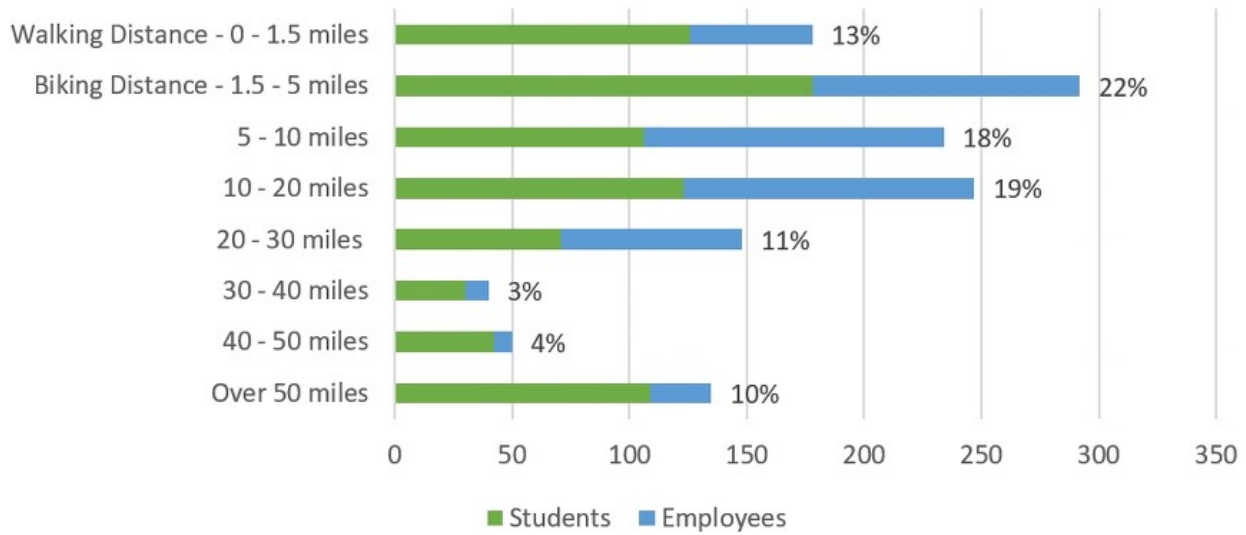


Figure 4 – Commute distances from UNE Portland Campus

# University of New England

## Distances to Portland Campus - 10 Mile Focus

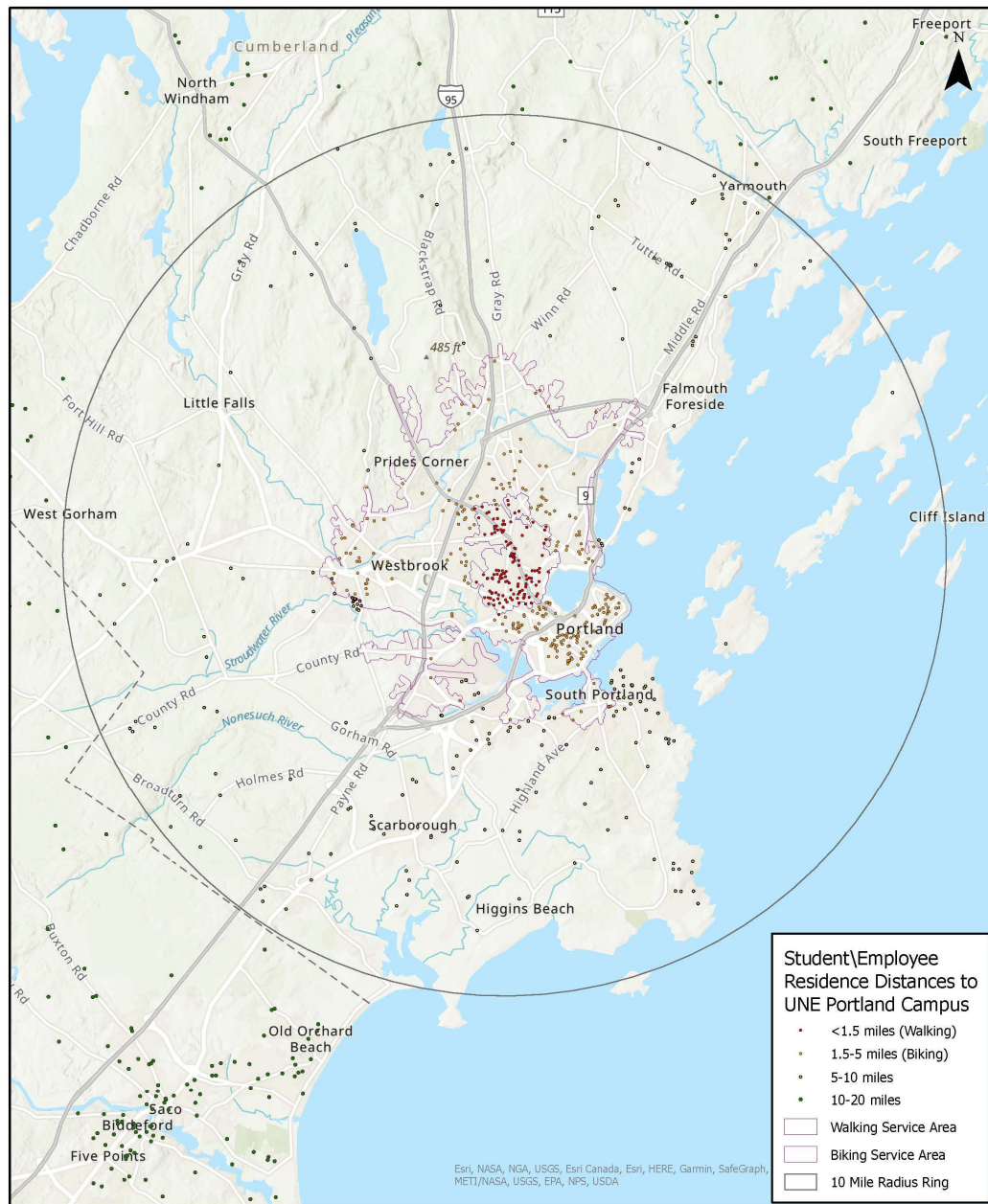


Figure 5 - Home Address Distances to Campus

### Bicycle Access

Stevens Avenue is a designated bicycle route in the City of Portland, providing direct access to the campus. UNE provides bicycle racks at a ratio of 1 bicycle rack space per every 20 UNE Portland Campus community members. Additionally, there is access to showers and lockers in the Finley Recreation Center, further facilitating bicycle commuting.

The Stevens Avenue on-road bike route connects to multiple nearby bike routes, including Allen Avenue, Walton Street, Read Street, Woodford Street and Congress Street. These bike routes then connect to facilities

with dedicated bicycle lanes, such as Forest Avenue. See Figure 6 - City of Portland Bikeway and Pedestrian Network map.

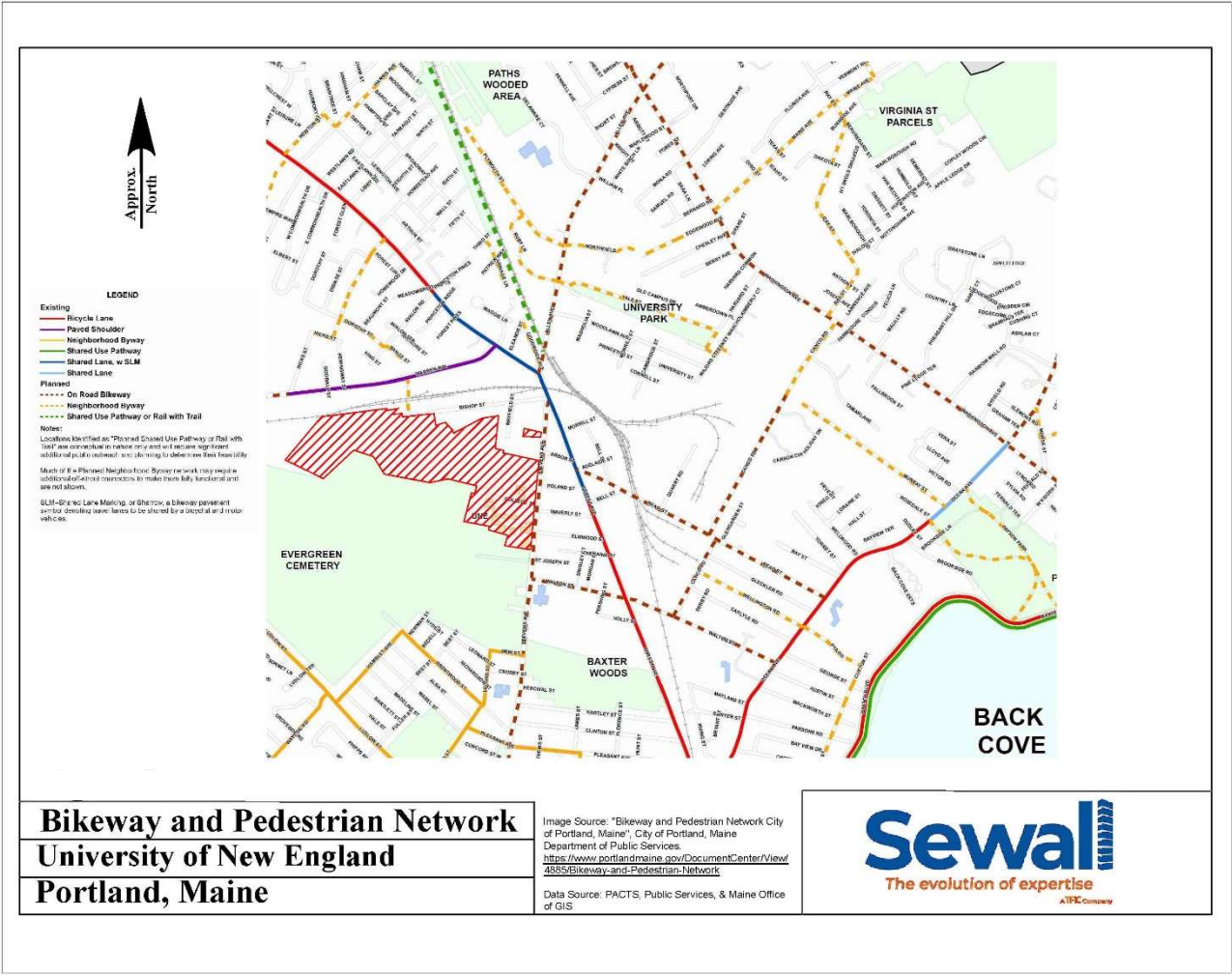


Figure 6 – City of Portland Local Bikeway and Pedestrian Network

Walkscore.com scores the Portland Campus as a 65 out of 100 for bicycle commuting and designates the campus location to be “Bikeable”, indicating “some bike infrastructure” in the vicinity of the campus. Their Travel Time map, in Figure 7 below, illustrates this.

# Travel Time Map

[Add to your site](#)

Explore how far you can travel by car, bus, bike and foot from 716 Stevens Avenue.

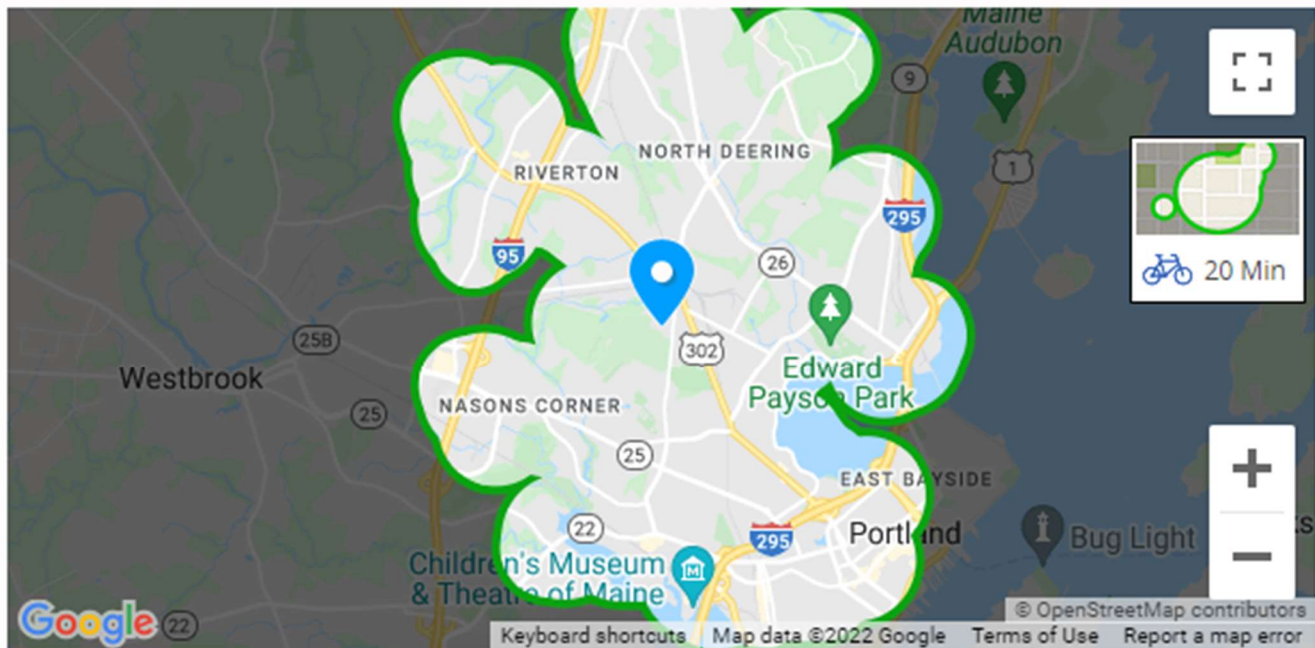


Figure 7 – Bicycle Travel Time Map from Walkscore.com

## Transit Service

Transit service is available via Greater Portland Metro's Route 9, which connects downtown Portland to North Deering via Stevens Avenue and also by Metro Route 2, which connects downtown Portland to Riverton via Forest Avenue. There are two Route 9 Metro stops located at the Portland campus, both of which are equipped with ADA complaint shelters and are located in well lit, conveniently located areas of the campus. The Route 2 stops on Forest Avenue are within 1,000 feet of the core campus and are immediately adjacent to the UNE's 1075 Forest Avenue property (UNE North). UNE provides free bus passes to all students and employees to encourage Metro use, including the Metro Breeze from Portland to Brunswick, and the Route 2 bus route to the Metro Pulse (the downtown hub). Additionally, the University provides free bus passes to the South Portland City Bus Services as well as the Biddeford, Saco, Old Orchard Beach Transit (BSOOB Transit) including the ZOOM Express between Portland and Biddeford. Free public transportation is thus offered between the University's two Maine campuses, as well as to/from the Portland Transportation Center, the Saco Transportation Center, the Greyhound Bus terminal, and the Portland International Jetport.

With UNE's recent (January 2021) upgrade to the centralized automated fare payment system, Dirigo TouchPass, for all of these transit services, enhanced ridership data is now available to UNE and can be utilized in future TDM considerations. Previously, the ridership data was recorded manually or only available for the number of passes issued, and not actual rides utilized. Previously, UNE would procure and manually distribute hardcopy passes, as community members requested them from the Student Affairs office. Thus, UNE community members were required to conscientiously obtain these in advance of their use, and there was no way to track whether or not all passes in the packet were used. For 2019, UNE purchased and distributed



monthly passes (40 rides per month) and weekly passes (10 rides per week) totaling approximately 10,590 rides, or 882 ride passes per month. During the academic year 2021-2022 actual average ridership, now tracked electronically through the Dirigo TouchPass system, is averaging approximately 107 rides per month. While the pandemic has undoubtedly impacted ridership, it is unlikely that the significantly lower ridership in 2021-2022 is only due to this cause. We believe the manually distributed hardcopy passes artificially inflated the ridership data, and the Dirigo TouchPass system will provide better data sets moving forward.

Additionally, the Dirigo TouchPass has improved convenience and removed barriers for all students, faculty, and staff to ride the buses for free, without first having to obtain a hardcopy pass. Now that the pandemic is entering an endemic phase, UNE anticipates the ridership to increase with the added ease and convenience of accessing these transit services. Current survey results indicate 10.5% of the respondents ride the bus between 1-20% of the time. Enhanced promotional activities are underway to highlight this free transit option, and ridership is anticipated to rebound and expand to at least double the current rate within the next year.

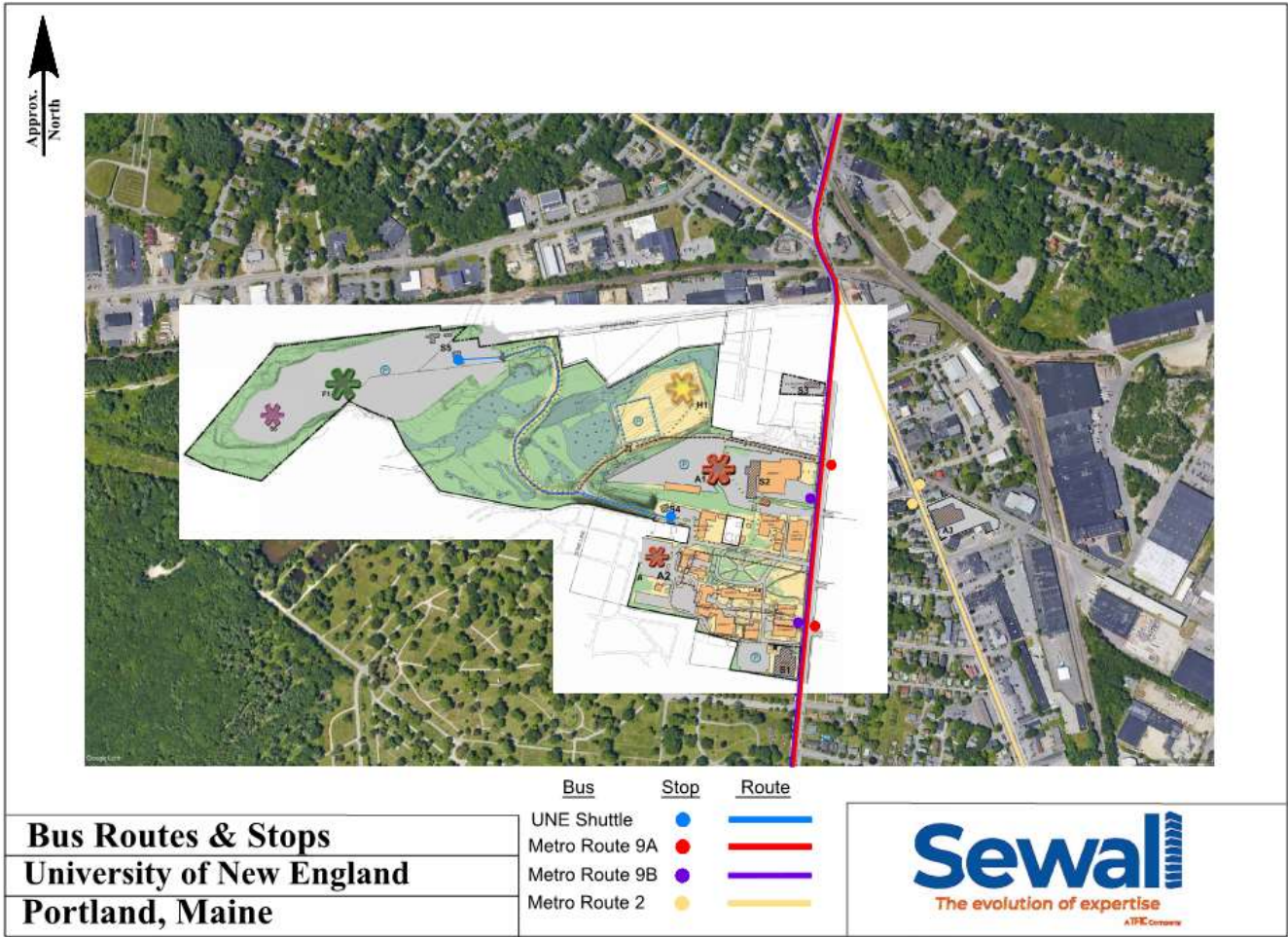


Figure 8 - Greater Portland Metro routes servicing the Portland Campus

### Vehicle Access

The campus is located off of Stevens Avenue, which is classified as a minor arterial. Nearby Forest Avenue is a principal arterial, and Warren Avenue to the north is a minor arterial. The campus, located within close

proximity of these three arterials, provides convenient access to the Maine Turnpike, I-95 and to Interstate I-295.

The Portland campus has no on-campus housing, so all students, faculty, and staff arrive from Portland and surrounding communities, and utilize multiple unsignalized access drives from Stevens Avenue, or from the Bishop Street Extension to the Bishop Street parking lot. The access point is generally determined by the parking permit acquired by each individual, as it relates to the parking lot in which they are authorized to park. Access points are depicted in Figure 9.

Recent survey results indicate approximately 68% of the respondents drive alone to campus most of the time and 19% carpool occasionally. This results in approximately 13 percent of persons utilizing alternative methods to arrive to campus.

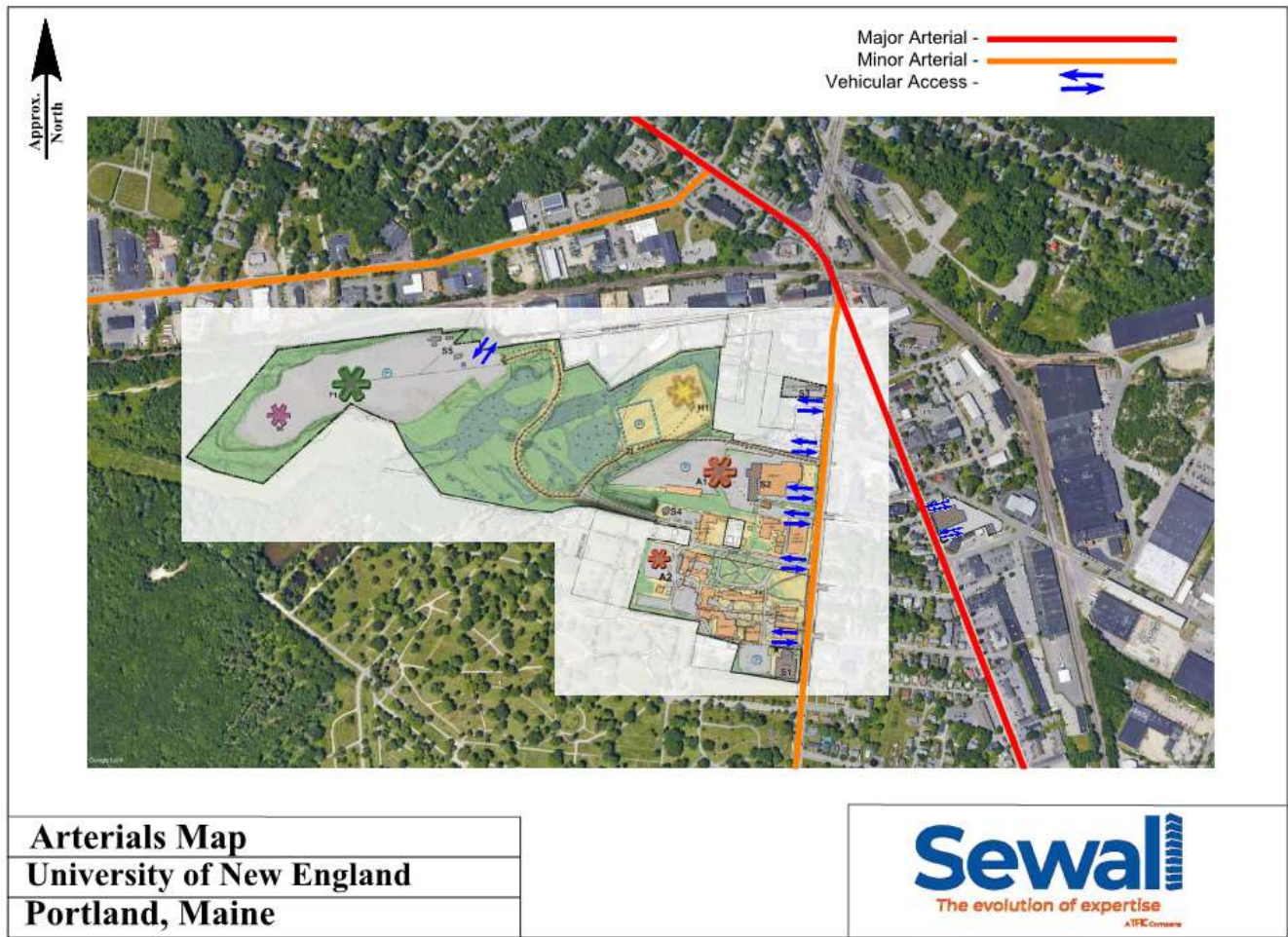


Figure 9 – Vehicle access points

### Parking

There are currently eleven parking lots located at UNE’s Portland campus, plus on-street parking along two campus roadways. The lot locations are depicted in yellow dashes in Figure 10 below. The number of spaces located in each of these lots is detailed below in Table 1. All campus parking lots require the display of parking decals, and the lots on the core campus require the purchase of a parking permit through a lottery process. If a UNE community member isn’t successful in obtaining a permit in the lottery process, they can park for free in



the remote lots, which include Bishop Street parking, 1075 Forest Avenue, 812 Stevens Avenue, the leased lot at the neighboring Congregational Church, or the dirt parking lot behind Innovation Hall.

In addition to the on-campus parking, there is also on-street parking located on some of the surrounding streets, which is available to UNE community members. This on-street parking includes College Street on the core campus and parking along both sides of Stevens Avenue off-campus.



Figure 10 - Portland Campus parking lot diagram



| Lot # & Description              | # of Parking Spaces |
|----------------------------------|---------------------|
| 1 – 812 Stevens                  | 30                  |
| 2 – Innovation Hall, Upper/Lower | 101                 |
| 3 – Innovation Hall, Front       | 34                  |
| 4 – Oral Health Center/Alexander | 38                  |
| 5 – Ginn/McDougal                | 28                  |
| 6 – Library                      | 104                 |
| 7 – Proctor                      | 121                 |
| 8 – Finley Rec Center            | 85                  |
| 9 – Stevens Ave. Church          | 36                  |
| 10 – UNE North, 1075 Forest Ave. | 77                  |
| 11 – Bishop St., Extension Lot   | 600                 |

|                         |       |
|-------------------------|-------|
| X – Proctor Access Road | 3     |
| Y – Hersey Circle       | 4     |
| Total                   | 1,261 |

Table 1- Current parking lot and space inventory

## Existing Parking Analysis

While there are several alternative transportation modes available to access the Portland campus, the majority, 87%, of students and employees arrive by private vehicle, based on the most recent transportation survey. The UNE Office of Safety and Security conducts biannual parking lot counts in October and April in all campus lots. Security Officers count the open spaces daily for one week between the hours of 8 am and 5 pm. Based upon the most recent parking counts conducted in fall of 2021, parking demand generally peaks between 11:00 am and 2:00 pm. The largest number of vehicles recorded during the fall 2021 counts in the university lots was 651. This highest demand occurred on a Wednesday at 1:00 PM. This represents 51.5% of current overall on-campus capacity. The overall capacity will decrease when the Repair Facility building, currently under construction on the Bishop Street lot, is opened.

On-street parking census counts are included in the biannual parking analysis; however, these on-street vehicles counts are informational only, as the parking along these streets is also utilized by the general public with no UNE connection. The number of vehicles parked along College Avenue during the peak periods ranged from 18 to 22. The majority of these users are likely UNE community members. The number of vehicles recorded in the Stevens Avenue spaces during the 2021 peak period was 109. As previously noted, not all of these users are UNE community members, as there are private single and multifamily residences, local businesses, a daycare center, a school, a couple of churches, and a couple of larger housing complexes located along this stretch of road.

The City of Portland has implemented residential parking permit requirements and one-hour parking restrictions on most side streets in the vicinity of campus, reducing the amount of on-street parking available to UNE community members. However, as long as there continues to be free on-street parking along Stevens Avenue, proximal to the campus core, continued use of these spaces by UNE community member is expected, given their convenience. UNE will continue to support the city in its parking regulations in this area, and will consider these parking needs in the total on-campus parking capacity.

## Shuttle Service

A free shuttle bus, outfitted with Wi-Fi, is provided from the Bishop Street parking lot to the campus core to provide for convenient parking access. There is a heated shelter with Wi-Fi at each end of the shuttle route to encourage ridership. The shuttle runs continuously from 7 am to 7 pm with minimal wait times. With these incentives, parking in this remote lot has increased significantly from 37 vehicles in October 2012, to 179 during the peak period (11:00 am to 2:00 pm) in October 2021.

## Transportation Demand Management Plan

### Overview

The University has had a Transportation Demand Management (TDM) Plan in place since 2010. This 2022 TDM Plan revision has been developed with the primary goal of reducing vehicle trips to campus and, thus, reducing the demand for on-site parking. The plan further aims to reduce traffic impacts, both on-campus and off-site, improve traffic flow in the surrounding area, and reduce UNE's Scope 3 carbon emissions.

UNE hopes to achieve these goals by implementing TDM strategies that promote and encourage alternative modes of transportation. In June 2019 a “Transportation Think Tank” (TTT) committee formed, with representation from Campus Planning, Student Affairs, Safety and Security, Undergraduate and COM Student Governments, Sustainability Office, and the Environmental Council. With oversight from the TTT committee, the Transportation Demand Management (TDM) strategies are regularly reviewed and updated to respond to changing conditions and needs. The TTT committee is actively engaged in implementing the TDM strategies outlined below.

## TDM Strategies

### EDUCATION & PROMOTION

UNE provides both educational and promotional material regarding the advantages of alternative transportation modes. The TDM Coordinator regularly publishes the “*Movements*” newsletter, which is hung in all bathroom stalls throughout the campus, ensuring visibility and contemplation. The newsletter informs the UNE community about ongoing, new, or revised transportation programs, events and resources, like bus maps and schedules, GoMaine carpool and rideshare information, parking updates, bike infrastructure updates, incentive program information and safety practices for pedestrians, among other topics. Additionally the university regularly provides specific TDM-related information to the campus community through various methods and media formats, including bulletin boards, strategically placed bus schedule brochure holders, weekly community-wide emails, digital screens, and website.

### GOMAINE

UNE utilizes the GoMaine service to encourage “greener commuting” to each campus as well as between campuses when required. UNE has its own landing page on the [GoMaine website](#), which helps users find carpool partners, map out alternative transportation methods with transit, walking and biking routes, incentivizes users with rewards, and offers emergency “ride home guarantee” for regular users. Additionally UNE takes advantage of the expertise of GoMaine staff for educational and promotional events with informational tabling, swag give-aways, and educational presentations.

### WAY-2-GO COMPETITION

During the last Way-2-Go, GoMaine competition in 2019, UNE won two awards: Most New Members in the XXL Company Category and the Team Spirit Awards. There was significant momentum developing in the alternative transportation realm and the university is eager to return to this pre-pandemic activity and progress. The TTT committee plans to participate in and support future Way-2-Go competitions.

### CARPOOLING

The university provides free parking to carpoolers and dedicates some of the most convenient parking spaces as incentives. The carpool program is not widely publicized, as it is administered manually and challenging to enforce. The TTT committee has identified the need to streamline carpool permitting procedures, which would make the incentive more desirable while making administration of the program less cumbersome. This update is a goal for the 2022-2023 academic year.

### TRANSIT SERVICE

The TDM plan includes the continuation of the provision of free GP Metro, South Portland City Bus Services, and Biddeford, Saco Old Orchard Beach Bus Transit (BSOOB) passes for all students, faculty, and staff to encourage transit usage. Each of these services provides GPS trackers with mobile apps for cell phones, which aid riders in knowing exactly where the bus is located and how close it is to their stop. The TTT committee actively engages with administration from these transit providers to update materials and promote ridership.

## INCENTIVES

Since 2008, UNE has continually promoted the use of alternative modes of transportation through incentives, including: raffling of new bicycles and iPads for transportation competitions, providing free coffee and doughnuts to users of the Bishop Street parking lot, free use of electric vehicle charging stations, and free public transit passes. The TTT committee will continue to evaluate the effectiveness of incentives, and implement when warranted.

## ON-GOING ASSESSMENTS OF EFFECTIVENESS

UNE has performed several student and employee surveys to determine arrival and departure times, transportation modality and parking usage, as well as to gauge interest in various alternative transportation and incentive programs. The results have guided UNE in making adjustments to its TDM plan, including infrastructure upgrades, and bus schedule changes, among others.

Recent hot mapping of faculty, staff, and student home addresses is being utilized to identify additional measures for enhanced promotional activities towards fostering alternative transportation modes and programs.

The Director of Safety and Security monitors the effectiveness of the TDM plan through biannual parking utilization studies. The TDM Coordinator and TTT Committee use the data collected from these parking studies to continually review and anticipate parking demand on campus and guide ongoing revisions to the TDM plan.

## EV CHARGING INFRASTRUCTURE

UNE provides free charging for electric vehicles. There are three EV charging stations located at the Bishop Street parking lot behind the bus shelter. These charging stations are powered by grid-tied solar panels on the roof of the bus shelter. Additionally, there are five outlets on campus designated for EV slow-charging. Expanded EV infrastructure is planned with the development of the Harold and Bibby Alford Center of Health Sciences, as described later. The TTT Committee will continue to monitor the growth of EV adoption in the campus community and will advise administration regarding further expansion of charging infrastructure as needed.

## BICYCLE INFRASTRUCTURE

UNE promotes bicycling as a convenient means to access campus for those students and employees that reside within the appropriate range, and for exercise and wellness benefits. The university has several bikes on campus that the UNE community members can borrow to utilize during the day. Bike racks are conveniently located across campus for campus community members to store their personal bikes as well. Additional bikes and racks will be added with the anticipated development of the Harold and Bibby Alford Center of Health Sciences, as described later. UNE has previously discussed, and would consider, being a site for a city-wide bike share program.

## CAMPUS PLANNING

The University has traditionally located its programs so that it limits the travel between campuses by its community members. Thus, faculty and staff are generally assigned to only one campus and student degree programs are generally offered/completed on one campus or the other. However, there are several programs that are currently required to travel between campuses to access the highly specific and state-of-the-art facilities housed only on one of the two Maine campuses. For example, graduate students studying Dental Medicine in Portland are required to learn Gross Anatomy on the Biddeford Campus. Conversely, the Osteopathic Medicine students, located in Biddeford, are required to access the Simulation Center on the Portland Campus to learn using hi-tech robotics and virtual reality health care programming offered there. This



results in potentially hundreds of students commuting between Portland and Biddeford, during the day, several times a week. Development of the Harold and Bibby Alford Center of Health Sciences, described below will further limit this intercampus travel.

## Proposed Access and Circulation Modifications

### VEHICLE ACCESS AND PARKING

The Harold and Bibby Alford Center of Health Sciences (HBACHS) project will reconfigure the access point on Stevens Avenue at Innovation Hall, extending beyond the HBACHS, to the expanded parking area behind this new facility. The current drive will be widened and installed with a sidewalk from Stevens Avenue to the renovated parking area. The parking lot capacity will be approximately doubled. Pavement and lighting will be installed that meets the University's enhanced safety standards. Charging stations, a combination of Level 2 and 110v outlets, will be installed for free and convenient electric vehicle charging.

The Campus Master Plan provides for additional improvements to the parking access road connecting the proposed HBACHS facility parking lot, College Street, and the Bishop Street lot. This future access road will allow vehicles, bicycles and pedestrians, to travel between the core campus on Stevens Avenue, through to the Bishop Street parking lot and on to Warren Avenue. This future access road will eliminate unnecessary trips on Stevens Avenue, Forest Avenue, Bishop Street and Warren Avenue by allowing UNE community members to enter and exit the campus at the location most proximal to their origin/destination by either Bishop Street Extension or Stevens Avenue. More importantly, it will eliminate traffic that is currently routed through Morrill's Corner. The University is currently discussing its design with the Maine Department of Transportation and Portland Trails. Additional information related to this proposed development will be made available as it is developed.

### PEDESTRIAN AND BICYCLE ACCESS

The Harold and Bibby Alford Center for Health Sciences building will include men's, women's and gender-neutral locker room facilities, complete with showers. These additional facilities encourage and support additional active transportation commuting modes to campus.

The Portland Trails network of trails abuts the campus and could be utilized by some local community members to access the campus. UNE is actively working with Portland Trails to extend this network across the UNE campus as the future access road is developed, which could provide additional alternative pedestrian access to the campus, as well as rerouting the Portland Trails route away from Morrill's Corner.

Additionally, the University anticipates the UNE community utilizing this future access road for increased bicycle access to campus. This would provide additional opportunities for UNE community members to bike to campus, without having to bike through Morrill's Corner, with its intimidating shared vehicle and bicycle lanes.

City Planning staff have suggested that the University consider allowing bike access to the general public along this future access drive. See Figure 11, below. However, the current design and anticipated funding sources limit the access road to two shared travel lanes and a sidewalk, and would not support significant additional traffic, including bicycles. The Maine DOT has also expressed interest in this alternative pedestrian and bicycle route away from Morrill's Corner. They are seeking grant opportunities to assist with the addition of bike lanes, which would allow for this potential increased usage. This expanded infrastructure would aid in connecting pedestrians and bicyclists from the Riverton Neighborhood to the Deering Center Neighborhood, without traveling through Morrill's Corner. If external funding is available, UNE may be able to consider the addition of bike lanes to the access road to accommodate this additional bicycle traffic.

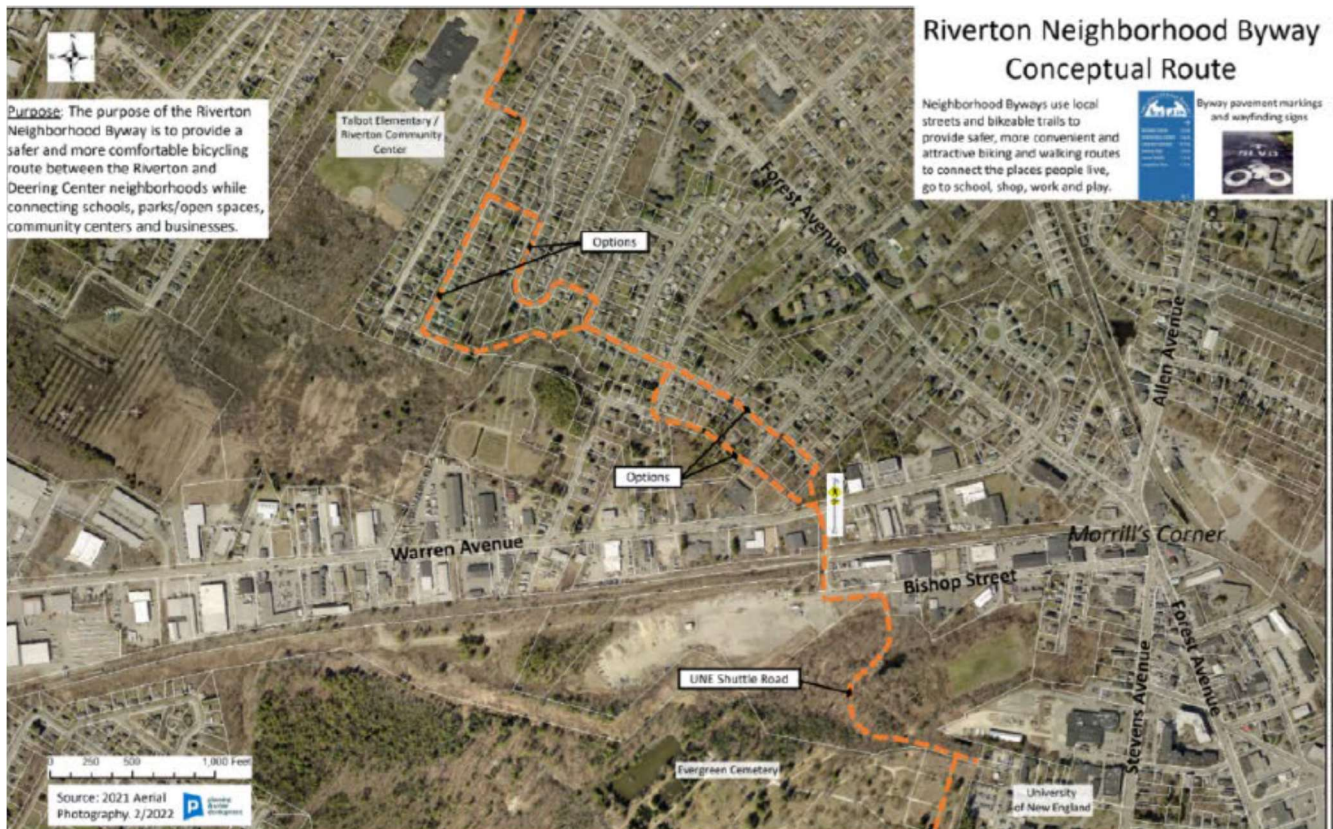


Figure 11 – City of Portland - Riverton Neighborhood Byway Conceptual Plan

## Future Parking Needs

Through all of these actions, UNE has shown long-term dedication to reducing overall single-occupancy vehicle trips to campus and the associated traffic impacts to the area, and in being a good neighbor, as well as reducing its carbon footprint. Alternative transportation goals remain focused on realizing further reductions in these areas.

The goals for UNE in terms of parking are to:

- Continue to provide an adequate on-campus parking supply
- Reduce parking needs over time through continued TDM strategies
- Reduce neighborhood impact by reducing on-street parking usage by UNE community members

In previous projects, as approved by the City, UNE's parking needs, based on actual data, has been typically based on the student population, at an actual rate of 0.58 spaces per student. With a campus dominated by health professions graduate students, who often spend their entire day and week on campus, the parking demand is significantly more than the Institute of Transportation Engineers (ITE) would predict for a typical college or university. UNE intends to continue to monitor parking demand, twice a year, with the goal being to reduce the parking supply rate over time. With the construction of the HBACHS, the development will result in a net gain of 92 spaces in this area of campus. The recently approved Repair Facility near the Bishop Street parking lot, results in the loss of 256 spaces, while adding additional green space, resulting in a total of 1086 spaces on campus. With completion of these projects, the resultant parking need would be estimated at 0.54 spaces per student. This projected need does not include UNE community vehicles legally parked on adjacent public streets.



| Lot # & Description              | # of Parking Spaces |
|----------------------------------|---------------------|
| 1 – 812 Stevens                  | 30                  |
| 2 – Innovation Hall, Upper/Lower | 193                 |
| 3 – Innovation Hall, Front       | 34                  |
| 4 – Oral Health Center/Alexander | 27                  |
| 5 – Ginn/McDougal                | 28                  |
| 6 – Library                      | 104                 |
| 7 – Proctor                      | 121                 |
| 8 – Finley Rec Center            | 85                  |
| 9 – Stevens Ave. Church          | 36                  |
| 10 – UNE North, 1075 Forest Ave. | 77                  |
| 11 – Bishop St., Extension Lot   | 344                 |
| X – Proctor Access Road          | 3                   |
| Y – Hersey Circle                | 4                   |
| Total                            | 1,086               |

Table 2 - Anticipated parking availability with the development of HBACHS

### Reduction Goals

With the ongoing efforts to increase transit ridership and increase carpooling and other alternative means of transportation, UNE anticipates a reduction in parking demand of approximately 4% over the next couple of years. With the completion of the HBACHS facility, UNE aims to increase on-campus parking and begin to reduce the on-street parking demand. This would be achieved through the addition of more on-campus parking within the campus core and incentivizing the use of alternative methods of transportation, primarily transit and carpooling. Survey results indicate options for carpooling could be enhanced with additional promotional events. The Go Maine Programs are featured prominently and regularly in the UNE Movements Newsletter, and a GO Maine informational event was recently held on campus.

### Future Planning Efforts

UNE will continue to work with neighbors and neighborhood groups as campus development projects are planned to identify any neighborhood transportation issues and concerns so that they can be considered in the planning and design process. This will ensure that UNE will continue to be a good neighbor and minimize the impact on surrounding roadways as much as possible.

Additionally, UNE will continue to work with the City of Portland, the Maine Department of Transportation, Portland trails and other stakeholders to review and consider options for increasing active transportation to, from, and through the campus.

## Appendix A: TDM Roles & Responsibilities

### TDM COORDINATOR/ASSISTANT DIRECTOR OF SUSTAINABILITY

- Promote non-SOV transportation choices to faculty, staff, and commuter and resident students.
- Review potential new alternative transportation technology or SOV reduction technology and coordinate implementation efforts associated with them.
- Champion the implementation of new TDM strategies to reduce parking demand and increase the use of non-SOV transportation modes.
- Recruit and engage participants for any outreach events or campaigns associated with the TDM program over time.
- Conduct/provide information for new student/new employee orientation to educate incoming affiliates regarding their transportation options to and from the campus.
- Maintain the transportation webpage (<https://www.une.edu/studentlife/security/transportation>) content to include TDM strategies outlined in the TDM plan.
- Coordinate the implementation of TDM strategies with Student Affairs, Registrar, Human Resources, Safety and Security, Campus Planning, and any other departments as necessary.
- Work with the City of Portland, GP Metro, GoMaine, and other potential partners to improve non-SOV transportation access to the campus and to gain support for program implementation.
- Coordinate all monitoring and evaluation activities necessary to measure the effectiveness of the TDM program in achieving the targets.
- Facilitate collaborative, representative Transportation Think Tank Committee reviews.
- Co-develop with the Transportation Think Tank Committee financial parking incentives or disincentives as identified by the TDM plan.
- Update annual TDM Report, which will provide an assessment of strategies implemented to date and outline the activities to be implemented in the upcoming year.

### VICE PRESIDENT OF CAMPUS OPERATIONS

- Maintain regular membership with the Transportation Think Tank Committee.
- Assist in the coordination of all monitoring and evaluation activities necessary to measure the effectiveness of the TDM program in achieving the targets.
- Review annual TDM Report, which will provide an assessment of strategies implemented to date and outline the activities to be implemented in the upcoming year.
- Provide consultation on TDM strategies that impact parking supply, services, and technology.
- Provide up-to-date data on parking lot inventories.
- Provide support for conducting additional parking assessments and measurements annually.
- Co-develop with the Transportation Think Tank Committee financial parking incentives or disincentives as identified by the TDM plan.
- Maintain existing parking infrastructure and technology, with support of Facilities Management and Campus Planning.
- Maintain parking services, including payments, campus notifications, and website updates.

### DIRECTOR OF SAFETY AND SECURITY

- Maintain regular membership with the Transportation Think Tank Committee.
- Administer the parking permit process.
- Carry-out parking enforcement.
- Maintain interactive parking maps on transportation website.

- Conduct parking assessments in October and April annually, and report data to Transportation Think Tank Committee.

#### DIRECTOR OF INSTITUTIONAL RESEARCH AND DATA ANALYTICS

- Assist with annual transportation survey to faculty, students and professional staff.
- Provide data to assist with affiliate population density mapping to develop non-SOV transportation programming.

## Unit Overview

|                               |                                               |
|-------------------------------|-----------------------------------------------|
| <b>Chiller Model</b>          | Ascend (TM) Air-Cooled Chiller Model ACS      |
| <b>Unit Nominal Tonnage</b>   | 140 Nominal Tons                              |
| <b>Refrigeration Capacity</b> | 127.07 tons                                   |
| <b>Cooling Efficiency</b>     | 9.981 EER (Btu/W-h)                           |
| <b>IPLV.IP</b>                | 16.407 EER (Btu/W-h)                          |
| <b>NPLV.IP</b>                | 15.807 EER (Btu/W-h)                          |
| <b>Elevation</b>              | 0.00 ft                                       |
| <b>Unit Voltage</b>           | 460V/60Hz/3 phase                             |
| <b>Refrigerant Type</b>       | Refrigerant Charge R-410A                     |
| <b>Agency Listing</b>         | UL listed to US & Canadian safety std         |
| <b>Model Number</b>           | ACSA1402EUAALUXAXNB2XFNX SMEX1HBBBXXAA1X****X |



## Evaporator Information

|                               |                              |                             |                       |
|-------------------------------|------------------------------|-----------------------------|-----------------------|
| <b>Evaporator Application</b> | Evaporator Application       | <b>Fluid Properties</b>     |                       |
| <b>Fouling Factor</b>         | 0.000100 hr-sq ft-deg F/ Btu | <b>Fluid Type</b>           | Evaporator fluid type |
| <b>Flow Sense Set Point</b>   | Flow Switch Set Point 35     | <b>Fluid Concentration</b>  | 35.00 %               |
| <b>Design Flow</b>            | 213.41 gpm                   | <b>Fluid Freeze Point</b>   | 2.40 F                |
| <b>Evaporator Head Loss</b>   | 6.29 ft H2O                  | <b>Entering Temperature</b> | 57.00 F               |
| <b>Strainer Head Loss</b>     | 3.09 ft H2O                  | <b>Leaving Temperature</b>  | 42.00 F               |
| <b>VPF Min Flow</b>           | 170.21 gpm                   |                             |                       |

## Condenser Information

|                              |                        |                               |          |
|------------------------------|------------------------|-------------------------------|----------|
| <b>Unit Application</b>      | Standard Ambient       | <b>Temperatures</b>           |          |
| <b>Condenser Fin Options</b> | Aluminum Micro Channel | <b>Ambient Air Temp.</b>      | 95.00 F  |
| <b>Number of Fans</b>        | 8                      | <b>Saturated Cond - ckt 1</b> | 119.01 F |
|                              |                        | <b>Saturated Cond - ckt 2</b> | 119.01 F |

## Unit Electrical

|                                       |                                    |                           |            |               |
|---------------------------------------|------------------------------------|---------------------------|------------|---------------|
| <b>Compressor Starter</b>             | Across-The-Line-Starter            |                           | <b>RLA</b> | <b>LRA XL</b> |
| <b>Unit Voltage</b>                   | 460V/60Hz/3 phase                  | <b>Comp 1A</b>            | 54.00 A    | 294.00 A      |
| <b>Unit Power</b>                     | 152.78 kW                          | <b>Comp 1B</b>            | 69.00 A    | 344.00 A      |
| <b>Incoming Power Line Conn. Type</b> | Single Point Unit Power Connection | <b>Comp 2A</b>            | 54.00 A    | 294.00 A      |
| <b>Power Line Conn. Type</b>          | High Fault Rated Circuit Breaker   | <b>Comp 2B</b>            | 69.00 A    | 344.00 A      |
| <b>FLA - Condenser Fan (each)</b>     | 2.70 A                             | <b>Single Point Power</b> |            |               |
| <b>Short Circuit Current Option</b>   | High Short Circuit Rating          | <b>MCA</b>                | 289 A      |               |
| <b>Short Circuit Current Rating</b>   | 65000 A                            | <b>MOP</b>                | 350 A      |               |

## Physical Information

|                   |        |                  |         |                    |                  |                  |
|-------------------|--------|------------------|---------|--------------------|------------------|------------------|
| <b>Dimensions</b> |        | <b>Weights</b>   |         | <b>Charge</b>      | <b>Circuit 1</b> | <b>Circuit 2</b> |
| <b>Length</b>     | 229 in | <b>Operating</b> | 7897 lb | <b>Refrigerant</b> | 57.0 lb          | 57.0 lb          |
| <b>Width</b>      | 88 in  | <b>Shipping</b>  | 7754 lb | <b>Oil</b>         | 3.10 gal         | 3.10 gal         |
| <b>Height</b>     | 98 in  |                  |         |                    |                  |                  |

## Acoustical Performance

| Unit Sound Level                        |                                   |        |       |       | Superior Sound Level |       |       |       |               |
|-----------------------------------------|-----------------------------------|--------|-------|-------|----------------------|-------|-------|-------|---------------|
| Sound Power Levels (Lw, in dB, ref1 pW) |                                   |        |       |       |                      |       |       |       |               |
| Percent Load                            | Octave Band Center Frequency (Hz) |        |       |       |                      |       |       |       | Overall A-Wtd |
|                                         | 63                                | 125    | 250   | 500   | 1000                 | 2000  | 4000  | 8000  |               |
| 100                                     | 96 dB                             | 100 dB | 95 dB | 94 dB | 92 dB                | 85 dB | 79 dB | 73 dB | 96 dBA        |
| 75                                      |                                   | 98 dB  | 93 dB | 92 dB | 89 dB                | 83 dB | 77 dB | 71 dB | 94 dBA        |
| 50                                      | 91 dB                             | 89 dB  | 88 dB | 88 dB | 87 dB                | 80 dB | 74 dB | 69 dB | 90 dBA        |
| 25                                      | 88 dB                             | 85 dB  | 84 dB | 84 dB | 83 dB                | 77 dB | 71 dB | 67 dB | 86 dBA        |

Standard full and part-load rating conditions per AHRI 550/590

| Sound Pressure Levels (Lw, in dB, ref1 pW)<br>10m from center of broad sides of chiller |                                   |       |       |       |       |       |       |       |               |
|-----------------------------------------------------------------------------------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------|
| Percent Load                                                                            | Octave Band Center Frequency (Hz) |       |       |       |       |       |       |       | Overall A-Wtd |
|                                                                                         | 63                                | 125   | 250   | 500   | 1000  | 2000  | 4000  | 8000  |               |
| 100                                                                                     | 69 dB                             | 73 dB | 68 dB | 67 dB | 65 dB | 58 dB | 52 dB | 46 dB | 69 dBA        |
| 75                                                                                      | 68 dB                             | 71 dB | 66 dB | 65 dB | 62 dB | 56 dB | 50 dB | 44 dB | 67 dBA        |
| 50                                                                                      | 64 dB                             | 62 dB | 61 dB | 61 dB | 60 dB | 53 dB | 47 dB | 42 dB | 63 dBA        |
| 25                                                                                      | 61 dB                             | 58 dB | 57 dB | 57 dB | 56 dB | 50 dB | 44 dB | 40 dB | 59 dBA        |

Standard full and part-load rating conditions per AHRI 550/590

## Regulatory Compliance

| ASHRAE 90.1                                                                                                                                                                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| AHRI Standard 550/590                                                                                                                                                                                                                                                                       |  |
| Certified in accordance with Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at <a href="http://www.ahridirectory.org">www.ahridirectory.org</a> |  |

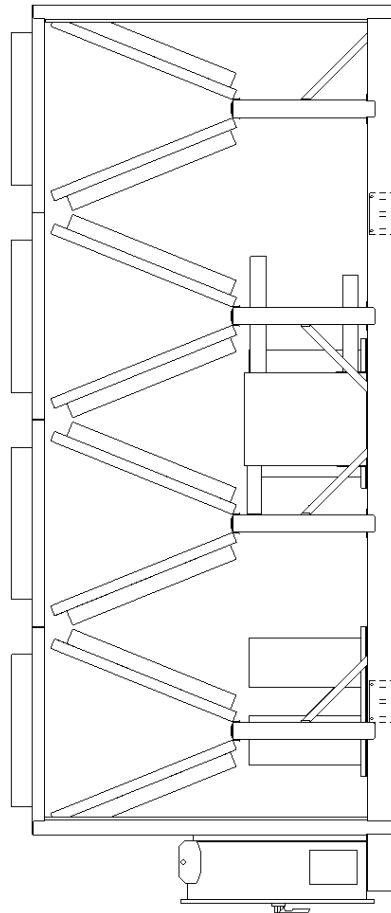
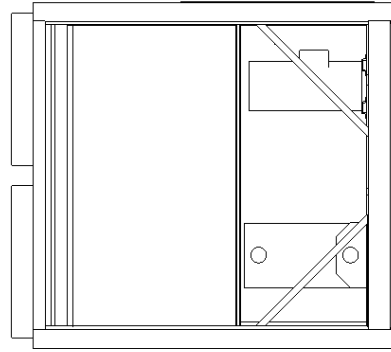
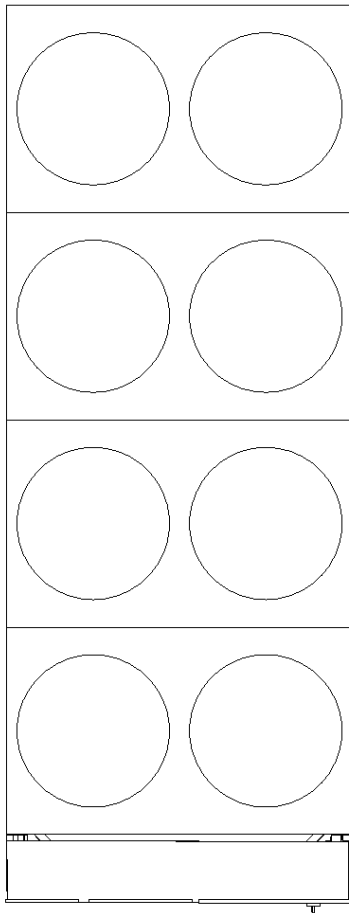


## Information for LEED Projects

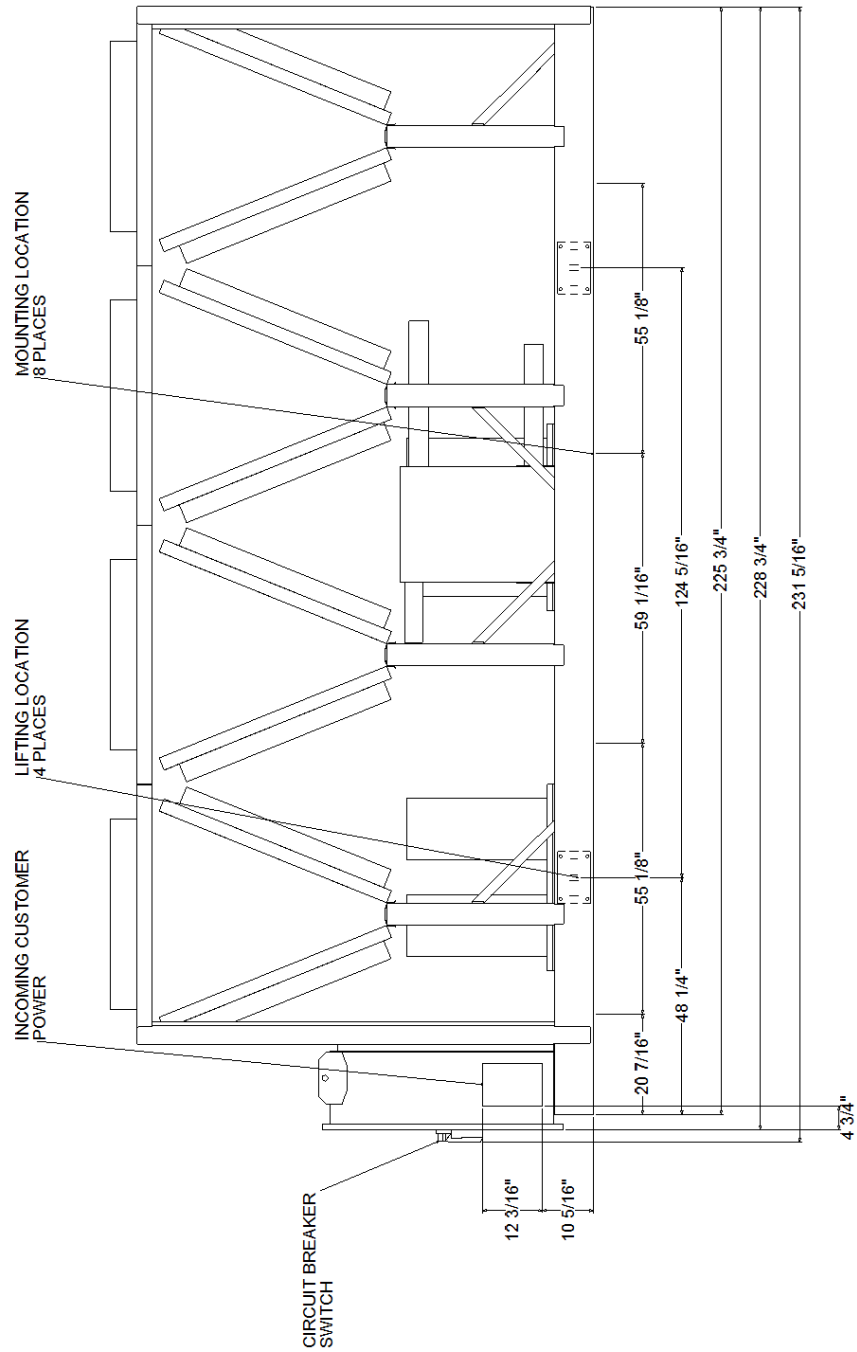
|                            |                      |                                                                                                                                                                                                                                                                                            |
|----------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Refrigerant Charge - ckt 1 | 57.0 lb              | This product meets the minimum efficiency requirements of ASHRAE Standard 90.1 and CANS/CSA C743 for all versions (which are based on AHRI standard rating conditions) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section. |
| Refrigerant Charge - ckt 2 | 57.0 lb              |                                                                                                                                                                                                                                                                                            |
| Rated Capacity (AHRI)      | 134.11 tons          | The LEED Green Building Rating System™, developed by the U.S. Green Building Council, provides independent, third-party verification that a building project meets green building and performance measures.                                                                                |
| Rated Efficiency (AHRI)    | 10.379 EER (Btu/W-h) |                                                                                                                                                                                                                                                                                            |
| IPLV                       | 16.407 EER (Btu/W-h) |                                                                                                                                                                                                                                                                                            |
| Refrigeration Capacity     | 127.07 tons          |                                                                                                                                                                                                                                                                                            |
| Compressor Power           | 143.87 kW            |                                                                                                                                                                                                                                                                                            |
| Fan Motor Power            | 8.88 kW              |                                                                                                                                                                                                                                                                                            |

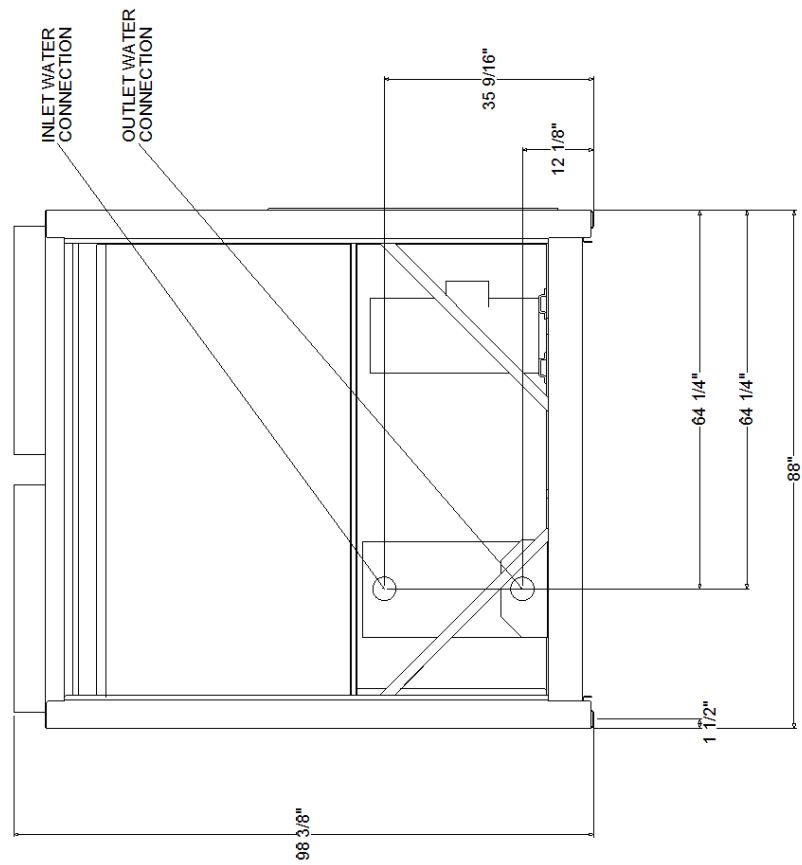
Trane Select Assist  
Version Number: 250  
Data Generation Date: 8/20/2021

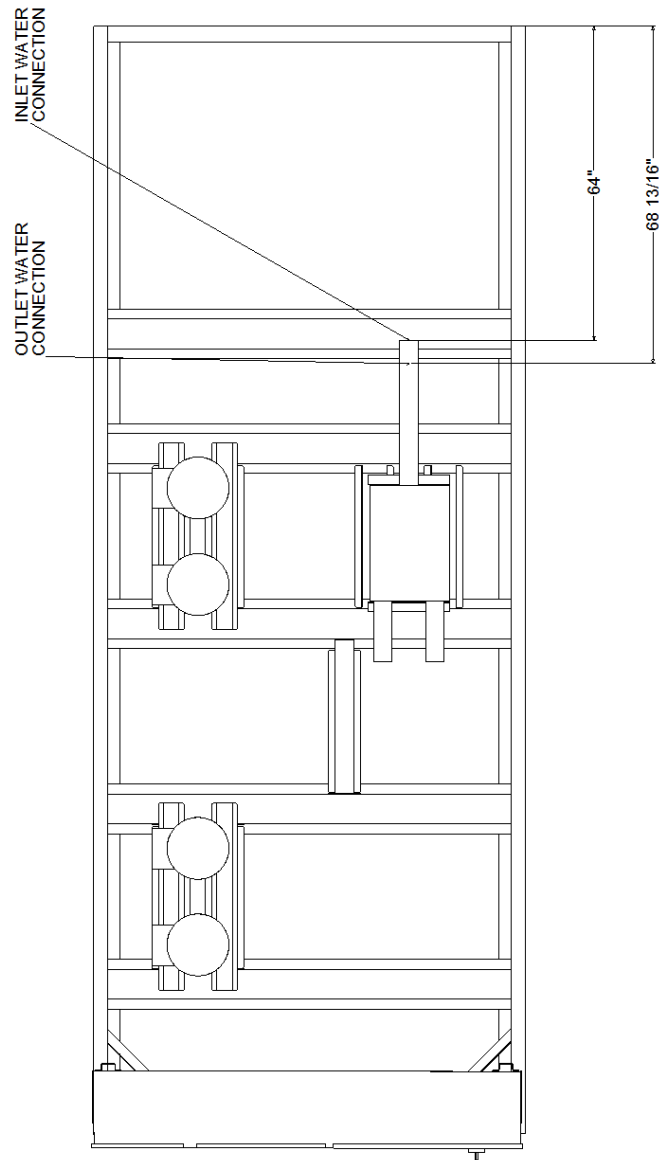
NOMINAL TONNAGE 140  
 WATER CONNECTION 4" (100mm)  
 WATER VOLUME 4481 in3  
 NOTE: WIRING AND MOST PIPING IS  
 NOT SHOWN FOR CLARITY. ONLY MAJOR  
 COMPONENTS ARE SHOWN.











CONDENSER REMOVED FOR CLARITY

- NOTES:**
1. DO NOT FORK LIFT UNIT.
  2. KEEP UNIT LEVEL WHEN LIFTING.
  3. TOTAL WEIGHT IS TYPICAL FOR UNITS WITH R-410A AND WITHOUT LOUVER PANELS.
  4. DIAGRAM IS A GENERIC REPRESENTATION OF THE UNIT.
  5. THE MAXIMUM RIGGING ABLE AT EACH CHILLER LIFT POINT IS 30 DEGREES FROM VERTICAL.
  6. DO NOT ALLOW LIFTING STRAPS/CHAINS TO CONTACT UNIT DURING LIFT.

**TOTAL SHIPPING/LIFTING WEIGHT 7,754 lb**

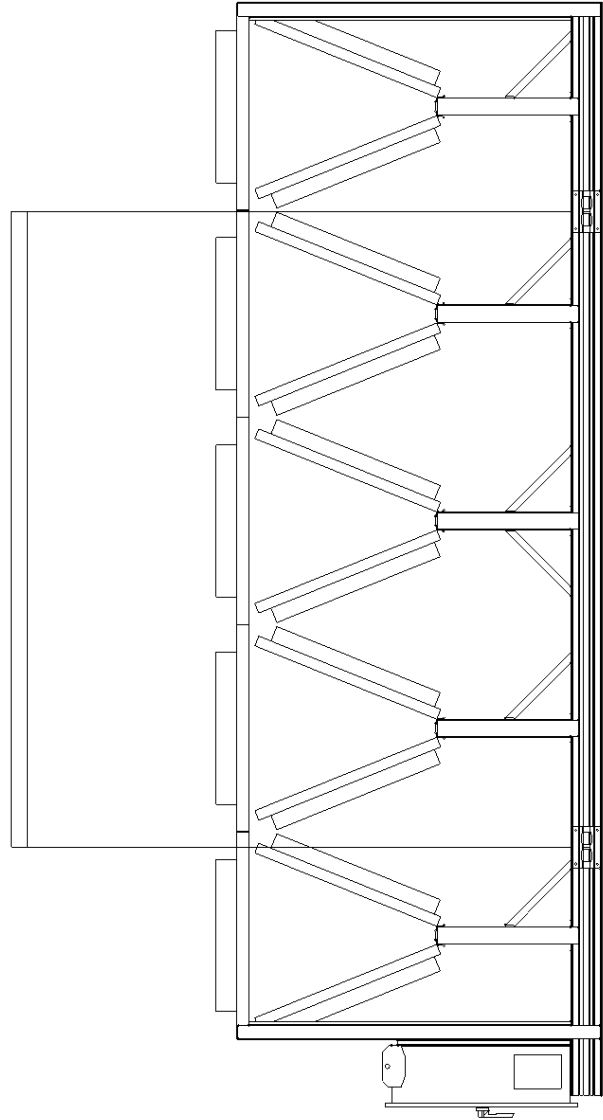
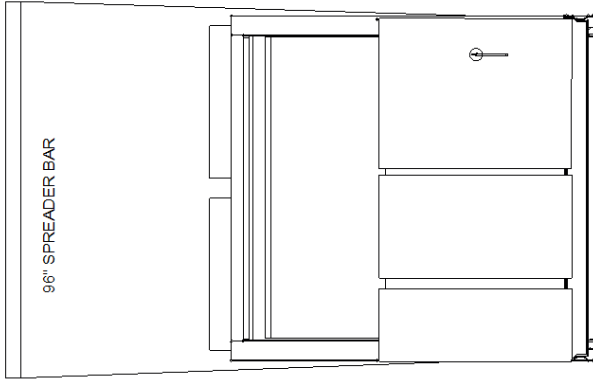
**WARNING**

**LIFTING AND RIGGING**

Use the spreader bar as shown in the diagram. Refer to installation instructions located inside control panel for further rigging information.

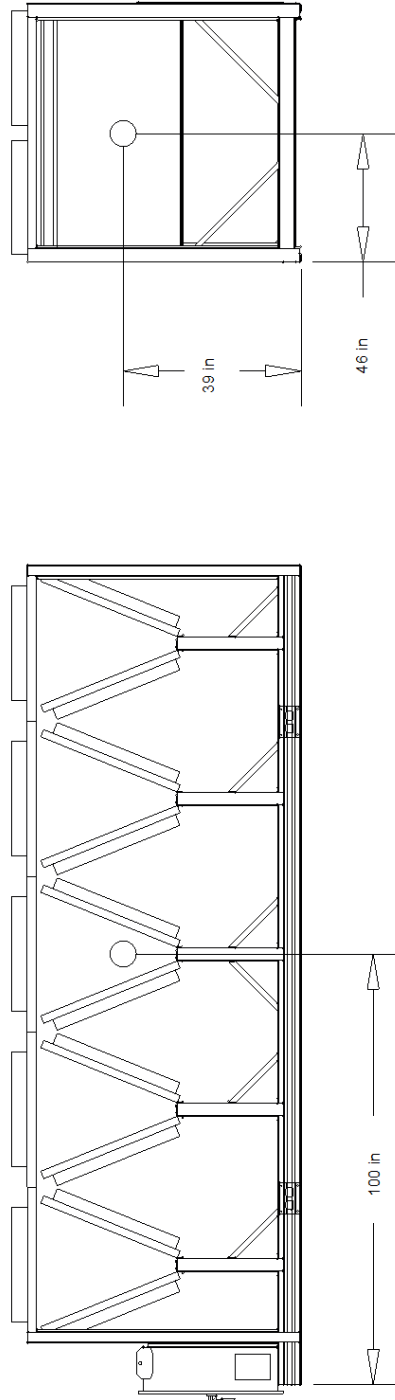
Other lifting arrangements could result in death, serious injury or equipment damage.

**DO NOT ALL LIFTING STRAPS TO CONTACT UNIT DURING LIFT.**

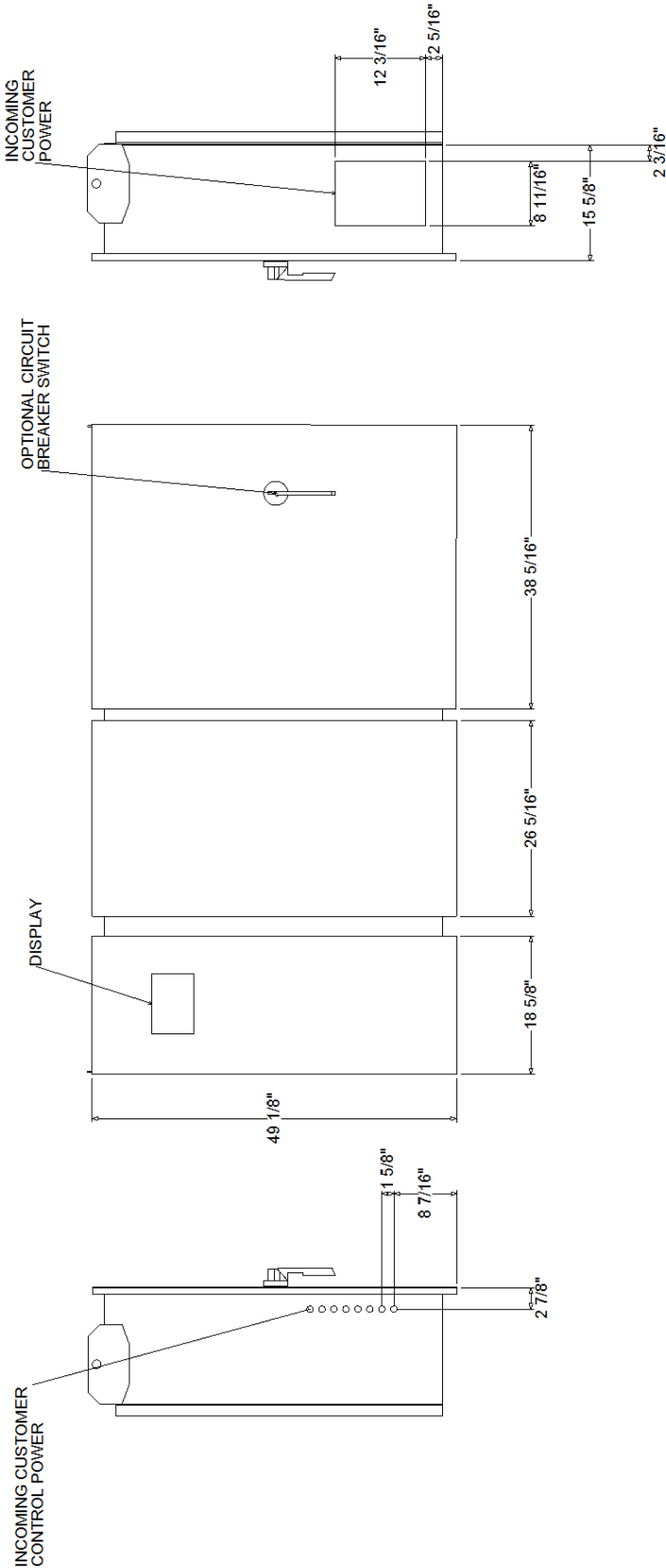
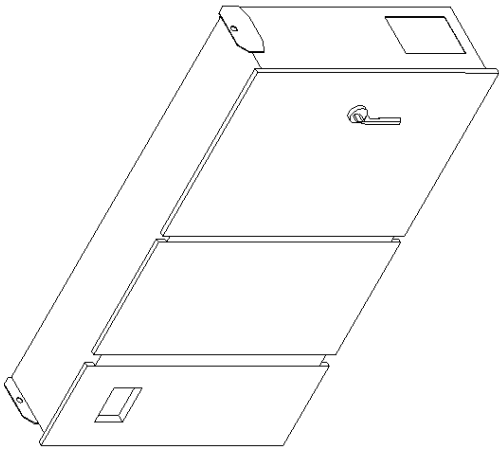


## CENTER OF GRAVITY

Different unit configurations and options may cause a variation in the center of gravity from what is listed. Refer to the Installation, Operating and Maintenance manual for specific lifting instructions.

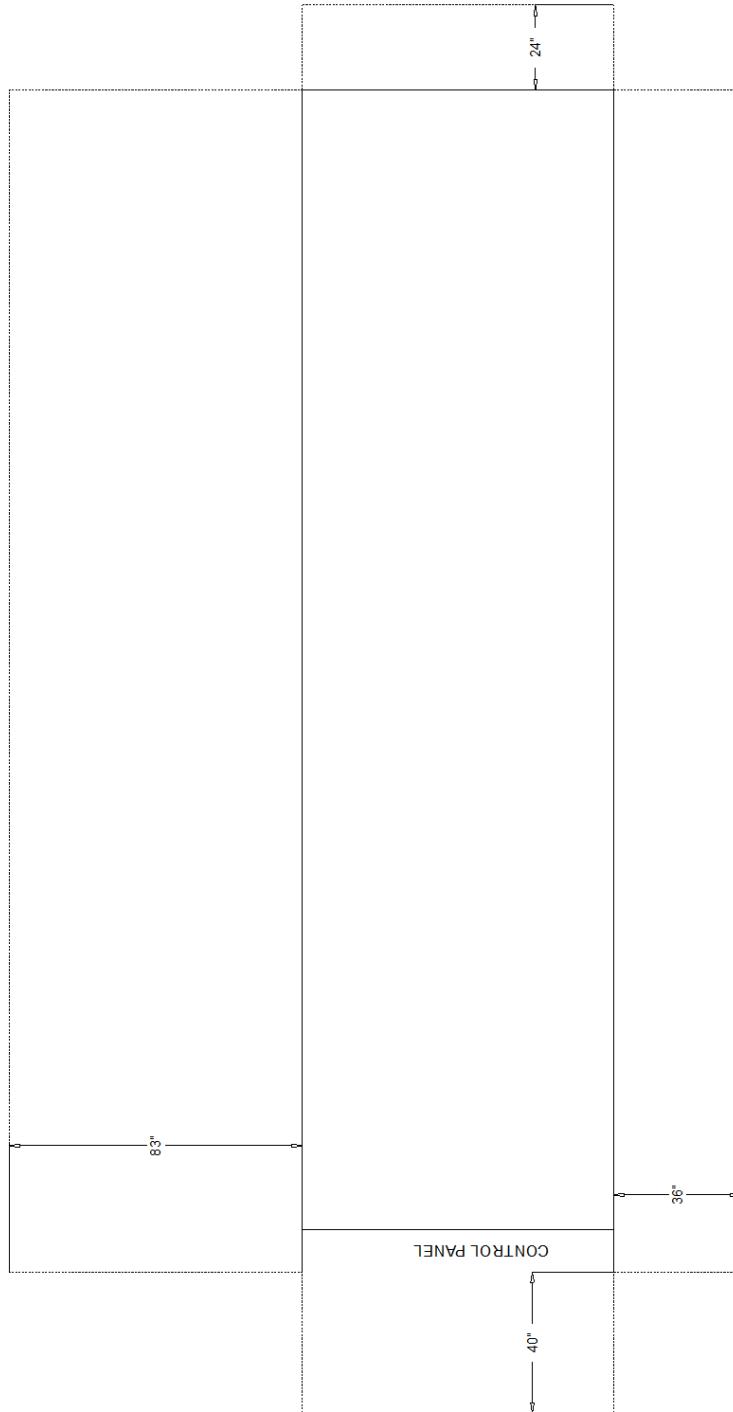


| CUSTOMER WIRE SELECTION TABLE                                         |                   |  |
|-----------------------------------------------------------------------|-------------------|--|
| POWER WIRE CONNECTION TO HIGH FAULT CIRCUIT BREAKER                   |                   |  |
| CIRCUIT 1 & 2 (SINGLE POINT POWER)<br>LUG WIRE SIZE RANGE (PER PHASE) | (2) 2/0 - 500 MCM |  |
| SHORT CIRCUIT RATING                                                  | 65,000 A          |  |





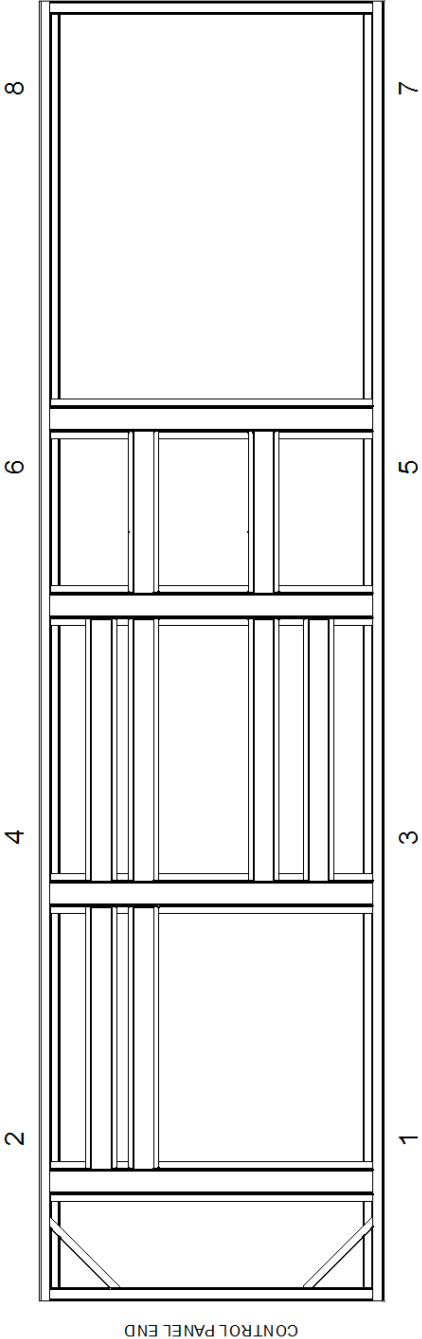
UNIT CLEARANCE  
NO OBSTRUCTIONS ABOVE UNIT



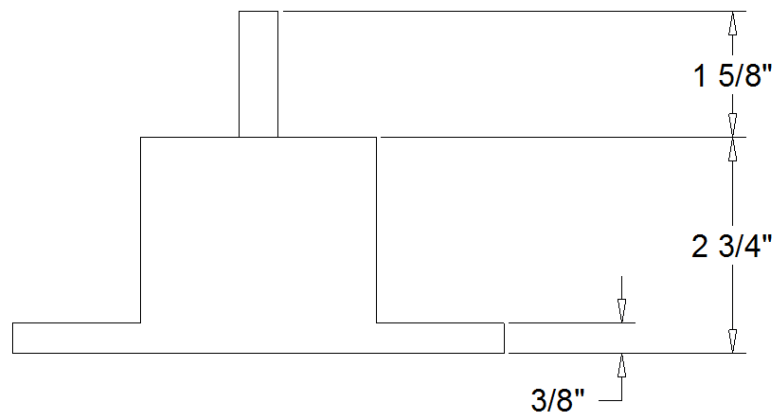
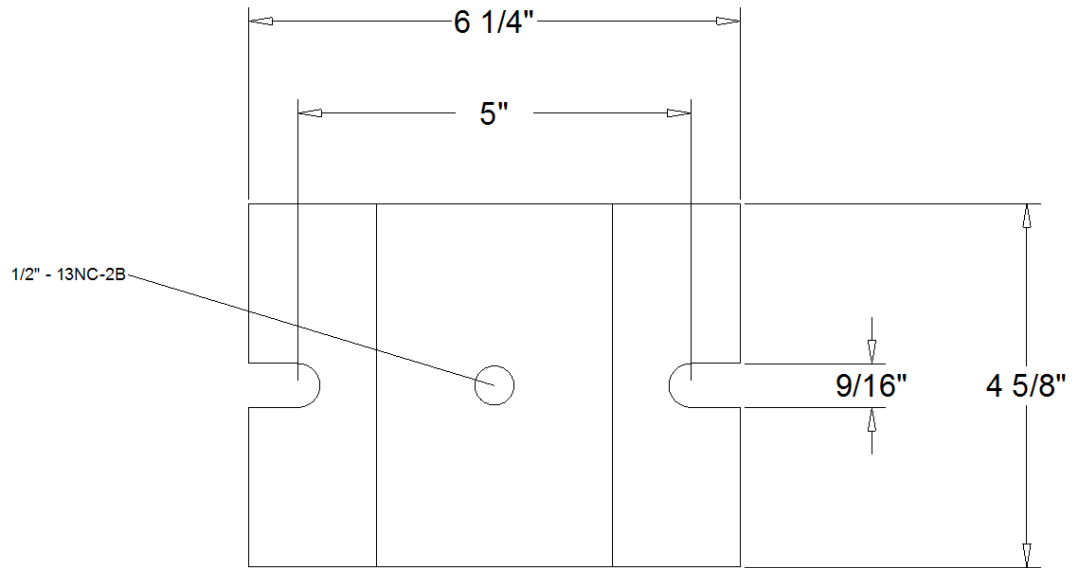
POINT LOAD WEIGHTS AND ISOLATOR SELECTIONS

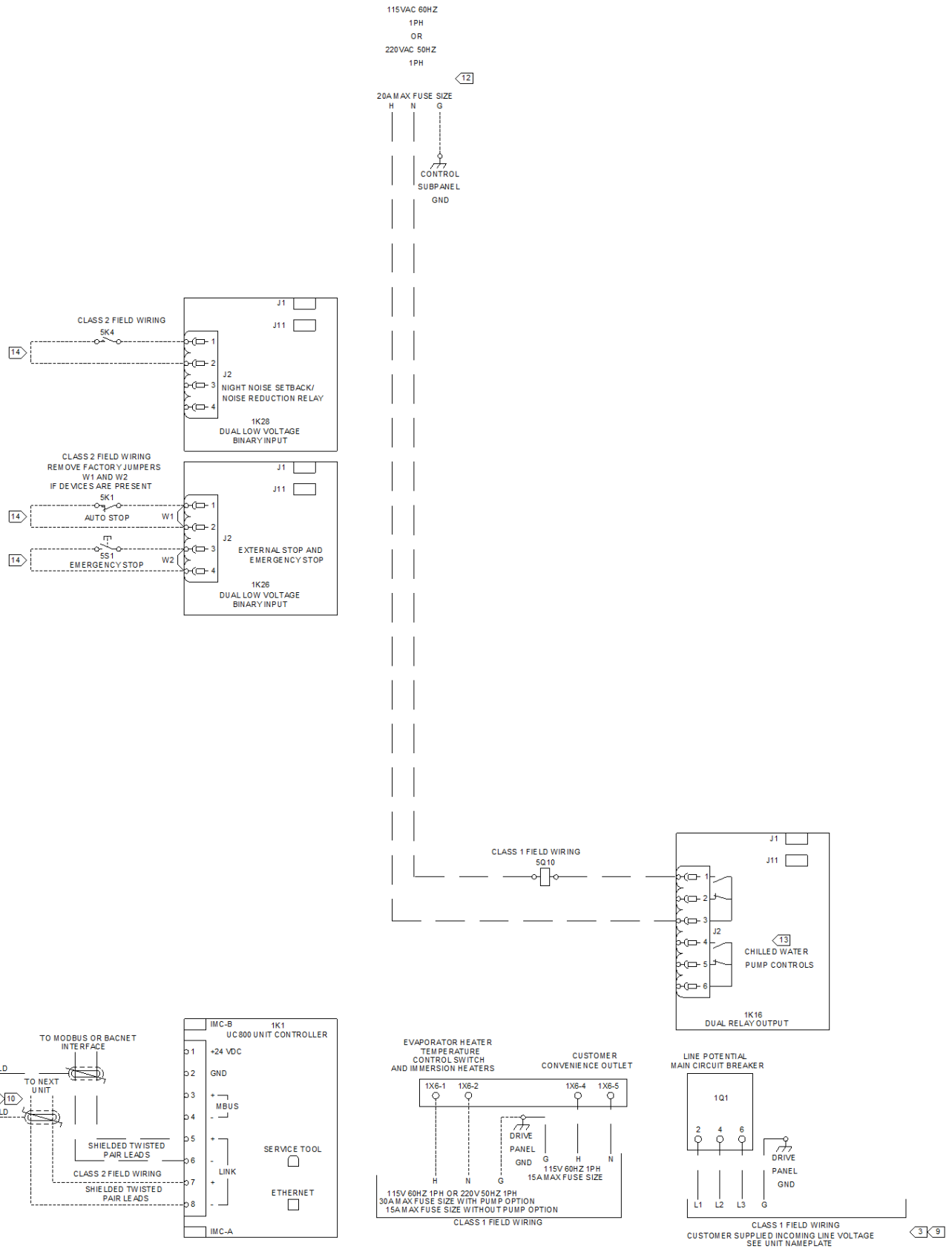
Mounting Hole Diameter: 9/16"

|   |          |                                      |
|---|----------|--------------------------------------|
| 1 | 1,329 lb | RDP4-WR BRICK RED MAX LOAD 2250.0 lb |
| 2 | 1,410 lb | RDP4-WR LIME MAX LOAD 3000.0 lb      |
| 3 | 1,170 lb | RDP4-WR BRICK RED MAX LOAD 2250.0 lb |
| 4 | 1,369 lb | RDP4-WR LIME MAX LOAD 3000.0 lb      |
| 5 | 684 lb   | RDP4-WR BROWN MAX LOAD 1500.0 lb     |
| 6 | 671 lb   | RDP4-WR BROWN MAX LOAD 1500.0 lb     |
| 7 | 601 lb   | RDP4-WR BROWN MAX LOAD 1500.0 lb     |
| 8 | 663 lb   | RDP4-WR BROWN MAX LOAD 1500.0 lb     |



## NEOPRENE ISOLATOR DIMENSIONS





## GENERAL NOTES:

1. WIRE REPRESENTED BY DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS.
2. ALL STANDARD AND OPTIONAL COMPONENTS SHOWN.
- 3 SINGLE SOURCE POWER IS PROVIDED AS STANDARD ON THIS PRODUCT. FIELD CONNECTIONS ARE MADE TO DEVICES 1Q1 OR 1X1.
4. ALL MOTORS ARE PROTECTED FROM PRIMARY SINGLE PHASE FAILURES.
5. CAUTION - TRANE PUMP CONTROL MUST BE USED TO PROVIDE PUMP CONTROL. EVAPORATOR CHILLED WATER PUMP MUST BE CONTROLLED BY THE CHILLER OUTPUT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN DAMAGE TO THE UNIT.
6. CAUTION - DO NOT ENERGIZE THE UNIT UNTIL CHECK OUT AND STARTUP PROCEDURES HAVE BEEN COMPLETED.

## WIRING REQUIREMENTS:

7. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL CODES.
8. DO NOT RUN LOW VOLTAGE CONTROL WIRING (30V OR LESS) IN CONDUIT WITH 110V OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTH FOR A GIVEN SIZE: 14 AWG OF 5000 FT, 16 AWG OF 2000 FT OR 18 AWG OF 1000 FT.
- 9 ALL UNIT POWER WIRING MUST BE 600V COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 C. REFER TO UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION DEVICE. PROVIDE AN EQUIPMENT GROUNDING IN ACCORDANCE WITH APPLICABLE ELECTRIC CODES. REFER TO WIRE RANGE TABLE FOR LUG SIZES.
- 10 SHIELDED, TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULES (1K1 OR OPTIONAL 1K6). THE SHIELD SHOULD BE GROUNDED AT THE UNIT CONTROL PANEL END.
- 11 22 AWG SHIELDED COMMUNICATION WIRE EQUIVALENT TO HELIX LF22P0014216 IS RECOMMENDED FOR WIRING TO NEXT UNIT. THE SUM TOTAL OF ALL INTERCONNECTED CABLE SEGMENTS ARE NOT TO EXCEED 4500 FT. CONNECTION TOPOLOGY SHOULD BE DAISY CHAIN. REFER TO BUILDING AUTOMATION SYSTEM (BAS) COMMUNICATION INSTALLATION LITERATURE FOR END OF LINE TERMINATION RESISTOR REQUIREMENTS.
- 12 ALL CUSTOMER SUPPLIED CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300V. EXCEPT AS NOTED, ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG OR TO DIN RAIL MOUNTED SPRING FORCE TERMINALS.

## CONTACT RATINGS AND REQUIREMENTS:

- 13 UNIT PROVIDED DRY CONTACTS FOR THE CONDENSER / CHILLED WATER PUMP CONTROL. RELAY CONTACT RATINGS AT 120VAC: 7.2A RESISTIVE, 2.88A PILOT DUTY, OR 1/3 HP, 7.2 FLA. CONTACTS ARE RATED FOR 240VAC, 5A GENERAL PURPOSE DUTY. 1K16 IS NOT PRESENT WITH PUMP PACKAGE OPTION.
- 14 CUSTOMER SUPPLIED CONTACTS FOR ALL LOW VOLTAGE CONNECTIONS MUST BE COMPATABLE WITH DRY CIRCUIT 24VDC FOR A 12mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

# Trane Performance Climate Changer Air Handler

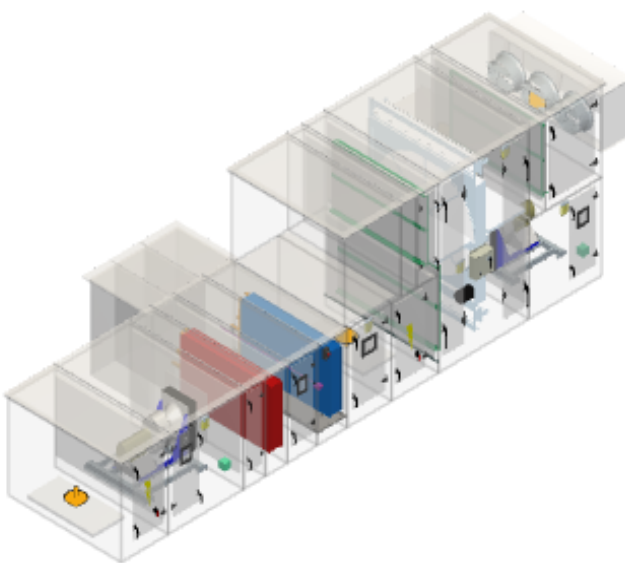
## Unit Overview - DOAS-1

| Application                   | Unit Size | External Dimensions   |               |                      | Weight              |                                    |
|-------------------------------|-----------|-----------------------|---------------|----------------------|---------------------|------------------------------------|
|                               |           | Height                | Width         | Length               | Installed           | Rigging                            |
| Outdoor unit                  | CSAA017   | 104.4 in              | Width: 72.000 | Unit length: 306.757 | 8700 lb             | 7462 lb                            |
| Quantity of Shipping Sections |           | Largest Ship Split    |               |                      | Heaviest Ship Split | Elevation                          |
|                               |           | Height                | Width         | Length               |                     |                                    |
| 5 piece(s)                    |           | 55.2 in               | 72.0 in       | 202.4 in             | 3949 lb             | 0.00 ft                            |
| Supply Fan                    |           |                       |               | Return/Exhaust Fan   |                     |                                    |
| Airflow                       | 7275 cfm  | Total Static Pressure | 5.792 in H2O  | Airflow              | 6826 cfm            | Total Static Pressure 4.039 in H2O |

Note: Height includes air handler sloped roof panel and standing seam.

## Construction Features

|                              |                                            |
|------------------------------|--------------------------------------------|
| Panel                        | 2in. foam injected R-13 with thermal break |
| Panel Material               | All unit inner panels - galvanized         |
| Integral Base Frame          | 6in. integral base frame                   |
| Paint                        | Slate gray                                 |
| Short Circuit Current Rating | 5 kA                                       |
| Agency Approval              | UL listed unit                             |
| Roof Curb Type               | Standard roof curb                         |



## Unit Electrical

| Circuit                                               | Voltage/Phase/Frequency | FLA     | MCA     | Max Fuse Size |
|-------------------------------------------------------|-------------------------|---------|---------|---------------|
| Circuit number 1 SPP (Field provided unit disconnect) | 460/3/60                | 36.52 A | 41.77 A | 60.00 A       |
| Circuit number 2 UV lights 1                          | 115/1/60                | 1.54 A  | 1.93 A  | 15.00 A       |
| Circuit number 3 Lights + switch                      | 115/1/60                | 2.61 A  | 3.26 A  | 15.00 A       |
| Circuit number 4 Receptacle                           | 115/1/60                | 8.00 A  | 10.00 A | 15.00 A       |

## Unit Acoustics

| Sound Path     | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|----------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Supply bottom: | 81 dB   | 79 dB | 78 dB | 87 dB | 80 dB | 75 dB | 79 dB | 67 dB |
| Return:        | 67 dB   | 64 dB | 76 dB | 64 dB | 60 dB | 60 dB | 60 dB | 46 dB |
| Outdoor:       | 69 dB   | 71 dB | 64 dB | 68 dB | 61 dB | 60 dB | 58 dB | 47 dB |
| Exhaust:       | 82 dB   | 78 dB | 88 dB | 80 dB | 76 dB | 73 dB | 77 dB | 63 dB |
| Casing:        | 81 dB   | 79 dB | 82 dB | 86 dB | 78 dB | 63 dB | 64 dB | 56 dB |

## Unit Controls

|                 |               |
|-----------------|---------------|
| Controller Type | No controller |
|-----------------|---------------|

## Warranty

|                  |                         |
|------------------|-------------------------|
| Warranty section | Extd. warranty          |
| Labor - 1st year | 1st year labor warranty |

## Pipe cabinet section

|                                    |                |
|------------------------------------|----------------|
| Pipe cabinet 1 side doors          | One side door  |
| Pipe cabinet 1 door front position | One front door |
| Pipe cabinet 1 door back position  | One back door  |



### Exhaust fan section - Position: 1

| Fan Data                  |                      |                                          |               | Motor Data             |               |                                       |              |
|---------------------------|----------------------|------------------------------------------|---------------|------------------------|---------------|---------------------------------------|--------------|
| Wheel Diameter/Type/Class |                      | 22.25in. dd plenum, 80% width, M press   |               | Power / Fan            |               | 10 hp                                 |              |
| Fan Quantity              |                      | 1                                        |               | Voltage                |               | 460/3                                 |              |
| Discharge Location        |                      | Side opp. drive                          |               | Speed                  |               | 1800                                  |              |
| Motor Location            |                      | Right side drive                         |               | Class                  |               | NEMA premium compliant ODP            |              |
| Blades                    |                      | Higher eff.(some bands lower,more spike) |               | Precision Motor        |               | No                                    |              |
| Drive Service Factor      |                      | Direct drive                             |               | Efficiency             |               | 92.12 %                               |              |
| Fan Performance           |                      |                                          |               | Part Load Efficiency   |               | 86.09 %                               |              |
|                           |                      |                                          |               | Fan Electrical Power   |               | 5.83 kW                               |              |
|                           |                      |                                          |               | Fan Section Options    |               |                                       |              |
| Airflow                   |                      | 6826 cfm                                 |               | Inlet Sound Attenuator |               | Inlet bell (reduces spike)            |              |
| Total Static Pressure     |                      | 4.039 in H2O                             |               | Fan Wheel Balance      |               | Inverter balance with shaft grounding |              |
| Total Brake Power         |                      | 6.873 hp                                 |               | Perforated Panel       |               | Perforated panels                     |              |
| Operating Speed           |                      | 1960 rpm                                 |               | Door Location          |               | Right                                 |              |
| Total Brake HP            |                      | 6.873 hp                                 |               | Window                 |               | Right - thermal                       |              |
| AMCA FEG                  |                      | FEG80                                    |               | Door Guard             |               | Yes                                   |              |
| Unit Static Efficiency    |                      | 63.24 %                                  |               | Marine Light           |               | Marine LED light                      |              |
| Motor Interface Options   |                      |                                          |               |                        |               |                                       |              |
| Selection Type            |                      | VFD                                      |               |                        |               |                                       |              |
| Voltage                   |                      | 460/3                                    |               |                        |               |                                       |              |
| Mounting Location         |                      | Internal mounting                        |               |                        |               |                                       |              |
| Motor Wire In Conduit     |                      | Motor wiring conduit                     |               |                        |               |                                       |              |
| VFD Frequency             |                      | 66.00 Hz                                 |               |                        |               |                                       |              |
| Fan Discharge Options     |                      |                                          |               |                        |               |                                       |              |
| Face                      | Type                 | Airflow                                  | Face Velocity | Area                   | Pressure Drop | Damper Torque Requirement             | Exhaust Hood |
| Side Face Feature         | Opposed blade damper | 7000 cfm                                 | 1241 ft/min   | 5.64 sq ft             | 0.144 in H2O  | N/A                                   | N/A          |

### Exhaust fan Acoustics

| Sound Path | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Return:    | 67 dB   | 64 dB | 76 dB | 64 dB | 60 dB | 60 dB | 60 dB | 46 dB |
| Exhaust:   | 82 dB   | 78 dB | 88 dB | 80 dB | 76 dB | 73 dB | 77 dB | 63 dB |
| Casing:    | 76 dB   | 74 dB | 81 dB | 76 dB | 71 dB | 58 dB | 57 dB | 52 dB |

### Pressure Drop in (in w.g.)

| Exhaust fan              |      |
|--------------------------|------|
| Wheel                    | 1.53 |
| Fan section              | 0.51 |
| Internal Static Pressure | 2.04 |
| External Static Pressure | 2.00 |
| Total Static Pressure    | 4.04 |

### Starter/VFD only section - Position: 2

| Return/Exhaust Fan Motor Interface Door |        |             | Right    |               |            |               |
|-----------------------------------------|--------|-------------|----------|---------------|------------|---------------|
| Openings                                |        |             |          |               |            |               |
| Face                                    | Path   | Type        | Airflow  | Face Velocity | Area       | Pressure Drop |
| Bottom Face Feature                     | Return | Rectangular | 7000 cfm |               | 5.91 sq ft |               |

### Air mixing section - Position: 3

| Openings               |               |             |             |                            |            |               |      |
|------------------------|---------------|-------------|-------------|----------------------------|------------|---------------|------|
| Face                   | Path          | Type        | Airflow     | Face Velocity              | Area       | Pressure Drop | Hood |
| Back                   | Outside       | Std TRAQ    | 7326 cfm    | 1748 ft/min                | 4.19 sq ft | 0.271 in H2O  | Yes  |
| Filter                 |               |             |             |                            |            |               |      |
| Type                   | Frame         | MERV Rating | Quantity    | Size                       |            | Pressure Drop |      |
| Pleated media - MERV 8 | 2"            | MERV 8      | 2.00        | 20in.x20in.<br>20in.x24in. |            | 0.606         |      |
|                        |               |             | 4.00        |                            |            |               |      |
| Condition              | Face Velocity | Airflow     | Area        |                            |            |               |      |
| Mid-life               | 388 ft/min    | 7326 cfm    | 18.89 sq ft |                            |            |               |      |
| Section Options        |               |             |             |                            |            |               |      |
| Door Location          |               |             | Right       |                            |            |               |      |

### Custom length section - Position: 4

|                |           |
|----------------|-----------|
| Section Length | 10.523 in |
|----------------|-----------|

### Dedicated outside air Energy wheel - Position: 5

| Wheel                              |  |              |            | Motor                     |          |                        |            | Dampers           |             |                    |          |                            |  |               |        |              |  |                            |  |
|------------------------------------|--|--------------|------------|---------------------------|----------|------------------------|------------|-------------------|-------------|--------------------|----------|----------------------------|--|---------------|--------|--------------|--|----------------------------|--|
| Size                               |  | Efficiency   |            | Model Number              |          | Voltage                |            | Interface Options |             | Exhaust Air Bypass |          | Outside Air Bypass         |  | Recirculation |        |              |  |                            |  |
| 7000                               |  | High         |            | Wheel 7000 Poly H         |          | 460/3                  |            | Starter           |             | Yes                |          | Yes                        |  |               |        |              |  |                            |  |
| Design Airflow                     |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Ventilation                        |  |              |            | Exhaust                   |          |                        |            | Return            |             |                    |          | Supply                     |  |               |        |              |  |                            |  |
| 7000 cfm                           |  |              |            | 6500 cfm                  |          |                        |            | 6775 cfm          |             |                    |          | 7275 cfm                   |  |               |        |              |  |                            |  |
| Pressure Drop @ Design Airflow     |  |              |            |                           |          | SA to RA Pressure Diff | OACF Ratio | OATR Flow         | EATR        | EATR Flow          |          |                            |  |               |        |              |  |                            |  |
| Supply Side                        |  | Exhaust Side |            | Recirculation Damper      |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| 1.00 in H2O                        |  | 0.94 in H2O  |            | N/A                       |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
|                                    |  |              |            | 1.500 in H2O              |          | 1.01 Number            |            | 326 cfm           |             | 3.8 %              |          | 275 cfm                    |  |               |        |              |  |                            |  |
| Summer Conditions                  |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Outside Air                        |  |              | Return Air |                           |          | Supply Air             |            |                   | Exhaust Air |                    |          | Effectiveness              |  |               |        |              |  |                            |  |
| Dry Bulb                           |  | Wet Bulb     | Dry Bulb   |                           | Wet Bulb | Dry Bulb               |            | Wet Bulb          | Dry Bulb    |                    | Wet Bulb | Latent                     |  | Sensible      | Total  |              |  |                            |  |
| 87.00 F                            |  | 72.00 F      | 75.00 F    |                           | 63.00 F  | 78.17 F                |            | 65.77 F           | 84.21 F     |                    | 69.93 F  | 71.8 %                     |  | 76.5 %        | 73.5 % |              |  |                            |  |
| Winter Conditions                  |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Outside Air                        |  |              | Return Air |                           |          | Supply Air             |            |                   | Exhaust Air |                    |          | Effectiveness              |  |               |        |              |  |                            |  |
| Dry Bulb                           |  | Wet Bulb     | Dry Bulb   |                           | Wet Bulb | Dry Bulb               |            | Wet Bulb          | Dry Bulb    |                    | Wet Bulb | Latent                     |  | Sensible      | Total  |              |  |                            |  |
| -5.00 F                            |  | -6.00 F      | 70.00 F    |                           | 53.00 F  | 48.29 F                |            | 39.79 F           | 12.05 F     |                    | 11.94 F  | 72.3 %                     |  | 77.6 %        | 75.9 % |              |  |                            |  |
| Energy Savings                     |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Summer                             |  |              |            |                           |          |                        |            |                   |             |                    |          | Winter                     |  |               |        |              |  |                            |  |
| Sensible                           |  |              | Latent     |                           |          | Total                  |            |                   | Sensible    |                    |          |                            |  |               |        |              |  |                            |  |
| 68.82 MBh                          |  |              | 87.99 MBh  |                           |          | 156.81 MBh             |            |                   | 414.49 MBh  |                    |          |                            |  |               |        |              |  |                            |  |
| Economizing                        |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Supply Airflow                     |  |              |            | Supply Side Pressure Drop |          |                        |            | Exhaust Airflow   |             |                    |          | Exhaust Side Pressure Drop |  |               |        |              |  |                            |  |
| 7000 cfm                           |  |              |            | 0.53 in H2O               |          |                        |            | 6500 cfm          |             |                    |          | 0.55 in H2O                |  |               |        |              |  |                            |  |
| Return/Exhaust Air Filter          |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Type                               |  | Frame        |            | MERV Rating               |          | Airflow                |            | Face Area         |             | Face Velocity      |          | Condition                  |  | Pressure Drop |        | Quantity     |  | Size                       |  |
| Pleated media - MERV 8             |  | 2"           |            | MERV 8                    |          | 6775 cfm               |            | 18.89 sq ft       |             | 359 ft/min         |          | Mid-life                   |  | 0.595 in H2O  |        | 2.00<br>4.00 |  | 20in.x20in.<br>20in.x24in. |  |
| Energy Wheel Section Options       |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| Door Location                      |  |              |            |                           |          |                        |            |                   |             | Right              |          |                            |  |               |        |              |  |                            |  |
| 1st level - air entering LED light |  |              |            |                           |          |                        |            |                   |             | Marine LED light   |          |                            |  |               |        |              |  |                            |  |
| 2nd level - air entering light     |  |              |            |                           |          |                        |            |                   |             | Marine LED light   |          |                            |  |               |        |              |  |                            |  |
| AHRI 1060 Classification - Summer  |  |              |            |                           |          |                        |            |                   |             |                    |          |                            |  |               |        |              |  |                            |  |
| AHRI 1060 Classification           |  |              |            |                           |          |                        |            |                   |             | AHRI ERV Certified |          |                            |  |               |        |              |  |                            |  |
| Data Generation Date               |  |              |            |                           |          |                        |            |                   |             | 8/6/2021           |          |                            |  |               |        |              |  |                            |  |
| Trane Select Assist update number  |  |              |            |                           |          |                        |            |                   |             | 2490               |          |                            |  |               |        |              |  |                            |  |

Note: Purge is Not Included.

Note: Certified in accordance with the AHRI ERV Certification Program, which is based on AHRI Standard 1060. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).




## AHRI 1060 Classification - Winter

AHRI 1060 Classification Outside Scope of AHRI 1060

Data Generation Date 8/6/2021

Trane Select Assist update number 2490

Note: Application Rating is outside of the scope of AHRI ERV Certification Program, but is rated in accordance with AHRI Standard 1060.

## Filter section - Position: 6

## Primary Filter

| Type                               | Frame             | Loading           | Airflow  | Face Area   | Face Velocity | Condition | Pressure Drop             | Filter Quantity | Filter Size    |
|------------------------------------|-------------------|-------------------|----------|-------------|---------------|-----------|---------------------------|-----------------|----------------|
| 4in. cartridge - MERV 14 - premium | 4in. filter frame | Side load filters | 7275 cfm | 18.89 sq ft | 385 ft/min    | Mid-life  | 0.762 in H <sub>2</sub> O | 2.00<br>4.00    | 20x20<br>20x24 |

## Filter Section Options

|                             |             |
|-----------------------------|-------------|
| Door Location               | Right       |
| Extra sets of filter type 1 | 1 extra set |

## Custom length section - Position: 7

|                |           |
|----------------|-----------|
| Section Length | 10.000 in |
|----------------|-----------|

## Access/blank/turning section - Position: 8

## Options

|                |           |
|----------------|-----------|
| Section Length | 36.000 in |
|----------------|-----------|

## Air mixing section - Position: 9

## Openings

| Face | Path | Type | Airflow | Face Velocity | Area | Pressure Drop | Hood |
|------|------|------|---------|---------------|------|---------------|------|
|------|------|------|---------|---------------|------|---------------|------|

## Section Options

|               |                  |
|---------------|------------------|
| Door Location | Right            |
| Window        | Right - thermal  |
| Marine Light  | Marine LED light |

## Cooling coil section - Position: 10

| Coil Construction        |                                                | Coil Performance                  |                            |
|--------------------------|------------------------------------------------|-----------------------------------|----------------------------|
| Model                    | Chilled water - UW                             | Capacity                          |                            |
| Rows                     | 8                                              | Total                             | 300.86 MBh                 |
| Tube Diameter            | 1/2in. tube diameter (12.7 mm)                 | Sensible                          | 209.68 MBh                 |
| Tube Matl/Wall Thickness | .016" (0.406 mm) copper tubes                  | Air                               |                            |
| Fin Spacing              | 101 Per Foot                                   | Flow                              | 7275 cfm                   |
| Fin Material             | Aluminum fins                                  | Entering Dry Bulb                 | 78.17 F                    |
| Fin Type                 | Delta flo H (Hi efficient)                     | Entering Wet Bulb                 | 65.77 F                    |
| Face Area                | 16.81 sq ft                                    | Leaving Dry Bulb                  | 52.00 F                    |
| Coil (top/single) H x L  | 40 in. (1016 mm) X 61" (1549 mm) finned length | Leaving Wet Bulb                  | 51.87 F                    |
| Casing                   | Galvanized                                     | Pressure Drop                     | 0.716 in H <sub>2</sub> O  |
| Turbulators              | Yes                                            | Face Velocity                     | 433 ft/min                 |
| Rigging Weight           | 323.3 lb                                       | Fluid                             |                            |
| Installed Weight         | 461.4 lb                                       | Flow                              | 44.12 gpm                  |
| Voltage                  | 115/60/1                                       | Entering                          | 42.00 F                    |
| Coil Section Options     |                                                | Leaving                           | 57.00 F                    |
| Extended Drain and Vent  | Holes only                                     | Pressure Drop                     | 12.42 ft H <sub>2</sub> O  |
| Drain Pan                | Stainless steel                                | Tube Velocity                     | 2.44 ft/s                  |
| Drain Connection         | Left                                           | Reynolds Number                   | 1858.20                    |
| Minimum Trap Height (L)  | 10.582 in                                      | Type                              | Propylene glycol           |
| H Trap Dimension         | 6.388 in                                       | Concentration                     | 35.00 %                    |
| J Trap Dimension         | 3.194 in                                       | Fouling Factor                    | 0.00000 hr-sq ft-deg F/Btu |
| Service Panel            | Coil connection side                           | Volume                            | 14.70 gal                  |
| UV Light                 | Yes                                            | AHRI 410 Classification           |                            |
|                          |                                                | AHRI 410 Classification           | NOT Certified by AHRI      |
|                          |                                                | Data Generation Date              | 8/6/2021                   |
|                          |                                                | Trane Select Assist update number | 2490                       |



Note: Coil is NOT certified by AHRI. Coil is within the scope of AHRI Standard 410.

**Access/blank/turning section - Position: 11****Options**

|                        |                 |
|------------------------|-----------------|
| <b>Section Length</b>  | 19.000 in       |
| <b>Door Location 1</b> | Right           |
| <b>Window 1</b>        | Right - thermal |

**Heating coil section - Position: 12**

| Coil Construction               |                                                | Coil Performance                         |                            |
|---------------------------------|------------------------------------------------|------------------------------------------|----------------------------|
| <b>Model</b>                    | Hot water - UW                                 | <b>Capacity</b>                          |                            |
| <b>Rows</b>                     | 2                                              | <b>Total</b>                             | 531.41 MBh                 |
| <b>Tube Diameter</b>            | 1/2in. tube diameter (12.7 mm)                 | <b>Air</b>                               |                            |
| <b>Tube Matl/Wall Thickness</b> | .016" (0.406 mm) copper tubes                  | <b>Flow</b>                              | 7000 cfm                   |
| <b>Fin Spacing</b>              | 137 Per Foot                                   | <b>Entering Dry Bulb</b>                 | -5.00 F                    |
| <b>Fin Material</b>             | Aluminum fins                                  | <b>Leaving Dry Bulb</b>                  | 65.00 F                    |
| <b>Fin Type</b>                 | Delta flo H (Hi efficient)                     | <b>Pressure Drop</b>                     | 0.150 in H2O               |
| <b>Face Area</b>                | 16.81 sq ft                                    | <b>Face Velocity</b>                     | 417 ft/min                 |
| <b>Coil (top/single) H x L</b>  | 40 in. (1016 mm) X 61" (1549 mm) finned length | <b>Fluid</b>                             |                            |
| <b>Casing</b>                   | Galvanized                                     | <b>Flow</b>                              | 26.63 gpm                  |
| <b>Turbulators</b>              | Not Included                                   | <b>Entering</b>                          | 140.00 F                   |
| <b>Rigging Weight</b>           | 125.1 lb                                       | <b>Leaving</b>                           | 100.00 F                   |
| <b>Installed Weight</b>         | 167.0 lb                                       | <b>Pressure Drop</b>                     | 0.77 ft H2O                |
| <b>Coil Section Options</b>     |                                                | <b>Tube Velocity</b>                     | 1.47 ft/s                  |
| <b>Extended Drain and Vent</b>  | Holes only                                     | <b>Reynolds Number</b>                   | 10312.74                   |
| <b>Service Panel</b>            | Coil connection side                           | <b>Type</b>                              | Water                      |
|                                 |                                                | <b>Concentration</b>                     | 100.00 %                   |
|                                 |                                                | <b>Fouling Factor</b>                    | 0.00025 hr-sq ft-deg F/Btu |
|                                 |                                                | <b>Volume</b>                            | 5.03 gal                   |
|                                 |                                                | <b>AHRI 410 Classification</b>           |                            |
|                                 |                                                | <b>AHRI 410 Classification</b>           | Outside Scope of AHRI 410  |
|                                 |                                                | <b>Data Generation Date</b>              | 8/6/2021                   |
|                                 |                                                | <b>Trane Select Assist update number</b> | 2490                       |

Note: Coil is NOT certified by AHRI. Coil is outside the scope of AHRI Standard 410.

**Access/blank/turning section - Position: 13****Options**

|                        |           |
|------------------------|-----------|
| <b>Section Length</b>  | 14.000 in |
| <b>Door Location 1</b> | Right     |

### Supply fan section - Position: 14

| Fan Data                  |                                          | Motor Data             |                                       |
|---------------------------|------------------------------------------|------------------------|---------------------------------------|
| Wheel Diameter/Type/Class | 22.25in. dd plenum, 80% width, H press   | Power / Fan            | 15 hp                                 |
| Fan Quantity              | 1                                        | Voltage                | 460/3                                 |
| Discharge Location        | Front top                                | Speed                  | 1800                                  |
| Motor Location            | Right side drive                         | Class                  | NEMA premium compliant ODP            |
| Blades                    | Improved sound(lowest overall,less spike | Precision Motor        | No                                    |
| Drive Service Factor      | Direct drive                             | Efficiency             | 93.46 %                               |
| Fan Performance           |                                          | Part Load Efficiency   | 88.96 %                               |
| Airflow                   | 7275 cfm                                 | Fan Electrical Power   | 8.71 kW                               |
| Total Static Pressure     | 5.792 in H2O                             | Fan Section Options    |                                       |
| Total Brake Power         | 10.473 hp                                | Inlet Sound Attenuator | Inlet bell (reduces spike)            |
| Operating Speed           | 2213 rpm                                 | Fan Wheel Balance      | Inverter balance with shaft grounding |
| Total Brake HP            | 10.473 hp                                | Perforated Panel       | Perforated panels                     |
| AMCA FEG                  | FEG80                                    | Door Location          | Right                                 |
| Unit Static Efficiency    | 63.43 %                                  | Window                 | Right - thermal                       |
| Motor Interface Options   |                                          | Door Guard             | Yes                                   |
| Selection Type            | VFD                                      | Marine Light           | Marine LED light                      |
| Voltage                   | 460/3                                    |                        |                                       |
| Mounting Location         | Internal mounting                        |                        |                                       |
| Motor Wire In Conduit     | Motor wiring conduit                     |                        |                                       |
| VFD Frequency             | 75.00 Hz                                 |                        |                                       |

### Supply fan Acoustics

| Sound Path     | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|----------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Supply bottom: | 81 dB   | 79 dB | 78 dB | 87 dB | 80 dB | 75 dB | 79 dB | 67 dB |
| Outdoor:       | 69 dB   | 71 dB | 64 dB | 68 dB | 61 dB | 60 dB | 58 dB | 47 dB |
| Casing:        | 79 dB   | 77 dB | 73 dB | 85 dB | 77 dB | 62 dB | 63 dB | 54 dB |

### Pressure Drop in (in w.g.)

| Supply fan               |      |
|--------------------------|------|
| Air mixing section       | 1.07 |
| Wheel                    | 1.00 |
| Filter section           | 0.76 |
| Coil section             | 0.72 |
| Coil section             | 0.17 |
| Fan section              | 0.02 |
| Controls section         | 0.04 |
| Internal Static Pressure | 3.79 |
| External Static Pressure | 2.00 |
| Total Static Pressure    | 5.79 |

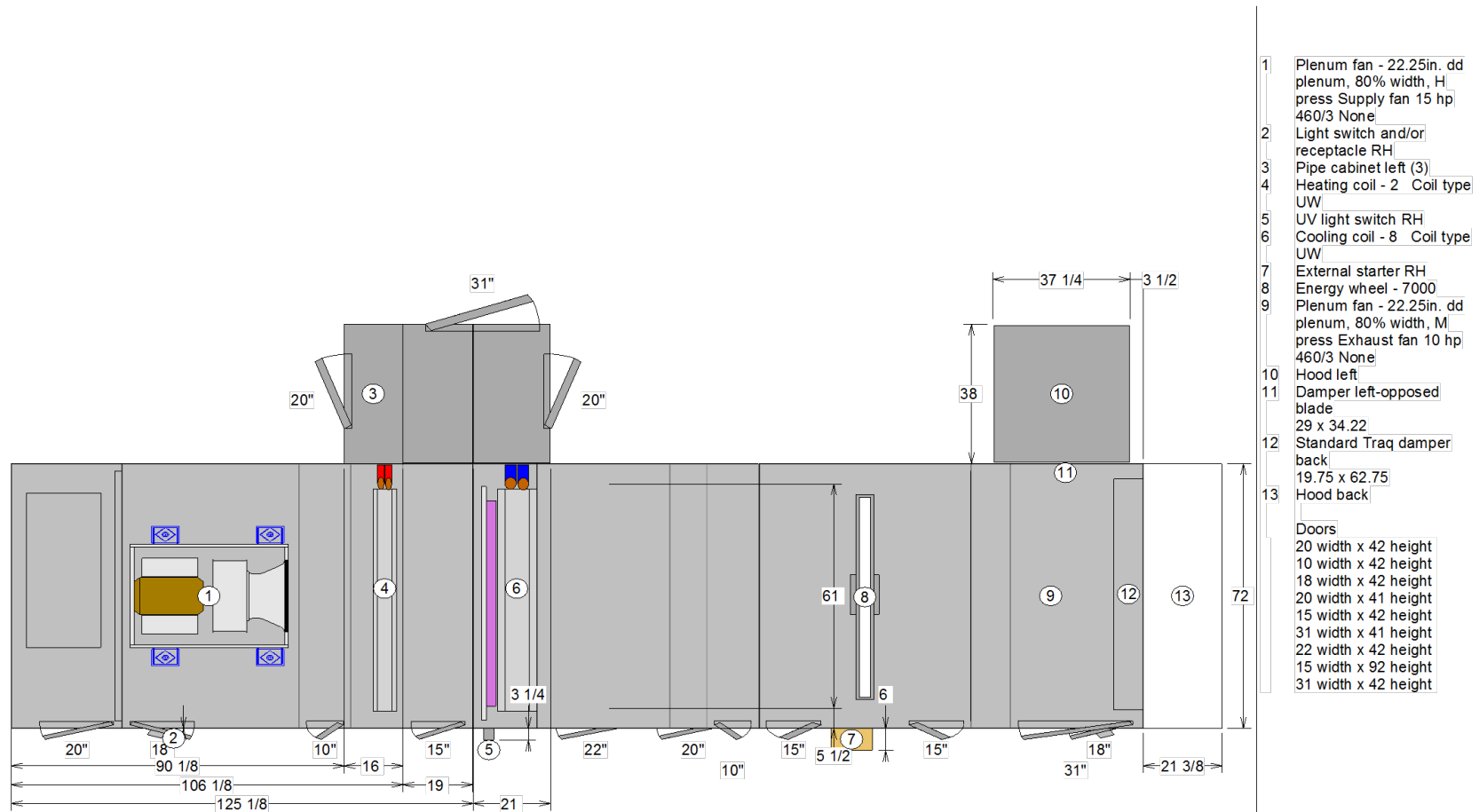
### Starter/VFD only section - Position: 15

| Supply Fan Motor Interface Door |        |             | Right    |               |            |               |
|---------------------------------|--------|-------------|----------|---------------|------------|---------------|
| Openings                        |        |             |          |               |            |               |
| Face                            | Path   | Type        | Airflow  | Face Velocity | Area       | Pressure Drop |
| Bottom Face Feature             | Supply | Rectangular | 7000 cfm | 1185 ft/min   | 5.91 sq ft | 0.044 in H2O  |



Job Name: UNE IIPE COM Building

CSAA  
Quantity: 1  
Tags: DOAS-1



For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

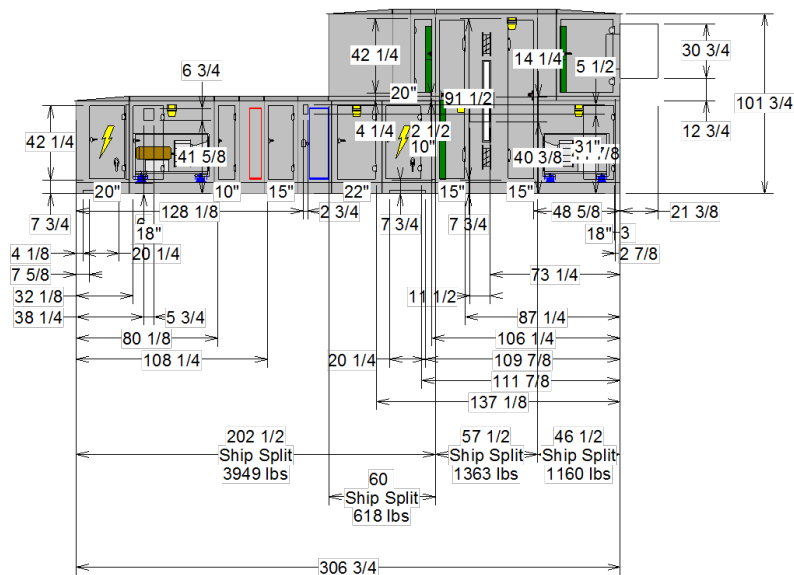
|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |



**TRANE**

Performance Climate Changer  
Air Handlers



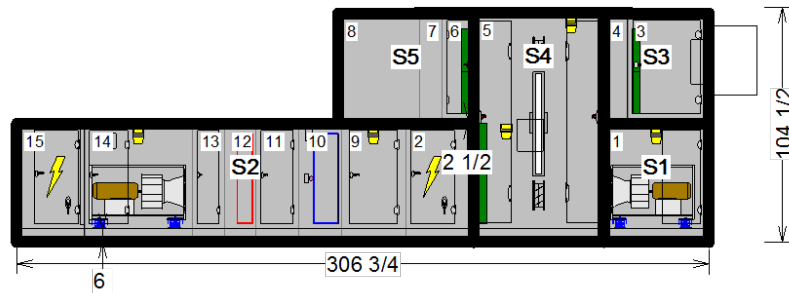


- 1 Plenum fan - 22.25in. dd plenum, 80% width, H press Supply fan 15 hp 460/3 None
  - 2 Light switch and/or receptacle RH
  - 3 Pipe cabinet left (3)
  - 4 Heating coil - 2 Coil type UW
  - 5 UV light switch RH
  - 6 Cooling coil - 8 Coil type UW
  - 7 External starter RH
  - 8 Energy wheel - 7000
  - 9 Plenum fan - 22.25in. dd plenum, 80% width, M press Exhaust fan 10 hp 460/3 None
  - 10 Hood left
  - 11 Damper left-opposed blade 29 x 34.22
  - 12 Standard Traq damper back 19.75 x 62.75
  - 13 Hood back
- Doors
- 20 width x 42 height
  - 10 width x 42 height
  - 18 width x 42 height
  - 20 width x 41 height
  - 15 width x 42 height
  - 31 width x 41 height
  - 22 width x 42 height
  - 15 width x 92 height
  - 31 width x 42 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

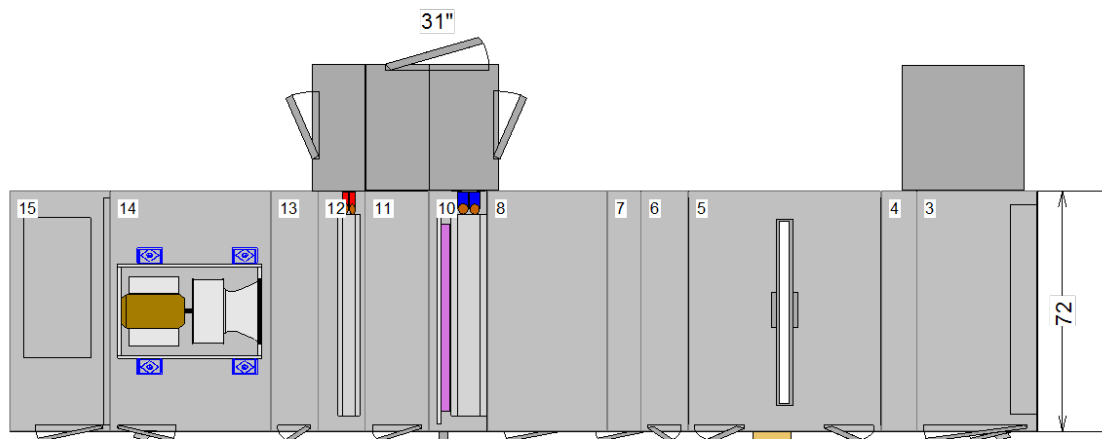
**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |



For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh

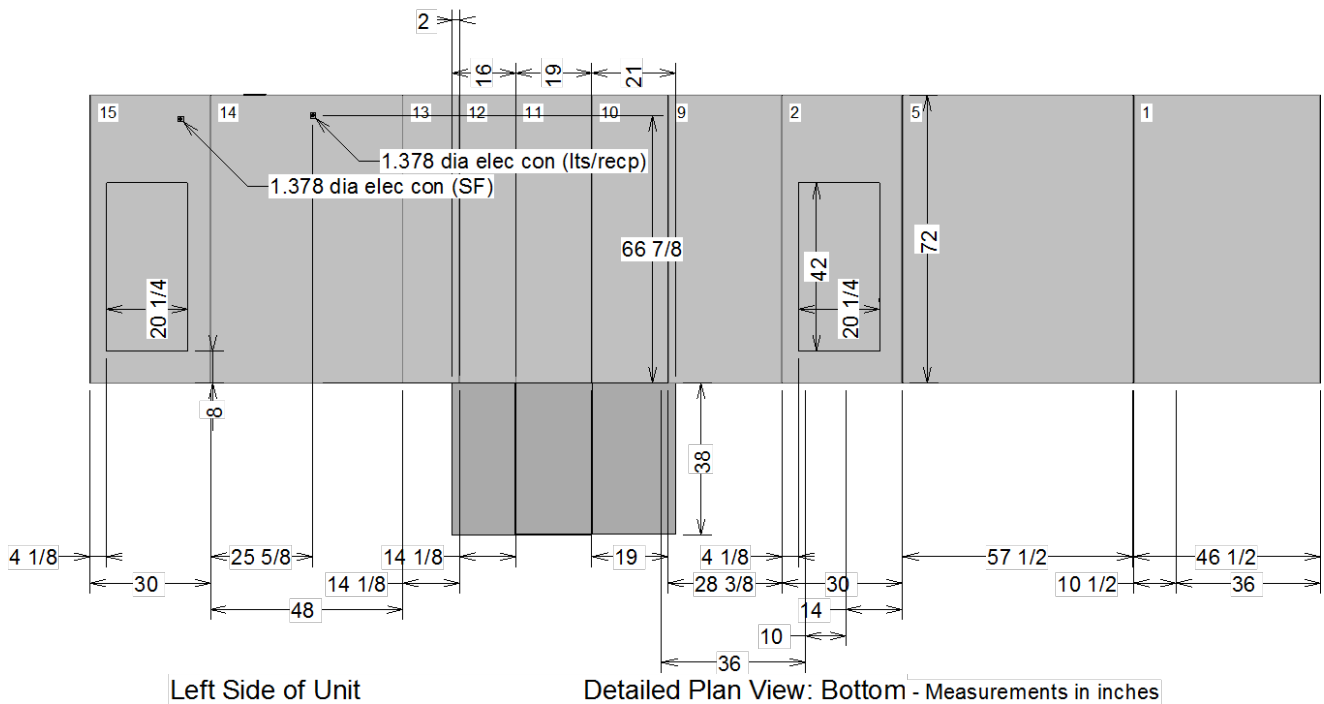
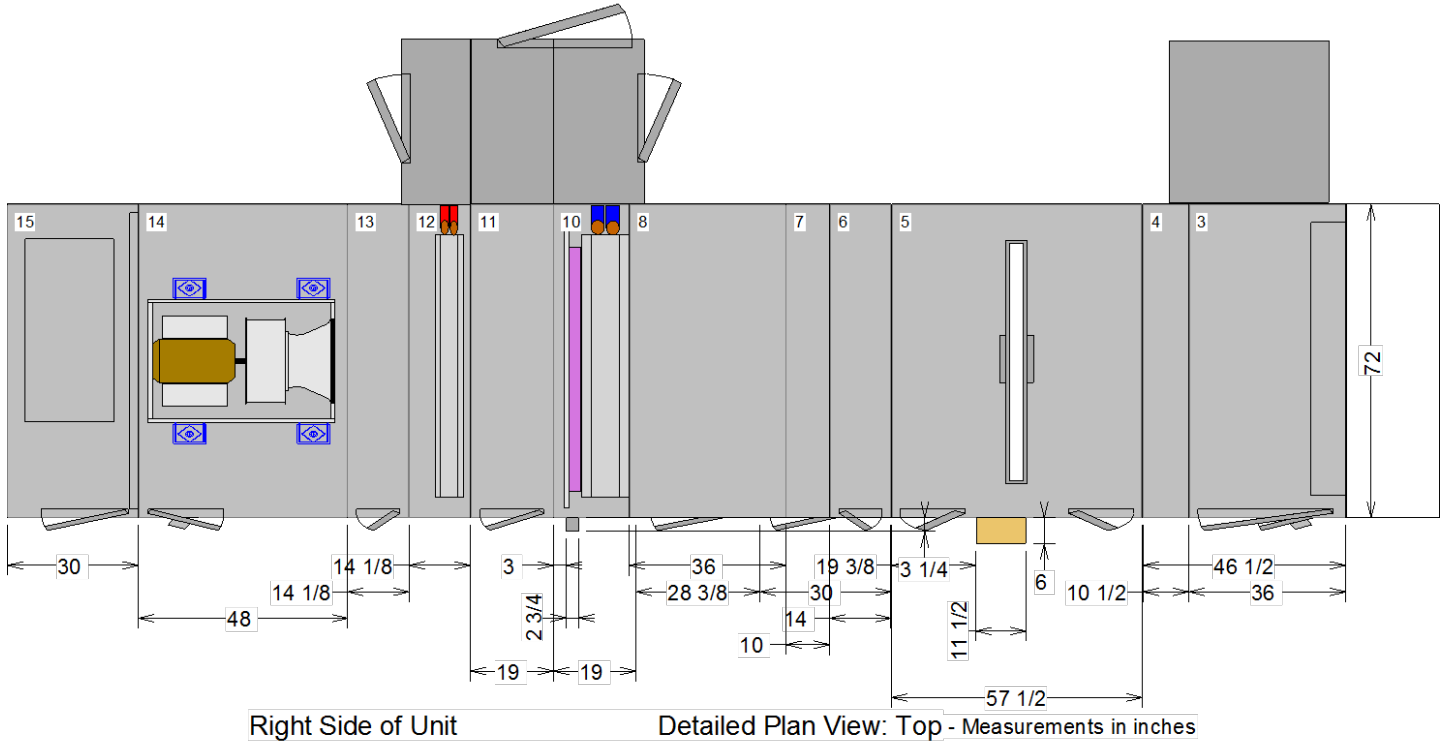
| Pos # | Module                | Length | Weight  | Pos #                             | Module           | Length | Weight  |
|-------|-----------------------|--------|---------|-----------------------------------|------------------|--------|---------|
| 1     | Fan section           | 46 1/2 | 1159.64 | 14                                | Fan section      | 48     | 1278.59 |
| 2     | Controls section      | 30     | 444.86  | 15                                | Controls section | 30     | 470.57  |
| 3     | Air mixing section    | 36     | 461.92  |                                   | Roof Curb        |        | 1057.91 |
| 4     | Custom length section | 10 1/2 | 90.30   | Installed Unit Weight 8699.85 lbs |                  |        |         |
| 5     | Wheel                 | 57 1/2 | 1363.03 |                                   |                  |        |         |
| 6     | Filter section        | 14     | 174.91  |                                   |                  |        |         |
| 7     | Custom length section | 10     | 86.01   |                                   |                  |        |         |
| 8     | Access section        | 36     | 356.81  |                                   |                  |        |         |
| 9     | Air mixing section    | 28 3/8 | 261.97  |                                   |                  |        |         |
| 10    | Coil section          | 19     | 732.28  |                                   |                  |        |         |
| 11    | Access section        | 19     | 221.98  |                                   |                  |        |         |
| 12    | Coil section          | 14 1/8 | 391.36  |                                   |                  |        |         |
| 13    | Access section        | 14 1/8 | 147.71  |                                   |                  |        |         |



Basic Overall Plan View: Top - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

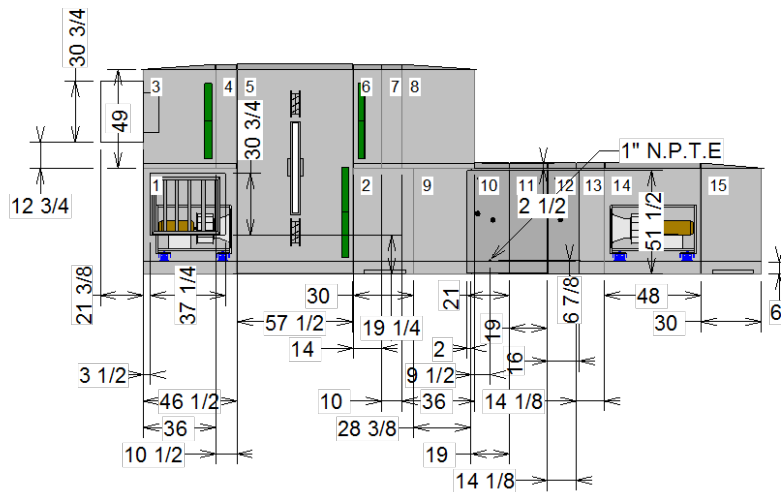
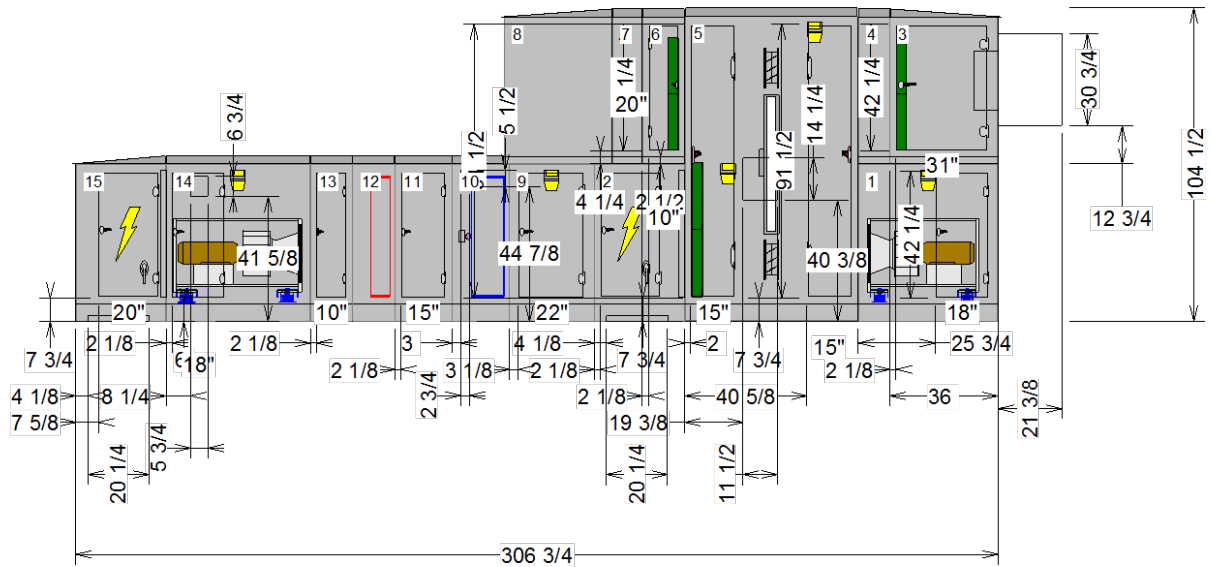
|                                               |                                 |                                                   |                                                                                                                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |  <b>TRANE</b><br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |                                                                                                                                                   |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |                                                                                                                                                   |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |                                                                                                                                                   |



**\*\*Placement of electrical conduit may vary by a tolerance of 8" in any direction.**

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |                                                                                                                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |  <b>TRANE</b><br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |                                                                                                                                                   |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |                                                                                                                                                   |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |                                                                                                                                                   |



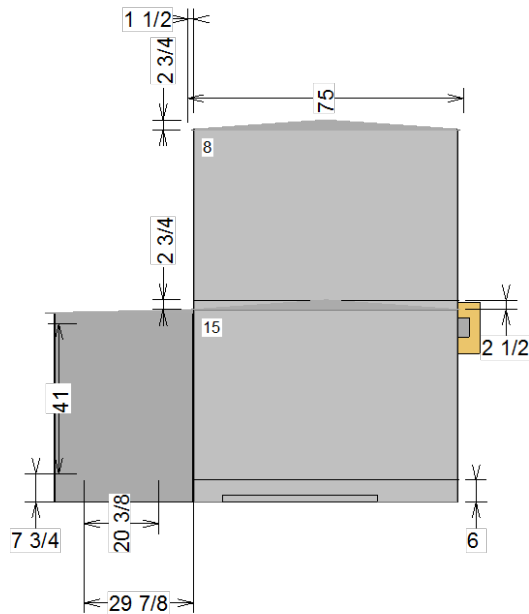
Detailed Elevation View: Left - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

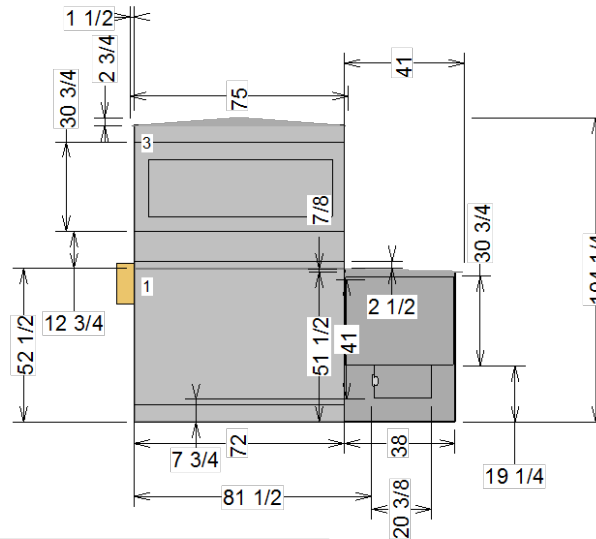
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|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |


**TRANE**

Performance Climate Changer  
Air Handlers



Detailed Elevation View: Front - Measurements in inches



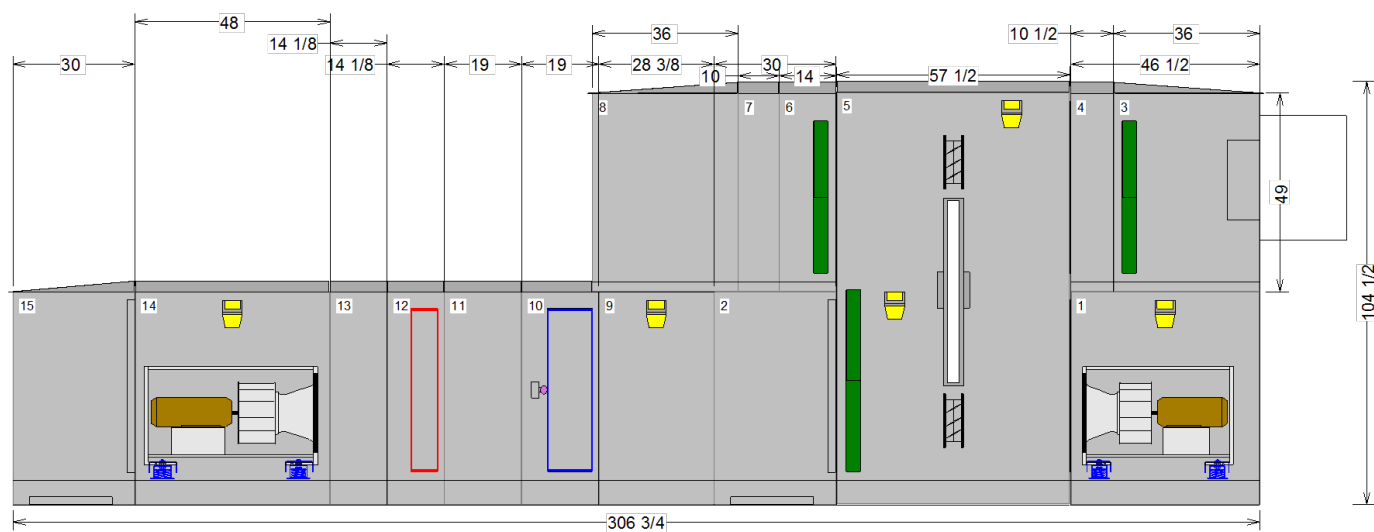
Detailed Elevation View: Back - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |                                                                                                                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |  <b>TRANE</b><br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |                                                                                                                                                   |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |                                                                                                                                                   |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |                                                                                                                                                   |



CSAA  
Quantity: 1  
Tags: DOAS-1



**NPTI : National Pipe Thread Internal Connection**  
**NPTE : National Pipe Thread External Connection**

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |

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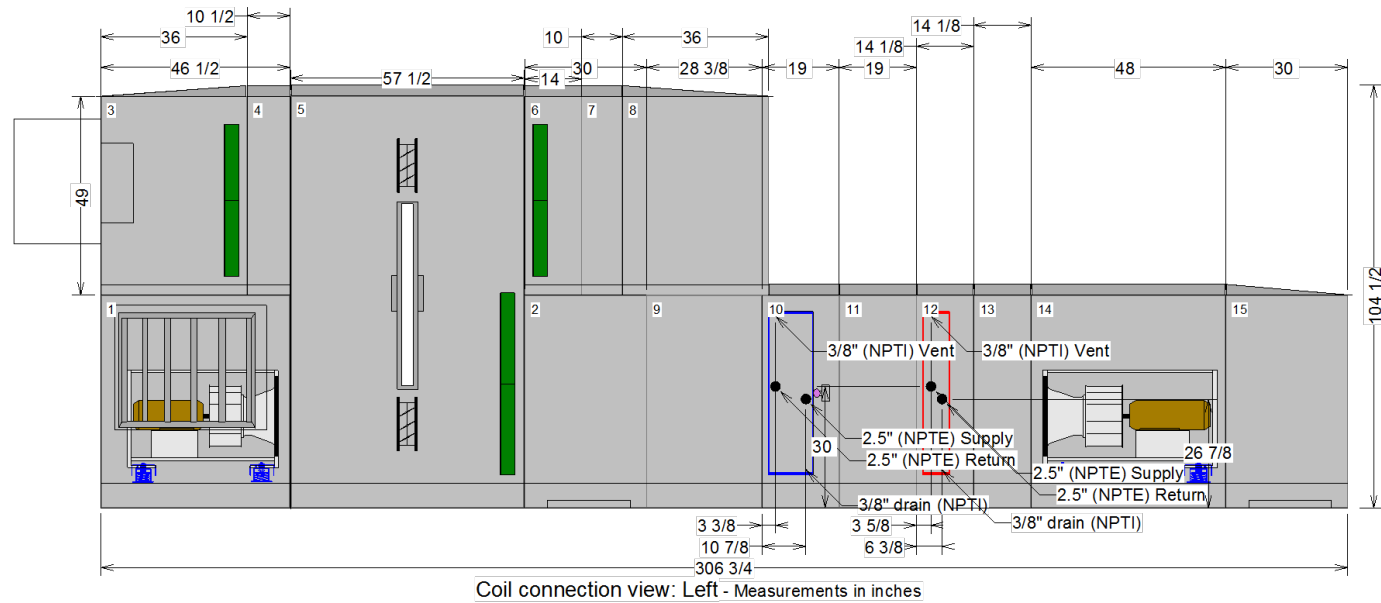
## Performance Climate Changer Air Handlers





Job Name: UNE IIPE COM Building

CSAA  
Quantity: 1  
Tags: DOAS-1



NPTI : National Pipe Thread Internal Connection  
NPTE : National Pipe Thread External Connection

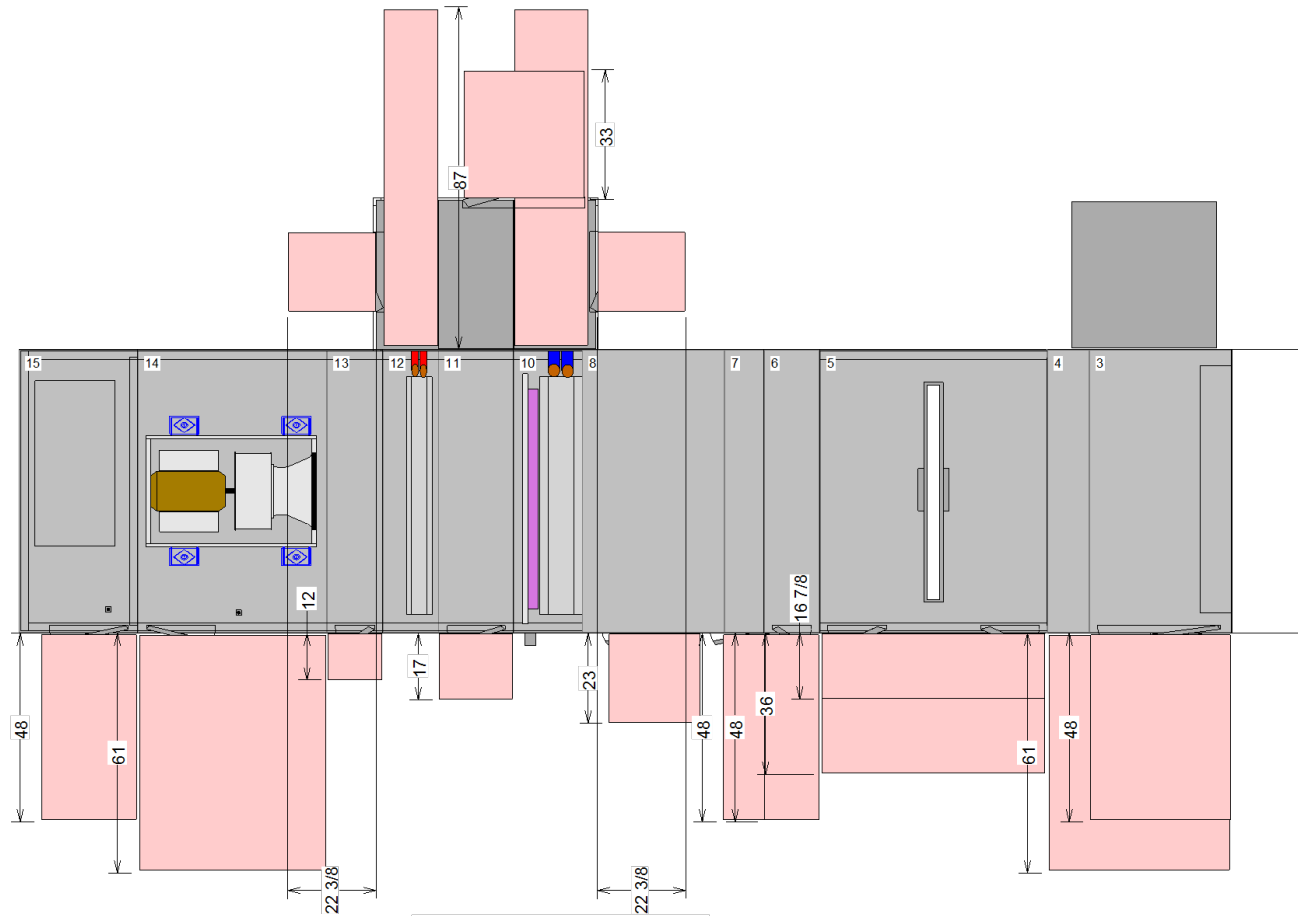
**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |



**TRANE**

Performance Climate Changer  
Air Handlers

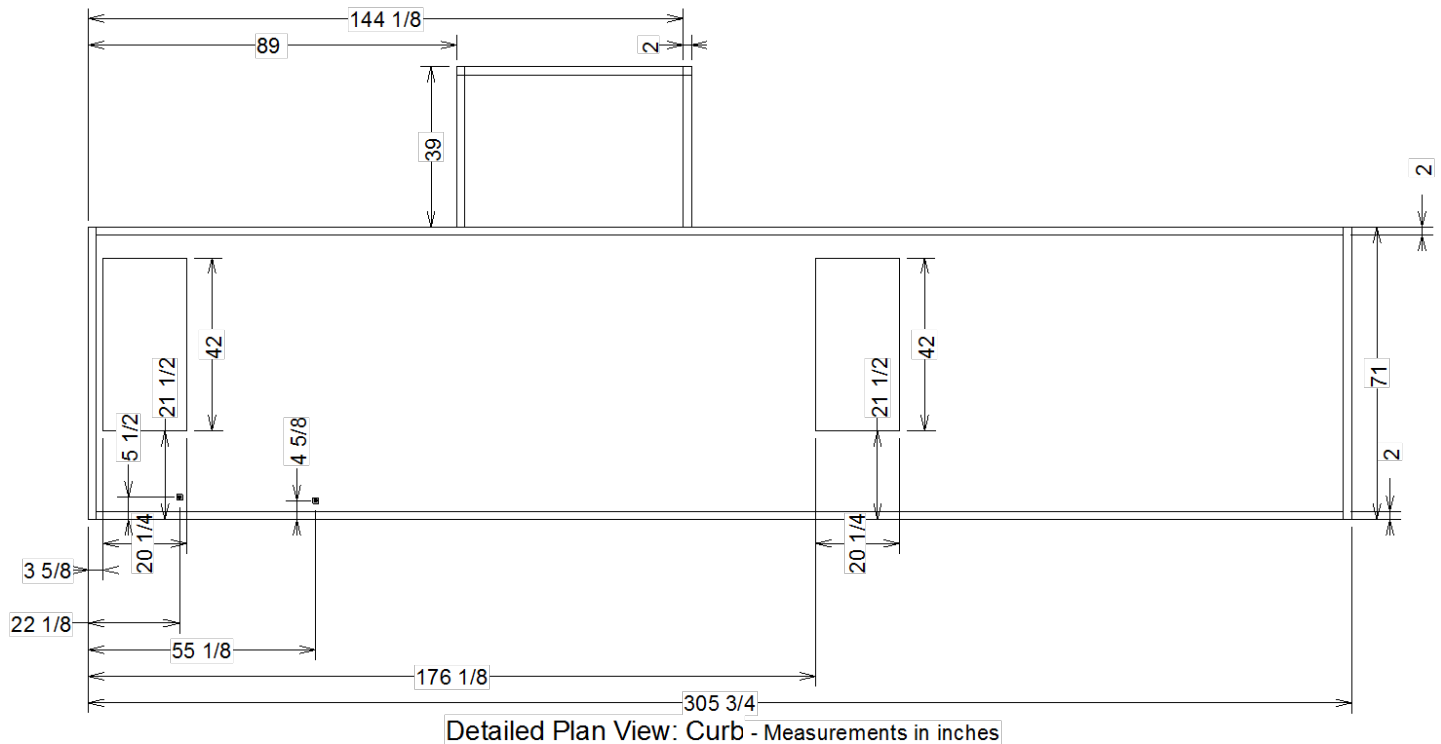
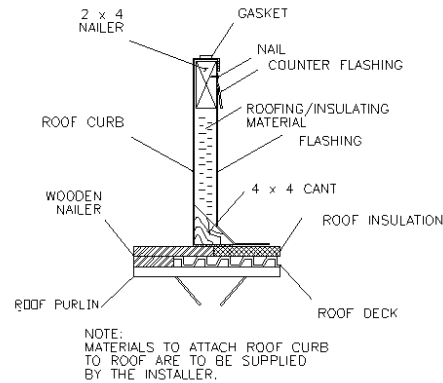
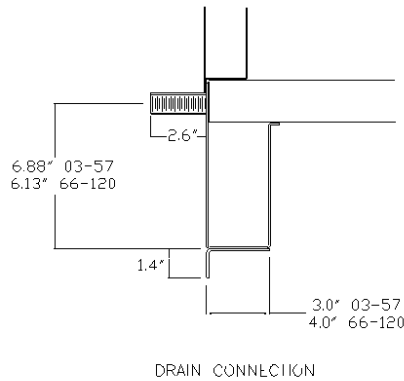
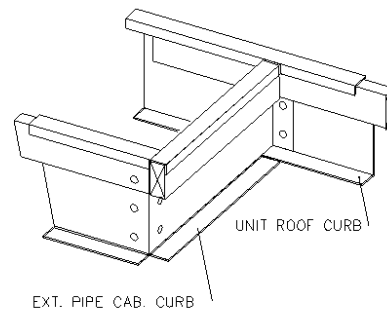
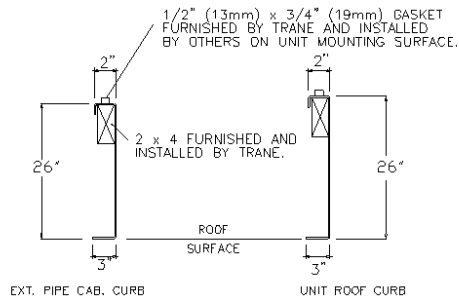


Basic Service Clearance - Plan - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |



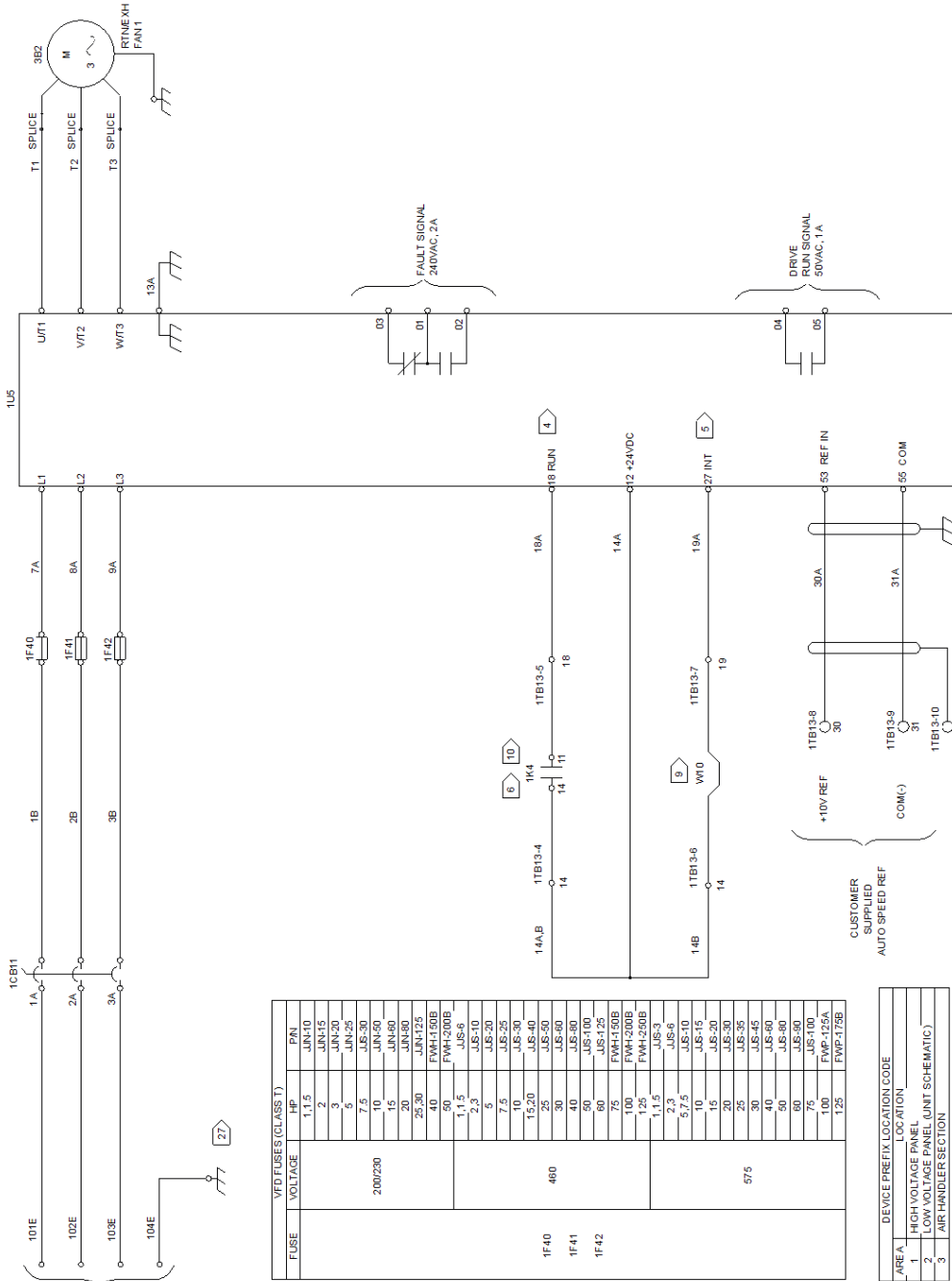


**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                 |                                                   |
|-----------------------------------------------|---------------------------------|---------------------------------------------------|
| Unit size: 17                                 | Job Name: UNE IIPE COM Building | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 7000            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                   | Tags: DOAS-1                                      |
| Paint: Slate gray                             |                                 | Rigging weight: 7462.0 / Installed weight: 8699.8 |


**TRANE**

Performance Climate Changer  
Air Handlers



## WARNING

**HAZARDOUS VOLTAGE!**  
DISCONNECT ALL ELECTRIC POWER  
INCLUDING REMOTE DISCONNECTS AND  
FOLLOW LOCK OUT AND TAG PROCEDURES  
BEFORE SERVICING. INSURE THAT ALL  
WIRING IS DE-ENERGIZED AND THE  
STORED VOLTAGE UNITS WITH VARIABLE  
SPEED DRIVE REFER TO DRIVE  
INSTRUCTIONS FOR CAPACITOR DISCHARGE.  
FAILURE TO DO THE ABOVE BEFORE  
SERVICING COULD RESULT IN DEATH OR  
SERIOUS INJURY.

## AVERTISSEMENT

**TENSION DANGEREUSE!**  
COUPER TOUTES LES TENSIONS ET  
OUIR LES SECTIONNEURS À DISTANCE.  
SUIVRE LES PROCÉDURES D'ARRÊT  
AVANT TOUTE INTERVENTION. VÉRIFIER QUE TOUTS  
LES CONDENSATEURS DES MOTEURS SONT  
DÉCHARGÉS. DANS LE CAS D'UNITÉS  
COMPORTANT DES ENTRAÎNEMENTS À  
VITESSE VARIABLE, SE REPORTER AUX  
INSTRUCTIONS DE L'ENTRAÎNEMENT POUR  
DE CHARGER LES CONDENSATEURS.  
NE PAS RESPECTER CES MESURES DE  
PRÉCAUTION PEUT ENTRAÎNER DES  
BLESSURES GRAVES POUVANT ÊTRE  
MORTELLES.

## ADVERTENCIA

**VOLTAJE PELIGROSO!**  
DESCONECTE TODA LA ENERGÍA ELÉCTRICA,  
INCLUIDO LAS DESCONEXIONES REMOTAS Y  
SIGA LOS PROCEDIMIENTOS DE CIERRE Y  
ETIQUETADO ANTES DE PROCEDER AL  
SERVICIO. ASEGURESE DE QUE TODOS  
LOS CAPACITORES DEL MOTOR HAYAN  
SIDO DESCARGADOS CORRECTAMENTE.  
PARA LAS UNIDADES CON VELOCIDAD VARIABLE,  
CONSULTE LAS INSTRUCCIONES PARA LA  
DESCARGA DEL CONDENSADOR.  
EL NO REALIZAR LO ANTERIORMENTE  
INDICADO, PODRÍA OCASIONAR LA MUERTE  
O SERIAS LESIONES PERSONALES.

## CAUTION

USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT  
OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE  
EQUIPMENT.

## ATTENTION

N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!  
LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES  
POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.  
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT  
ENDOMMAGER L'ÉQUIPEMENT.

## PRECAUCIÓN

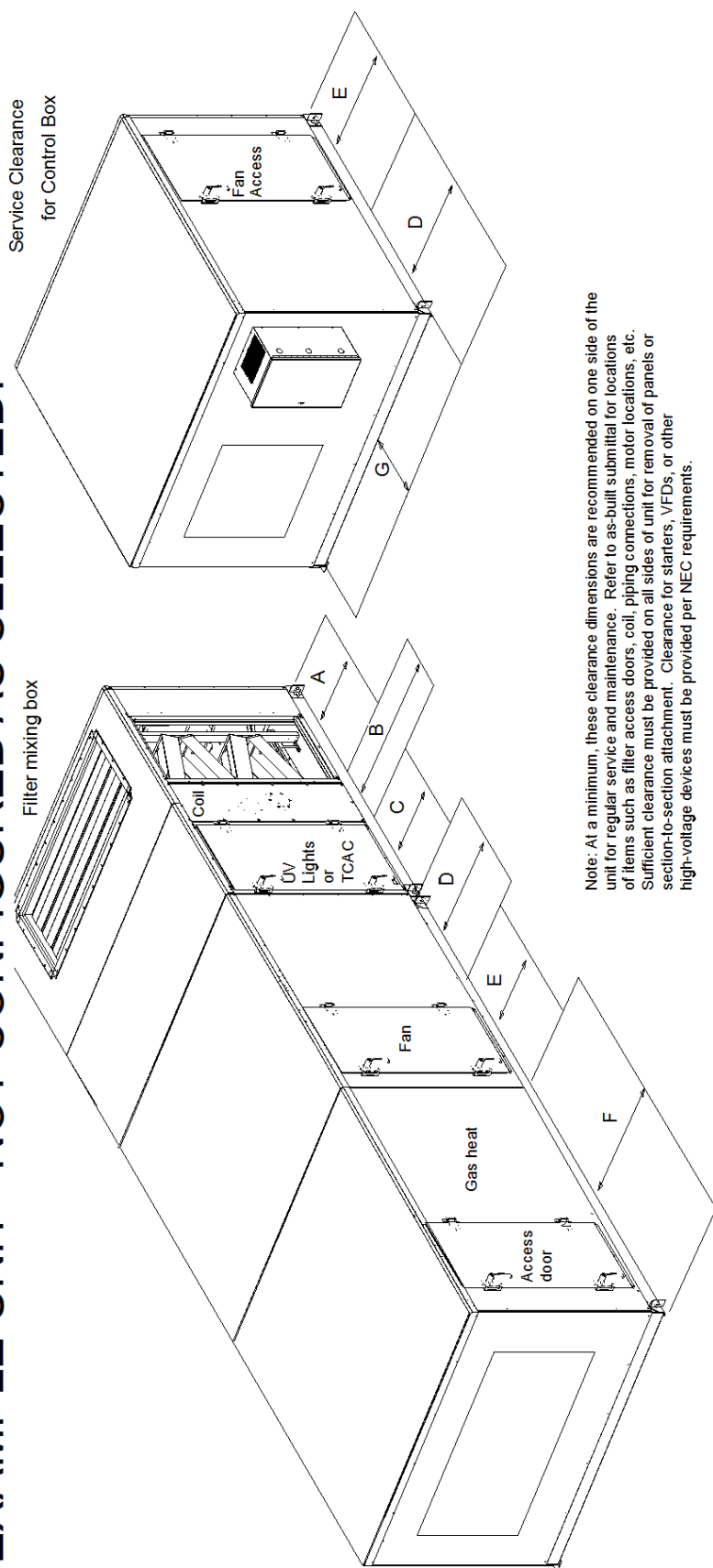
¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!  
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS  
PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.  
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

- NOTES:
- DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION. REF. CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL.
  - ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION RATING NOT LESS THAN 600V COPPER CONDUCTORS ONLY.
  - THE MINIMUM CIRCUIT AMPACITY, THE MAXIMUM FUSE SIZE, AND DISCONNECT SIZE ARE CALCULATED BASED ON THE INVERTER INPUT LINE CURRENTS PER ARTICLE 430-2 OF THE NATIONAL ELECTRICAL CODE.
- 4 PROGRAM TERMINAL 18 AS RUN.  
5 PROGRAM TERMINAL 27 INV. COASTING STOP.  
6 CLOSERS TO RUN/AUTO MODE OR BYPASS AUTO FOR OPTION VFD OR STARTER.  
9 REMOVE JUMPER AND INSTALL FIELD SAFETY INTERLOCK.  
10 FIELD SUPPLIED CONTACTS.  
17 ATTACH GROUND OR EQUIPMENT GROUND.

| DEVICE DESIGNATION | DESCRIPTION                    |
|--------------------|--------------------------------|
| 1CB11              | CIRCUIT BREAKER                |
| 1F40 TO 1F42       | VFD FUSES                      |
| 1K4                | START/STOP RELAY               |
| 1K10               | LOW LIMIT RELAY                |
| 11B13              | TERMINAL STRIP CONTROL CIRCUIT |
| 1U5                | VFD CONTROLLER                 |
| 3Ø2                | MOTOR 1                        |

| AREA | DEVICE PREFIX                      | LOCATION |
|------|------------------------------------|----------|
| 1    | HIGH VOLTAGE PANEL                 |          |
| 2    | LOW VOLTAGE PANEL (UNIT SCHEMATIC) |          |
| 3    | AIR HANDLER SECTION                |          |

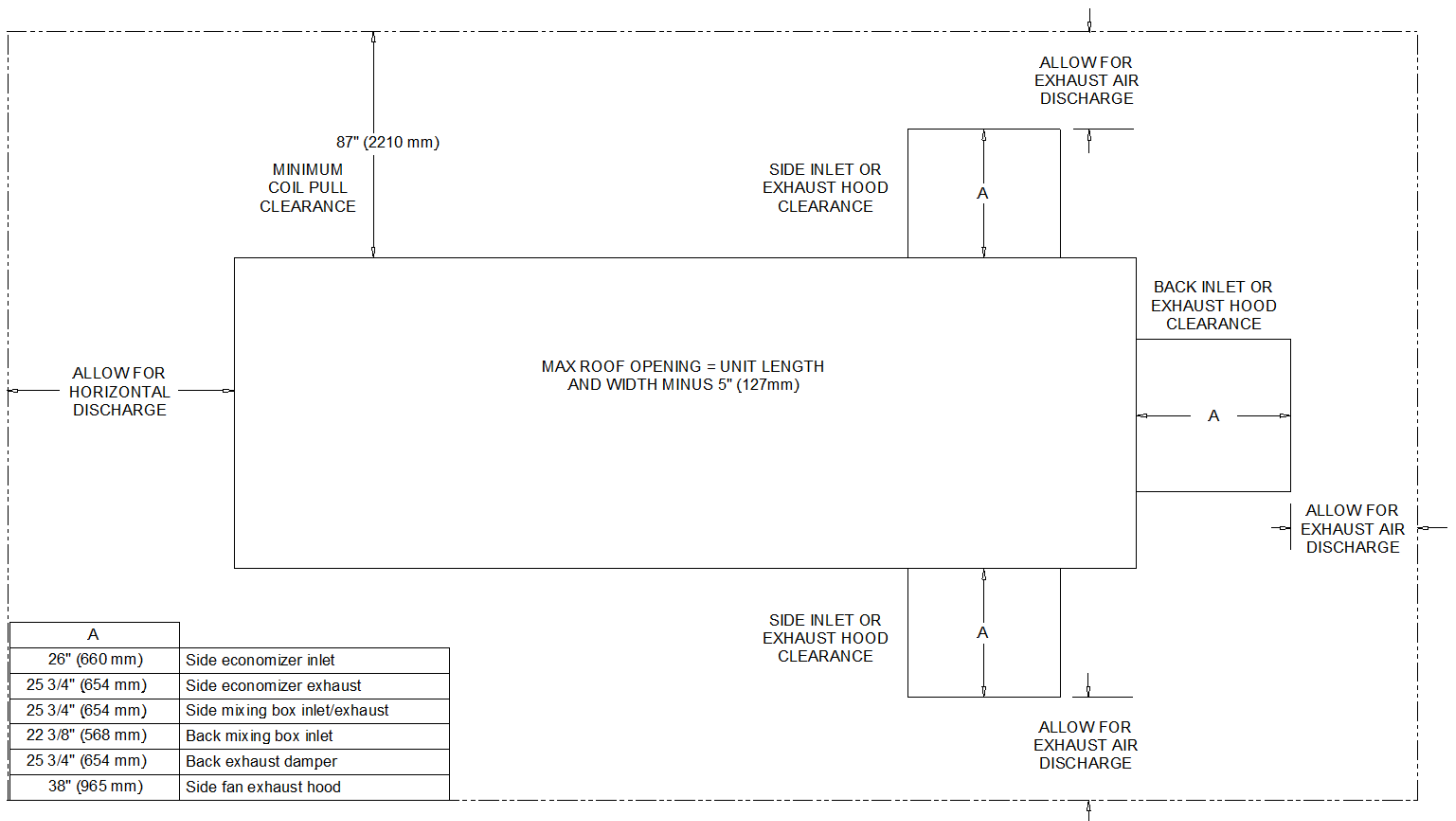
# EXAMPLE UNIT - NOT CONFIGURED AS SELECTED.



Note: At a minimum, these clearance dimensions are recommended on one side of the unit for regular service and maintenance. Refer to as-built submittal for locations of items such as filter access doors, coil, piping connections, motor locations, etc. Sufficient clearance must be provided on all sides of unit for removal of panels or section-to-section attachment. Clearance for starters, VFDs, or other high-voltage devices must be provided per NEC requirements.

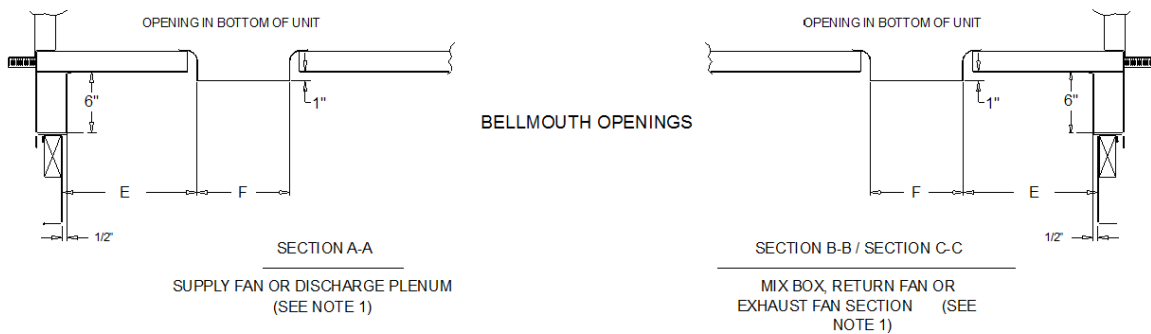
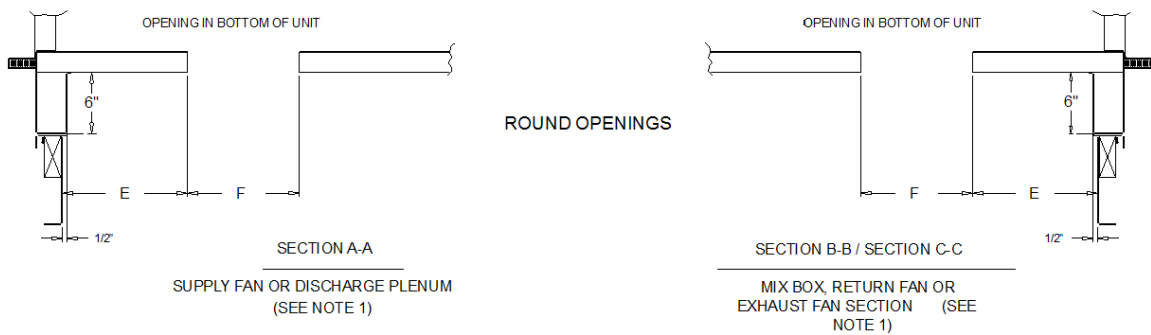
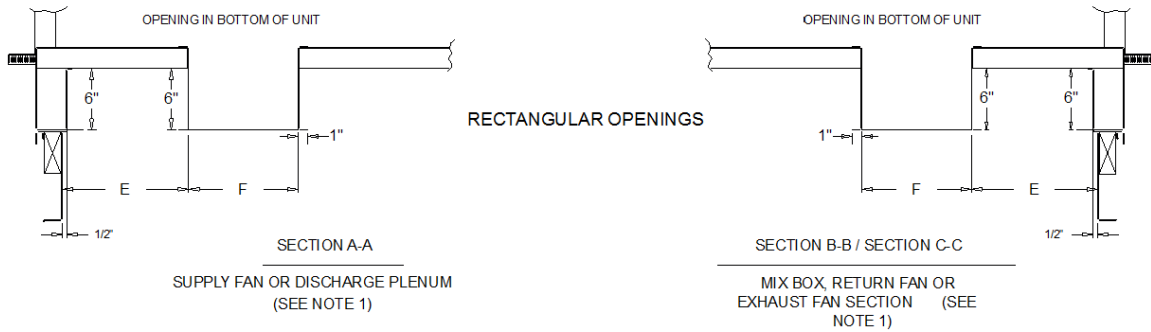
| Component                                         | 3   | 4   | 6   | 8   | 10  | 12  | 14  | 17  | 21  | 25  | 30  | 35  | 40  | 50  | 57  | 66  | 80  | 100 | 120 |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| A (filter)                                        | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 52  | 56  | 58  | 58  |
| B (coil, humidifier)                              | 48  | 59  | 66  | 77  | 82  | 82  | 87  | 87  | 95  | 95  | 109 | 115 | 128 | 141 | 141 | 156 | 156 | 170 | 197 |
| B (staggered coil)                                | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 67  | 67  | 76  | 80  | 88  | 96  | 96  | 105 | 105 | 113 | 129 |
| C (UV Lights)                                     | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 52  | 56  | 58  | 58  |
| C (TCAC)                                          | 43  | 59  | 59  | 63  | 75  | 81  | 83  | 83  | 58  | 58  | 83  | 75  | 83  | 83  | 83  | 83  | 83  | 75  | 83  |
| D (External Starter, VFD, LV box or Overload box) | 61  | 61  | 61  | 61  | 61  | 61  | 61  | 61  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  |
| D (Internal Starter or VFD)                       | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  |
| E (fan)                                           | 48  | 48  | 48  | 48  | 51  | 54  | 58  | 61  | 60  | 66  | 66  | 66  | 70  | 77  | 77  | 93  | 93  | 101 | 101 |
| F (Gas Heat Ext Vestible)                         | N/A | N/A | 89  | 90  | 108 | 100 | 100 | 105 | 115 | 115 | 118 | 136 | 140 | 156 | 156 | 170 | 179 | 180 | N/A |
| F (Gas Heat Int Vestible)                         | N/A | N/A | 56  | 63  | 74  | 79  | 84  | 84  | 92  | 92  | 106 | 112 | 125 | 138 | 138 | 153 | 153 | 167 | 194 |

| Component              | All Sizes |
|------------------------|-----------|
| G (Side mount LV box)  | 36        |
| G (Front mount LV box) | 13        |



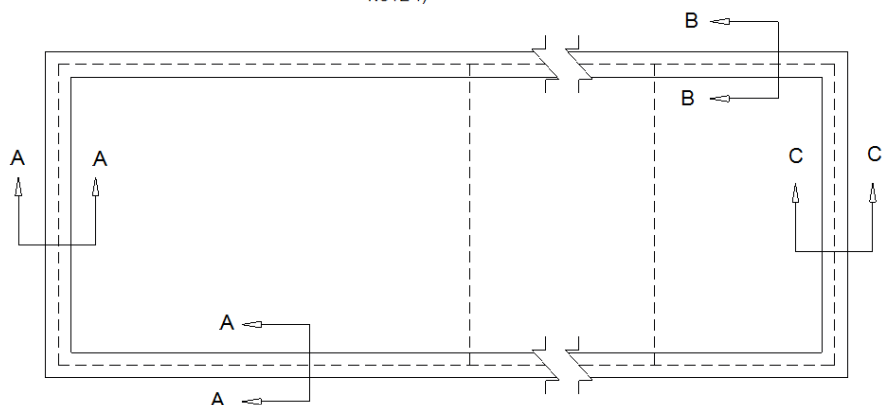


# RELATIONSHIP OF CURB TO UNIT AS-BUILT

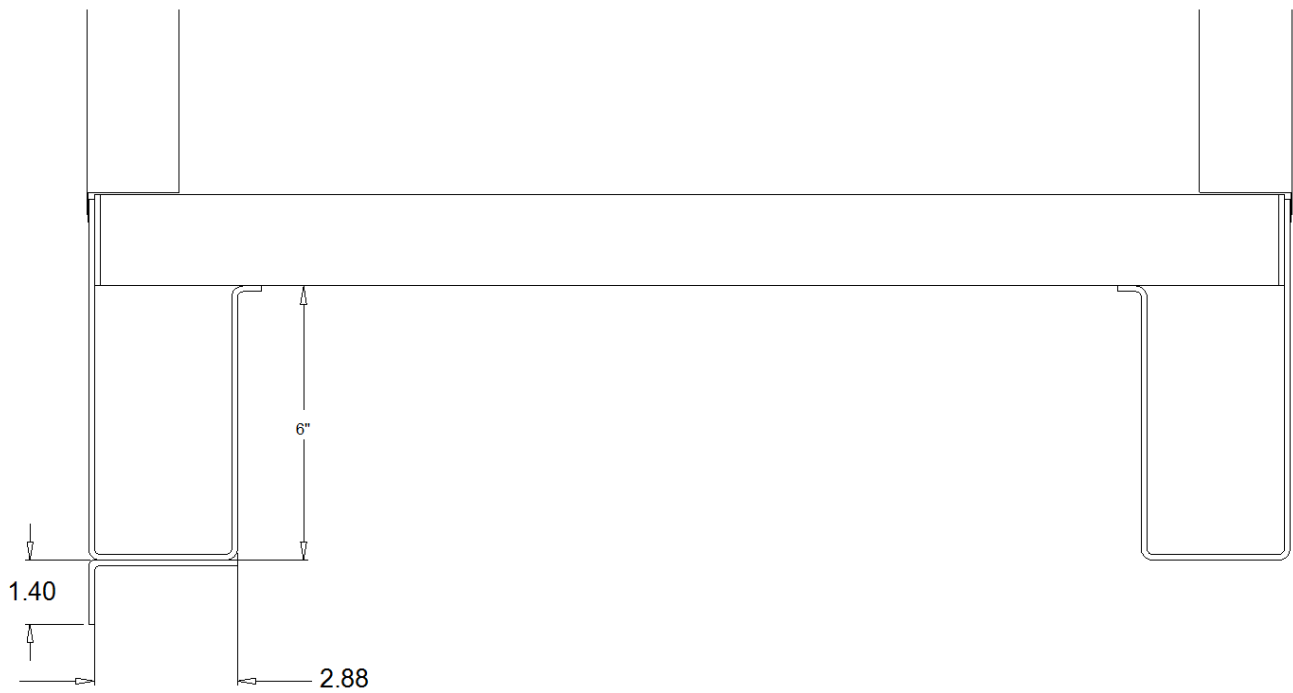


## NOTE:

1. E and F are representative of dimensions on the accessory as-built used to locate opening(s) in the roof surface.



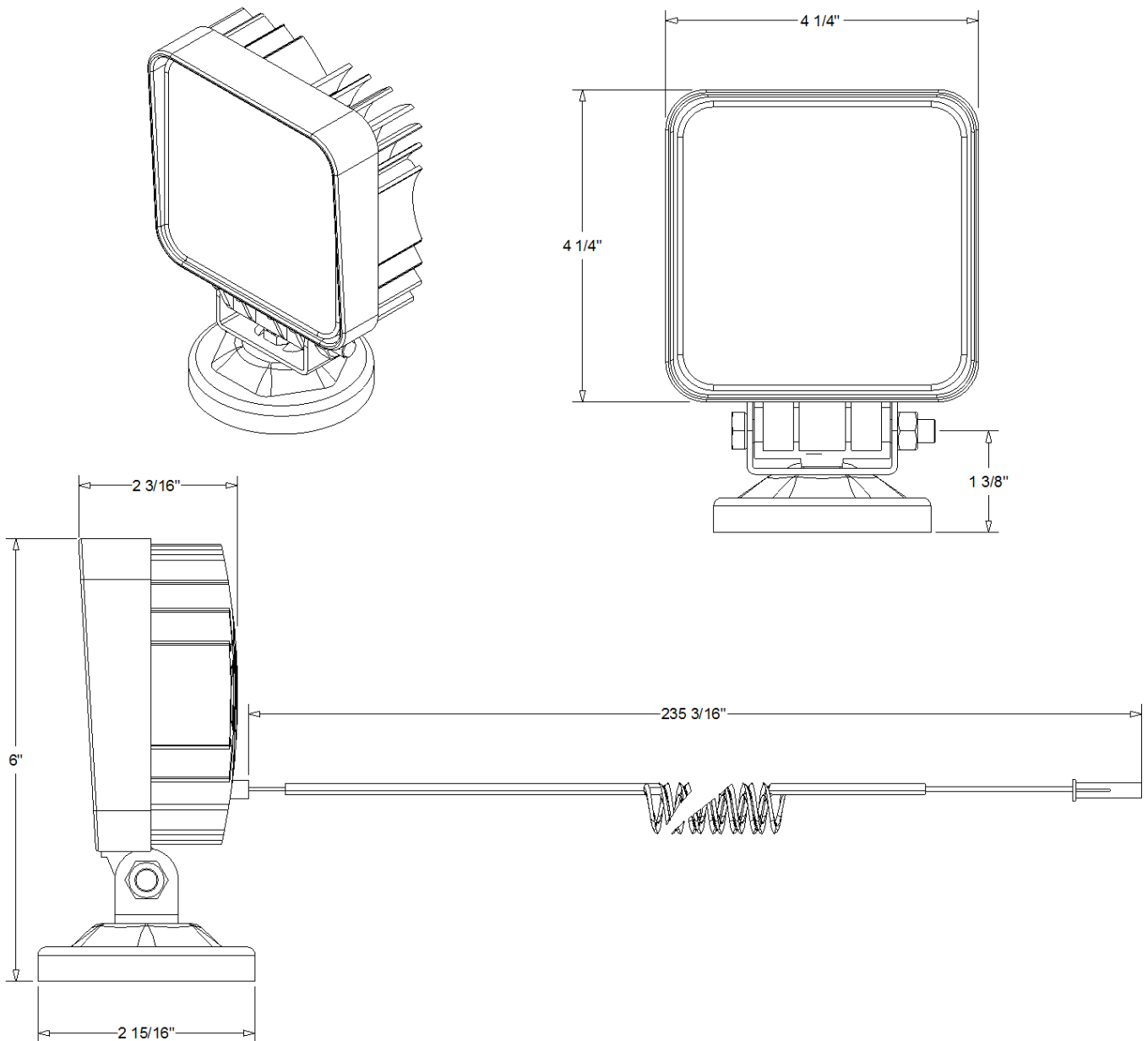
# Base Detail



# Marine LED Light

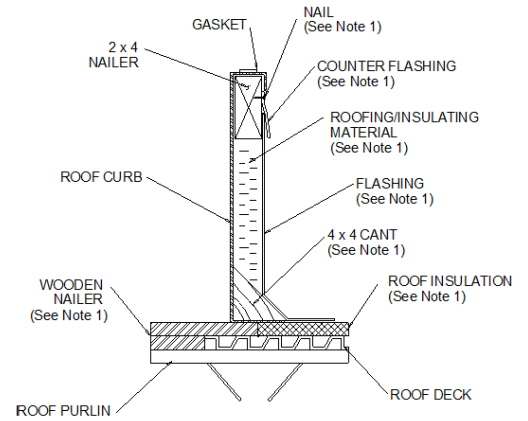
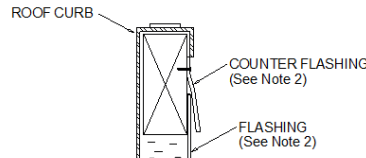
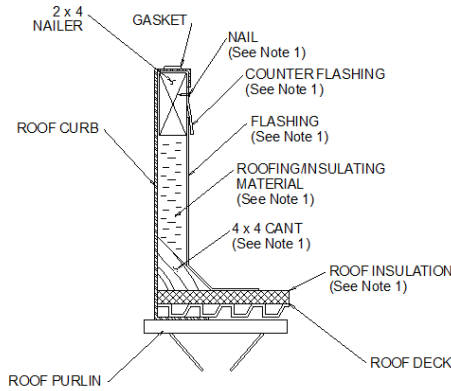
## SPECIFICATIONS:

**VOLTAGE:** 24VAC +33 % -25 %  
**POWER CONSUMPTION:** 19VA  
**WIRE:** 16 GA RED AND BLACK  
**LIFE:** 25,000 HRS  
**TEMPERATURE RANGE:** -40C TO 40C  
**CONNECTION:** AC SUPPLY  
**ENVIRONMENTAL PROTECTION:** WATER/DUST INTRUSTION  
**IP RATING:** IP65  
**MAGNETIC FLUX DENSITY:** 1200 GAUSS ±100



### Recommendation for Roof Curb Installation

Refer to Performance IOM for specific installation instructions

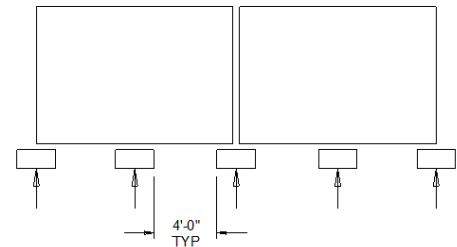
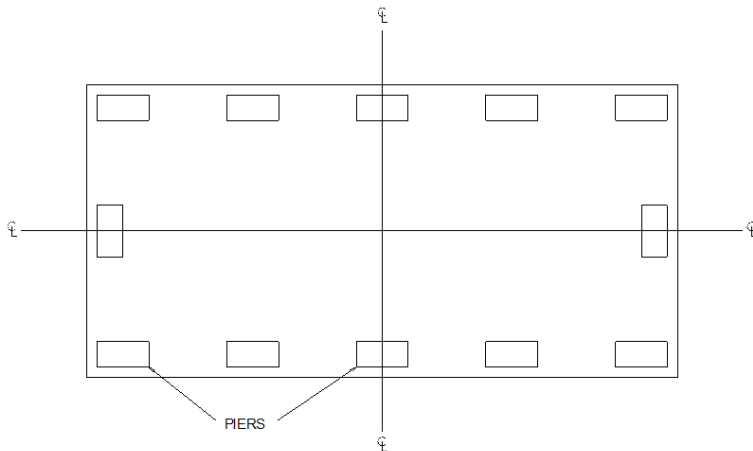


#### Note:

1. Materials to attach roof curb to roof are to be supplied by the installer.
2. Flashing or counter flashing should not come to or over top of curb.
3. Roof curb must be mechanically fastened to roof surface.

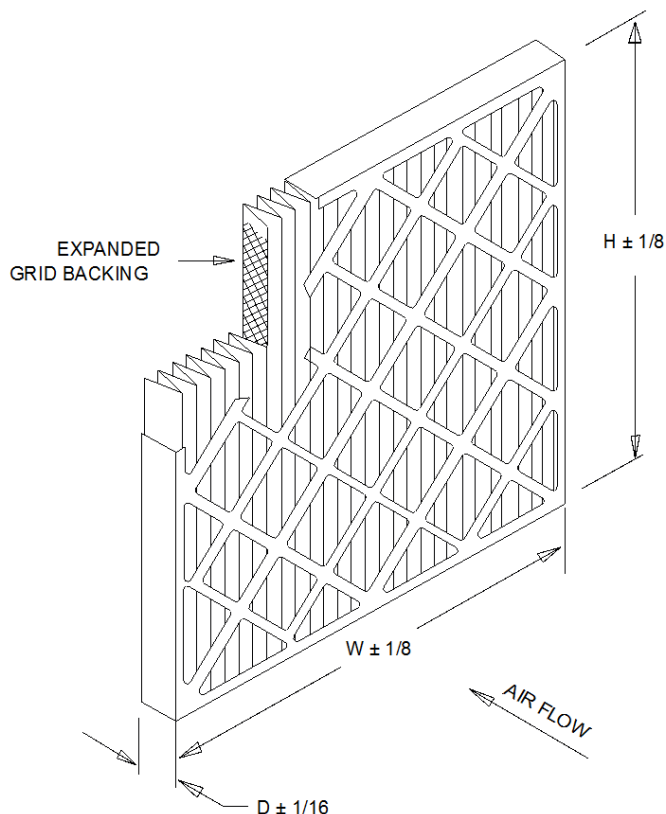
### Recommendation for Pier Mounting

Refer to Performance IOM for specific installation instructions



#### Note:

1. Pier supports should be inside 3" (3 - 50) or 4" (57 - 120) flat of unit base. Unit cannot be supported by unit base drip leg.
2. Piers beneath shipping splits must be structurally sound to support the weight of the unit.



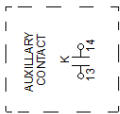
#### STANDARD CONSTRUCTION

1. 100 % Synthetic White Un-Dyed Media
2. 10.0 Pleats Per Foot
3. Expanded Metal Pleat Supports
4. Moisture Resistant Beverage Board Frame
5. Double Wall Frame

#### NOTES

1. MERV 8-A Per ASHRAE 52.2-2007 Appendix J.
2. Final Resistance: 1/0" W.G.
3. Rated Velocity: 500 FPM
4. Class 2 Filter Per U.L. Standard 900
5. Maximum Operating Temperature: 225 DEG. F

| MODEL NUMBER  | NOMINAL SIZE<br>IN. W X H X D | ACTUAL SIZE<br>IN. W X H X D | RATED<br>AIR FLOW<br>CFM | INITIAL<br>RESISTANCE<br>IN. W.G. | MEDIA AREA<br>SQ. FT. |
|---------------|-------------------------------|------------------------------|--------------------------|-----------------------------------|-----------------------|
| MX40-STD2-217 | 10 X 20 X 2                   | 9-1/2 X 19-1/2 X 1-3/4       | 700                      | 0.29                              | 4.7                   |
| MX40-STD2-220 | 12 X 20 X 2                   | 11-1/2 X 19-1/2 X 1-3/4      | 840                      | 0.29                              | 5.5                   |
| MX40-STD2-210 | 12 X 24 X 2                   | 11-3/8 X 23-3/8 X 1-3/4      | 1000                     | 0.29                              | 6.2                   |
| MX40-STD2-239 | 14 X 20 X 2                   | 13-1/2 X 19-1/2 X 1-3/4      | 980                      | 0.29                              | 5.7                   |
| MX40-2TD2-241 | 14 X 25 X 2                   | 13-1/2 X 24-1/2 X 1-3/4      | 1220                     | 0.29                              | 7.1                   |
| MX40-STD2-245 | 15 X 20 X 2                   | 14-1/2 X 19-1/2 X 1-3/4      | 1050                     | 0.29                              | 6.2                   |
| MX40-STD2-201 | 16 X 20 X 2                   | 15-1/2 X 19-1/2 X 1-3/4      | 1120                     | 0.29                              | 6.7                   |
| MX40-STD2-216 | 16 X 24 X 2                   | 15-3/8 X 23-3/8 X 1-3/4      | 1340                     | 0.29                              | 8.0                   |
| MX40-STD2-202 | 16 X 24 X 2                   | 15-1/2 X 24-1/2 X 1-3/4      | 1400                     | 0.29                              | 8.0                   |
| MX40-STD2-280 | 15 X 20 X 2                   | 17-1/2 X 19-1/2 X 1-3/4      | 1250                     | 0.29                              | 7.8                   |
| MX40-STD2-212 | 18 X 24 X 2                   | 17-3/8 X 23-3/8 X 1-3/4      | 1500                     | 0.29                              | 9.3                   |
| MX40-STD2-285 | 18 X 25 X 2                   | 17-1/2 X 24-1/2 X 1-3/4      | 1570                     | 0.29                              | 9.7                   |
| MX40-STD2-203 | 20 X 20 X 2                   | 19-1/2 X 19-1/2 X 1-3/4      | 1400                     | 0.29                              | 8.3                   |
| MX40-STD2-211 | 20 X 24 X 2                   | 19-3/8 X 23-3/8 X 1-3/4      | 1670                     | 0.29                              | 9.9                   |
| MX40-STD2-204 | 20 X 25 X 2                   | 19-1/2 X 24-1/2 X 1-3/4      | 1750                     | 0.29                              | 10.3                  |
| MX40-STD2-205 | 24 X 24 X 2                   | 23-3/8 X 23-3/8 X 1-3/4      | 2000                     | 0.29                              | 11.7                  |
| MX40-STD2-225 | 25 X 25 X 2                   | 24-1/2 X 24-1/2 X 1-3/4      | 2170                     | 0.29                              | 13.6                  |



**WARNING**

DISCONNECT ALL ELECTRIC POWER, INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED VOLTAGE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERVICING INJURY.

**AVERTISSEMENT**

TENSION DANGEREUSE!

COUPER TOUTES LES TENSIONS ET  
OUVRIER LES SECTIONNEURS À DISTANCE,  
PUI SUIVRE LES PROCÉDURES DE  
VERROUILLAGE ET DES ÉTIQUETTES AVANT  
TOUTE INTERVENTION. VÉRIFIER QUE TOUTS  
LES CONDENSEURS DES MOTEURS SONT  
DÉCHARGÉS. DANS LE CAS D'UNITÉS  
COMPORTANT DES ENTRAÎNEMENTS À  
VITESSE VARIABLE, SE REPORTER AUX  
INSTRUCTIONS DE L'ENTRAÎNEMENT POUR  
DÉCHARGER LES CONDENSEURS.

NE PAS RESPECTER CES MESURES DE PRÉCAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ÊTRE MORTELLES.

**ADVERTENCIA**

VOLTAJE PELIGROSO

DESCONECTE TODA LA ENERGÍA ELÉCTRICA  
Y SIGA LOS DESCONEXIONES REMOTAS Y  
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DESALCARADO EL VOLTAJE ALMACENADO.  
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NOTES):

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION. REF. CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL.
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, STATE, AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION RATING NOT LESS THAN 600V. COPPER CONDUCTORS ONLY.

3 MINIMUM CIRCUIT AMPACITY, MAXIMUM FUSE SIZE, AND DISCONNECT SIZE ARE CALCULATED BASED ON THE INVERTER INPUT LINE CURRENTS PER ARTICLE 430.2 OF THE NATIONAL ELECTRICAL CODE

CLOSES TO RUN AUTO MODE OR BYPASS AUTO FOR OPTION VFD OR

STARTER.

CONTROL TRANSFORMER SHOWN FOR 460V PRIMARY. FOR 200V OR 230V OR 575V REFER TO INSET A.

REMOVE JUMPER AND INSTALL

0> FIELD SUPPLIED CONTACTS.

6 OVERLOAD RELAY TRIP SETTING MUST BE ADJUSTED TO

THE MOTOR NAMEPLATE

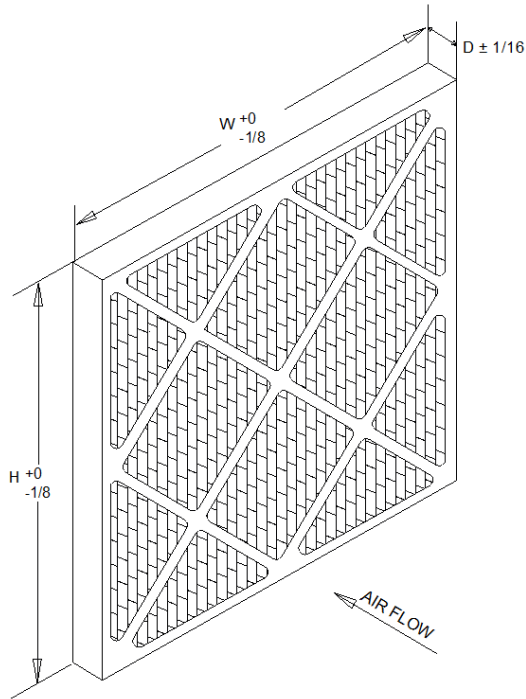
ATTACH GROUND OR EQUIPMENT GROUND.

| PRIMARY CONTROL TRANSFORMER FUSES (CLASS LP-CC) |         |          |
|-------------------------------------------------|---------|----------|
| FUSE                                            | VOLTAGE | PIN      |
| 1F4                                             | 200     | KLDR-1/2 |
|                                                 | 230     | KLDR-1/2 |
| 1F5                                             | 460     | KLDR-1/4 |
|                                                 | 575     | KLDR-1/4 |

| DEVICE PREFIX LOCATION CODE _____ |                                    |
|-----------------------------------|------------------------------------|
| AREA                              | LOCATION                           |
| 1                                 | HIGH VOLTAGE PANEL                 |
| 2                                 | LOW VOLTAGE PANEL (UNIT SCHEMATIC) |
| 3                                 | AIR HANDLER SECTION                |

| LEGEND             |                                   |
|--------------------|-----------------------------------|
| DEVICE DESIGNATION | DESCRIPTION                       |
| 1CB11              | CIRCUIT BREAKER                   |
| 1F4 TO 1F5         | PRIMARY CONTROL TRANSFORMER FUSES |
| 1K27               | START/STOP RELAY                  |
| 1K40               | STARTER CONTACTOR                 |
| 1OL                | OVERLOAD RELAY                    |
| 1S10               | HAND/OFF/AUTO SWITCH              |
| 1T1                | PRIMARY CONTROL TRANSFORMER       |
| 1TB13              | TERMINAL STRIP CONTROL CIRCUIT    |





#### USTANDARD CONSTRUCTION

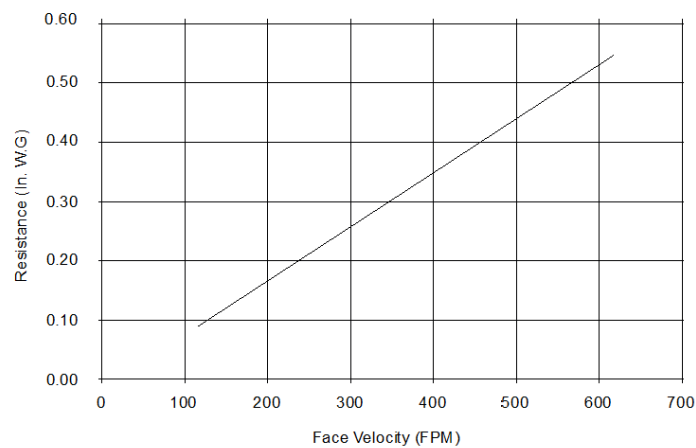
1. 100 % Synthetic Media
2. Bead Separator Packs
3. Moisture Resistant Beverage Board Frame
4. Cross-Straps on Both Sides
5. Pack Sealed to Frame with Adhesive
6. Standard Air Flow Direction as Shown

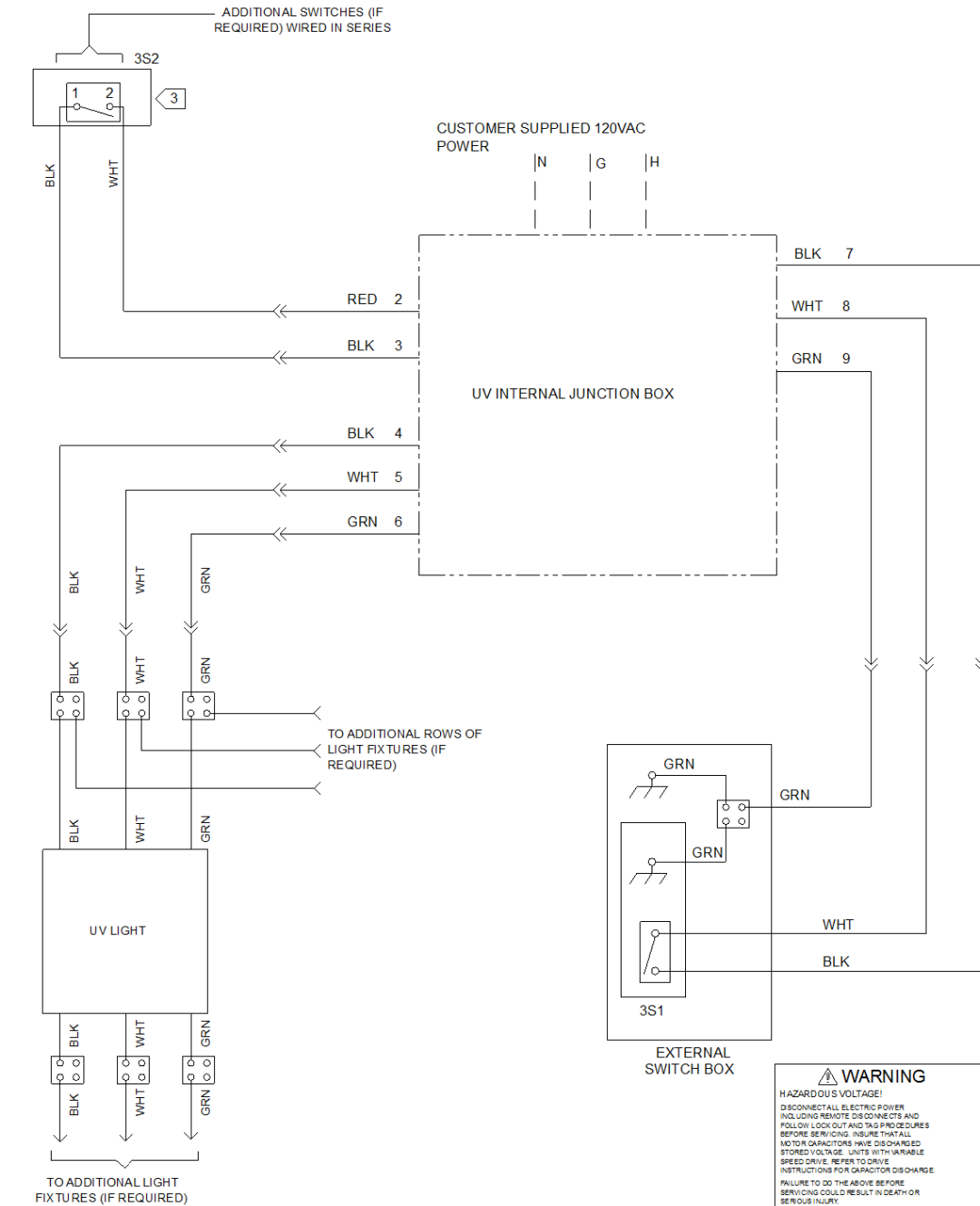
#### UNOTES

1. Testing per ASHRAE 52.2  
Test Velocity 492 FPM on 24x24x4 Nominal Size  
Test Data Preliminary
2. Final Resistance: 1.5" W.G.
3. Rated Velocity - 500 FPM
4. Maximum Velocity - 625 FPM
5. Maximum Operating Temperature: 200 deg. F
6. Filter to be Tested Per UL Standard 900 for Flammability

| NOMINAL SIZE<br>(INCHES) HXWXD | ACTUAL SIZE (INCHES)<br>HXWXD | RATED AIR FLOW<br>(CFM) | INITIAL<br>RESISTANCE<br>(IN. W.G.) | MEDIA AREA<br>(SQUARE FEET) | MERV RATING |
|--------------------------------|-------------------------------|-------------------------|-------------------------------------|-----------------------------|-------------|
| 24X24X4                        | 23-3/8X23-3/8X3-3/4           | 2000                    | 0.43                                | 49.1                        | 14          |
| 20X25X4                        | 19-3/8X24-3/8X3-3/4           | 1750                    | 0.43                                | 42.7                        | 14          |
| 20X24X4                        | 19-3/8X23-3/8X3-3/4           | 1650                    | 0.43                                | 40.9                        | 14          |
| 20X20X4                        | 19-3/8X19-3/8X3-3/4           | 1400                    | 0.43                                | 33.9                        | 14          |
| 16X25X4                        | 15-3/8X24-3/8X3-3/4           | 1400                    | 0.43                                | 34.1                        | 14          |
| 16X20X4                        | 15-3/8X19-3/8X3-3/4           | 1100                    | 0.43                                | 27.1                        | 14          |
| 12X24X4                        | 11-3/8X23-3/8X3-3/4           | 1000                    | 0.43                                | 23.4                        | 14          |

Filter Resistance vs. Face Velocity





| LEGEND             |                                |
|--------------------|--------------------------------|
| DEVICE DESIGNATION | DESCRIPTION                    |
| 3S1                | MAIN EXTERNAL UV LIGHT SWITCH  |
| 3S2                | DOOR KILL SWITCH FOR UV LIGHTS |

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- SWITCH CLOSING WHEN ACCESS DOORS ARE SHUT.
- UV LAMPS WILL NEED TO BE INSTALLED IN LAMP FIXTURES BEFORE UNIT START UP.
- UV LAMPS WILL NOT REMOVE AIRBORNE CONTAMINANTS. LAMPS ARE DESIGNED TO CONTROL MICROBIAL GROWTH ON COIL AND DRAIN PAN SURFACES. DO NOT CYCLE LAMPS OFF AND ON. REPLACE LAMPS ONCE PER YEAR.

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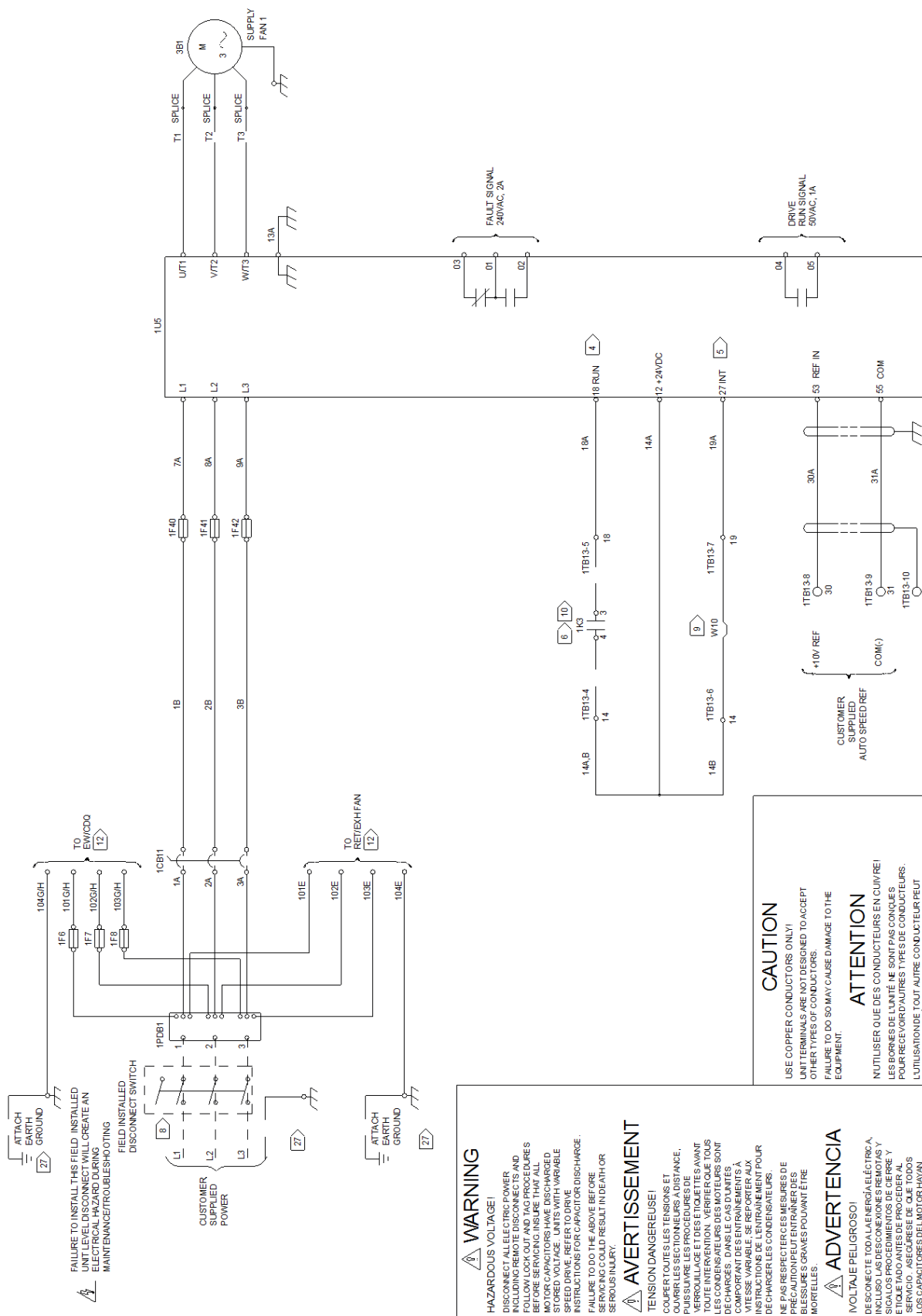
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HAZARDOUS VOLTAGE!  
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**ADVERTENCIA**  
VOLTAJE PELIGROSO!  
DESCONECTE TODA LA ENERGÍA ELÉCTRICA, INCLUIDO LAS CONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCIÓN DE VELOCIDAD VARIABLE CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.

EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRÍA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.



**CAUTION**

USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT  
OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE  
EQUIPMENT.

## ATTENTION

N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!  
LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES  
POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.  
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT  
ENDOMMAGER L'ÉQUIPEMENT.

## PRECAUCIÓN

¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!  
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS  
PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.  
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

**WARNING**

**HAZARDOUS VOLTAGE!**  
DISCONNECT ALL ELECTRIC POWER  
INCLUDING REMOTE DISCONNECTS AND  
FOLLOW LOCK OUT AND TAG PROCEDURES  
BEFORE SERVICING. INSURE THAT ALL  
MOTOR CAPACITORS HAVE DISCHARGED  
STORED VOLTAGE. UNITS WITH VARIABLE  
SPEED DRIVE, REFER TO DRIVE  
INSTRUCTIONS FOR CAPACITOR DISCHARGE

## VERTISSEMENT

**TENSION DANGEREUSE!**  
COUVRIR LES TENSIONS ET  
OUPÉR LES SECTIONNELS A DISTANCE.  
POUR SUIVRE LES PROCÉDURES DE  
PERFOILLAGE ET DES TIGUES ET  
TOUTE INTERVENTION, LES MÔTIERS SONT  
LES CHARGEMENTS DES MÔTIERS. TOUS  
LES COMMANDEMENTS SONT  
COMPORTANT DES SÉPARATEURS À  
VITESSE VARIABLE. SE REPORTER AUX  
INSTRUCTIONS DE L'ENTRETIEN POUR  
DE CHARGER LES CENDRIERES.

NE PAS RESPECTER LES MESURES DE  
PRÉCAUTION PEUT ENTRAÎNER DES  
BLESSURES GRAVES POUVANT ÊTRE  
MÔRTUÉLLES.

ADVERTENCIA

**¡VOLTAJE PELIGROSO!**

DE CONECTE TODA LA ENERGÍA ELÉCTRICA A CUALQUIERA DE LAS OCHO LÍNEAS REMOTAS Y SE ACTIVARÁN LOS PROCEDIMIENTOS DE CIERRE Y SE DETENDRÁ EL MOTOR ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN SIDO DESCARGADO AL VOLTAJE AL MENUDO. PARA LAS UNIDADES CON C.E. DE DIRECCION, VELOCIDAD, VIRA ABLE, RECONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.

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FOLLOW LOCK OUT AND TAG PROCEDURES  
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MOTOR CAPACITORS HAVE DISCHARGED  
FULLY BEFORE SERVICING. FOLLOW ALL  
INSTRUCTIONS FOR CAPACITOR DISCHARGE.  
FAILURE TO DO THE ABOVE BEFORE  
SERVICING COULD RESULT IN DEATH OR  
SERIOUS INJURY.

**AVERTISSEMENT**

TENSION DANGEREUSE!  
COUPER TOUTES LES TENSIONS ET  
QUATRE LES SECTIONNEURS ADISTANCE.  
PLUS SUIVRE LES PROCEDURES DE  
VERROUILLAGE ET DES ETIQUETTES AVANT  
TOUTE INTERVENTION. VERIFIER QUE TOUTS  
LES CONDENSATEURS DES MOTEURS SONT  
CHARGES COMPLETEMENT AVANT  
COMPORTER DES ENTRAÎNEMENTS À  
VITESSE VARIABLE. SE REPORTER AUX  
INSTRUCTIONS DE L'ENTRAÎNEMENT POUR  
DECHARGER LES CONDENSATEURS.  
NE PAS RESPECTER CES MESURES DE  
PRECAUTION PEUT ENTRAINER DE  
SERIEUSES GRAVES POUVANT ETRE  
MORTELS.

**ADVERTENCIA**

VOLTAJE PELIGROSO!  
DESCONECTE TODA LA ENERGÍA ELÉCTRICA  
INCLUIDOS LOS SECCIONNEURS REMOTOS Y  
SIGA LOS PROCEDIMIENTOS DE CERRADO Y  
ETIQUETADO ANTES DE PROCEDER AL  
SERVICIO. ASEGURESE DE QUE TODOS  
LOS CAPACITORES DEL MOTOR HAYAN  
DESCARGADO EL VOLTAJE ALMACENADO  
ANTES DE SERVICIAR. SIGA TODAS LAS  
DIRECCIONES DE CARGA VARIABLE.  
CONSULTE LAS INSTRUCCIONES PARA LA  
DESCARGA DEL CONDENSADOR.  
EL NO REALIZARLO ANTERIORMENTE  
INDICADO, PODRIA OCASIONAR LA MUERTE  
O SERIAS LESIONES PERSONALES.

NOTES:

- 1 DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION.  
REF: CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL.
- 2 ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION RATING NOT LESS THAN 600V COPPER CONDUCTORS ONLY.
- 3 THE MINIMUM CIRCUIT AMPACITY, THE MAXIMUM FUSE SIZE AND DISCONNECT SIZE ARE CALCULATED BASED ON THE INVERTER INPUT LINE CURRENTS PER ARTICLE 430-2 OF THE NATIONAL ELECTRICAL CODE.
- 4 PROGRAM TERMINAL 18 AS RUN.
- 5 PROGRAM TERMINAL 27 INV. COASTING STOP.
- 6 CLOSES TO RUN AUTO MODE OR BYPASS AUTO FOR OPTION VFD OR STARTER.
- 8 CUSTOMER SUPPLIED LOCKABLE DISCONNECTING MEANS, SUCH AS A DISCONNECT SWITCH OR CIRCUIT BREAKER, INSTALLED LOCAL TO UNIT. SIZE AND PLACEMENT OF DEVICE SHALL BE DONE IN ACCORDANCE WITH APPLICABLE NATIONAL AND LOCAL ELECTRICAL CODES.
- 9 REMOVE JUMPER AND INSTALL FIELD SAFETY INTERLOCK.
- 10 FIELD SUPPLIED CONTACTS
- 12 IF UNIT HAS SHIPPING SPLITS WIRING WILL TERMINATE TO MODULE AT EACH SHIPPING SPLIT.
- 27 ATTACH GROUND OR EQUIPMENT GROUND.

| FUSE                 | VOLTAGE | VFD FUSES      |          |     | CLASS |
|----------------------|---------|----------------|----------|-----|-------|
|                      |         | PANEL HP (MAX) | P/N      |     |       |
| 1F40<br>1F41<br>1F42 | 200/230 | 0.5-2          | LP-CC-10 | CC  | CC    |
|                      |         | 3              | LP-CC-15 | CC  |       |
|                      |         | 5              | LP-CC-25 | CC  |       |
|                      |         | 7.5-10         | JUN-50   | T   |       |
|                      |         | 15             | JUN-80   | T   |       |
|                      | 200     | 20-25          | JUN-100  | T   | T     |
|                      |         | 30-40          | FWX-150A | --- |       |
|                      |         | 50             | FWX-200A | --- |       |
|                      |         | 0.5-2          | LP-CC-10 | CC  |       |
|                      |         | 3              | LP-CC-25 | CC  |       |
| 230                  | 200     | 5-7.5          | JUN-50   | T   | T     |
|                      |         | 10             | JUN-80   | T   |       |
|                      |         | 15-25          | JUN-100  | T   |       |
|                      |         | 30-40          | FWX-150A | --- |       |
|                      |         | 15             | JUN-80   | T   | T     |
|                      | 230     | 30-40          | JUS-150  | T   |       |
|                      |         | FAN ARRAY      | LP-CC-10 | CC  |       |
|                      |         | FAN ARRAY      | LP-CC-15 | CC  |       |
|                      |         | 0.5-2          | LP-CC-15 | CC  |       |
|                      |         | 3              | LP-CC-25 | CC  |       |
| 460                  | 230     | 5              | LP-CC-25 | CC  | CC    |
|                      |         | 7.5-10         | JUN-50   | T   |       |
|                      |         | 15             | JUN-80   | T   |       |
|                      |         | 20-25          | JUN-100  | T   |       |
|                      |         | 30-40          | FWX-150A | --- |       |
|                      | 460     | 50             | FWX-200A | --- | ---   |
|                      |         | 30-40          | JUS-150  | T   |       |
|                      |         | FAN ARRAY      | LP-CC-10 | CC  |       |
|                      |         | 0.5-2          | LP-CC-15 | CC  |       |
|                      |         | 3-5            | LP-CC-25 | CC  |       |
| 575                  | 460     | 7.5-10         | JUN-50   | T   | T     |
|                      |         | 15-20          | JUS-50   | T   |       |
|                      |         | 25-30          | JUS-80   | T   |       |
|                      |         | 40-60          | JUS-125  | T   |       |
|                      |         | 75-100         | FWH-200B | --- |       |
|                      | 575     | 125            | FWH-250B | --- | ---   |
|                      |         | 75-100         | JUS-200  | T   |       |
|                      |         | FAN ARRAY      | LP-CC-20 | CC  |       |
|                      |         | 15-20          | LP-CC-30 | CC  |       |
|                      |         | 25-40          | JUS-80   | T   |       |
| 4#513385             | 575     | 50-75          | JUS-125  | T   | T     |
|                      |         | 100-125        | JUS-200  | T   |       |

| CONTROLLER EW/CDO FUSE (CLASS CC) |         |         |
|-----------------------------------|---------|---------|
| FUSE                              | VOLTAGE | P/N     |
| 1F8/1F7/1F8                       | 200/230 | KLDR-15 |
|                                   | 460/575 |         |

| AREA | DEVICE PREFIX LOCATION CODE        |  |
|------|------------------------------------|--|
|      | LOCATION                           |  |
| 1    | HIGH VOLTAGE PANEL                 |  |
| 2    | LOW VOLTAGE PANEL (UNIT SCHEMATIC) |  |
| 3    | AIR HANDLER SECTION                |  |

| LEGEND             |                                |
|--------------------|--------------------------------|
| DEVICE DESIGNATION | DESCRIPTION                    |
| 1CB1               | CIRCUIT BREAKER                |
| 1F8/1F7/1F8        | PRIMARY CONTROLLER EW/CDO FUSE |
| 1F40 TO 1F42       | VFD FUSES                      |
| 1K3                | START/STOP RELAY               |
| 1K5                | LOW LIMIT RELAY                |
| 1PDB1              | POWER DISTRIBUTION BLOCK       |
| 1TB13              | TERMINAL STRIP CONTROL CIRCUIT |
| 1U5                | VFD CONTROLLER                 |
| 3B1                | MOTOR 1                        |

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SI NO LO HACE, PUEDE DAÑAR O AL EQUIPO.

## WARNING

DISCONNECT ALL ELECTRIC POWER  
BEFORE SERVICING. FOLLOW LOCK-OUT AND TAG PROCEDURES  
BEFORE SERVICING. INSURE THAT ALL  
ELECTRIC POWER IS DISCONNECTED FROM THE  
SPEED DRIVE. UNITS WITH VARIABLE  
SPEED DRIVE REFER TO DRIVE  
INSTRUCTIONS FOR CAPACITOR DISCHARGE.  
FAILURE TO DO THE ABOVE BEFORE  
SERVICING COULD RESULT IN DEATH OR  
SERIOUS INJURY.

## AVERTISSEMENT

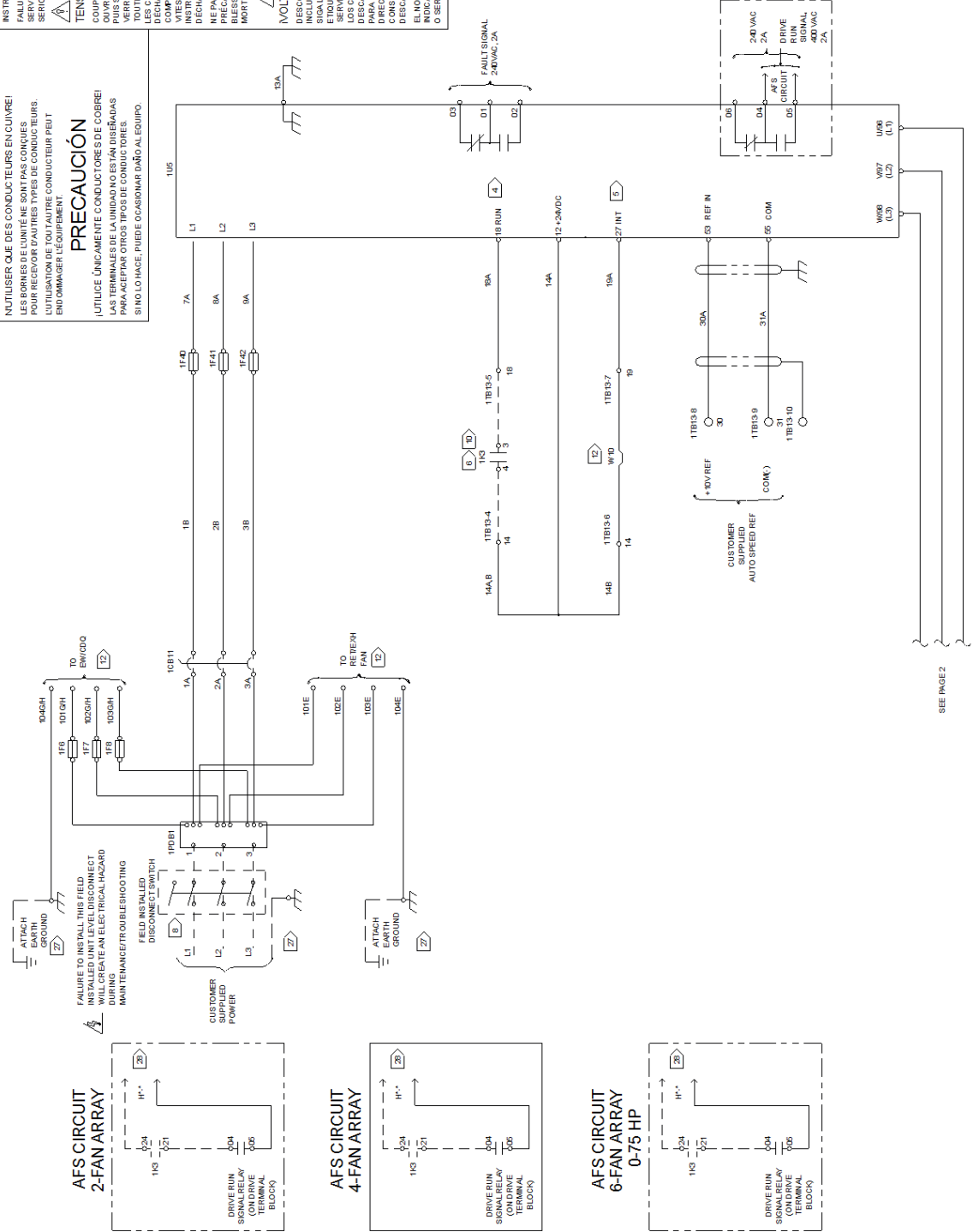
### TENSION DANGEREUSE!

COUPER TOUTES LES TENSIONS ET  
OUVRIER LES SECTIONNEURS À DISTANCE,  
PUIS SUIVRE LES PROCÉDURES DE  
VERROUILLAGE ET DES ÉTIQUETTES AVANT  
TOUT TRAVAIL. ASSURER QUE TOUTE L'ÉNERGIE  
DES CONDENSATEURS DES MOTEURS SONT  
DÉCHARGÉS. DANS LE CAS D'UNITÉS  
COMPORTANT DES ENTRAÎNEMENTS À  
VITESSE VARIABLE, CONSULTER LES  
INSTRUCTIONS DE L'ENTRAÎNEMENT POUR  
DÉCHARGER LES CONDENSATEURS.  
NE PAS RESPECTER CES MESURES DE  
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## ADVERTENCIA

### VOLTAJE PELIGROSO!

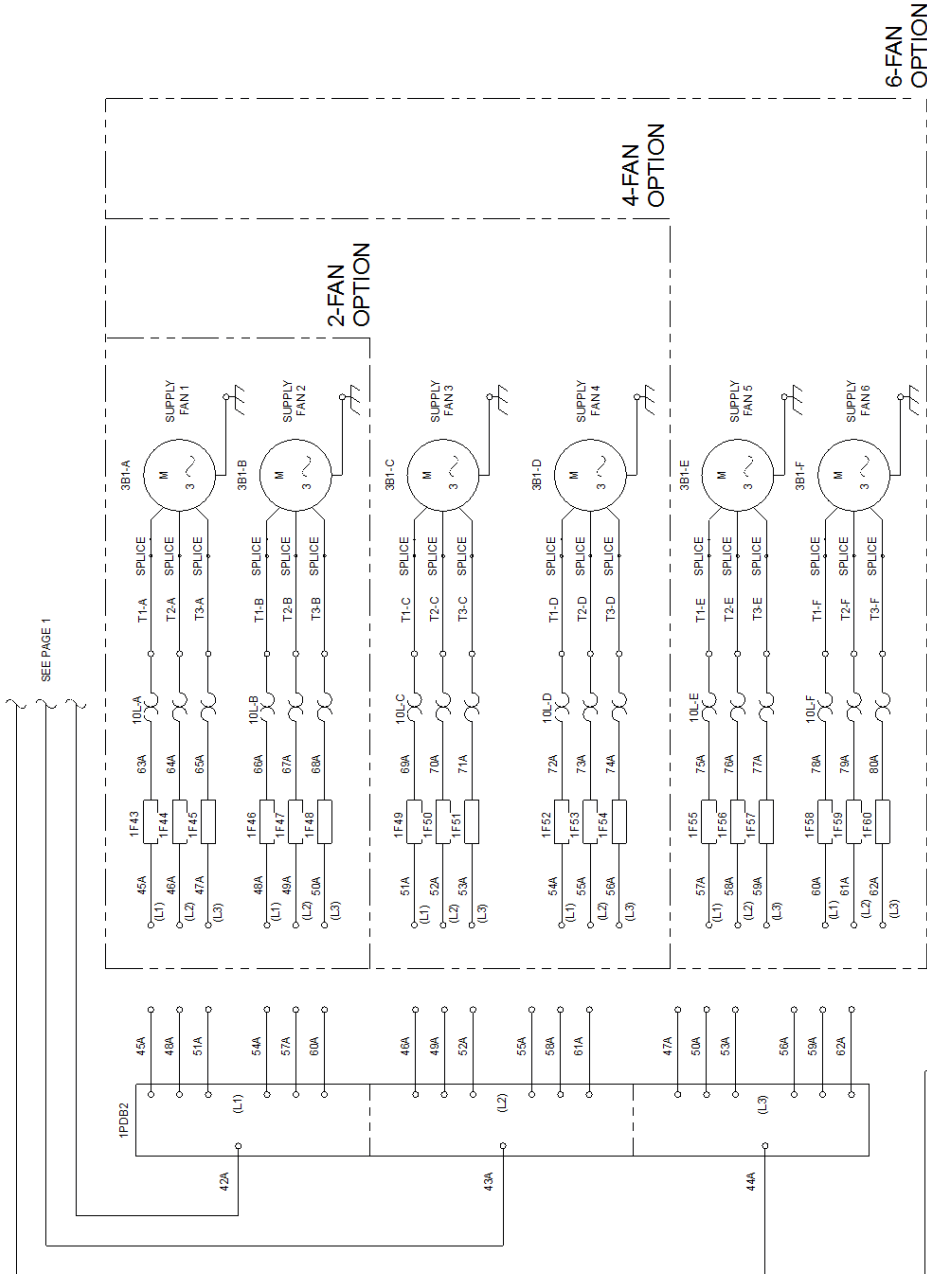
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TRABAJO. ASEGURESE QUE TODA LA ENERGÍA  
DE LOS CAPACITORES DEL MOTOR HAYAN  
DESCARGADO EL VOLTAJE ALMACENADO.  
PARA LAS UNIDADES CON EJE DE  
ENTRAÎNAMIENTO A VITESSE VARIABLE,  
CONSULTE LAS INSTRUCCIONES PARA LA  
DESCARGA DEL CONDENSADOR.  
EL NO REALIZAR LO ANTERIORMENTE  
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O SERIAS LESIONES PERSONALES.



SEE PAGE 2

SUPPLY FAN 1 SCHEMATIC PAGE 1 OF 3

## SUPPLY FAN 1 SCHEMATIC PAGE 2 OF 3



**⚠ WARNING**  
HAZARDOUS VOLTAGE!  
DISCONNECT ALL EXTERIOR POWER  
BEFORE REMOVING OR CONNECTING  
FOLLOW LOCK OUT AND TAG PROCEDURES  
BEFORE SERVICING. INSURE THAT ALL  
STORAGE VOLTAGE UNITS WITH VARIABLE  
SPEED DRIVE REFER TO DRIVE  
INSTRUCTIONS FOR CAPACITOR DISCHARGE  
SERVICES TO OBTAIN ADVISE BEFORE  
SERVICING TO PREVENT INJURY OR  
SERIOUS INJURY.

**⚠ AVERTISSEMENT**  
TENSION DANGEREUSE!  
COUPER TOUTES LES TENSIONS ET  
SERVICES AVANT DE DÉMONTAGER, DE  
PLUS SUIVRE LES PROCÉDURES  
TOUTE INTERVENTION. VÉRIFIER QUE TOUTES  
LES UNITÉS À VITESSE VARIABLE SONT  
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COMPORTANT DES ENTAÎNEMENTS À  
VITESSE VARIABLE, SE RÉFÉRER AUX  
INSTRUCTIONS POUR LA DÉCHARGE DES  
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LOS CAPACITORES DEL MOTOR HAYAN  
SIDO DESCARGADOS CORRECTAMENTE  
PARA LAS UNIDADES CON ELE DE  
DIRECCIÓN DE VELOCIDAD VARIABLE.  
CONSULTE LAS INSTRUCCIONES PARA LA  
DESCARGA DE LOS CAPACITORES PARA  
EVITAR LESIONES PERSONALES.  
SI NO SE SIGUEN LAS INSTRUCCIONES  
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OTHER TYPES OF CONDUCTORS.  
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EQUIPMENT.

**ATTENTION**

N'utiliser que des conducteurs en cuivre!  
Les bornes de l'unité ne sont pas conçues  
pour recevoir d'autres types de conducteurs.  
L'utilisation d'autres types de conducteurs peut  
endommager l'équipement.

**PRECAUCIÓN**

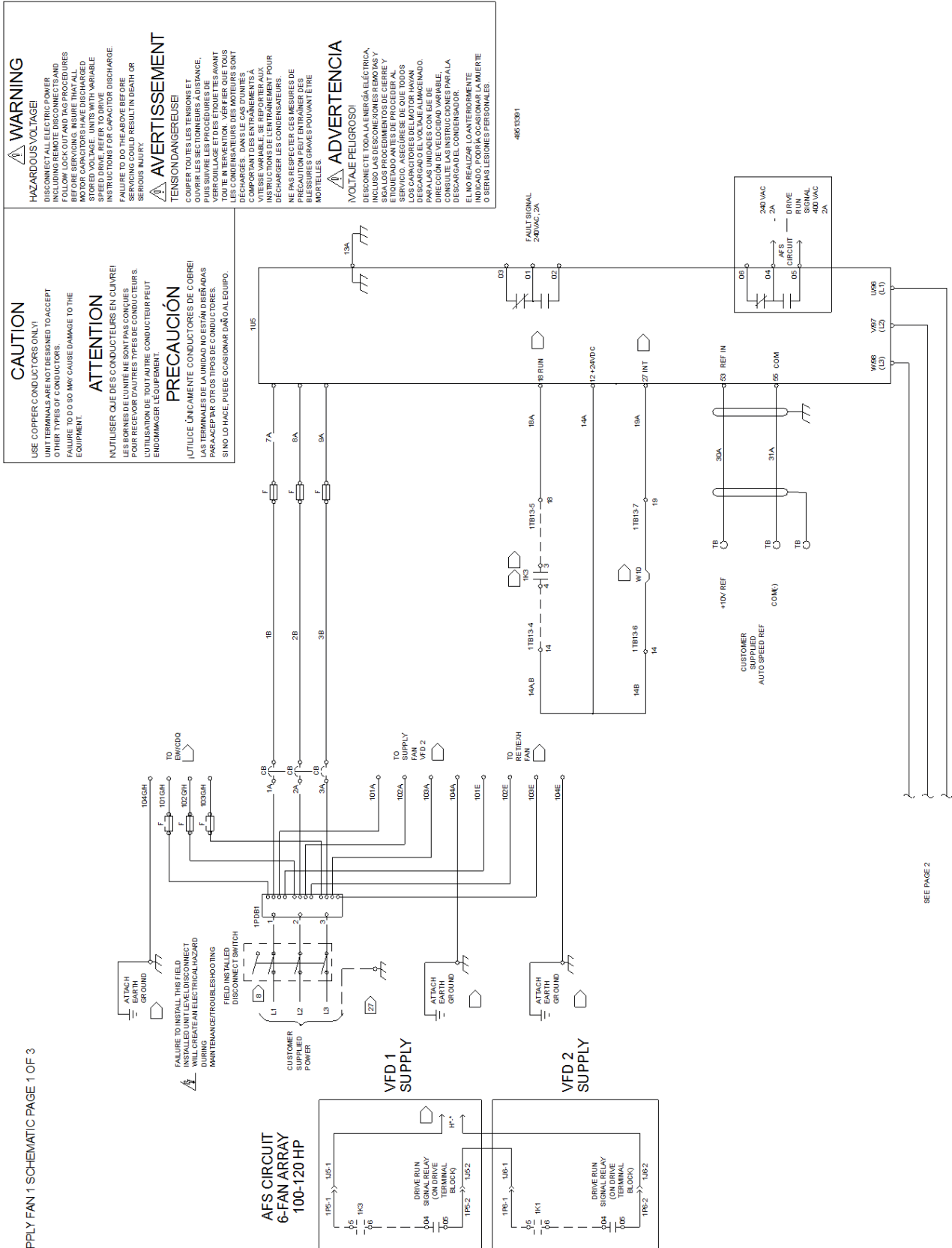
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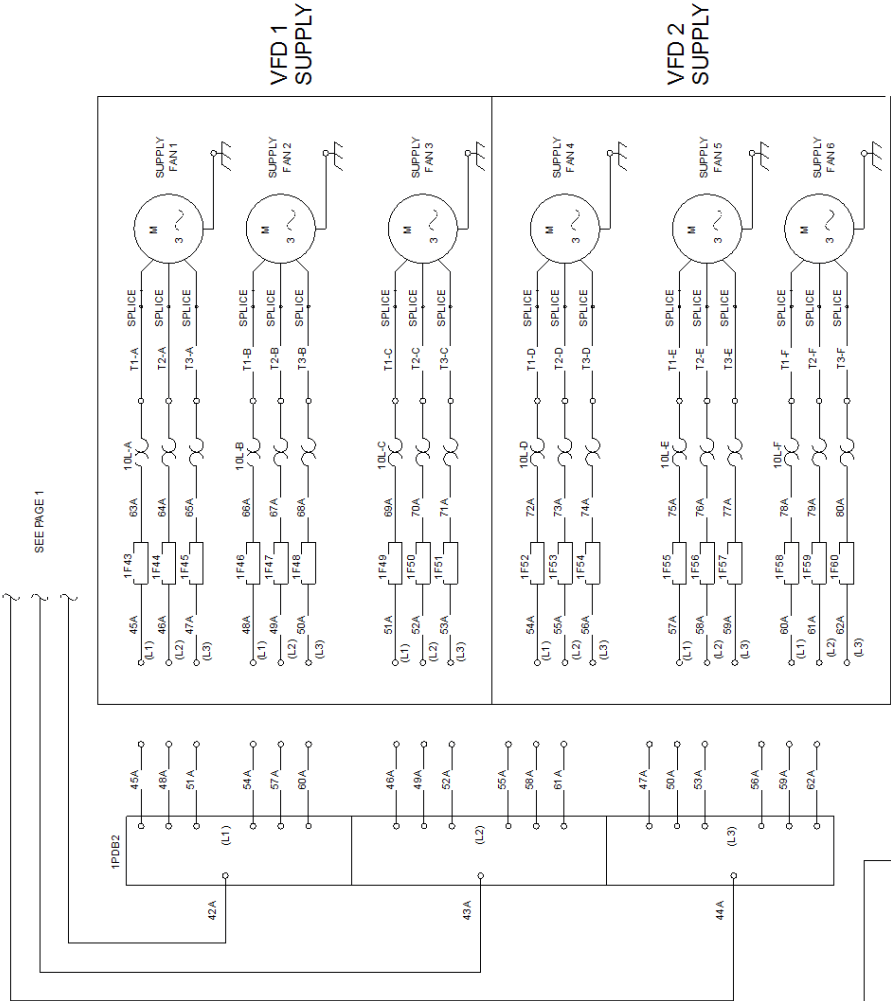
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SUPPLY FAN 1 SCHEMATIC PAGE 1 OF 3





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| FUSE                                                                                                                                         | VOLTAGE | MOTOR FUSES |          |    | CLASS |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|----------|----|-------|
|                                                                                                                                              |         | MFR/HP      | PIN      |    |       |
| 1F43<br>1F44<br>1F45<br>1F46<br>1F47<br>1F48<br>1F49<br>1F50<br>1F51<br>1F52<br>1F53<br>1F54<br>1F55<br>1F56<br>1F57<br>1F58<br>1F59<br>1F60 | 200/230 | 2x3         | LP-CC-15 | CC | CC    |
|                                                                                                                                              |         | 4x1.5       | LP-CC-10 | CC |       |
|                                                                                                                                              |         | 4x5         | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 2x5         | LP-CC-25 | CC |       |
|                                                                                                                                              |         | 2x7.5       | LP-CC-35 | CC |       |
| 200                                                                                                                                          | 200     | 2x10        | LP-40SP  | J  | J     |
|                                                                                                                                              |         | 2x15        | LP-40SP  | J  |       |
|                                                                                                                                              |         | 2x15        | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 4x1         | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 4x2         | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 4x5         | LP-CC-25 | CC |       |
|                                                                                                                                              |         | 4x7.5       | LP-35SP  | J  |       |
|                                                                                                                                              |         | 6x5         | LP-CC-35 | CC |       |
|                                                                                                                                              |         | 2x5         | LP-CC-35 | CC |       |
|                                                                                                                                              |         | 2x7.5       | LP-CC-30 | CC |       |
| 230                                                                                                                                          | 230     | 2x10        | LP-40SP  | J  | J     |
|                                                                                                                                              |         | 2x15        | LP-40SP  | J  |       |
|                                                                                                                                              |         | 2x20        | LP-70SP  | J  |       |
|                                                                                                                                              |         | 4x1         | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 4x2         | LP-CC-12 | CC |       |
|                                                                                                                                              |         | 4x5         | LP-CC-20 | CC |       |
|                                                                                                                                              |         | 2x20        | LP-35SP  | J  |       |
|                                                                                                                                              |         | 2x25        | LP-46SP  | J  |       |
|                                                                                                                                              |         | 2x30        | LP-60SP  | J  |       |
|                                                                                                                                              |         | 2x40        | LP-70SP  | J  |       |
| 460                                                                                                                                          | 460     | 4x1         | LP-CC-4  | CC | CC    |
|                                                                                                                                              |         | 4x1.5       | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 4x2         | LP-CC-7  | CC |       |
|                                                                                                                                              |         | 4x3         | LP-CC-7  | CC |       |
|                                                                                                                                              |         | 4x5         | LP-CC-10 | CC |       |
|                                                                                                                                              |         | 4x7.5       | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 4x10        | LP-CC-20 | CC |       |
|                                                                                                                                              |         | 4x15        | LP-CC-30 | CC |       |
|                                                                                                                                              |         | 4x20        | LP-35SP  | J  |       |
|                                                                                                                                              |         | 4x25        | LP-46SP  | J  |       |
| 575                                                                                                                                          | 575     | 6x5         | LP-CC-10 | CC | CC    |
|                                                                                                                                              |         | 6x7.5       | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 8x10        | LP-CC-20 | CC |       |
|                                                                                                                                              |         | 8x15        | LP-CC-30 | CC |       |
|                                                                                                                                              |         | 2 @ 3x20    | LP-40SP  | CC |       |
|                                                                                                                                              |         | 2x3         | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 2x5         | LP-CC-8  | CC |       |
|                                                                                                                                              |         | 2x7.5       | LP-CC-12 | CC |       |
|                                                                                                                                              |         | 2x10        | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 2x15        | LP-CC-25 | CC |       |
| 575                                                                                                                                          | 575     | 2x20        | LP-CC-30 | CC | CC    |
|                                                                                                                                              |         | 2x25        | LP-35SP  | J  |       |
|                                                                                                                                              |         | 2x30        | LP-46SP  | J  |       |
|                                                                                                                                              |         | 2x40        | LP-60SP  | J  |       |
|                                                                                                                                              |         | 4x1         | LP-CC-4  | CC |       |
|                                                                                                                                              |         | 4x1.5       | LP-CC-4  | CC |       |
|                                                                                                                                              |         | 4x2         | LP-CC-4  | CC |       |
|                                                                                                                                              |         | 4x3         | LP-CC-6  | CC |       |
|                                                                                                                                              |         | 4x5         | LP-CC-8  | CC |       |
|                                                                                                                                              |         | 4x7.5       | LP-CC-10 | CC |       |
| 575                                                                                                                                          | 575     | 4x10        | LP-CC-15 | CC | CC    |
|                                                                                                                                              |         | 4x15        | LP-CC-20 | CC |       |
|                                                                                                                                              |         | 4x20        | LP-CC-30 | CC |       |
|                                                                                                                                              |         | 4x25        | LP-35SP  | J  |       |
|                                                                                                                                              |         | 6x5         | LP-CC-8  | CC |       |
| 575                                                                                                                                          | 575     | 6x7.5       | LP-CC-10 | CC | CC    |
|                                                                                                                                              |         | 6x10        | LP-CC-15 | CC |       |
|                                                                                                                                              |         | 6x15        | LP-CC-20 | CC |       |
|                                                                                                                                              |         | 6x20        | LP-CC-30 | CC |       |
|                                                                                                                                              |         | 2 @ 3x20    | LP-35SP  | J  |       |

| DEVICE DESIGNATION | LEGEND | DESCRIPTION                          |
|--------------------|--------|--------------------------------------|
| 1CB11              |        | CIRCUIT BREAKER                      |
| 1F61F7/1F8         |        | PRIMARY CONTROLLER EW CDO FUSE       |
| 1F40 TO 1F42       |        | VFD FUSES                            |
| 1K3                |        | START / STOP RELAY                   |
| 1K5                |        | LOW LIMIT RELAY                      |
| 1PDB1              |        | POWER DISTRIBUTION BLOCK             |
| 1TE13              |        | TERMINAL STRIP CONTROL CIRCUIT       |
| 1L5                |        | VFD CONTROLLER                       |
| 3BH-A TO 3BH-F     |        | MOTORS (FAN ARRAY)                   |
| 1F43 TO 1F60       |        | MOTOR FUSES (FAN ARRAY)              |
| 1K1                |        | START / STOP RELAY (FAN ARRAY VFD)   |
| 1OL-A TO 1OL-F     |        | OVERLOAD RELAYS (FAN ARRAY)          |
| 1PDB2              |        | POWER DISTRIBUTION BLOCK (FAN ARRAY) |

| FUSE                 | VOLTAGE | PANEL HP (MAX) | PIN      | CLASS |
|----------------------|---------|----------------|----------|-------|
| 1F40<br>1F41<br>1F42 | 230     | 0.5-2          | LP-CC-10 | CC    |
|                      |         | 3              | LP-CC-15 | CC    |
|                      |         | 5              | LP-CC-25 | CC    |
|                      |         | 7.5-10         | JUN-50   | T     |
|                      |         | 15             | JUN-80   | T     |
|                      |         | 20-25          | JUN-100  | T     |
|                      |         | 30-40          | FWM-150A | ---   |
|                      |         | 50             | FWM-200A | ---   |
|                      |         | 15             | JUN-80   | T     |
|                      |         | 30-40          | JUS-150  | T     |
| 460                  | 460     | 0.5-2          | LP-CC-10 | CC    |
|                      |         | 3              | LP-CC-15 | CC    |
|                      |         | 5              | LP-CC-25 | CC    |
|                      |         | 7.5-10         | JUN-50   | T     |
|                      |         | 15             | JUN-80   | T     |
|                      |         | 20-25          | JUN-100  | T     |
|                      |         | 30-40          | FWM-150A | ---   |
|                      |         | 50             | FWM-200A | ---   |
|                      |         | 30-40          | JUS-150  | T     |
|                      |         | 0.5-2          | LP-CC-10 | CC    |
| 575                  | 575     | 0.5-2          | LP-CC-10 | CC    |
|                      |         | 3              | LP-CC-15 | CC    |
|                      |         | 5              | LP-CC-25 | CC    |
|                      |         | 7.5-10         | JUN-50   | T     |
|                      |         | 15             | JUN-80   | T     |
|                      |         | 20-25          | JUN-100  | T     |
|                      |         | 30-40          | FWM-150A | ---   |
|                      |         | 50             | FWM-200A | ---   |
|                      |         | 30-40          | JUS-150  | T     |
|                      |         | 0.5-10         | LP-CC-20 | CC    |

| AREA                               | DEVICE PREFIX                      | LOCATION CODE |
|------------------------------------|------------------------------------|---------------|
| 1                                  | HIGH VOLTAGE PANEL                 |               |
| 2                                  | LOW VOLTAGE PANEL (UNIT SCHEMATIC) |               |
| 3                                  | AIR HANDLER SECTION                |               |
| CONTROLLER EWM CDO FUSE (CLASS CC) |                                    |               |
| FUSE                               | VOLTAGE                            | PIN           |
| 1F61F7/1F8                         | 200/230                            | KLDR-15       |

CAUTION

USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

ATTENTION

NUTILISER QUE DES CONDUCTEURS EN CUIVRE!  
LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.  
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'EQUIPEMENT.

PRECAUCIÓN

UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!  
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.  
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

48513391

WARNING

HAZARDOUS VOLTAGE!  
DISCONNECT ALL ELECTRICAL POWER TO THE UNIT BEFORE SERVICING AND FOLLOW LOCK-OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE.  
FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.

AVERTISSEMENT

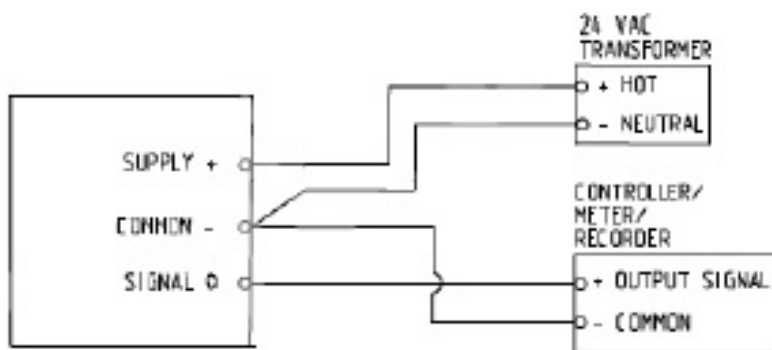
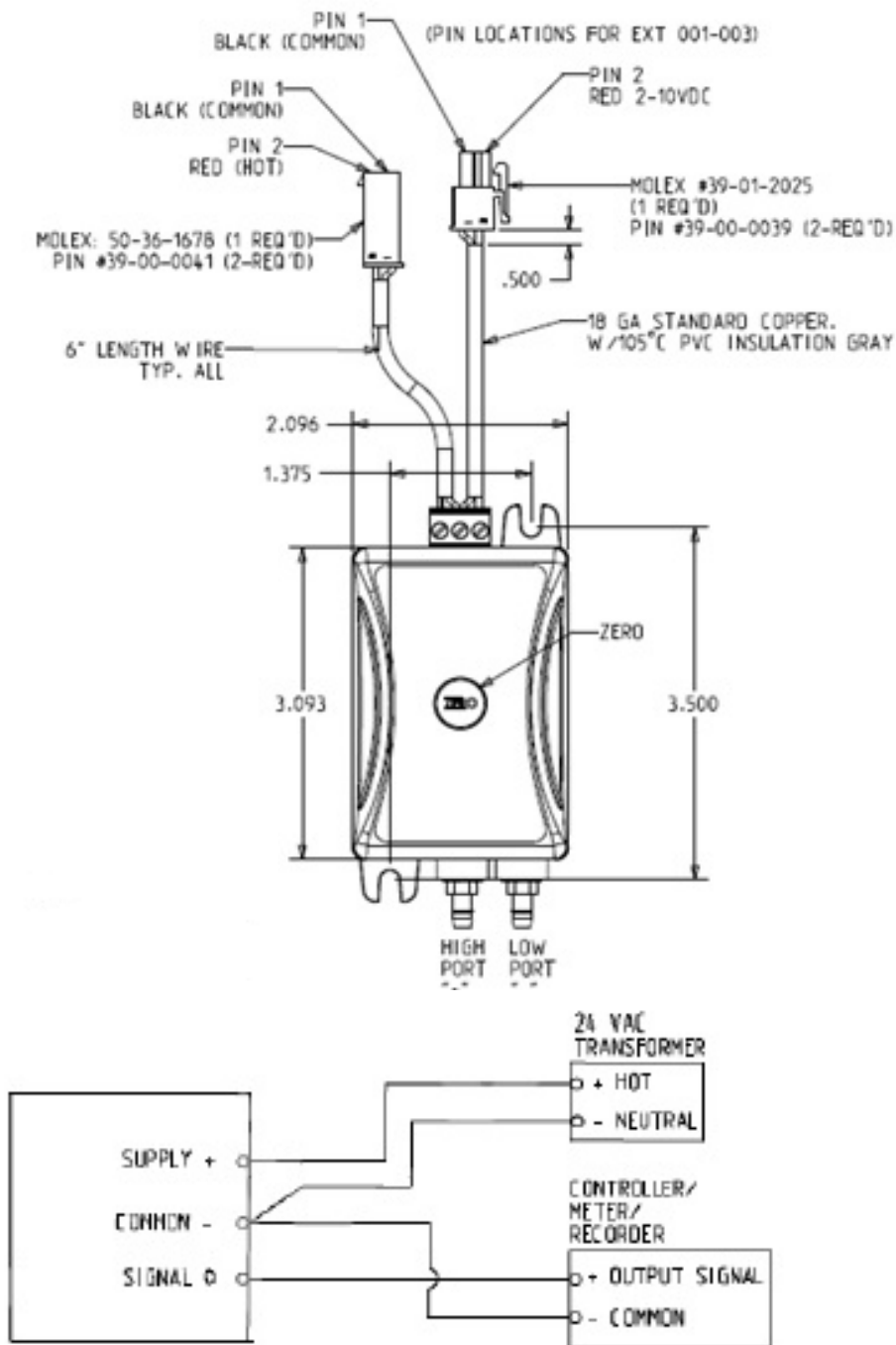
TENSION DANGEREUSE!  
COUPER TOUTES LES TENSIONS ET OUVRIER LES SECTIONNELS À DISTANCE, PUIS SUIVRE LES PROCÉDURES DE VERROUILLAGE ET DES ÉTIQUETTES AVANT TOUTE INTERVENTION. VÉRIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DÉCHARGÉS. DANS LE CAS D'UNITÉS COMPORTANT DES ENTRAÎNEMENTS À VITESSE VARIABLE, CONSULTER LES INSTRUCTIONS DE L'ÉQUIPEMENT POUR DÉCHARGER LES CONDENSATEURS.  
NE PAS RESPECTER CES MESURES DE PRÉCAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ÊTRE MORTELLES.

ADVERTENCIA

VOLTAJE PELIGROSO!  
DESCONECTE TODA LA ENERGÍA ELÉCTRICA INCLUIDO LAS DESCONEXIONES REMOVIENDO LAS ETIQUETAS DE CERRER Y VERIFICANDO QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO PARA LAS UNIDADES CON EJE DE DIRECCIÓN DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.  
EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRÍA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.

NOTES:

- DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION  
REF. CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL
- ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC). STATE AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION RATING NOT LESS THAN 600V COPPER CONDUCTORS ONLY.
- THE MINIMUM CIRCUIT AMPACITY, THE MAXIMUM FUSE SIZE AND DISCONNECT SIZE ARE CALCULATED BASED ON THE INVERTER INPUT LINE CURRENTS PER ARTICLE 430.2 OF THE NATIONAL ELECTRICAL CODE
- PROGRAM TERMINAL 18 AS RUN
- PROGRAM TERMINAL 27 INV. COASTING STOP.
- CLOSES TO RUN AUTO MODE OR BYPASS AUTO FOR OPTION VFD OR STARTER
- CUSTOMER SUPPLIED LOCKABLE DISCONNECTING MEANS, SUCH AS A DISCONNECT SWITCH OR CIRCUIT BREAKER, INSTALLED LOCAL TO UNIT. SIZE AND PLACEMENT OF DEVICE SHALL BE DONE IN ACCORDANCE WITH APPLICABLE NATIONAL AND LOCAL ELECTRICAL CODES.
- REMOVE JUMPER AND INSTALL FIELD SAFETY INTERLOCK.
- FIELD SUPPLIED CONTACTS.
- IF UNIT HAS SHIPPING SPLITS, WIRING WILL TERMINATE TO MODULE AT EACH SHIPPING SPLIT.
- ATTACH GROUND OR EQUIPMENT GROUND.
- AIRFLOW SWITCH INPUT, REFER TO LOW VOLTAGE SCHEMATIC.



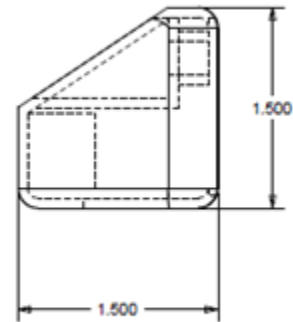
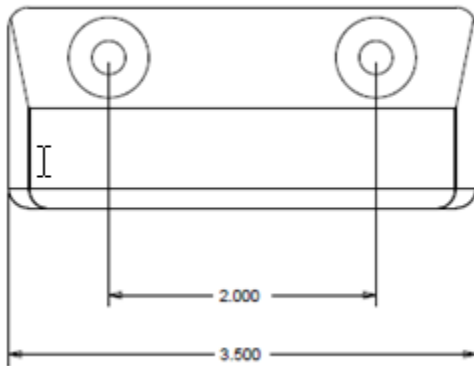
NOTE:

1. PRESSURE CONNECTIONS: 3/16" OD BARBED FITTING FOR 1/4" TUBING
2. OPERATING TEMPERATURE: 0 - 85 C
3. COMPENSATED TEMPERATURE: 0 - 50 C
4. LOAD IMPEDANCE: 500 OHMS
5. TERMINATION: SCREW TERMINAL BLOCK
6. ACCURACY: 0.25%
7. INPUT VOLTAGE: 24VAC (NOMINAL)

## Limit Switch

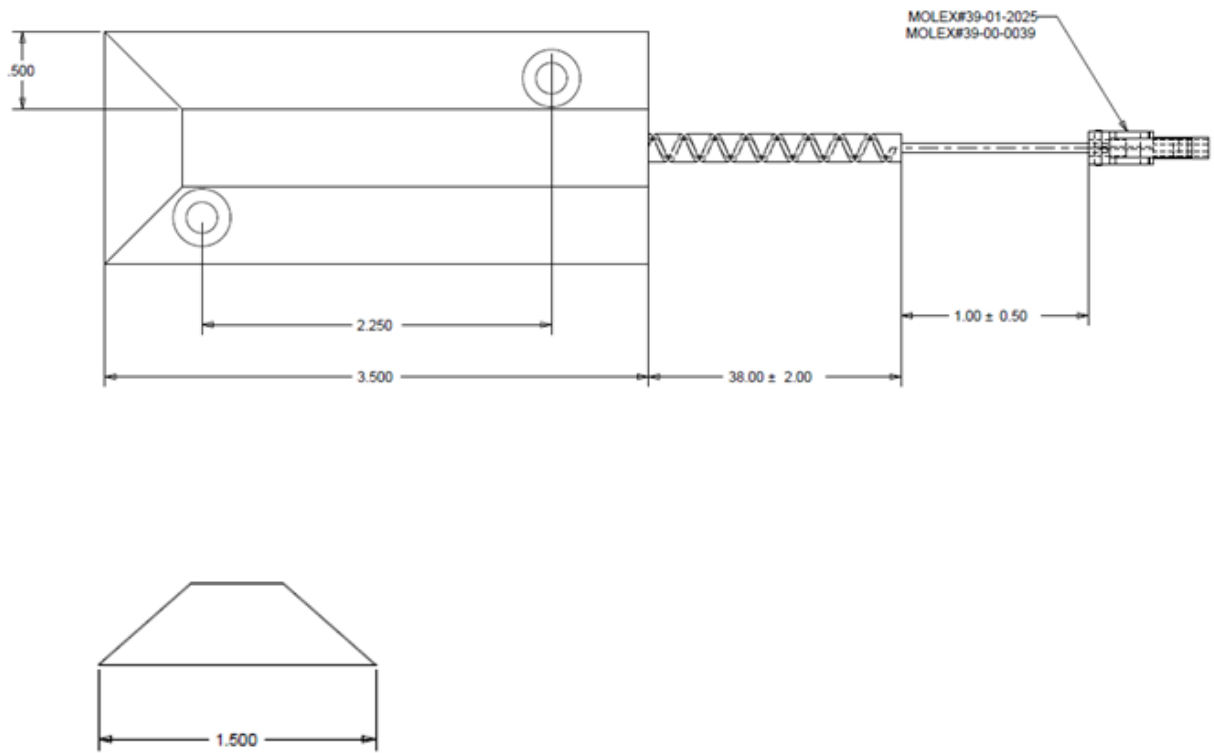
### Notes:

1. Parts Must Have Trane Part Number With Bar Code per ES.
2. All Dimensions Are Reference Dimensions Unless Otherwise Noted.
3. Replace 2 Mounting Screws with Pan Head Combination Drive Sheet Metal Screws, 18-8 Stainless Steel, #6 Size ½" Length.

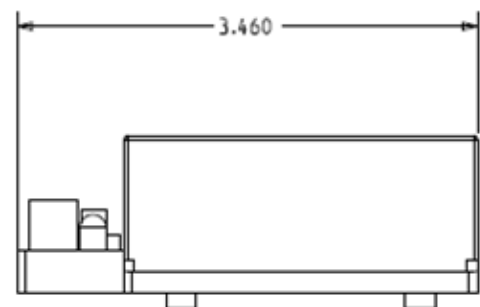
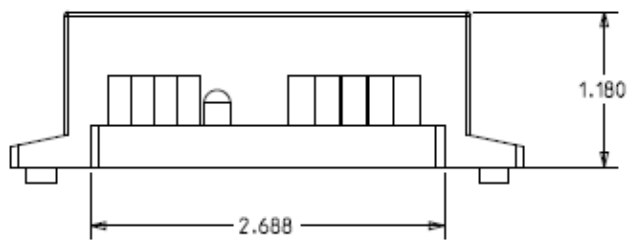
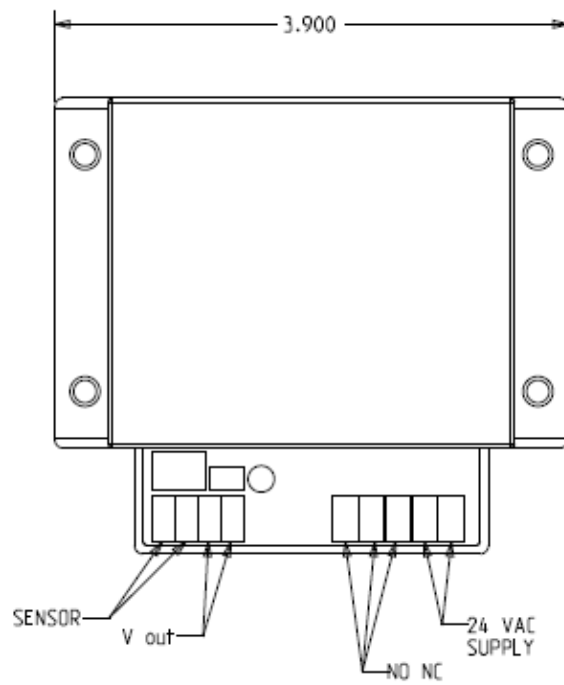




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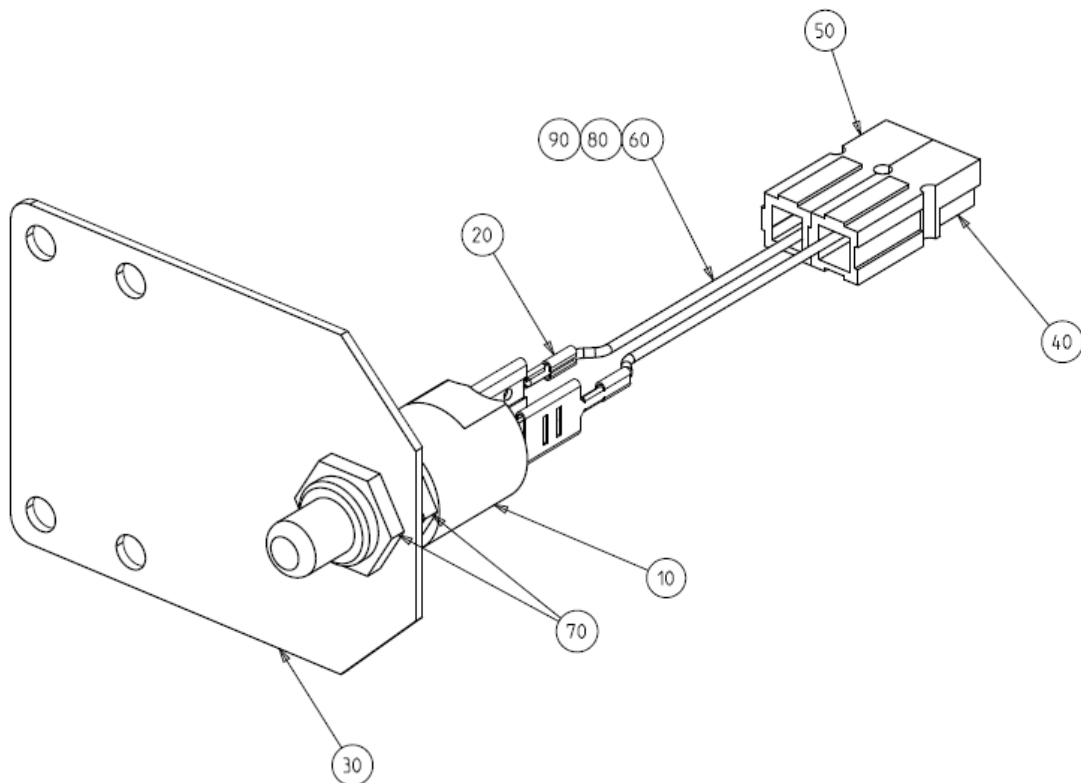


## Radiometer



## Limit Switch UV

| Item | Description                                 | Vendor No. or Equivalent | QTY |
|------|---------------------------------------------|--------------------------|-----|
| 10   | Momentary Switch. Eaton Metal Button        | 8418K12                  | 1   |
| 20   | Female Disconnects (Red) Panduit            | DNF18-250FIB-C           | 2   |
| 30   | Mounting Bracket 495319590001               | 16 GA. Galvanized        | 1   |
| 40   | Anderson Contact and Connector              | 1327G6 (Blk)             | 1   |
| 50   | Anderson Contact and Connector              | 1327G7 (Wht)             | 1   |
| 60   | 18 AWG Wire THHN Blk: Length 2.5"           | --                       | 2   |
| 70   | Nut: 15/32-32; Hexagon. Eaton               | 15-192                   | 3   |
| 80   | Heat Shrink Tube: Panduit 3/4": Length 3.5" | HSTTA75-48-5             | 1   |
| 90   | Aluminum Tape 2" Wide: Length 4.5"          | --                       | 1   |

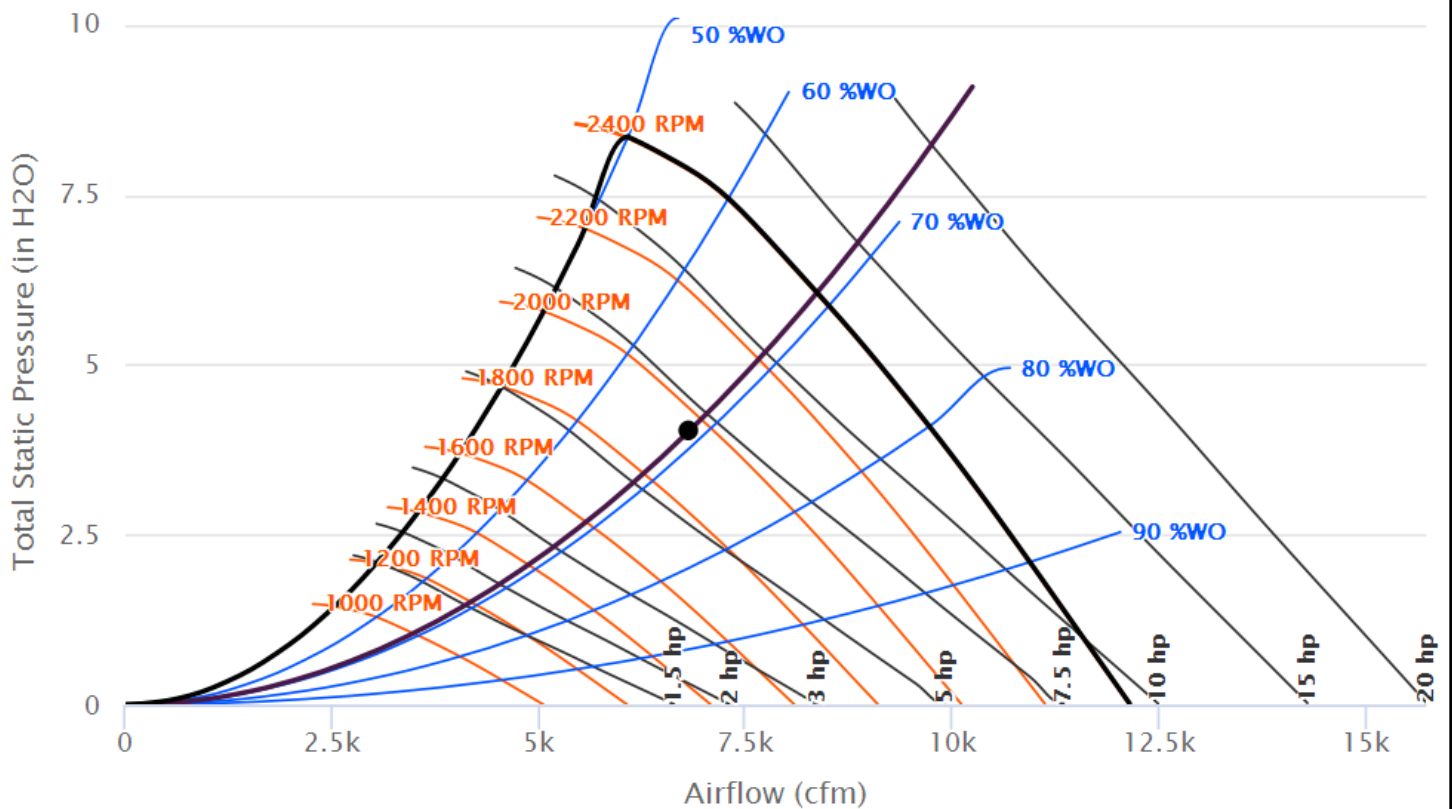


## Fan Details

|                                  |              |                              |          |
|----------------------------------|--------------|------------------------------|----------|
| <b>Unit Size</b>                 | 22TR         | <b>Operating Brake Power</b> | 6.873 hp |
| <b>Motor Frequency</b>           | 66.00 Hz     | <b>Altitude</b>              | 0.00 ft  |
| <b>Operating Airflow</b>         | 6,826 cfm    | <b>Design Temp.</b>          | 70.00 F  |
| <b>Operating Static Pressure</b> | 4.039 in H2O | <b>Efficiency</b>            | 63.24 %  |
| <b>Operating RPM</b>             | 1,960 rpm    |                              |          |

## DOAS-1 – Exhaust – Single Fan

Size 17 DDP 22.25 inch AF M Press 80% Width 9 blades

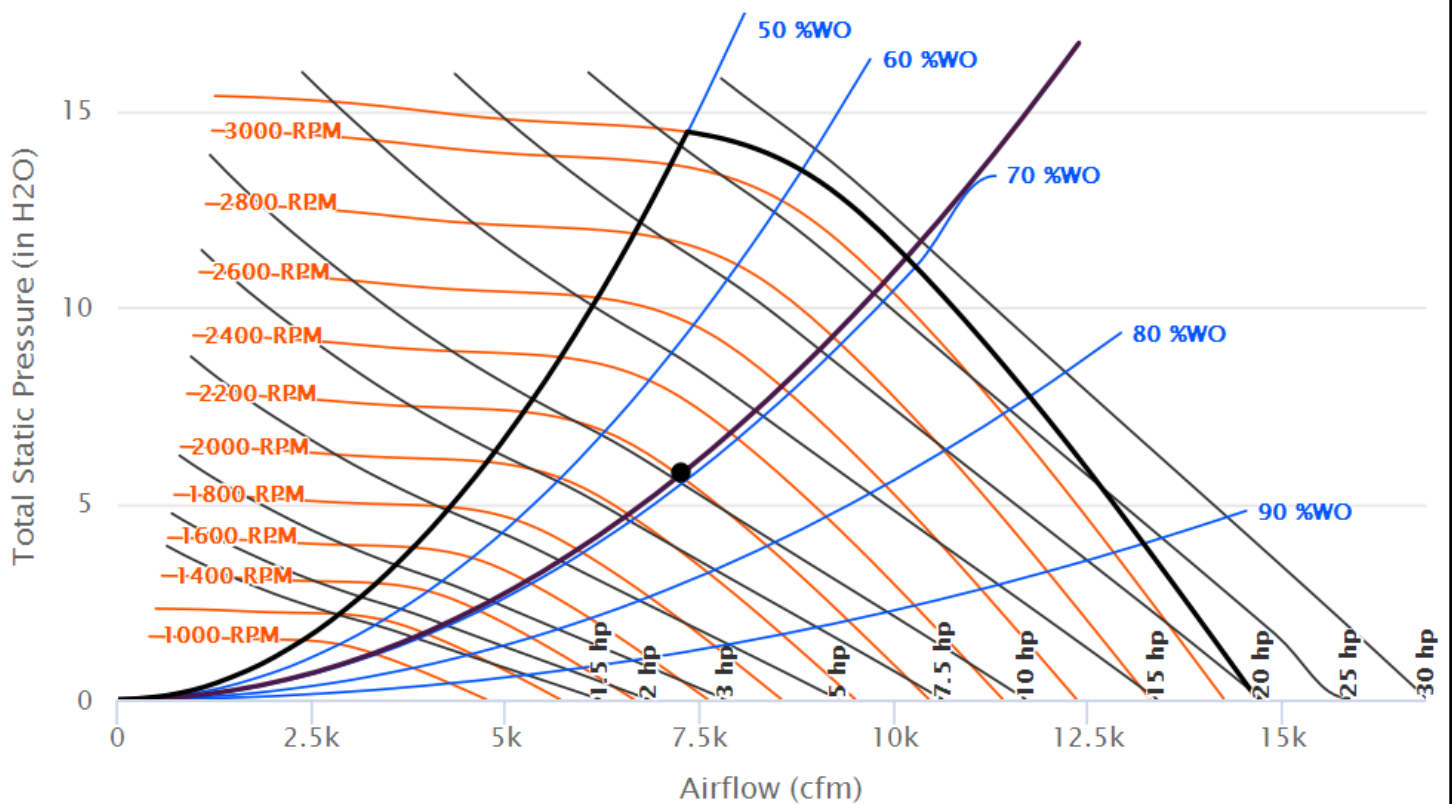


## Fan Details

|                                  |              |                              |           |
|----------------------------------|--------------|------------------------------|-----------|
| <b>Unit Size</b>                 | 22UR         | <b>Operating Brake Power</b> | 10.473 hp |
| <b>Motor Frequency</b>           | 75.00 Hz     | <b>Altitude</b>              | 0.00 ft   |
| <b>Operating Airflow</b>         | 7,275 cfm    | <b>Design Temp.</b>          | 70.00 F   |
| <b>Operating Static Pressure</b> | 5.792 in H2O | <b>Efficiency</b>            | 63.43 %   |
| <b>Operating RPM</b>             | 2,213 rpm    |                              |           |

## DOAS-1 – Supply – Single Fan

Size 17 DDP 22.25 inch AF H Press 80% Width 12 blades



# Trane Performance Climate Changer Air Handler

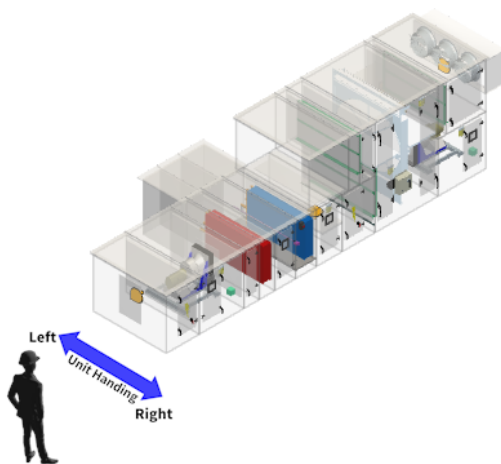
## Unit Overview - ERU-2

| Application                   | Unit Size | External Dimensions   |              |                    | Weight              |                                    |
|-------------------------------|-----------|-----------------------|--------------|--------------------|---------------------|------------------------------------|
|                               |           | Height                | Width        | Length             | Installed           | Rigging                            |
| Outdoor unit                  | CSAA012   | 89.4 in               | 66.5 in      | 291.5 in           | 7240 lb             | 6117 lb                            |
| Quantity of Shipping Sections |           | Largest Ship Split    |              |                    | Heaviest Ship Split | Elevation                          |
|                               |           | Height                | Width        | Length             |                     |                                    |
| 5 piece(s)                    |           | 47.7 in               | 66.5 in      | 190.1 in           | 3145 lb             | 0.00 ft                            |
| Supply Fan                    |           |                       |              | Return/Exhaust Fan |                     |                                    |
| Airflow                       | 5278 cfm  | Total Static Pressure | 5.527 in H2O | Airflow            | 4866 cfm            | Total Static Pressure 4.262 in H2O |

Note: Height includes air handler sloped roof panel and standing seam.

## Construction Features

|                              |                                            |
|------------------------------|--------------------------------------------|
| Panel                        | 2in. foam injected R-13 with thermal break |
| Panel Material               | All unit inner panels - galvanized         |
| Integral Base Frame          | 6in. integral base frame                   |
| Paint                        | Slate gray                                 |
| Short Circuit Current Rating | 5 kA                                       |
| Agency Approval              | UL listed unit                             |
| Roof Curb Type               | Standard roof curb                         |



## Unit Electrical

| Circuit                                               | Voltage/Phase/Frequency | FLA     | MCA     | Max Fuse Size |
|-------------------------------------------------------|-------------------------|---------|---------|---------------|
| Circuit number 1 SPP (Field provided unit disconnect) | 460/3/60                | 26.52 A | 30.02 A | 40.00 A       |
| Circuit number 2 UV lights 1                          | 115/1/60                | 1.54 A  | 1.93 A  | 15.00 A       |
| Circuit number 3 Lights + switch                      | 115/1/60                | 2.61 A  | 3.26 A  | 15.00 A       |
| Circuit number 4 Receptacle                           | 115/1/60                | 8.00 A  | 10.00 A | 15.00 A       |

## Unit Acoustics

| Sound Path    | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|---------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Supply front: | 80 dB   | 83 dB | 76 dB | 72 dB | 66 dB | 64 dB | 60 dB | 52 dB |
| Return:       | 70 dB   | 71 dB | 66 dB | 64 dB | 58 dB | 59 dB | 51 dB | 42 dB |
| Outdoor:      | 80 dB   | 79 dB | 72 dB | 66 dB | 58 dB | 59 dB | 50 dB | 43 dB |
| Exhaust:      | 74 dB   | 84 dB | 76 dB | 78 dB | 73 dB | 72 dB | 66 dB | 56 dB |
| Casing:       | 82 dB   | 80 dB | 89 dB | 82 dB | 73 dB | 63 dB | 60 dB | 52 dB |

## Unit Controls

|                 |               |
|-----------------|---------------|
| Controller Type | No controller |
|-----------------|---------------|

## Warranty

|                  |                         |
|------------------|-------------------------|
| Warranty section | Extd. warranty          |
| Labor - 1st year | 1st year labor warranty |

## Pipe cabinet section

|                                    |                |
|------------------------------------|----------------|
| Pipe cabinet 1 side doors          | One side door  |
| Pipe cabinet 1 door front position | One front door |
| Pipe cabinet 1 door back position  | One back door  |



## Exhaust fan section - Position: 1

| Fan Data                  |                                          | Motor Data                                                                          |                                       |
|---------------------------|------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|
| Wheel Diameter/Type/Class | 20in. dd plenum, 80% width, M press      | Power / Fan                                                                         | 7.5 hp                                |
| Fan Quantity              | 1                                        | Voltage                                                                             | 460/3                                 |
| Discharge Location        | Side opp. drive                          | Speed                                                                               | 1800                                  |
| Motor Location            | Right side drive                         | Class                                                                               | NEMA premium compliant ODP            |
| Blades                    | Improved sound(lowest overall,less spike | Efficiency                                                                          | 91.23 %                               |
| Drive Service Factor      | Direct drive                             | Part Load Efficiency                                                                | 84.69 %                               |
| Fan Performance           |                                          | Fan Electrical Power                                                                | 4.53 kW                               |
| Airflow                   | 4866 cfm                                 | Note: VFD driven motor fan electrical power calculated in accordance with AHRI 430. |                                       |
| Total Static Pressure     | 4.262 in H2O                             | Fan Section Options                                                                 |                                       |
| Total Brake Power         | 5.272 hp                                 | Inlet Sound Attenuator                                                              | Inlet bell (reduces spike)            |
| Operating Speed           | 2132 rpm                                 | Fan Wheel Balance                                                                   | Inverter balance with shaft grounding |
| Total Brake HP            | 5.272 hp                                 | Perforated Panel                                                                    | Perforated panels                     |
| AMCA FEG                  | FEG75                                    | Door Location                                                                       | Right                                 |
| Unit Static Efficiency    | 62.01 %                                  | Window                                                                              | Right - thermal                       |
| Motor Interface Options   |                                          | Door Guard                                                                          | Yes                                   |
| Selection Type            | VFD                                      | Marine Light                                                                        | Marine LED light                      |
| Voltage                   | 460/3                                    |                                                                                     |                                       |
| Mounting Location         | Internal mounting                        |                                                                                     |                                       |
| Motor Wire In Conduit     | Motor wiring conduit                     |                                                                                     |                                       |
| VFD Frequency             | 72.00 Hz                                 |                                                                                     |                                       |

| Fan Discharge Options |                      |          |               |            |               |                           |              |
|-----------------------|----------------------|----------|---------------|------------|---------------|---------------------------|--------------|
| Face                  | Type                 | Airflow  | Face Velocity | Area       | Pressure Drop | Damper Torque Requirement | Exhaust Hood |
| Side Face Feature     | Opposed blade damper | 5000 cfm | 1572 ft/min   | 3.18 sq ft | 0.231 in H2O  | N/A                       | N/A          |

Note: Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third party verified. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).



## Exhaust fan Acoustics

| Sound Path | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Return:    | 70 dB   | 71 dB | 66 dB | 64 dB | 58 dB | 59 dB | 51 dB | 42 dB |
| Exhaust:   | 74 dB   | 84 dB | 76 dB | 78 dB | 73 dB | 72 dB | 66 dB | 56 dB |
| Casing:    | 77 dB   | 75 dB | 76 dB | 77 dB | 68 dB | 59 dB | 56 dB | 47 dB |

## Pressure Drop in (in w.g.)

| Exhaust fan              |      |
|--------------------------|------|
| Wheel                    | 1.38 |
| Fan section              | 0.88 |
| Internal Static Pressure | 2.26 |
| External Static Pressure | 2.00 |
| Total Static Pressure    | 4.26 |

## Starter/VFD only section - Position: 2

| Return/Exhaust Fan Motor Interface Door |        | Right       |          |               |            |               |  |
|-----------------------------------------|--------|-------------|----------|---------------|------------|---------------|--|
| Openings                                |        |             |          |               |            |               |  |
| Face                                    | Path   | Type        | Airflow  | Face Velocity | Area       | Pressure Drop |  |
| Bottom Face Feature                     | Return | Rectangular | 5000 cfm | 1223 ft/min   | 4.09 sq ft | 0.000 in H2O  |  |

### Air mixing section - Position: 3

| Openings               |               |             |             |               |               |               |      |
|------------------------|---------------|-------------|-------------|---------------|---------------|---------------|------|
| Face                   | Path          | Type        | Airflow     | Face Velocity | Area          | Pressure Drop | Hood |
| Back                   | Outside       | Std TRAQ    | 5316 cfm    | 1269 ft/min   | 4.19 sq ft    | 0.142 in H2O  | Yes  |
| Filter                 |               |             |             |               |               |               |      |
| Type                   | Frame         | MERV Rating | Quantity    | Size          | Pressure Drop |               |      |
| Pleated media - MERV 8 | 2"            | MERV 8      | 6.00        | 16in.x20in.   | 0.610         |               |      |
| Condition              | Face Velocity | Airflow     | Area        |               |               |               |      |
| Mid-life               | 399 ft/min    | 5316 cfm    | 13.33 sq ft |               |               |               |      |
| Section Options        |               |             |             |               |               |               |      |
| Door Location          |               |             | Right       |               |               |               |      |

### Custom length section - Position: 4

|                |          |
|----------------|----------|
| Section Length | 7.507 in |
|----------------|----------|

### Dedicated outside air Energy wheel - Position: 5

| Wheel                              |              |                      |                           | Motor                  |                    |                 |                    | Dampers            |                            |        |
|------------------------------------|--------------|----------------------|---------------------------|------------------------|--------------------|-----------------|--------------------|--------------------|----------------------------|--------|
| Size                               | Efficiency   | Model Number         |                           | Voltage                | Interface Options  |                 | Exhaust Air Bypass | Outside Air Bypass | Recirculation              |        |
| 6000                               | High         | Wheel 6000 Poly H    |                           | 460/3                  | Starter            |                 |                    | Yes                |                            |        |
| Design Airflow                     |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Ventilation                        |              |                      | Exhaust                   |                        |                    | Return          |                    |                    | Supply                     |        |
| 5000 cfm                           |              |                      | 4550 cfm                  |                        |                    | 4828 cfm        |                    |                    | 5278 cfm                   |        |
| Pressure Drop @ Design Airflow     |              |                      |                           | SA to RA Pressure Diff | OACF Ratio         | OATR Flow       | EATR               | EATR Flow          |                            |        |
| Supply Side                        | Exhaust Side | Recirculation Damper |                           |                        |                    |                 |                    |                    |                            |        |
| 0.86 in H2O                        | 0.79 in H2O  | N/A                  |                           |                        |                    |                 |                    |                    | 1.500 in H2O               |        |
| Summer Conditions                  |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Outside Air                        |              | Return Air           |                           | Supply Air             |                    | Exhaust Air     |                    | Effectiveness      |                            |        |
| Dry Bulb                           | Wet Bulb     | Dry Bulb             | Wet Bulb                  | Dry Bulb               | Wet Bulb           | Dry Bulb        | Wet Bulb           | Latent             | Sensible                   | Total  |
| 87.00 F                            | 72.00 F      | 75.00 F              | 63.00 F                   | 77.88 F                | 65.54 F            | 84.63 F         | 70.23 F            | 75.2 %             | 80.0 %                     | 76.8 % |
| Winter Conditions                  |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Outside Air                        |              | Return Air           |                           | Supply Air             |                    | Exhaust Air     |                    | Effectiveness      |                            |        |
| Dry Bulb                           | Wet Bulb     | Dry Bulb             | Wet Bulb                  | Dry Bulb               | Wet Bulb           | Dry Bulb        | Wet Bulb           | Latent             | Sensible                   | Total  |
| -5.00 F                            | -6.00 F      | 70.00 F              | 53.00 F                   | 50.12 F                | 41.02 F            | 9.62 F          | 9.52 F             | 75.7 %             | 81.0 %                     | 79.0 % |
| Energy Savings                     |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Summer                             |              |                      |                           |                        |                    |                 |                    | Winter             |                            |        |
| Sensible                           |              | Latent               |                           |                        |                    | Total           |                    | Sensible           |                            |        |
| 51.27 MBh                          |              | 63.53 MBh            |                           |                        |                    | 114.80 MBh      |                    | 309.15 MBh         |                            |        |
| Economizing                        |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Supply Airflow                     |              |                      | Supply Side Pressure Drop |                        |                    | Exhaust Airflow |                    |                    | Exhaust Side Pressure Drop |        |
| 5000 cfm                           |              |                      | 0.79 in H2O               |                        |                    | 4550 cfm        |                    |                    | 0.50 in H2O                |        |
| Return/Exhaust Air Filter          |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Type                               | Frame        | MERV Rating          | Airflow                   | Face Area              | Face Velocity      | Condition       | Pressure Drop      | Quantity           | Size                       |        |
| Pleated media - MERV 8             | 2"           | MERV 8               | 4828 cfm                  | 13.33 sq ft            | 362 ft/min         | Mid-life        | 0.596 in H2O       | 6.00               | 16in.x20in.                |        |
| Energy Wheel Section Options       |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| Door Location                      |              |                      |                           |                        | Right              |                 |                    |                    |                            |        |
| 1st level - air entering LED light |              |                      |                           |                        | Marine LED light   |                 |                    |                    |                            |        |
| 2nd level - air entering light     |              |                      |                           |                        | Marine LED light   |                 |                    |                    |                            |        |
| AHRI 1060 Classification - Summer  |              |                      |                           |                        |                    |                 |                    |                    |                            |        |
| AHRI 1060 Classification           |              |                      |                           |                        | AHRI ERV Certified |                 |                    |                    |                            |        |
| Data Generation Date               |              |                      |                           |                        | 1/13/2022          |                 |                    |                    |                            |        |
| Trane Select Assist update number  |              |                      |                           |                        | 2540               |                 |                    |                    |                            |        |

Note: Purge is Not Included.

Note: Certified in accordance with the AHRI ERV Certification Program, which is based on AHRI Standard 1060. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).


**AHRI 1060 Classification - Winter****AHRI 1060 Classification** Outside Scope of AHRI 1060**Data Generation Date** 1/13/2022**Trane Select Assist update number** 2540

Note: Application Rating is outside of the scope of AHRI ERV Certification Program, but is rated in accordance with AHRI Standard 1060.

**Filter section - Position: 6****Primary Filter**

| Type                               | Frame             | Loading           | Airflow  | Face Area   | Face Velocity | Condition | Pressure Drop             | Filter Quantity | Filter Size |
|------------------------------------|-------------------|-------------------|----------|-------------|---------------|-----------|---------------------------|-----------------|-------------|
| 4in. cartridge - MERV 14 - premium | 4in. filter frame | Side load filters | 5278 cfm | 13.33 sq ft | 396 ft/min    | Mid-life  | 0.767 in H <sub>2</sub> O | 6.00            | 16x20       |

**Filter Section Options**

|                                    |             |
|------------------------------------|-------------|
| <b>Door Location</b>               | Right       |
| <b>Extra sets of filter type 1</b> | 1 extra set |

**Custom length section - Position: 7**

|                       |           |
|-----------------------|-----------|
| <b>Section Length</b> | 10.000 in |
|-----------------------|-----------|

**Access/blank/turning section - Position: 8****Options**

|                       |           |
|-----------------------|-----------|
| <b>Section Length</b> | 36.000 in |
|-----------------------|-----------|

**Air mixing section - Position: 9****Openings**

| Face | Path | Type | Airflow | Face Velocity | Area | Pressure Drop | Hood |
|------|------|------|---------|---------------|------|---------------|------|
|------|------|------|---------|---------------|------|---------------|------|

**Section Options**

|                      |                  |
|----------------------|------------------|
| <b>Door Location</b> | Right            |
| <b>Window</b>        | Right - thermal  |
| <b>Marine Light</b>  | Marine LED light |

**Cooling coil section - Position: 10**

| Coil Construction               |                                               | Coil Performance                         |                            |
|---------------------------------|-----------------------------------------------|------------------------------------------|----------------------------|
| <b>Model</b>                    | Chilled water - UW                            | <b>Capacity</b>                          |                            |
| <b>Rows</b>                     | 8                                             | <b>Total</b>                             | 213.68 MBh                 |
| <b>Tube Diameter</b>            | 1/2in. tube diameter (12.7 mm)                | <b>Sensible</b>                          | 150.45 MBh                 |
| <b>Coil Connection</b>          | Standard                                      | <b>Air</b>                               |                            |
| <b>Tube Matl/Wall Thickness</b> | .016" (0.406 mm) copper tubes                 | <b>Flow</b>                              | 5278 cfm                   |
| <b>Fin Spacing</b>              | 107 Per Foot                                  | <b>Entering Dry Bulb</b>                 | 77.88 F                    |
| <b>Fin Material</b>             | Aluminum fins                                 | <b>Entering Wet Bulb</b>                 | 65.54 F                    |
| <b>Fin Type</b>                 | Delta flo H (Hi efficient)                    | <b>Leaving Dry Bulb</b>                  | 52.00 F                    |
| <b>Face Area</b>                | 12.30 sq ft                                   | <b>Leaving Wet Bulb</b>                  | 51.90 F                    |
| <b>Coil (top/single) H x L</b>  | 32 in. (813 mm) X 55" (1397 mm) finned length | <b>Pressure Drop</b>                     | 0.724 in H <sub>2</sub> O  |
| <b>Casing</b>                   | Galvanized                                    | <b>Face Velocity</b>                     | 429 ft/min                 |
| <b>Turbulators</b>              | Yes                                           | <b>Fluid</b>                             |                            |
| <b>Rigging Weight</b>           | 245.1 lb                                      | <b>Flow</b>                              | 31.34 gpm                  |
| <b>Installed Weight</b>         | 343.5 lb                                      | <b>Entering</b>                          | 42.00 F                    |
| <b>Voltage</b>                  | 115/60/1                                      | <b>Leaving</b>                           | 57.00 F                    |
| <b>Coil Section Options</b>     |                                               | <b>Pressure Drop</b>                     | 8.80 ft H <sub>2</sub> O   |
| <b>Extended Drain and Vent</b>  | Holes only                                    | <b>Tube Velocity</b>                     | 2.15 ft/s                  |
| <b>Drain Pan</b>                | Stainless steel                               | <b>Reynolds Number</b>                   | 1636.46                    |
| <b>Drain Connection</b>         | Left                                          | <b>Type</b>                              | Propylene glycol           |
| <b>Minimum Trap Height (L)</b>  | 10.163 in                                     | <b>Concentration</b>                     | 35.00 %                    |
| <b>H Trap Dimension</b>         | 6.108 in                                      | <b>Fouling Factor</b>                    | 0.00000 hr-sq ft-deg F/Btu |
| <b>J Trap Dimension</b>         | 3.054 in                                      | <b>Volume</b>                            | 10.42 gal                  |
| <b>Service Panel</b>            | Coil connection side                          | <b>AHRI 410 Classification</b>           |                            |
| <b>UV Light</b>                 | Yes                                           | <b>AHRI 410 Classification</b>           | NOT Certified by AHRI      |
|                                 |                                               | <b>Data Generation Date</b>              | 1/13/2022                  |
|                                 |                                               | <b>Trane Select Assist update number</b> | 2540                       |



Note: Coil is NOT certified by AHRI. Coil is within the scope of AHRI Standard 410.

## Access/blank/turning section - Position: 11

## Options

|                 |                 |
|-----------------|-----------------|
| Section Length  | 19.000 in       |
| Door Location 1 | Right           |
| Window 1        | Right - thermal |

## Heating coil section - Position: 12

| Coil Construction       |                                               | Coil Performance                  |                            |
|-------------------------|-----------------------------------------------|-----------------------------------|----------------------------|
| Model                   | Hot water - UW                                | Capacity                          |                            |
| Rows                    | 2                                             | Total                             | 379.58 MBh                 |
| Tube Diameter           | 1/2in. tube diameter (12.7 mm)                | Air                               |                            |
| Coil Connection         | Standard                                      | Flow                              | 5000 cfm                   |
| Tube Mat/Wall Thickness | .016" (0.406 mm) copper tubes                 | Entering Dry Bulb                 | -5.00 F                    |
| Fin Spacing             | 142 Per Foot                                  | Leaving Dry Bulb                  | 65.00 F                    |
| Fin Material            | Aluminum fins                                 | Pressure Drop                     | 0.150 in H2O               |
| Fin Type                | Delta flo H (Hi efficient)                    | Face Velocity                     | 406 ft/min                 |
| Face Area               | 12.30 sq ft                                   | Fluid                             |                            |
| Coil (top/single) H x L | 32 in. (813 mm) X 55" (1397 mm) finned length | Flow                              | 19.02 gpm                  |
| Casing                  | Galvanized                                    | Entering                          | 140.00 F                   |
| Turbulators             | Not Included                                  | Leaving                           | 100.00 F                   |
| Rigging Weight          | 93.5 lb                                       | Pressure Drop                     | 0.53 ft H2O                |
| Installed Weight        | 121.4 lb                                      | Tube Velocity                     | 1.31 ft/s                  |
| Coil Section Options    |                                               | Reynolds Number                   | 9134.14                    |
| Extended Drain and Vent | Holes only                                    | Type                              | Water                      |
| Service Panel           | Coil connection side                          | Concentration                     | 100.00 %                   |
|                         |                                               | Fouling Factor                    | 0.00025 hr-sq ft-deg F/Btu |
|                         |                                               | Volume                            | 3.35 gal                   |
|                         |                                               | AHRI 410 Classification           |                            |
|                         |                                               | AHRI 410 Classification           | Outside Scope of AHRI 410  |
|                         |                                               | Data Generation Date              | 1/13/2022                  |
|                         |                                               | Trane Select Assist update number | 2540                       |

Note: Coil is NOT certified by AHRI. Coil is outside the scope of AHRI Standard 410.

## Access/blank/turning section - Position: 13

## Options

|                 |           |
|-----------------|-----------|
| Section Length  | 14.000 in |
| Door Location 1 | Right     |

## Supply fan section - Position: 14

| Fan Data                  |                                          | Motor Data                                                                          |                                       |
|---------------------------|------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|
| Wheel Diameter/Type/Class | 20in. dd plenum, 80% width, M press      | Power / Fan                                                                         | 10 hp                                 |
| Fan Quantity              | 1                                        | Voltage                                                                             | 460/3                                 |
| Discharge Location        | Front top                                | Speed                                                                               | 1800                                  |
| Motor Location            | Right side drive                         | Class                                                                               | NEMA premium compliant ODP            |
| Blades                    | Higher eff.(some bands lower,more spike) | Efficiency                                                                          | 92.19 %                               |
| Drive Service Factor      | Direct drive                             | Part Load Efficiency                                                                | 87.00 %                               |
| Fan Performance           |                                          | Fan Electrical Power                                                                | 6.04 kW                               |
| Airflow                   | 5278 cfm                                 | Note: VFD driven motor fan electrical power calculated in accordance with AHRI 430. |                                       |
| Total Static Pressure     | 5.527 in H2O                             | Fan Section Options                                                                 |                                       |
| Total Brake Power         | 7.123 hp                                 | Inlet Sound Attenuator                                                              | Inlet bell (reduces spike)            |
| Operating Speed           | 2374 rpm                                 | Fan Wheel Balance                                                                   | Inverter balance with shaft grounding |
| Total Brake HP            | 7.123 hp                                 | Perforated Panel                                                                    | Perforated panels                     |
| AMCA FEG                  | FEG80                                    | Door Location                                                                       | Right                                 |
| Unit Static Efficiency    | 64.57 %                                  | Window                                                                              | Right - thermal                       |
| Motor Interface Options   |                                          | Door Guard                                                                          | Yes                                   |
| Selection Type            | VFD                                      | Marine Light                                                                        | Marine LED light                      |
| Voltage                   | 460/3                                    |                                                                                     |                                       |
| Mounting Location         | Internal mounting                        |                                                                                     |                                       |
| Motor Wire In Conduit     | Motor wiring conduit                     |                                                                                     |                                       |
| VFD Frequency             | 80.00 Hz                                 |                                                                                     |                                       |

Note: Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third party verified. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).



## Supply fan Acoustics

| Sound Path    | 63 (Hz) | 125   | 250   | 500   | 1K    | 2K    | 4K    | 8K    |
|---------------|---------|-------|-------|-------|-------|-------|-------|-------|
| Supply front: | 80 dB   | 83 dB | 76 dB | 72 dB | 66 dB | 64 dB | 60 dB | 52 dB |
| Outdoor:      | 80 dB   | 79 dB | 72 dB | 66 dB | 58 dB | 59 dB | 50 dB | 43 dB |
| Casing:       | 81 dB   | 79 dB | 89 dB | 81 dB | 71 dB | 60 dB | 58 dB | 50 dB |

## Pressure Drop in (in w.g.)

| Supply fan               |      |
|--------------------------|------|
| Air mixing section       | 0.93 |
| Wheel                    | 0.86 |
| Filter section           | 0.77 |
| Coil section             | 0.72 |
| Coil section             | 0.18 |
| Fan section              | 0.02 |
| Controls section         | 0.05 |
| Internal Static Pressure | 3.53 |
| External Static Pressure | 2.00 |
| Total Static Pressure    | 5.53 |

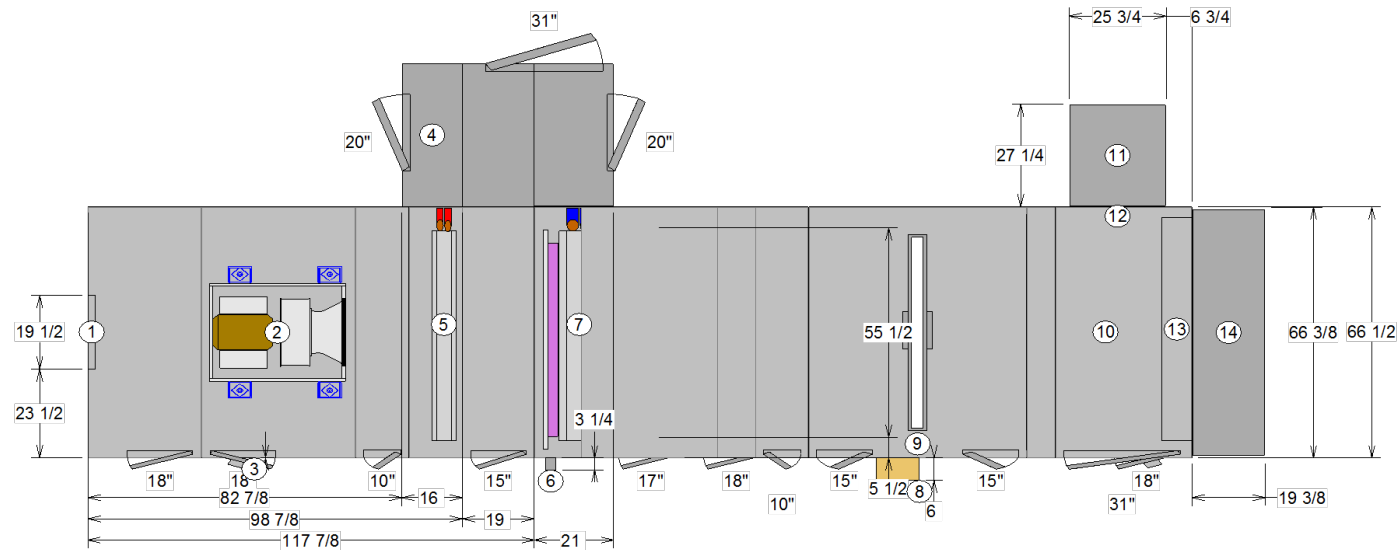
## Starter/VFD only section - Position: 15

| Supply Fan Motor Interface Door |        |             | Right    |               |            |               |
|---------------------------------|--------|-------------|----------|---------------|------------|---------------|
| Openings                        |        |             |          |               |            |               |
| Face                            | Path   | Type        | Airflow  | Face Velocity | Area       | Pressure Drop |
| Front Face Feature              | Supply | Rectangular | 5000 cfm | 1231 ft/min   | 4.06 sq ft | 0.047 in H2O  |



Job Name: UNE - Harold & Bibby Alfond Center-Health Sciences

CSAA  
Quantity: 1  
Tags: ERU-2



- 1 Opening front  
30 x 19.5
  - 2 Plenum fan - 20in. dd  
plenum, 80% width, M  
press Supply fan 10 hp  
460/3 None
  - 3 Light switch and/or  
receptacle RH
  - 4 Pipe cabinet left (3)
  - 5 Heating coil - 2 Coil type  
UW
  - 6 UV light switch RH
  - 7 Cooling coil - 8 Coil type  
UW
  - 8 External starter RH
  - 9 Energy wheel - 6000
  - 10 Plenum fan - 20in. dd  
plenum, 80% width, M  
press Exhaust fan 7.5 hp  
460/3 None
  - 11 Hood left
  - 12 Damper left-opposed  
blade  
26.25 x 22.72
  - 13 Standard Traq damper  
back  
22.25 x 59.125
  - 14 Hood back
- Doors
- 18 width x 35 height
  - 10 width x 35 height
  - 20 width x 33 height
  - 15 width x 35 height
  - 31 width x 33 height
  - 17 width x 35 height
  - 15 width x 77 height
  - 31 width x 35 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

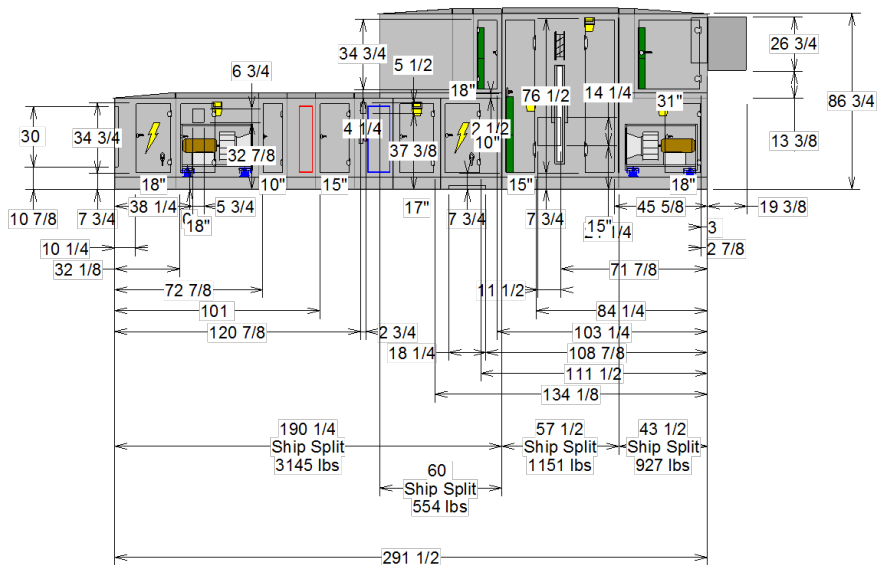
|                                               |                                                                 |                                                   |
|-----------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alfond<br>Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 5000                                            | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                                                   | Tags: ERU-2                                       |
| Paint: Slate gray                             |                                                                 | Rigging weight: 6117.3 / Installed weight: 7240.0 |



**TRANE**

Performance Climate Changer  
Air Handlers



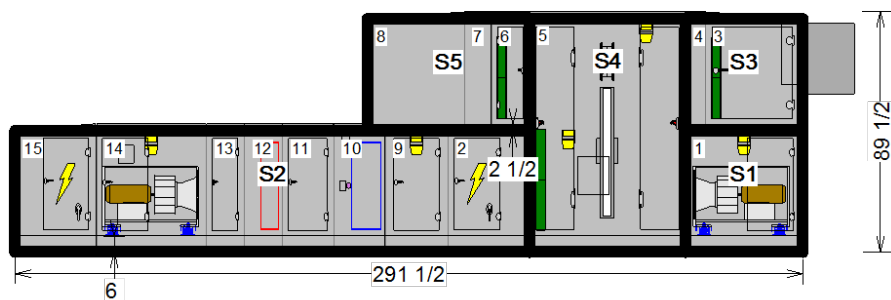


- 1 Opening front  
30 x 19.5
  - 2 Plenum fan - 20in. dd  
plenum, 80% width, M  
press Supply fan 10 hp  
460/3 None
  - 3 Light switch and/or  
receptacle RH
  - 4 Pipe cabinet left (3)
  - 5 Heating coil - 2 Coil type  
UW
  - 6 UV light switch RH
  - 7 Cooling coil - 8 Coil type  
UW
  - 8 External starter RH
  - 9 Energy wheel - 6000
  - 10 Plenum fan - 20in. dd  
plenum, 80% width, M  
press Exhaust fan 7.5 hp  
460/3 None
  - 11 Hood left
  - 12 Damper left-opposed  
blade  
26.25 x 22.72
  - 13 Standard Traq damper  
back  
22.25 x 59.125
  - 14 Hood back
- Doors
- 18 width x 35 height
  - 10 width x 35 height
  - 20 width x 33 height
  - 15 width x 35 height
  - 31 width x 33 height
  - 17 width x 35 height
  - 15 width x 77 height
  - 31 width x 35 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

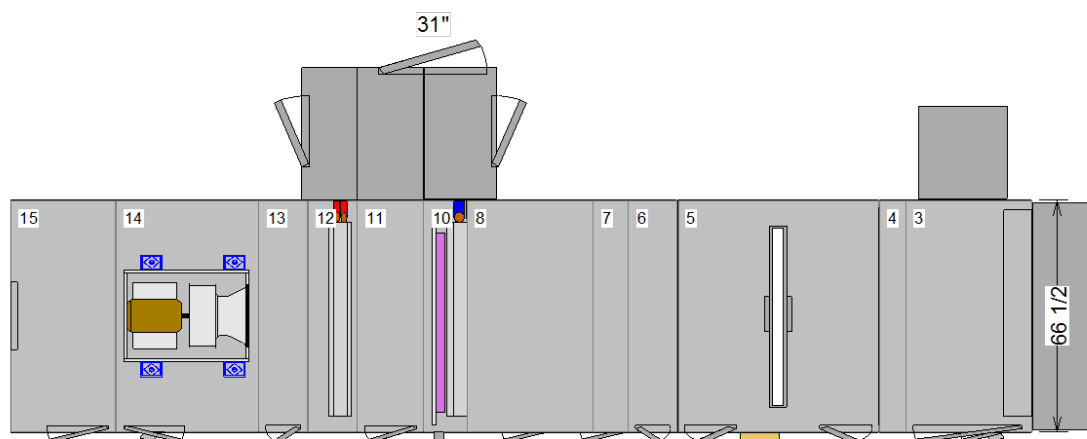
**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                                 |                                                   |                                                                                                                                      |
|-----------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alfond<br>Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 | <br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                            | Proposal Number:                                  |                                                                                                                                      |
| Integral base frame: 6in. integral base frame | Sales Office:                                                   | Tags: ERU-2                                       |                                                                                                                                      |
| Paint: Slate gray                             |                                                                 | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                      |



**For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh**

| Pos # | Module                | Length | Weight  | Pos # | Module                            | Length | Weight |
|-------|-----------------------|--------|---------|-------|-----------------------------------|--------|--------|
| 1     | Fan section           | 43 1/2 | 926.54  | 14    | Fan section                       | 40 3/4 | 945.35 |
| 2     | Controls section      | 30     | 381.89  | 15    | Controls section                  | 30     | 359.27 |
| 3     | Air mixing section    | 36     | 406.12  |       | Roof Curb                         |        | 996.32 |
| 4     | Custom length section | 7 1/2  | 60.07   |       | Installed Unit Weight 7239.97 lbs |        |        |
| 5     | Wheel                 | 57 1/2 | 1151.10 |       |                                   |        |        |
| 6     | Filter section        | 14     | 157.63  |       |                                   |        |        |
| 7     | Custom length section | 10     | 78.78   |       |                                   |        |        |
| 8     | Access section        | 36     | 318.06  |       |                                   |        |        |
| 9     | Air mixing section    | 23 3/8 | 205.39  |       |                                   |        |        |
| 10    | Coil section          | 19     | 585.89  |       |                                   |        |        |
| 11    | Access section        | 19     | 204.17  |       |                                   |        |        |
| 12    | Coil section          | 14 1/8 | 326.82  |       |                                   |        |        |
| 13    | Access section        | 14 1/8 | 136.56  |       |                                   |        |        |



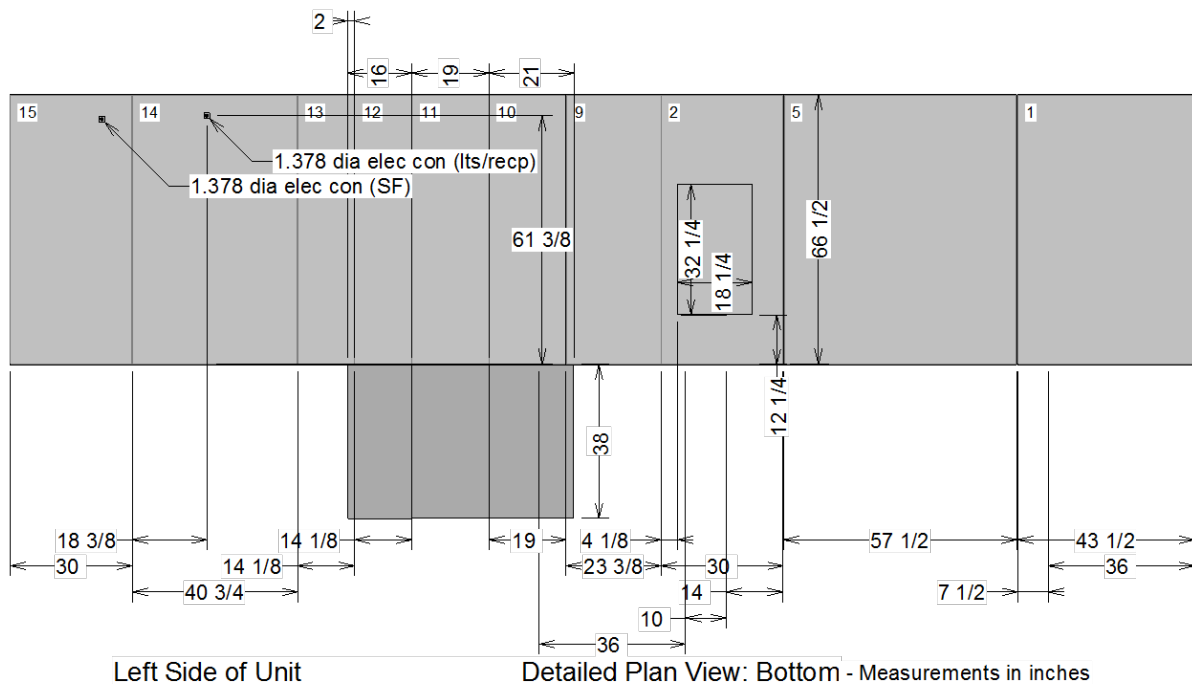
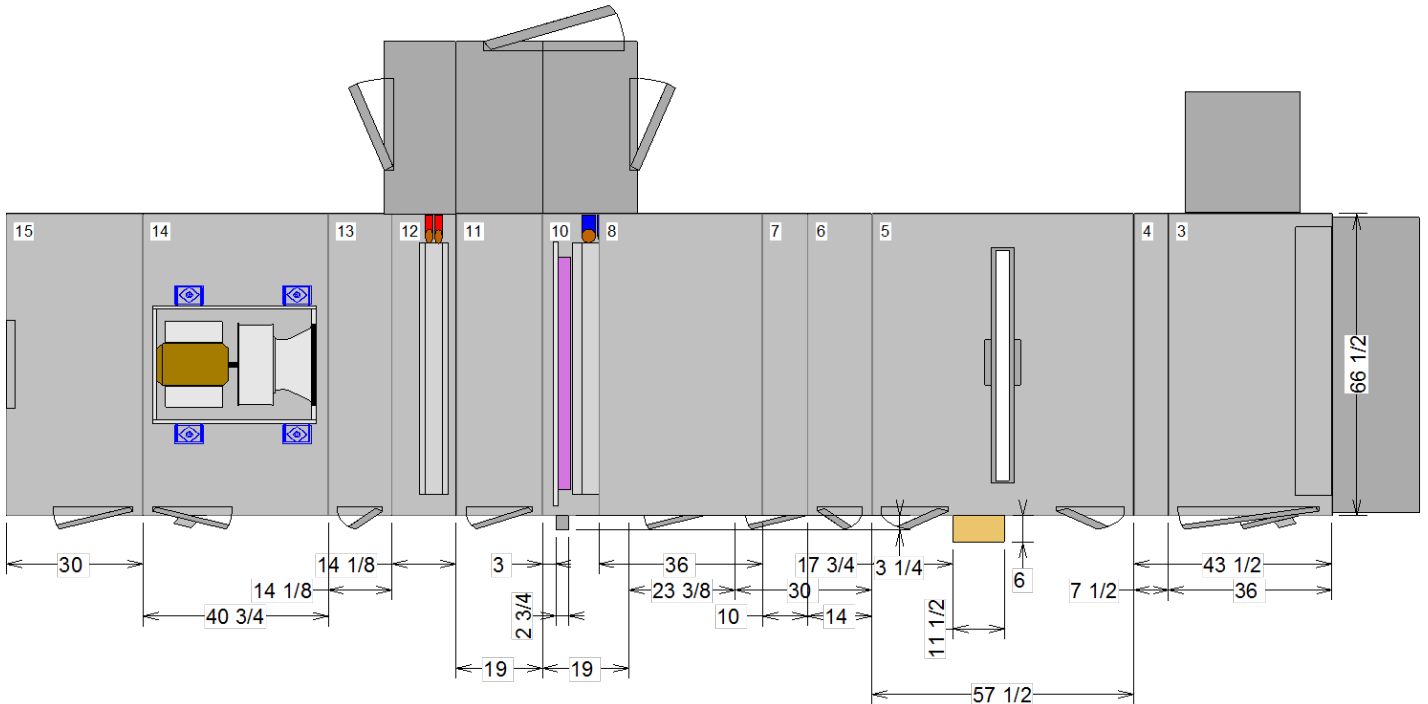
Basic Overall Plan View: Top - Measurements in inches

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ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

|                                               |                                                              |                                                   |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |

**TRANE®**

## Performance Climate Changer Air Handlers



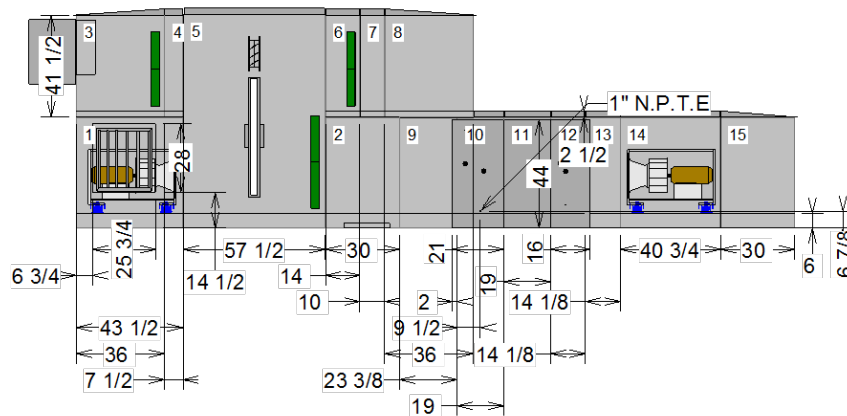
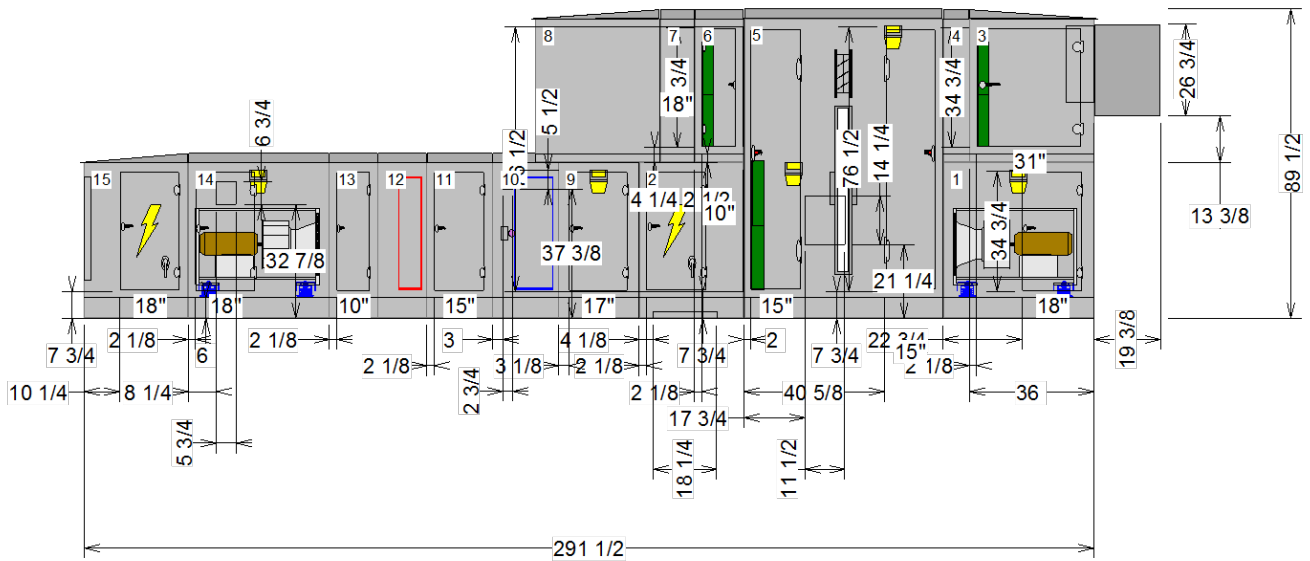
**\*\*Placement of electrical conduit may vary by a tolerance of 8" in any direction.**

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                              |                                                   |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |


**TRANE**

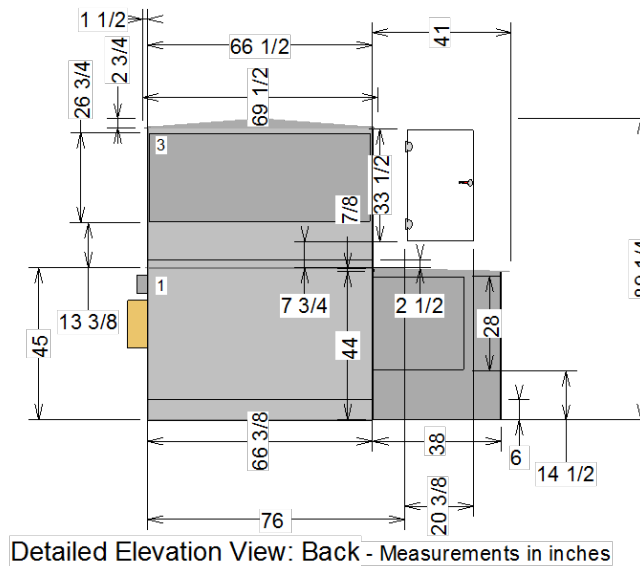
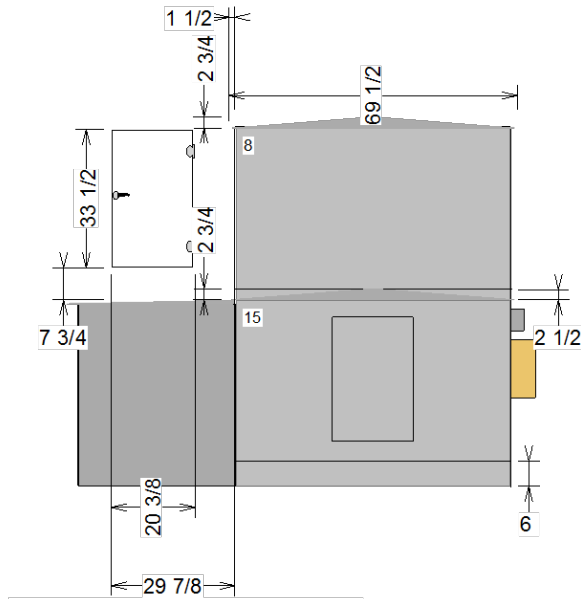
Performance Climate Changer  
Air Handlers



Detailed Elevation View: Left - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                              |                                                   |                                                                                                                                                   |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alfond Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |  <b>TRANE</b><br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |                                                                                                                                                   |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |                                                                                                                                                   |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                                   |



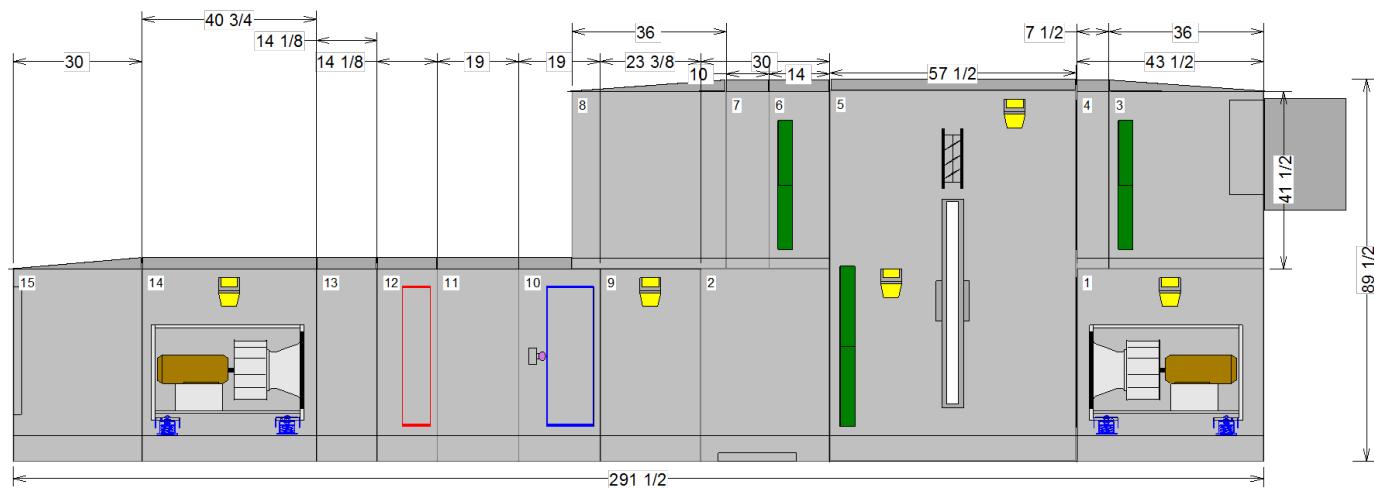
**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                              |                                                   |                                                                                                                                                   |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |  <b>TRANE</b><br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |                                                                                                                                                   |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |                                                                                                                                                   |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                                   |



Job Name: UNE - Harold & Bibby Alford Center-Health Sciences

CSAA  
Quantity: 1  
Tags: ERU-2



NPTI : National Pipe Thread Internal Connection  
NPTE : National Pipe Thread External Connection

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

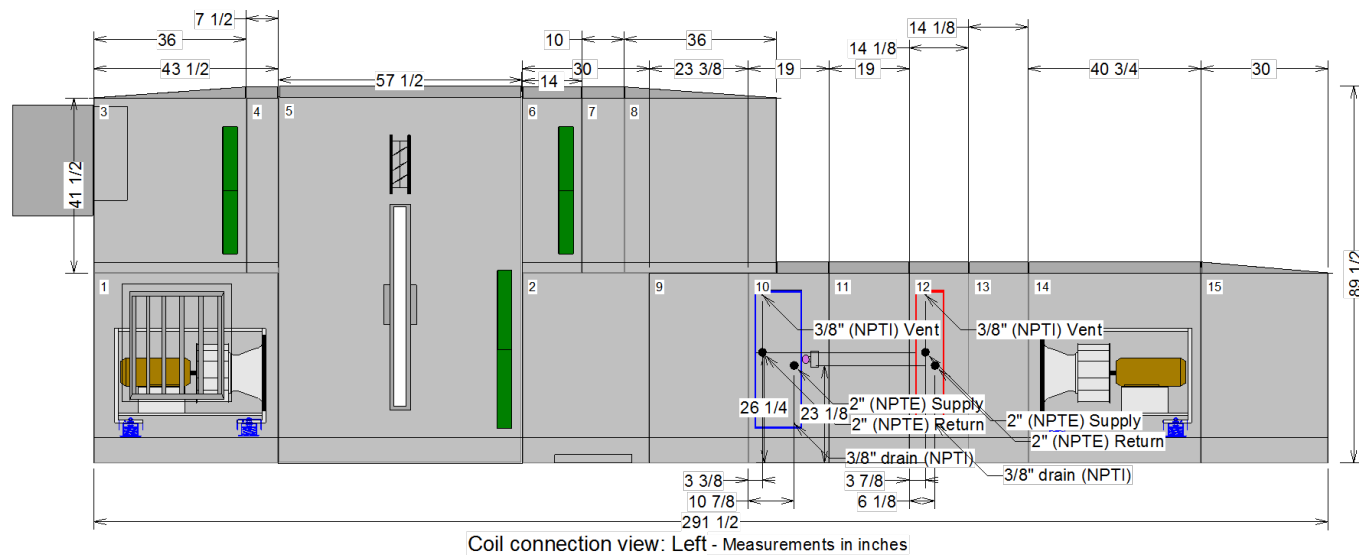
|                                               |                                                              |                                                   |                                                                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 | <br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |                                                                                                                                      |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |                                                                                                                                      |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                      |





Job Name: UNE - Harold & Bibby Alford Center-Health Sciences

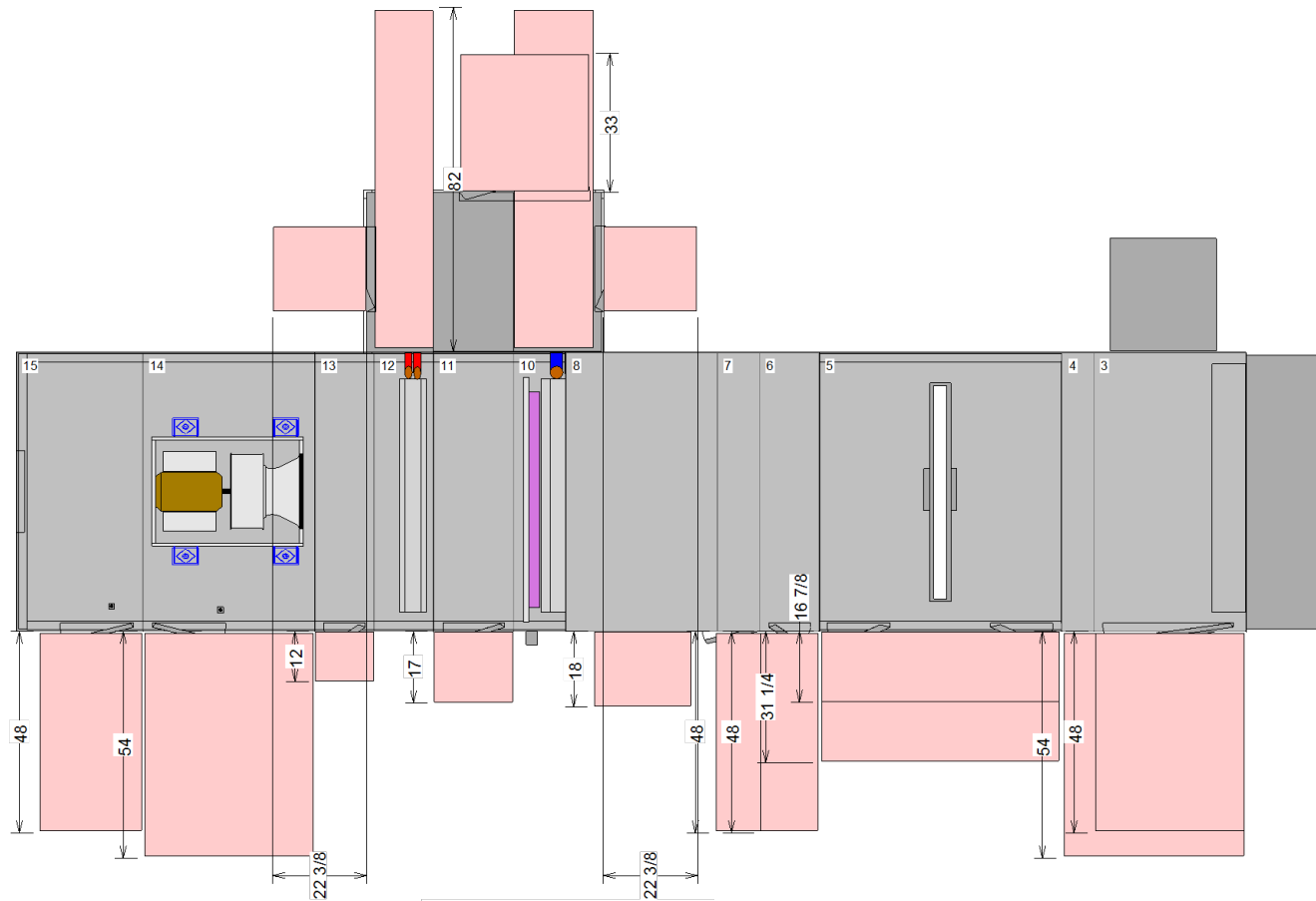
CSAA  
Quantity: 1  
Tags: ERU-2



NPTI : National Pipe Thread Internal Connection  
NPTE : National Pipe Thread External Connection

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

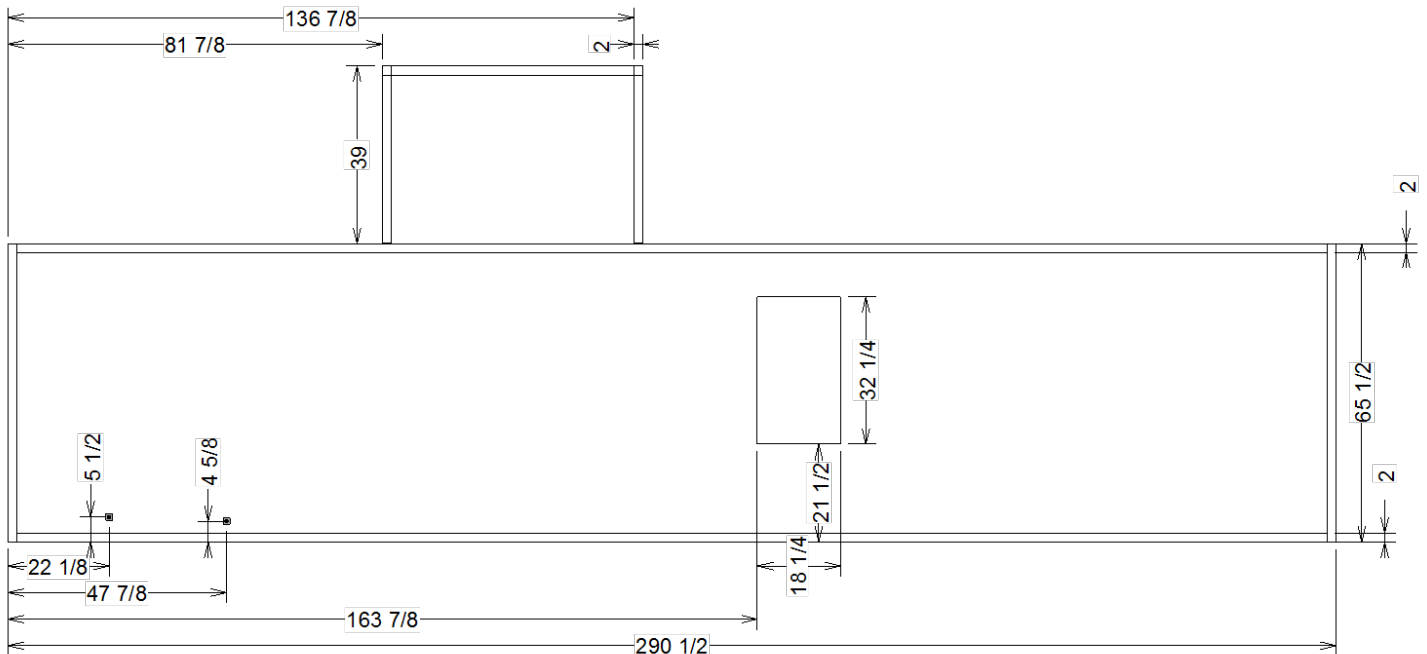
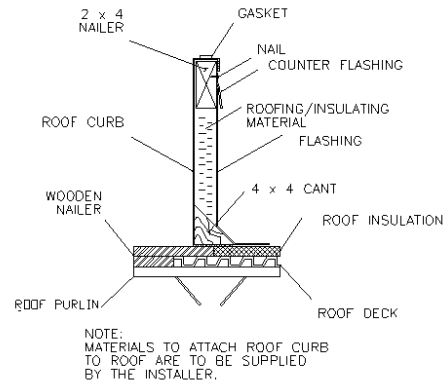
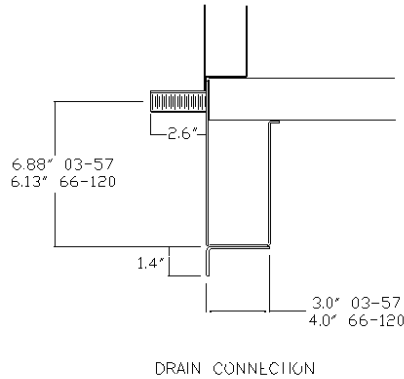
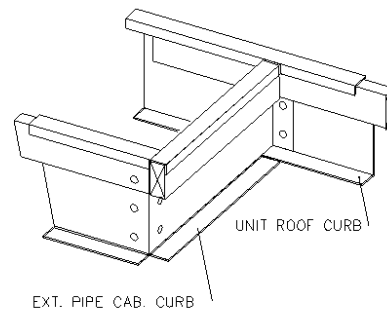
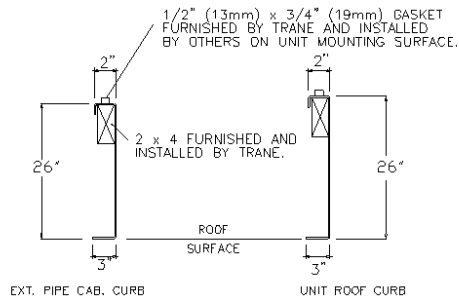
|                                               |                                                              |                                                   |                                                                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 | <br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |                                                                                                                                      |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |                                                                                                                                      |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                      |



Basic Service Clearance - Plan - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                                 |                                                   |                                                                                                                                      |
|-----------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford<br>Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 | <br>Performance Climate Changer<br>Air Handlers |
| Product group: Outdoor unit                   | Actual airflow: 5000                                            | Proposal Number:                                  |                                                                                                                                      |
| Integral base frame: 6in. integral base frame | Sales Office:                                                   | Tags: ERU-2                                       |                                                                                                                                      |
| Paint: Slate gray                             |                                                                 | Rigging weight: 6117.3 / Installed weight: 7240.0 |                                                                                                                                      |



Detailed Plan View: Curb - Measurements in inches

**OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE**

|                                               |                                                              |                                                   |
|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------|
| Unit size: 12                                 | Job Name: UNE - Harold & Bibby Alford Center-Health Sciences | Unit Casing: 2in Double Wall Foam                 |
| Product group: Outdoor unit                   | Actual airflow: 5000                                         | Proposal Number:                                  |
| Integral base frame: 6in. integral base frame | Sales Office:                                                | Tags: ERU-2                                       |
| Paint: Slate gray                             |                                                              | Rigging weight: 6117.3 / Installed weight: 7240.0 |


**TRANE**

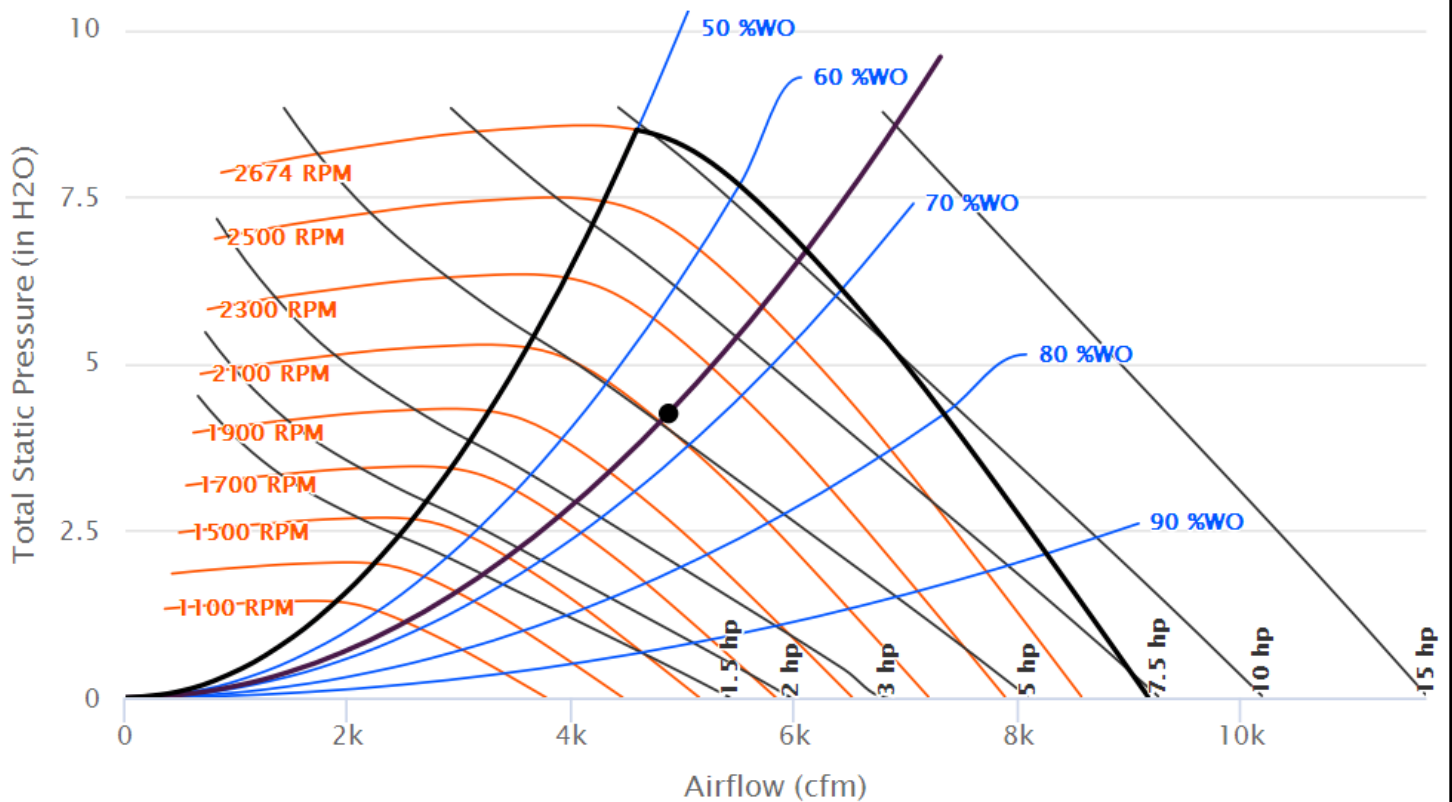
Performance Climate Changer  
Air Handlers

## Fan Details

|                           |              |                       |          |
|---------------------------|--------------|-----------------------|----------|
| Unit Size                 | 20TR         | Operating Brake Power | 5.272 hp |
| Motor Frequency           | 72.00 Hz     | Altitude              | 0.00 ft  |
| Operating Airflow         | 4,866 cfm    | Design Temp.          | 70.00 F  |
| Operating Static Pressure | 4.262 in H2O | Efficiency            | 62.01 %  |
| Operating RPM             | 2,132 rpm    |                       |          |

### ERU-2 – Exhaust – Single Fan

Size 12 DDP 20 inch AF M Press 80% Width 12 blades

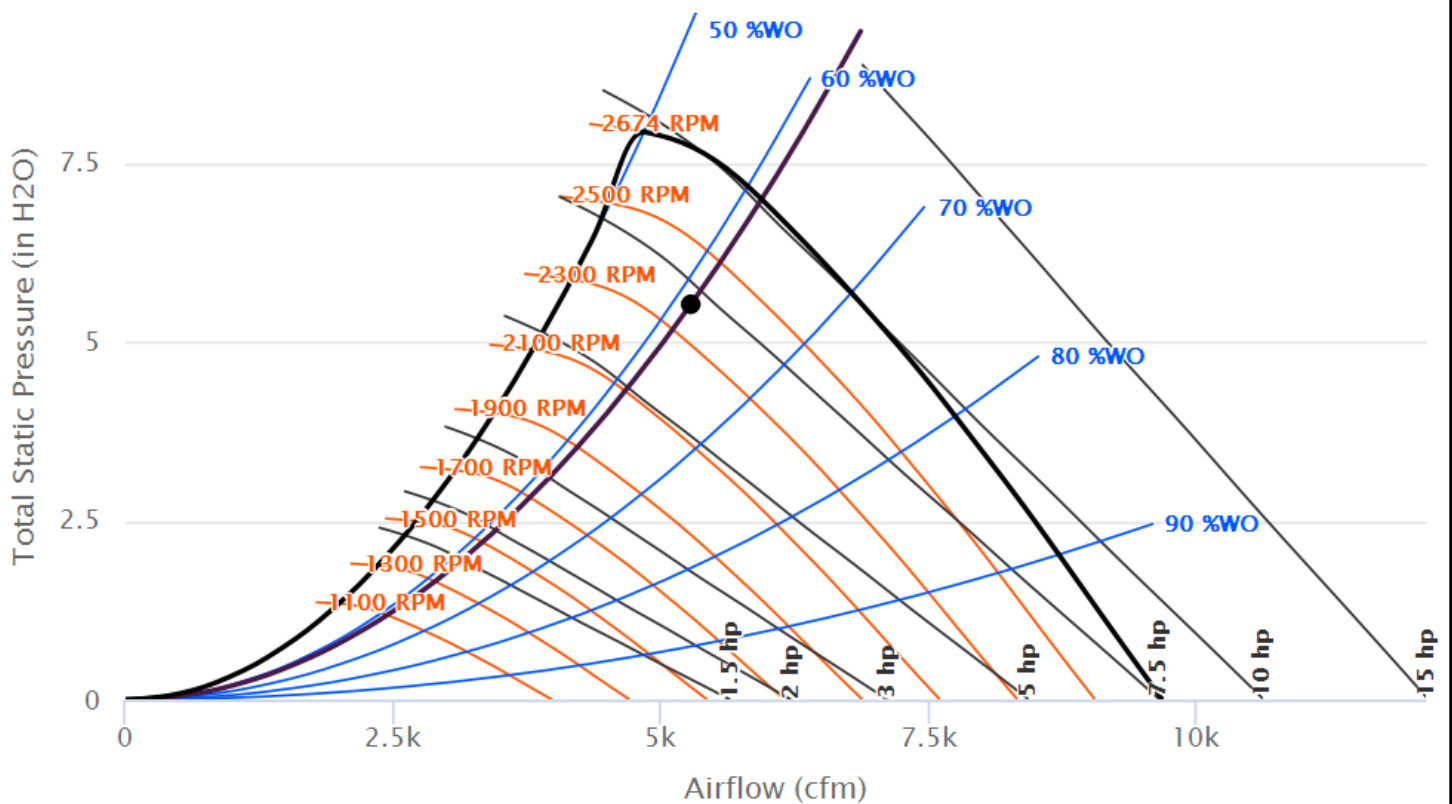


## Fan Details

|                                  |              |                              |          |
|----------------------------------|--------------|------------------------------|----------|
| <b>Unit Size</b>                 | 20TR         | <b>Operating Brake Power</b> | 7.123 hp |
| <b>Motor Frequency</b>           | 80.00 Hz     | <b>Altitude</b>              | 0.00 ft  |
| <b>Operating Airflow</b>         | 5,278 cfm    | <b>Design Temp.</b>          | 70.00 F  |
| <b>Operating Static Pressure</b> | 5.527 in H2O | <b>Efficiency</b>            | 64.57 %  |
| <b>Operating RPM</b>             | 2,374 rpm    |                              |          |

## ERU-2 – Supply – Single Fan

Size 12 DDP 20 inch AF M Press 80% Width 9 blades



|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b> | RA Inlet Dampers (2 x 24"H x 48"W)                                                                                            |
| <b>B</b> | Filter Section (2.5Hx7L, 24"x24", MERV 8)                                                                                     |
| <b>C</b> | (4) Konvekta HR coils (FH=28", FL=62")                                                                                        |
| <b>D</b> | Pipe Chase (18"W x 32"L)                                                                                                      |
| <b>E</b> | (2) MK Plastics Axijet-S 3650 Exhaust Fans with 5ft attenuator                                                                |
| <b>F</b> | Bypass Air Inlet Damper (12" x 24")                                                                                           |
| <b>G</b> | Bypass Sleeve Assembly w/ Ebtron "Gold Series" AFMS & Integral Silencer Bank (12"H x 24"W x 36"L) - <b>Sleeve Ships Loose</b> |
| <b>H</b> | Removable Panels                                                                                                              |
|          | (2) EF VFD's, 20HP Yaskawa (not shown)                                                                                        |

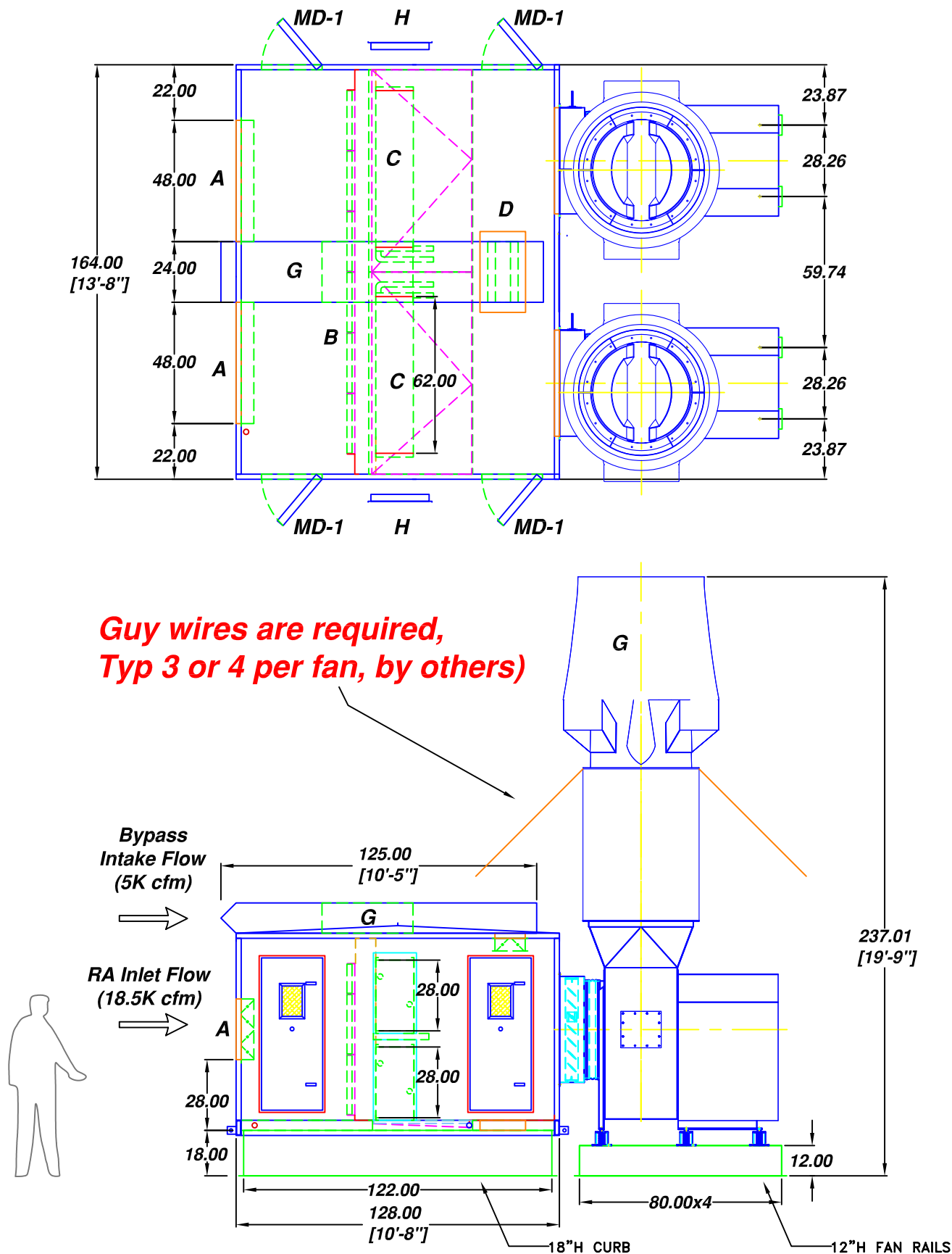
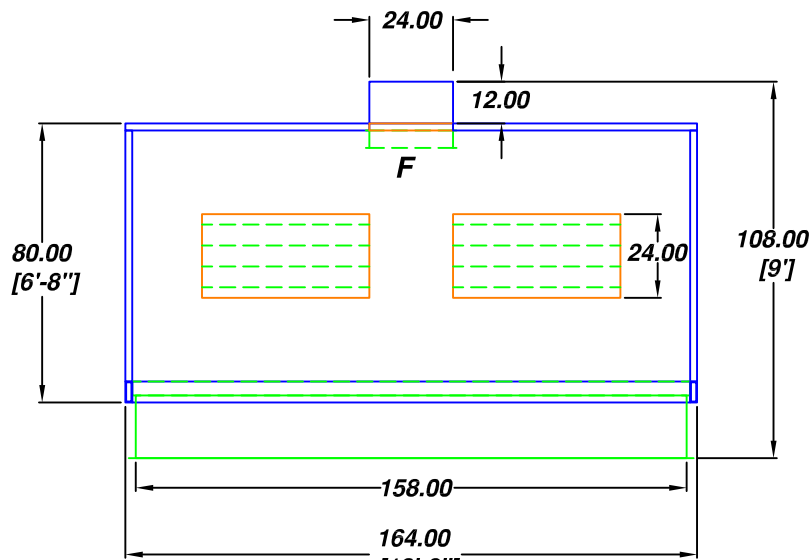
## Access Door Legend

|             |                                     |
|-------------|-------------------------------------|
| <b>MD-4</b> | (4) SD2200T (N) Doors (24"W x 60"H) |
|-------------|-------------------------------------|

## Section Sizes/Rigging Weights

(with 2" Injected Foam Structural Casing, SS Interior, Aluminum Exterior & Base)

|                                      |                            |                   |
|--------------------------------------|----------------------------|-------------------|
| <b>ERU</b>                           | 13'-8"L x 10'-8"W x 6'-8"H | 9,000 lbs         |
| <b>EA Fans</b>                       | Axijet-S 3650 (Typ 2X)     | 1,875 lbs Each    |
| <b>TOTAL UNIT + FANS DRY WEIGHT:</b> |                            | <b>12,750 lbs</b> |



### Project Notes:

- 1) All piping materials & labor will be field-provided by others
- 2) Exhaust fans are shipped direct to the jobsite for field installation by others in 3 pieces: base, attenuator & nozzle. Fan isolation springs, isolation intake dampers, flex connectors and rails to be provided by fan manufacturer, shipped loose for field installation by others
- 3) VFDs are to be provided by manufacturer in NEMA1 enclosures, shipped loose for remote indoor installation by others
- 4) The ERU portion of the unit is designed to be shipped/rigged in one (1) piece
- 5) One (1) bypass sleeve assembly will be shipped loose for field-mounting by others
- 6) Factory-installed/wired 120V lighting package consisting of (4) light fixtures, (2) switches, & (2) GFCI outlets provided
- 7) Outlet openings in ERU casing for each exhaust fan to be field cut by installing contractor per ERU manufacturer recommendations to align with installed fan intake damper and flex connector
- 8) guy wires are required to support fan stacks, Typ 3 or 4 per fan, to be finalized during submittals. Connection ring to be provided by fan manufacturer for wires to connect to top of attenuator



| CAMBRIDGEPORT CUSTOM                                                                                                                                                                                                                                                  |        |            |               |             |                        |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|---------------|-------------|------------------------|--------------|
| AHU #                                                                                                                                                                                                                                                                 | CFM    | REVISION # | REVISION DATE | DESCRIPTION | UNIT LAYOUT DRAWING    |              |
| ERU-E                                                                                                                                                                                                                                                                 | 18,500 | 1          | 4/1/22        | JOB NAME    | UNE Portland Donor Lab |              |
| THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROPRIETARY TO CAMBRIDGEPORT CUSTOM. THIS DOCUMENT MAY NOT BE ISSUED TO ANOTHER PARTY WITHOUT PRIOR WRITTEN CONSENT AND AUTHORIZATION. CAMBRIDGEPORT CUSTOM & IT'S LOGO ARE REGISTERED TRADEMARKS. ALL RIGHTS RESERVED. |        |            |               | Q# or JOB#  | 6610                   |              |
|                                                                                                                                                                                                                                                                       |        |            |               | SCALE       | NTS                    | DATE 9/27/21 |
|                                                                                                                                                                                                                                                                       |        |            |               | DRAWN BY    | PSW                    | PAGE 1 OF 1  |



### Representative

Dynamic Air Corporation  
 Pat Will

Customer  
 Project  
 Engineer  
 P.O. #

UNE Portland

SMRT

JOB #

Date 03/28/2022

Sys. No. LEF -1A; 1B  
 2 fan N+ 1 Operation  
 Design Flow 18,500 CFM

Drawing  
 Revision

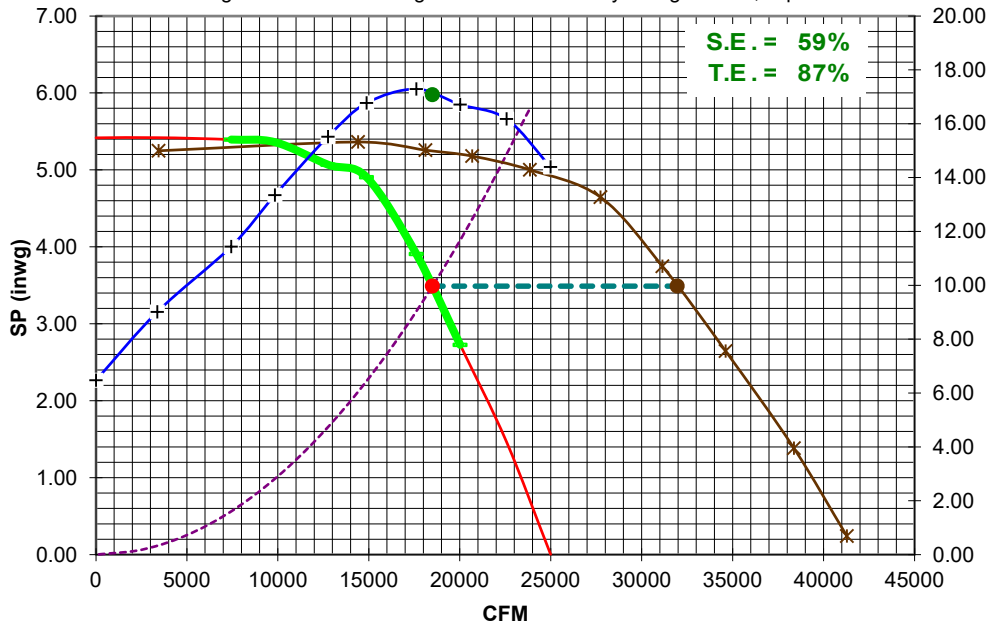
Model AXIJET  
 Fan Size 3650  
 Dia.[in] 36.50  
 CFM 18500  
 SP 3.49  
 BHP 17.08  
 RPM 1091

10 [mph]  
 EH = 46.7 [feet]  
 PH = 33.5 [feet]  
 NV = 5125 [fpm]  
 WV = 2376 [fpm]  
 TF = 31953 [cfm]  
 TS = 10425 [fpm]  
 T = 70 [°F]  
 ALT = 0 [feet]

This assumes:  
 - RA dmptr 0.1"  
 - loaded PF 1.0"  
 - ER coil: 0.7"  
 - fan dmptr: 0.2  
 - fan attntr 0.09  
 - ESP 1.4"

### Air performance

TF=Total Flow; NV=Nozzle Velocity; WV=Windband Velocity; TS=Tip Speed  
 EH: Effective Plume Height. ( Plume Height + Fan Height )  
 Plume Height is calculated using ASHRAE Laboratory Design Guide, Equation 9-2



CLASS II WHEEL

Density :  
 0.075 lb/ft³

CFM-SP  
 System Cur  
 CFM-BHP  
 Total Flow-S  
 15% Peak T



M.K. Plastics Corporation of  
 that the models shown here in  
 licensed to bear the AMCA Seal.  
 The ratings shown are based on  
 tests and procedures performed in  
 accordance with AMCA Publication  
 211 and 311 and comply with the  
 requirements of the AMCA Certified  
 Ratings Program.

TSP=3.49  
 Is ESP=1.4"  
 correct?

If we go to  
 EST/TSP=1.5"/3  
 .59" the bhp  
 would be 17.59  
 which would still  
 be OK for the  
 20HP motors, in  
 fact they would  
 be OK up to  
 TSP=4.01" so  
 ESP up to 1.91"  
 worst case.

Performance certified is for installation type C: Ducted inlet, Free outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of crosswinds.

### Sound power level

The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA standard 301. Values shown are for (outlet Lwo and LwoA ) sound power levels for installation type C :Ducted inlet, Free outlet. Ratings do not include the effects of duct end correction. The A-weighted sound ratings have been calculated per AMCA Standard 301.

| RPM  | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | LwA |
|------|----|-----|-----|-----|------|------|------|------|-----|
| 1091 | 91 | 91  | 86  | 83  | 83   | 83   | 76   | 66   | 88  |

### Sound pressure level variation

Values shown are calculated based on a free-field over a reflecting plane conditions. (ASHRAE Fundamentals Handbook). dBA levels are not licensed by AMCA international.

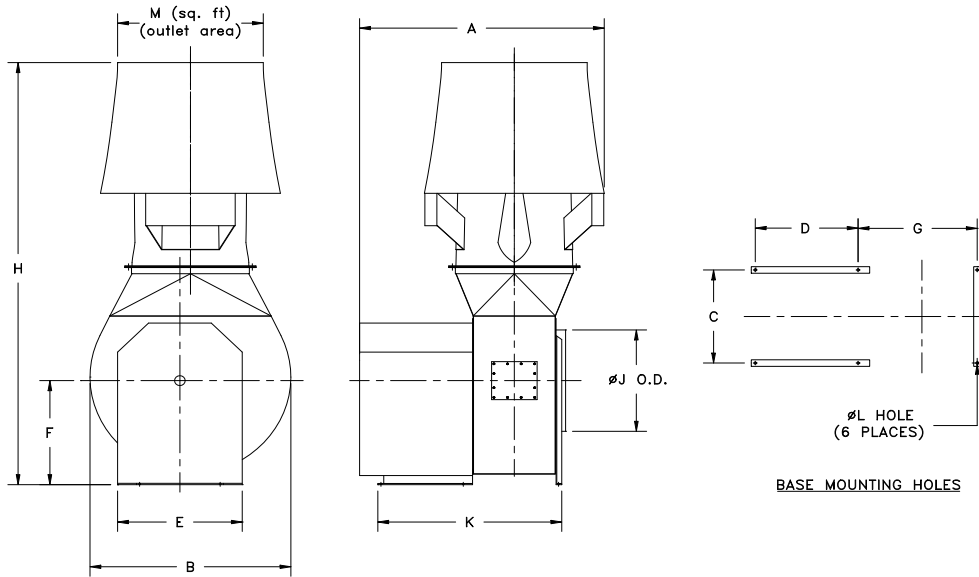
| Feet  | 1  | 3  | 5  | 10 | 15 | 50 | 100 | 150 |
|-------|----|----|----|----|----|----|-----|-----|
| dB(A) | 91 | 81 | 77 | 71 | 67 | 57 | 51  | 47  |

Comments :

Drawing . B  
Revision .

Customer .  
Project UNE Portland  
Engineer SMRT  
P.O. # . JOB # .

Dimensions are subject to change. Certified prints are available.



Arrangement 10

Maximum motor frame: 326T

| Dimensions | [ in ] |
|------------|--------|
| A          | 85.77  |
| B          | 70.51  |
| C          | 28.26  |
| D          | 28.88  |
| E          | 43.75  |
| F          | 39.50  |
| G          | 33.44  |
| H          | 158.45 |
| J          | 38.50  |
| K          | 64.56  |
| L          | 0.69   |
| Stack ext. | 0.00   |

| Outlet Area | [sq. ft] |
|-------------|----------|
| M           | 13.45    |

Quantity .  
Sys. No. .  
.

Materials  
Casing 4-6 mils polyester coated steel  
Stack FRP  
Windband FRP  
Impeller 4-6 mils polyester coated steel  
Stand 4-6 mils polyester coated steel  
Shaft C-1045 Carbon steel  
Hardware 304 Stainless steel  
Stack ext.

Motor  
Type HIEFF  
Enclosure TEFC  
HP 20.00  
V/Ph/Hz 460/3/60  
RPM :

Weight [ Lb ]  
Fan : 1385  
Motor : 290  
Total : 1675

|                                                       |                                               |                                              |
|-------------------------------------------------------|-----------------------------------------------|----------------------------------------------|
| Accessories                                           |                                               |                                              |
| <input checked="" type="checkbox"/> Belt drive        | <input type="checkbox"/> Inlet plenum*        | <input type="checkbox"/> Damper control*     |
| <input checked="" type="checkbox"/> Weather cover     | <input type="checkbox"/> Single               | <input type="checkbox"/> AMCA B Construction |
| <input checked="" type="checkbox"/> Access door       | <input type="checkbox"/> Multiple             | <input type="checkbox"/> AMCA C Construction |
| <input type="checkbox"/> 0.75" Drain & Plug           | <input type="checkbox"/> Dampers*             | <input type="checkbox"/> Lifting lugs        |
| <input type="checkbox"/> Shaft seal                   | <input type="checkbox"/> Isolation            | <input type="checkbox"/> Fan rails           |
| <input type="checkbox"/> Flex. Connector              | <input type="checkbox"/> Bypass               | <input type="checkbox"/> Plenum curb         |
| <input type="checkbox"/> Stack extension*             | <input type="checkbox"/> Vibration isolators* | <input type="checkbox"/> Other               |
| <input type="checkbox"/> Sound attenuator*            | <input type="checkbox"/> Spring               |                                              |
| <input type="checkbox"/> Disconnect switch (unwired)* | <input type="checkbox"/> RIS                  |                                              |

Note: \* Drawings required

### Additional information

### Revisions

| No. | Description | Date | Approved by |
|-----|-------------|------|-------------|
|     |             |      |             |
|     |             |      |             |

| Released by | Checked by | Approved by |
|-------------|------------|-------------|
| Initial     |            |             |
| Date        |            |             |

### Representative

Dynamic Air Corporation

Pat Will

### Customer

Project UNE Portland

Engineer SMRT

P.O. #

JOB #

Date 03/28/2022

Sys. No. LEF -1A; 1B

2 fan N+ 1 Operation

Design Flow 18,500 CFM

### Model

AXIJET

### Fan Size

3650

### Dia.[in]

36.50

### CFM

18500

### SP

3.49

### BHP

17.08

### RPM

1091

### Attenuator Information

Material:

Length: 60.0

S.P. drop:

Weight:

### Sound power level

#### Without attenuator

| RPM  | 63 | 125 | 250 | Hz | 500 | 1000 | 2000 | 4000 | 8000 | LwA |
|------|----|-----|-----|----|-----|------|------|------|------|-----|
| 1091 | 91 | 91  | 86  | 83 | 83  | 83   | 83   | 76   | 66   | 88  |

The sound power level ratings shown are in decibels, referred to  $10^{-12}$  watts calculated per AMCA standard 301. Values shown are for (outlet Lwo and LwoA ) sound power levels for installation type C :Ducted inlet, Free outlet. Ratings do not include the effects of duct end correction. The A-weighted sound ratings have been calculated per AMCA Standard 301. dBA levels are not licensed by AMCA International.

### Sound pressure level variation

#### Without attenuator

Values shown are calculated based on a free-field over a reflecting plane conditions. (ASHRAE Fundamentals Handbook)

| Feet  | 1  | 3  | 5  | 10 | 15 | 50 | 100 | 150 |
|-------|----|----|----|----|----|----|-----|-----|
| dB(A) | 91 | 81 | 77 | 71 | 67 | 57 | 51  | 47  |

### Sound power level

#### Add insertion loss of attenuator

|                | 63 | 125 | 250 | Hz | 500 | 1000 | 2000 | 4000 | 8000 |     |
|----------------|----|-----|-----|----|-----|------|------|------|------|-----|
| Insertion loss | 7  | 13  | 18  | 25 | 27  | 20   | 15   | 10   |      |     |
| RPM            |    |     |     |    |     |      |      |      |      | LwA |
| 1091           | 84 | 78  | 68  | 58 | 56  | 63   | 61   | 56   | 56   | 69  |

### Sound pressure level variation

#### With attenuator

| Feet  | 1  | 3  | 5  | 10 | 15 | 50 | 100 | 150 |
|-------|----|----|----|----|----|----|-----|-----|
| dB(A) | 72 | 62 | 58 | 52 | 48 | 38 | 32  | 28  |

### Comments :

Sound Attenuator Model MKP 41CSA-57V70 OAL 60 inches P.D. 0.09 " w.c

|             |         |
|-------------|---------|
| Voltage     | 480 VAC |
| CB Oversize | 120%    |

| All Fans     |     |
|--------------|-----|
| MCA          | 39A |
| MOP          | 68A |
| Main CB Size | 50A |

### EC Fans

|          | FLA | KW | Amps | HP | Thermal CB |
|----------|-----|----|------|----|------------|
| Motor 1  |     |    |      |    |            |
| Motor 2  |     |    |      |    |            |
| Motor 3  |     |    |      |    |            |
| Motor 4  |     |    |      |    |            |
| Motor 5  |     |    |      |    |            |
| Motor 6  |     |    |      |    |            |
| Motor 7  |     |    |      |    |            |
| Motor 8  |     |    |      |    |            |
| Motor 9  |     |    |      |    |            |
| Motor 10 |     |    |      |    |            |
| Motor 11 |     |    |      |    |            |
| Motor 12 |     |    |      |    |            |

### AC Fans

|          | HP   | FLA   | CB Size |
|----------|------|-------|---------|
| Motor 1  | 20.0 | 30.5A | 40.0A   |
| Motor 2  |      |       |         |
| Motor 3  |      |       |         |
| Motor 4  |      |       |         |
| Motor 5  |      |       |         |
| Motor 6  |      |       |         |
| Motor 7  |      |       |         |
| Motor 8  |      |       |         |
| Motor 9  |      |       |         |
| Motor 10 |      |       |         |
| Motor 11 |      |       |         |
| Motor 12 |      |       |         |

Unit Tag: ERU-3S  
(1) 18.5K cfm Unit

|   |                                                                                                                                                                                      | SP Profile  |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| A | OA Hood w/ Bird Screen, 514 fpm                                                                                                                                                      | 0.15"       |
| B | OA Damper (60"H x 78"W), 569 fpm                                                                                                                                                     | 0.05"       |
| C | "Summer" Filter Section (MERV 8) w/ #2001-ASF Gauge, 289 fpm                                                                                                                         | 1.00"       |
| D | (3) Konvekta Snow-Melt Coils (FH=29.3", FL=89"), 341 fpm                                                                                                                             | 0.24"       |
| E | "Winter" Filter Section (MERV 8 & 15) w/ #2001-ASF Gauge, 289 fpm                                                                                                                    | 1.50"       |
| G | (1) Silencer (H=90", L=96", D=36"), 308 fpm                                                                                                                                          | 0.05"       |
| F | (3) Konvekta Pre-Heat/Cool Coils (FH=29.3", FL=89"), 341 fpm                                                                                                                         | 0.40"       |
| G | (3) Cooling Coils (FH=30", FL=89"), 333 fpm                                                                                                                                          | 0.70"       |
| H | (3) Konvekta Re-Heat Coils (FH=29.3", FL=89"), 341 fpm                                                                                                                               | 0.32"       |
| I | (4) Supply Fans (#HPA-18) w/ 15 HP Motors & (4) Integral Backdraft Isolation Dampers                                                                                                 | 0.10"       |
| J | SA Smoke Damper (36"H x 72"W), 1,027 fpm                                                                                                                                             | 0.10"       |
| K | (8) Removable Panels (TYP)                                                                                                                                                           | -           |
| L | VFD Cabinet w/ (2) 6" Sq Vent Dampers for (4) NF Motor Disconnects, (1) Main Disconnect, & (4) Fan VFDs *Fan VFDs will be Selected by DAC & Factory-Installed/Wired by Cambridgeport | -           |
|   |                                                                                                                                                                                      | 2.00"       |
|   |                                                                                                                                                                                      | 6.61"       |
|   |                                                                                                                                                                                      | External SP |
|   |                                                                                                                                                                                      | Total SP    |

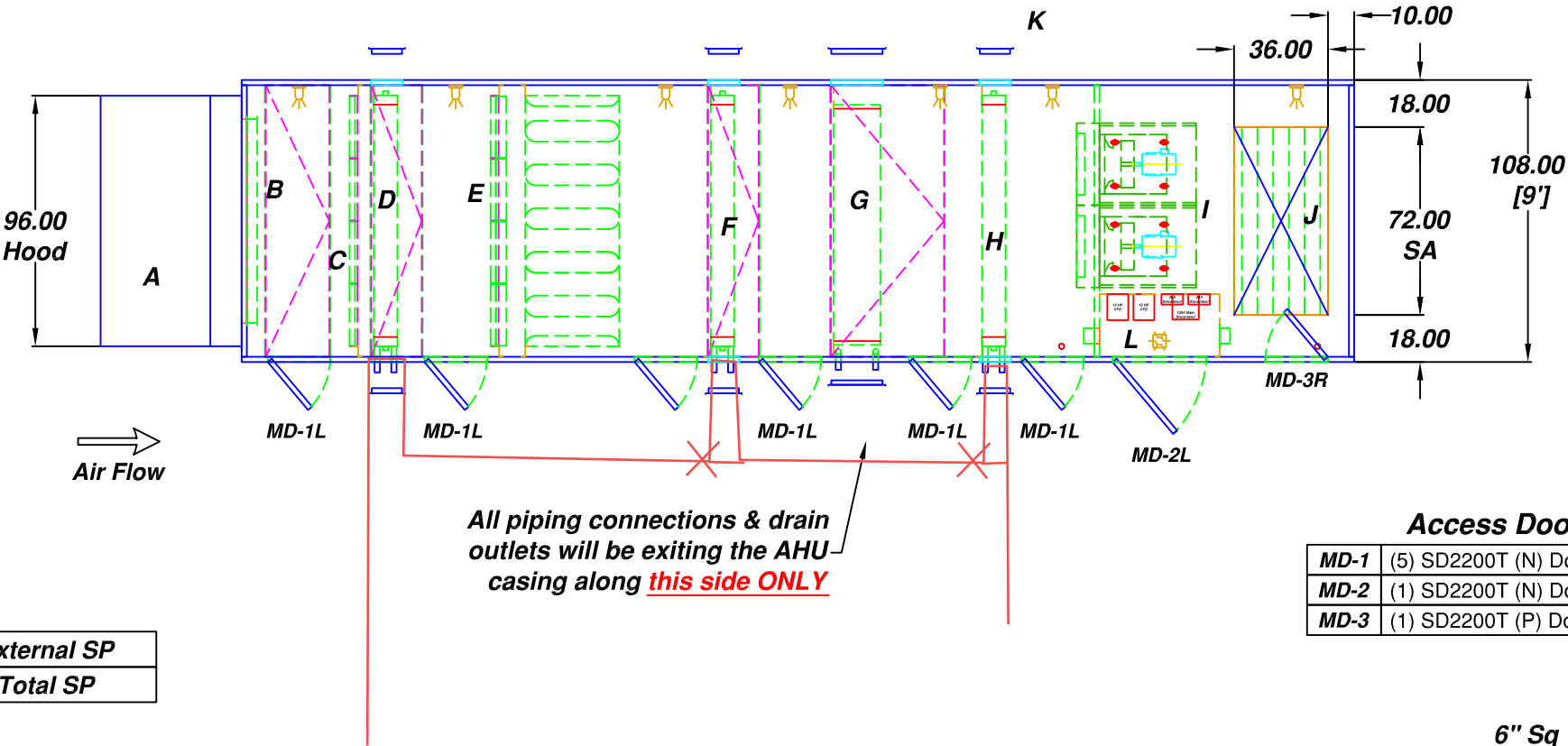
Notes:

- 1) Units are designed for outdoor use & will be shipped/rigged to the jobsite as **one (1) piece**
- 2) Factory-installed/wired 120V lighting package consisting of (7) light fixtures, (2) switches, & (2) GFCI outlets provided.
- 3) Any & all necessary piping materials & labor to be field-provided by others

Estimated Rigging Weight

(with 2" Injected Foam Structural Casing, All-aluminum Casing & Base)

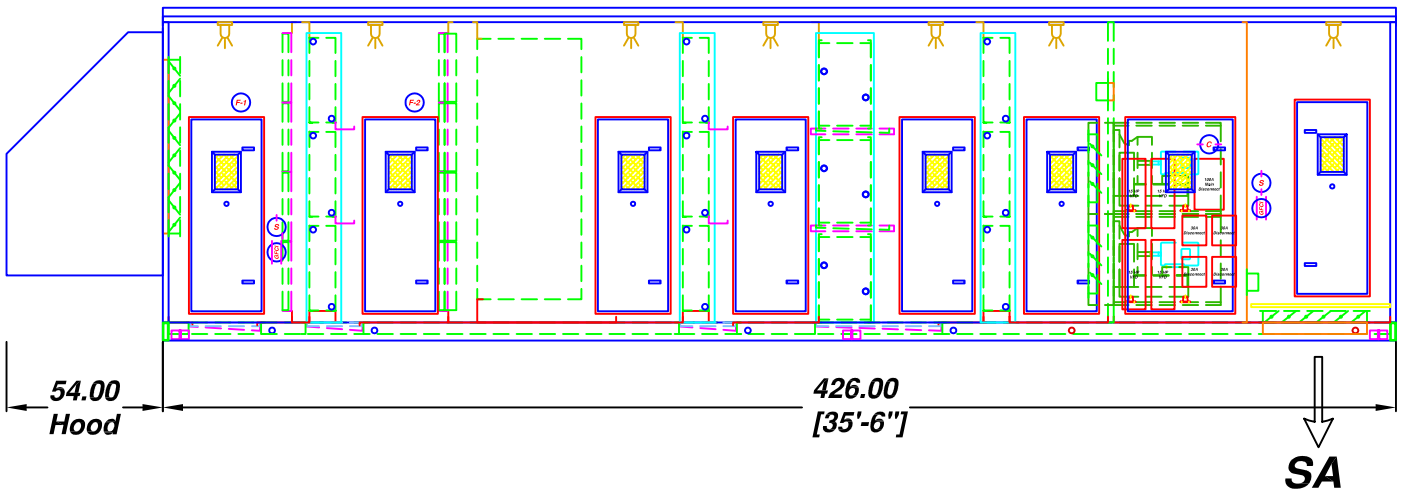
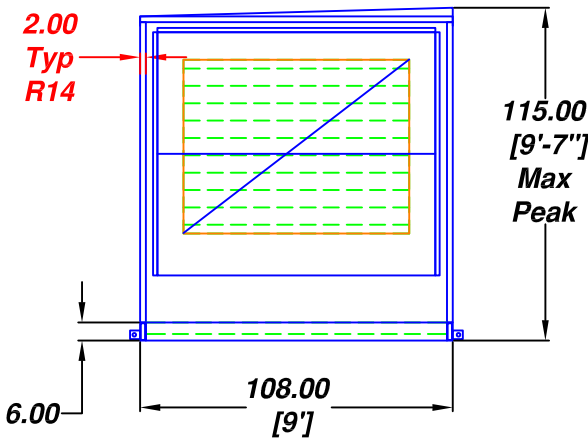
|        |                           |            |
|--------|---------------------------|------------|
| ERU-3S | 35'-6"L x 9'-0"W x 9'-7"H | 19,500 lbs |
|--------|---------------------------|------------|



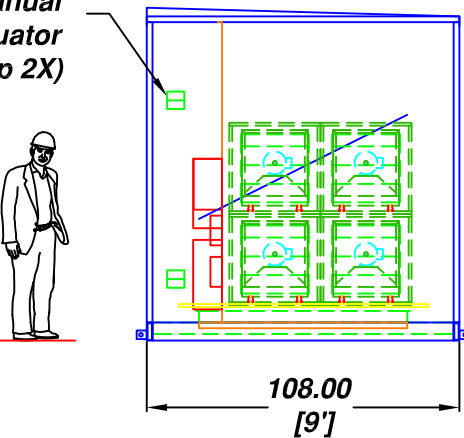
- F-1 — Filter Gauge (2001-ASF)
- F-2 — Filter Gauge (2002-ASF)
- S — Light Switch
- GU — GFCI Outlet
- C — Sure-Aire Controller

Access Door Legend

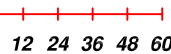
|      |                                     |
|------|-------------------------------------|
| MD-1 | (5) SD2200T (N) Doors (24"W x 66"H) |
| MD-2 | (1) SD2200T (N) Door (36"W x 66"H)  |
| MD-3 | (1) SD2200T (P) Door (24"W x 66"H)  |



6" Sq vent damper w/ manual quad actuator (Typ 2X)



Scale (Inches)

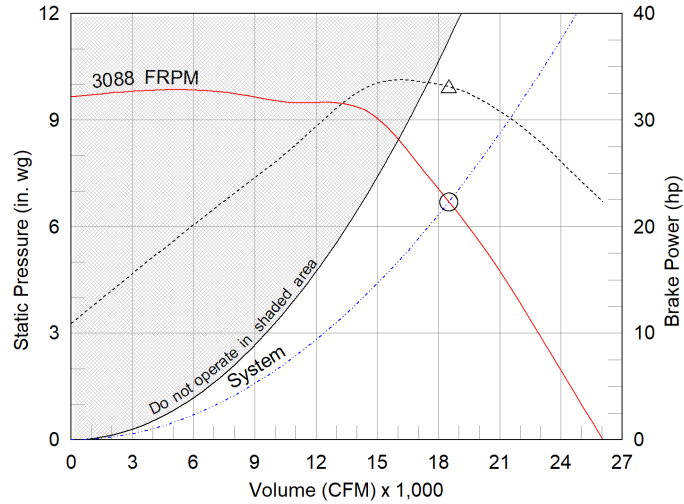


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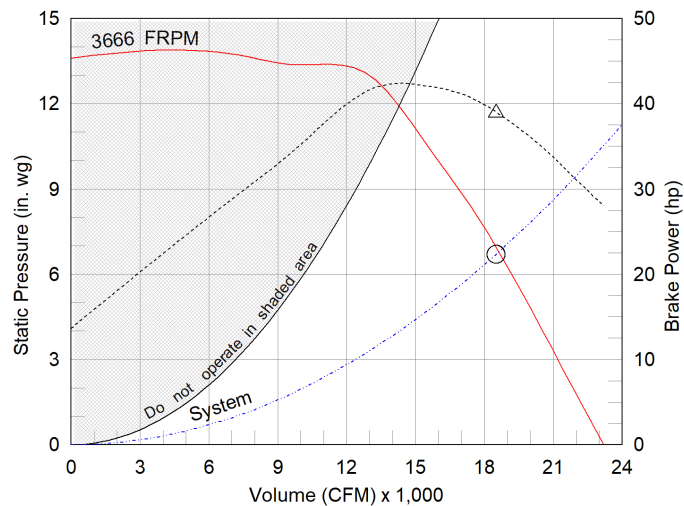
| AHU #                                                                                                                                                                                                                                                                | CFM    | REVISION # | REVISION DATE | DESCRIPTION | SUBMITTAL/UNIT LAYOUT DRAWING |      |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|---------------|-------------|-------------------------------|------|------------|
| ERU-3S                                                                                                                                                                                                                                                               | 18,500 | 1          | 4/1/2022      | JOB NAME    | UNE - PORTLAND DONOR LAB      |      |            |
| THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROPRIETARY TO CAMBRIDGEPORT CUSTOM. THIS DOCUMENT MAY NOT BE ISSUED TO ANOTHER PARTY WITHOUT PRIOR WRITTEN CONSENT AND AUTHORIZATION. CAMBRIDGEPORT CUSTOM & ITS LOGO ARE REGISTERED TRADEMARKS. ALL RIGHTS RESERVED. |        |            |               | Q# or JOB#  | Q-6610                        | DATE | 11/23/2021 |
|                                                                                                                                                                                                                                                                      |        |            |               | SCALE       | NTS                           | PAGE | 1 OF 1     |
|                                                                                                                                                                                                                                                                      |        |            |               | DRAWN BY    | CJR                           |      |            |

## Model: HPA-18-65-C-150 Housed Plenum Array

### Operating Performance



### Redundancy Performance



Operating performance shown is for 4 fans operating in parallel. For individual fan performance, divide the airflow and power scales by the number of fans.

- △ Operating Bhp point
- Operating point at Total External SP
- Fan curve
- System curve
- Brake horsepower curve

### Sound Power by Octave Band

| Sound Data | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | LwA | dBA |
|------------|------|-----|-----|-----|------|------|------|------|-----|-----|
| Inlet      | 94   | 96  | 98  | 100 | 93   | 90   | 86   | 80   | 100 | 89  |
| Outlet     | 98   | 95  | 92  | 91  | 86   | 85   | 81   | 78   | 93  | 81  |

LwA - A weighted sound power level, based on ANSI S1.4

dBA - A weighted sound pressure level, based on 11.5 dB attenuation per octave band at 5 ft- dBA levels are not licensed by AMCA International

### Sound Power by Octave Band (Array)

| Sound Data   | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | LwA | dBA |
|--------------|------|-----|-----|-----|------|------|------|------|-----|-----|
| Total Inlet  | 100  | 102 | 104 | 106 | 99   | 96   | 92   | 86   | 106 | 95  |
| Total Outlet | 104  | 101 | 98  | 97  | 92   | 91   | 87   | 84   | 99  | 87  |

Total Array sound is not licensed by AMCA International

Z:\Shared\Custom\Quote Folders\6600 Quotes\6610 - BC - DAC - UNE Portland Donor Lab\Quote Folders\6610 - BC - DAC - UNE Portland Donor Lab\Equipment Selections\A) Fans  
6610\_UNE Portland\_AHU Supply Fans\_Prelim\_r0.gfcj

Generated by: crichard@ahu.com



| Fan Array              |        |
|------------------------|--------|
| # fans                 | 4      |
| Fans high              | 2      |
| Fans wide              | 2      |
| Total volume           | 18,500 |
| Total Oper. Power (hp) | 32.96  |

| Performance(single fan)    |       |
|----------------------------|-------|
| Volume (CFM)               | 4,625 |
| Total External SP (in. wg) | 6.694 |
| Operating Power (hp)       | 8.24  |
| Required Power (hp)        | 8.24  |
| Fan RPM                    | 3088  |
| Max Fan RPM                | 4,040 |
| Oper. Frequency (Hz)       | 53    |
| Elevation (ft)             | 30    |
| Start-up Temp.(F)          | 70    |
| Operating Temp.(F)         | 70    |

| N-1 Redundancy Performance(Single Fan) |       |
|----------------------------------------|-------|
| Volume (CFM)                           | 6,167 |
| Operating Power (hp)                   | 12.98 |
| Required Power (hp)                    | 12.98 |
| Fan RPM                                | 3666  |
| Max Fan RPM                            | 4,040 |
| Oper. Frequency (Hz)                   | 63    |

| Fan Configuration   |            |
|---------------------|------------|
| Size                | 18         |
| Arrangement         | 4          |
| Housing Size        | Compact    |
| Wheel Width         | 65         |
| Wheel Class         | III        |
| Rotation CW Qty     | 3          |
| Rotation CCW Qty    | 1          |
| Orientation         | Horizontal |
| Inlet Cone Material | Steel      |

| Total Array Weights |       |
|---------------------|-------|
| Fan (LMD)(lb)       | 1,000 |
| Motor/Drive (lb)    | 1,012 |
| Accessories (lb)    | 0     |

| Misc Fan Data            |        |
|--------------------------|--------|
| Fan Eff. Index (FEI)     | 1.09   |
| Outlet Velocity (ft/min) | 896    |
| Static Efficiency (%)    | 59     |
| Wheel WR2 (lb-ft2)       | 0      |
| Tip Speed (ft/min)       | 14,754 |

| Motor and Drives |          |
|------------------|----------|
| Size (hp)        | 15       |
| RPM              | 3500     |
| Enclosure        | TEFC     |
| V/C/P            | 460/60/3 |
| Frame Size       | 254T     |
| Max Frame Size   | 256      |
| Location         | Centered |



## Model: HPA-18-65-C-150

Housed Plenum Array

### Standard Construction Features:

HPA Standard Construction Features

FRAMEWORK: Heavy gauge laser cut and die formed galvanized steel frame integrally isolated from the fan housing with rubber isolators. HOUSING: Heavy gauge galvanized panels containing 2" of sound absorbing insulation with integral lifting points and punched flanges for fan array assembly. Motor lubrication lines will be extended to the outside of the housing panels on all motors with re-greasable bearings. WHEEL: Welded, aluminum 12- blade airfoil centrifugal.

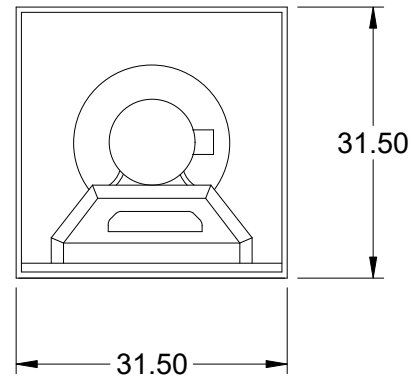
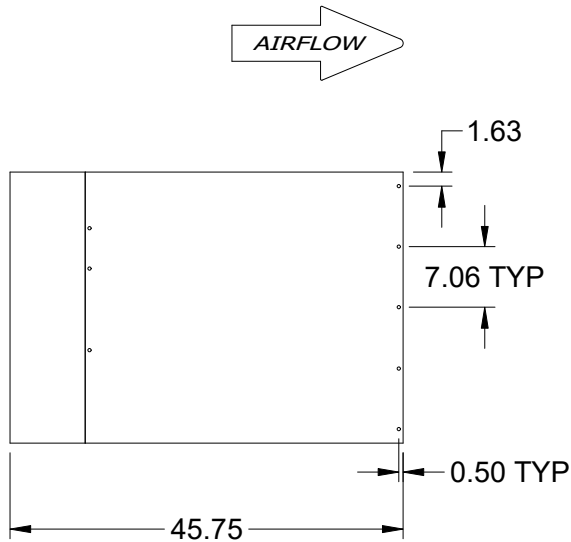
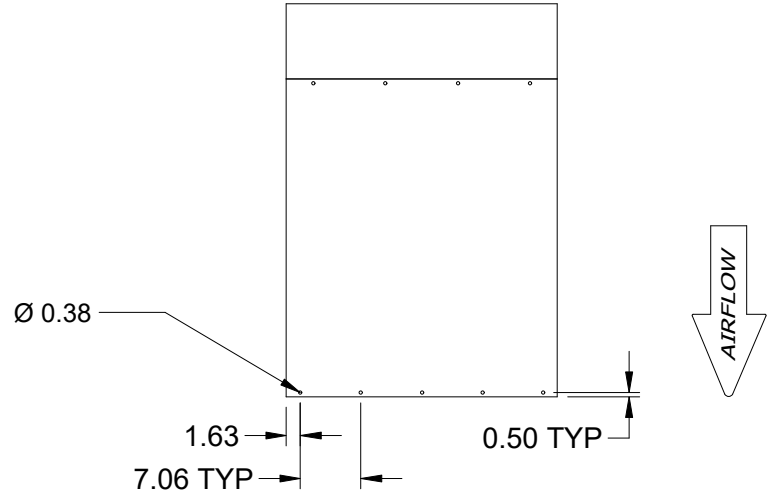
### Selected Options & Accessories:

Motor PN - 311916, Baldor Motor Model Number - EM2394T-G  
NEMA Premium Efficient Motor - meets NEMA Table 12-12  
Motor VFD Rated  
Motor sized for fan rpm operation with VFD, not power line Hz  
Motor with Shaft Grounding  
Motor with Class F or Greater Insulation  
Direct Mount Isolators, Isolator-Rubber Mount, 0.25 Inch  
Rotation CW Qty - 3, Rotation CCW Qty - 1  
Inlet Damper, Gravity, EM-32, Alum. Blade, Parallel, w/ Mill Finish  
Sure-Aire Flow Station (With Electronics), 1 per Array  
Unit Warranty: 1 Yr (Standard)

Model: HPA-18-65-C-150

Housed Plenum Array

## Overview Drawing

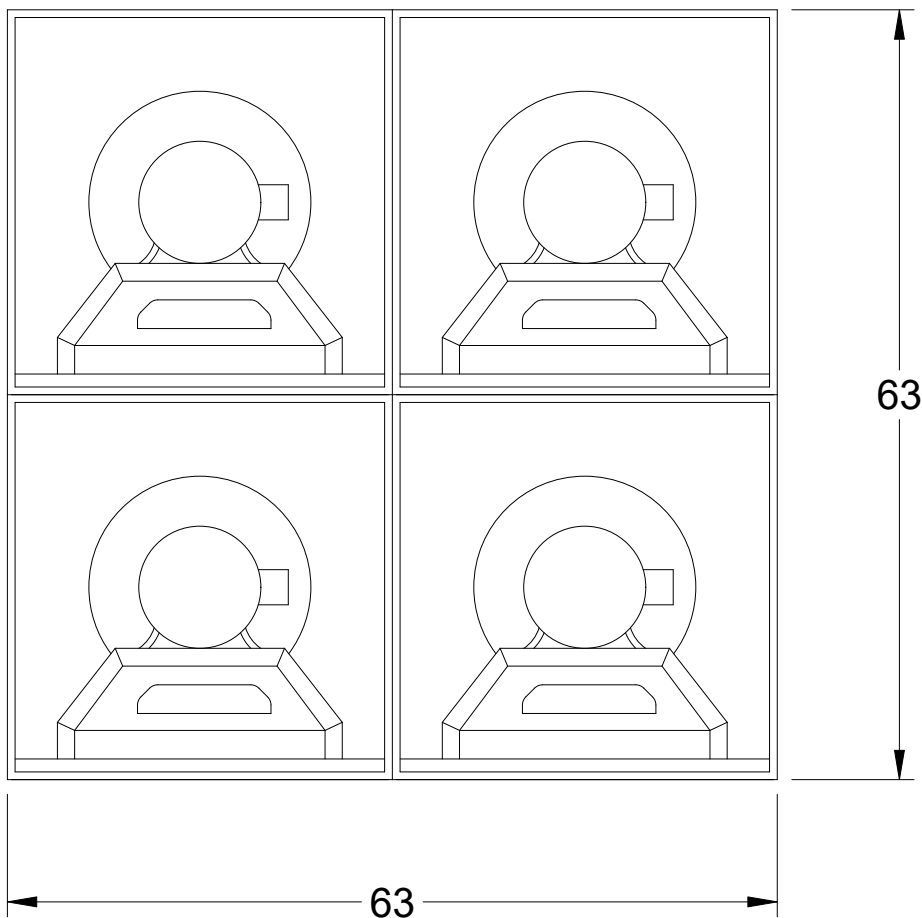


Notes: All dimensions shown are in units of in.

Model: HPA-18-65-C-150

Housed Plenum Array

## ASSEMBLED ARRAY DRAWING



Notes: All dimensions shown are in units of in.

Customer: Date: 10/29/2021  
Contact: From:  
Telephone: Company:  
Cell: Return Tel:  
Fax: Return Fax:  
Job:  
Quote #:

### Construction

Item: MAU-1 CC  
Coils Per Bank: 3  
Allow Opp. End: No  
Tube OD IN: 5/8  
Coil Duty: Cool-Standard  
Fins Per Inch: Optimize  
Rows: 1  
Fin Surface: Optimize ABC  
Fin Height (IN): 30.00  
Finned Length (IN): 89.00  
Tubing Mat. (IN): 0.035 Copper  
TurboSpirals: No  
Fin Mat. (IN): 0.0095 Aluminum  
Conn Qty/Size (IN): 1 / Optimize  
Circuiting: Optimize  
Face Area (SQ FT): 55.63

need to  
change spec  
to .0095"  
fins OR I  
can have the  
selection  
changed to  
.0075"?

### Air Side

Air Flow (Sft^3/min) 18500.0  
Altitude FT: 0.00  
Ent. Air DB/WB °F: 87.00 / 72.00  
Lvg. Air DB/WB °F: 51.00 / 51.00  
Total / Sensible MBH: 0.00 / 0.00  
Max Air PD "H2O: 0.00  
Fin Fouling Factor ft^2-°F-hr/BTU: 0

Used higher EAT  
to provide safety  
factor

### Fluid Side

Fluid Type: Propylene  
Percent Glycol: 35  
Ent. Fluid : 42.00  
Lvg. Fluid : 57.00  
Fluid Flow gal/min: 0.00  
Max FPD FT H2O: 0.00  
Fouling Factor ft^2-°F-hr/BTU: 0

| OUTPUT DATA        |           | Most Economical |        |        | Specified Coil |        |        |
|--------------------|-----------|-----------------|--------|--------|----------------|--------|--------|
|                    |           | Coil 1 ✓        | Coil 2 | Coil 3 | Coil 4         | Coil 5 | Coil 6 |
| Model Number:      |           | 5WS1212A        |        |        |                |        |        |
| FPI   Rows   Surf: |           | 12   12   A     |        |        |                |        |        |
| Circuiting:        |           | 1               |        |        |                |        |        |
| Air Velocity:      | (Sft/min) | 332.6           |        |        |                |        |        |
| Total Capacity:    | MBH       | 1246.9          |        |        |                |        |        |
| Sens. Capacity:    | MBH       | 734.3           |        |        |                |        |        |
| Lvg. Air DB:       | °F        | 50.70           |        |        |                |        |        |
| Lvg. Air WB:       | °F        | 50.55           |        |        |                |        |        |
| Standard APD       | "H2O      | 0.70            |        |        |                |        |        |
| Lvg. Fluid:        | °F        | 57.15           |        |        |                |        |        |
| Fluid Flow:        | gal/min   | 176.7           |        |        |                |        |        |
| Fluid PD:          | FT H2O    | 24.01           |        |        |                |        |        |
| Fluid Vel.:        | ft/s      | 3.54            |        |        |                |        |        |
| Conn Size:         | IN        | (1) 2.000       |        |        |                |        |        |
| Internal Volume:   | in^3      | 6204.8          |        |        |                |        |        |
| Weight (Dry):      | lbm       | 978.6           |        |        |                |        |        |
| Weight (w/Fluid):  | lbm       | 1230.7          |        |        |                |        |        |
| Notes:             |           | AL              |        |        |                |        |        |

### Notes:

A) Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).

L) Coil rating valid for Heatcraft coils only.

|            |             |            |
|------------|-------------|------------|
| Customer:  | Date:       | 10/29/2021 |
| Contact:   | From:       |            |
| Telephone: | Company:    |            |
| Cell:      | Return Tel: |            |
| Fax:       | Return Fax: |            |
| Job:       |             |            |
| Quote #:   |             |            |

| Item     | Coils<br>Per<br>Bank | FA<br>SQ FT | Air<br>Flow<br>ft^3/min | Face<br>Vel.<br>ft/min | Fin<br>Fouling<br>Factor<br>ft^2-°F-hr/BTU | Ent Air<br>DB/WB<br>°F | Lvg Air<br>DB/WB<br>°F | Capacity<br>Total<br>MBH | APD<br>"H2O | Fluid<br>Type    | Fluid<br>Fouling<br>Factor<br>ft^2-°F-hr/BTU | Fluid Temp.<br>Ent/Lvg<br>°F | FPD<br>FT H2O | Fluid<br>Vel | Fluid<br>Flow<br>gal/min | Model FhxFI<br>Number IN |
|----------|----------------------|-------------|-------------------------|------------------------|--------------------------------------------|------------------------|------------------------|--------------------------|-------------|------------------|----------------------------------------------|------------------------------|---------------|--------------|--------------------------|--------------------------|
| MAU-1 CC | 3                    | 55.63       | S- 18500.0              | 332.6                  | 0.00                                       | 87.00/72.00            | 50.70/50.55            | 1246.9/734.3             | 0.70        | 35%<br>Propylene | 0.00                                         | 42.00/57.15                  | 24.01         | 3.54         | 176.7                    | 5WS1212A 30.00 x 89.00   |

## Preliminary Electrical Calculations

**Job Name:** UNE Portland MAU  
**Unit Tag:** 460V, 4 x 15HP SF motors  
**Unit Type:**  
**Date:** 11/3/2021

### Unit Electrical Input:

#### Motor Data:

|           | Size (hp) | NEC Amps |
|-----------|-----------|----------|
| Motor #1: | 15        | 21       |
| Motor #2: | 15        | 21       |
| Motor #3: | 15        | 21       |
| Motor #4: | 15        | 21       |

#### Electric Heater Data:

Heater Power (in KW): 0

#### Condensing Unit Data:

None

Mounted  
Amps

Quantity

|                   |                                                               |                                                               |
|-------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Compressor #1:    | <span style="border: 1px solid black; padding: 2px;">0</span> | <span style="border: 1px solid black; padding: 2px;">1</span> |
| Compressor #2:    | <span style="border: 1px solid black; padding: 2px;">0</span> | <span style="border: 1px solid black; padding: 2px;">1</span> |
| Condenser Fan #1: | <span style="border: 1px solid black; padding: 2px;">0</span> | <span style="border: 1px solid black; padding: 2px;">1</span> |
| Condenser Fan #2: | <span style="border: 1px solid black; padding: 2px;">0</span> | <span style="border: 1px solid black; padding: 2px;">1</span> |

Separate ACCU Power Feed:

No

Humidifier Amps: 0  
 Other Amps: 0

☐ Electric Heat-Humidifier and ACCU Lockout

Unit Voltage: 460  
 Unit Phase: 3

Transformer Amps:

|                            | Quantity                                                       | VA                                                               |
|----------------------------|----------------------------------------------------------------|------------------------------------------------------------------|
| Number of Dampers:         | <span style="border: 1px solid black; padding: 2px;">6</span>  | <span style="border: 1px solid black; padding: 2px;">1000</span> |
| # of Indirect Gas Heaters: | <span style="border: 1px solid black; padding: 2px;">0</span>  | <span style="border: 1px solid black; padding: 2px;">0</span>    |
| Dewpoint Control:          | <span style="border: 1px solid black; padding: 2px;">No</span> | <span style="border: 1px solid black; padding: 2px;">0</span>    |
| Direct Fired Gas:          | <span style="border: 1px solid black; padding: 2px;">No</span> | <span style="border: 1px solid black; padding: 2px;">0</span>    |
| Indirect Evap. Cooling:    | <span style="border: 1px solid black; padding: 2px;">No</span> | <span style="border: 1px solid black; padding: 2px;">0</span>    |

### Unit Electrical Output:

Transformer Amps: 2.2  
 Electric Heater Amps: 0

Unit FLA: 86.2  
 Unit MCA: 92.0  
 ACCU FLA: -  
 ACCU MCA: -  
 Unit Max Fuse: 100

The above results are based on simultaneous operation of all of the components.

FLA: -  
 MCA: -  
 Max Fuse: -

This was using the "old" electrical calc spreadsheet - see latest spreadsheet that estimates MOP=120A



|             |         |
|-------------|---------|
| Voltage     | 480 VAC |
| CB Oversize | 120%    |

| All Fans     |      |
|--------------|------|
| MCA          | 98A  |
| MOP          | 120A |
| Main CB Size | 120A |

|          | EC Fans |    |      |    |            |
|----------|---------|----|------|----|------------|
|          | FLA     | KW | Amps | HP | Thermal CB |
| Motor 1  |         |    |      |    |            |
| Motor 2  |         |    |      |    |            |
| Motor 3  |         |    |      |    |            |
| Motor 4  |         |    |      |    |            |
| Motor 5  |         |    |      |    |            |
| Motor 6  |         |    |      |    |            |
| Motor 7  |         |    |      |    |            |
| Motor 8  |         |    |      |    |            |
| Motor 9  |         |    |      |    |            |
| Motor 10 |         |    |      |    |            |
| Motor 11 |         |    |      |    |            |
| Motor 12 |         |    |      |    |            |

|          | AC Fans |       |         |
|----------|---------|-------|---------|
|          | HP      | FLA   | CB Size |
| Motor 1  | 15.0    | 22.9A | 30.0A   |
| Motor 2  | 15.0    | 22.9  | 30A     |
| Motor 3  | 15.0    | 22.9  | 30A     |
| Motor 4  | 15.0    | 22.9  | 30A     |
| Motor 5  |         |       |         |
| Motor 6  |         |       |         |
| Motor 7  |         |       |         |
| Motor 8  |         |       |         |
| Motor 9  |         |       |         |
| Motor 10 |         |       |         |
| Motor 11 |         |       |         |
| Motor 12 |         |       |         |

This is using the latest electrical calc spreadsheet which estimates MOP=120A (higher than the old spreadsheet which estimated 100A)

Date: 2022-03-15  
 Enquiry dated:  
 Project:  
 Quotation-no.: 112813  
 Item: Adiabatic Cooler  
 Reference: AS

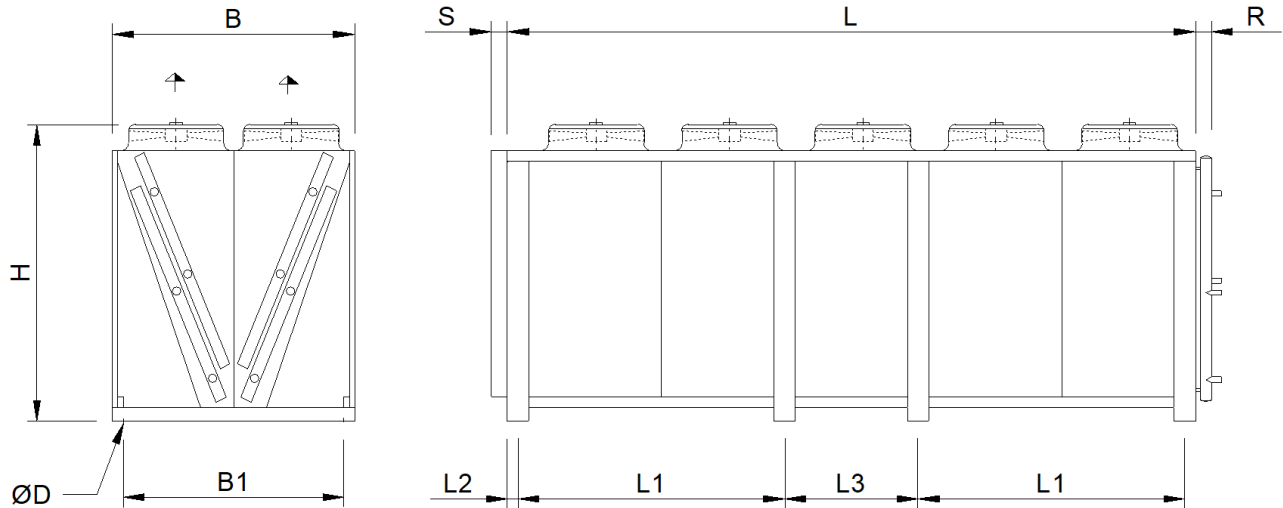
**Drycooler S-GFD 080.1D/2x5-N200/4P.M**

|                                       |                                  |                              |                            |
|---------------------------------------|----------------------------------|------------------------------|----------------------------|
| <b>Capacity:</b>                      | 1627000 Btu/h                    | <b>Medium:</b>               | Propylene glycol 35 Vol. % |
| <b>Surface reserve:</b>               | 0.4 %                            | <b>Inlet:</b>                | 95.1 °F                    |
| <b>Air flow:</b>                      | 129161 cfm <sup>(1)(2)</sup>     | <b>Outlet:</b>               | 85.1 °F                    |
| <b>Air velocity:</b>                  | 391 ft/min                       |                              |                            |
| <b>Air inlet:</b>                     | 95.0 DB / 74.0 WB °F             | <b>Pressure drop:</b>        | 16.74 psi                  |
| <b>Dry switch point:</b>              | 78.5 °F                          |                              |                            |
| <b>Air pressure:</b>                  | 14.692 psi                       | <b>Volume flow:</b>          | 345.00 gpm                 |
| <b>Heat transf. coeff.:</b>           | 6.77 Btu/(h·ft <sup>2</sup> ·°F) | <b>Mass flow:</b>            | 177608 lb/h                |
| <b>Fans:</b>                          | 10 Piece(s) 3~460V 60Hz          | <b>Fan diameter:</b>         | 31 1/2 in                  |
| <b>Data per motor (nominal data):</b> |                                  | <b>Noise pressure level:</b> | 57 dB(A)                   |
| <b>Speed:</b>                         | 975 rpm                          | <b>at a distance of:</b>     | 32.8 ft                    |
| <b>Capacity:</b>                      | 1.94 kW, 2 hp mech.              | <b>Noise power level:</b>    | 91 dB(A)                   |
| <b>Current:</b>                       | 3.00 A                           |                              |                            |
| <b>Casing:</b>                        | Galv. Steel, light grey          | <b>Tubes:</b>                | Copper <sup>(3)</sup>      |
| <b>Surface:</b>                       | 45631 ft <sup>2</sup>            | <b>Fins:</b>                 | Aluminum <sup>(3)</sup>    |
| <b>Tube volume:</b>                   | 17.078 ft <sup>3</sup>           | <b>Connections per unit:</b> |                            |
| <b>Fin spacing:</b>                   | 12.7 FPI                         | <b>Inlet:</b>                | 2 x 4 1/8 in               |
| <b>Dry weight:</b>                    | 8296 lb <sup>(4)</sup>           | <b>Outlet:</b>               | 2 x 4 1/8 in               |
| <b>Max. operating pressure:</b>       | 232.1 psi                        |                              |                            |
| <b>Dimensions:<sup>(4)</sup></b>      |                                  |                              |                            |
| <b>Length:</b>                        | 262 9/16 in                      | <b>Outlet header:</b>        | 2 x 4 1/8 in               |
| <b>Width:</b>                         | 94 1/2 in                        | <b>Inlet header:</b>         | 2 x 4 1/8 in               |
| <b>Height:</b>                        | 112 3/16 in <sup>(4)</sup>       | <b>Face Area:</b>            | 326.8 ft <sup>2</sup>      |
| <b>No. of legs:</b>                   | 8                                | <b>Circuits:</b>             | 2N                         |
|                                       |                                  | <b>Distributions:</b>        | 2 * 72                     |

(S = Special coil, Special fan VT03059U.2 3~400V 5060Hz)

S-GFD 080.1D/2x5-N200/4P.M

Project:  
Quotation-no.: 112813  
Item: Adiabatic Cooler  
Reference: AS



File: EMF\GVD\_CD2x5\_UNI.emf

|    |   |             |    |   |            |    |   |             |
|----|---|-------------|----|---|------------|----|---|-------------|
| L  | = | 253 1/8 in  | B  | = | 94 1/2 in  | H  | = | 112 3/16 in |
| R  | = | 8 11/16 in  | L1 | = | 98 5/8 in  | L2 | = | 3 1/16 in   |
| L3 | = | 49 13/16 in | B1 | = | 90 9/16 in | S  | = | 13/16 in    |
| ØD | = | 11/16 in    |    |   |            |    |   |             |

Attention: Drawing and dimensions not valid for all accessory options!

| Accessories                                                                                   | Piece(s) |
|-----------------------------------------------------------------------------------------------|----------|
| Special design                                                                                | 1        |
| Extra accessories                                                                             |          |
| hydroBLU Adiabatic Cooling System                                                             | 1        |
| EC Fan Motors                                                                                 | 10       |
| Coil Modification                                                                             | 1        |
| Mounted Panel#CECC10 - 0300ML - NAUBUNU - N                                                   | 1        |
| 1 x GMM Next EC/16;                                                                           |          |
| 10 x MSP, 2.5-4.0A, 1HP;                                                                      |          |
| 1 x Non Fused Disconnect, Nema 4X, 60 A;                                                      |          |
| 1 x Power Distribution Block 3x6;                                                             |          |
| 1 x Control Transformer 230/460 - 115 VAC /750VA, 60Hz;                                       |          |
| 1 x Panel Heater 400W 120V;                                                                   |          |
| 1 x GHM Pad Controller Accessory;                                                             |          |
| 1 x 2x Temperature Sensor for Güntner Controller (for 2 refrigerant circuits);                |          |
| 1 x NEMA 4 Steel Enclosure (WxHxD) 800x1000x300 [mm] / 31.5x39.37x11.81 [Inch];               |          |
| 1 x Cabinet Mounting Kit 1200;                                                                |          |
| Panel Data:                                                                                   |          |
| Operating Range = -40°C to 43.1°C / -40°F to 109.58°F                                         |          |
| Electrical Power = 3/460V/60Hz - Y                                                            |          |
| Control Voltage = 115VAC 50/60Hz                                                              |          |
| Largest Load [A] = 3                                                                          |          |
| FLA [A] = 30                                                                                  |          |
| MCA [A] = 30.75                                                                               |          |
| MOP [A] = 35                                                                                  |          |
| Adiabatic water use: Evaporation Rate - 4.2 GPM @ Design, Makeup water rate: 5.4 GPM @ Design | 0        |
| Water inlet pressure range: 25-60 PSI                                                         | 0        |

#### Important remarks / explanatory notes:

- (1) For the external pressure, 0.132 in H<sub>2</sub>O has been taken into account!
- (2) Additional pressure drop for casing and mounted parts is not taken into account.
- (3) The unit may not be suitable for very corrosive atmospheres (close to shores, in smoke rooms, etc.). For further information see program menu "?", "Material recommendations brochure", or ask your sales partner.
- (4) Dimensions and weights are not valid for all possible options! They may differ for units with accessories or special units (S-...).

**Tom Saucier**

---

**Subject:** FW: EXTERNAL:RE: University of New England to manage their new COM Building CMP Three Phase Service Process

---

**From:** Donna Bisson <[dbisson@une.edu](mailto:dbisson@une.edu)>

**Sent:** Friday, July 22, 2022 10:58 AM

**To:** [Jamie.Cough@cmpco.com](mailto:Jamie.Cough@cmpco.com); Alan Thibeault <[athibeault@une.edu](mailto:athibeault@une.edu)>; Phil LaClaire <[phil@pmlprojectmanagement.com](mailto:phil@pmlprojectmanagement.com)>; [Jeffrey.Lagueux@cmpco.com](mailto:Jeffrey.Lagueux@cmpco.com); [LWade@smrtinc.com](mailto:LWade@smrtinc.com); 'Peter Reynolds' <[preynolds@ledgewoodconstruction.com](mailto:preynolds@ledgewoodconstruction.com)>; [paul.duperre@cmpco.com](mailto:paul.duperre@cmpco.com)

**Cc:** Donna Bisson <[dbisson@une.edu](mailto:dbisson@une.edu)>

**Subject:** RE: EXTERNAL:RE: University of New England to manage their new COM Building CMP Three Phase Service Process

Good Morning Folks,

Here is the SAP notification number **103 009 083 72** for the HBACHS Building at 780 Stevens Ave. - Portland Campus which I set up with CMP this morning.

The CMP service account number for this building will be 3001 433 8856.

Please let me know if you have any questions. Thank you

Sincerely,

Donna Bisson

Executive Assistant to the VP for University Operations

207-602-2262

**Site Design Associates**  
**Consulting Engineering and Land Planning**

July 25, 2022

Mr. Austen Davis, Planner  
City of Portland  
Via email

**RE: University of New England - Portland Campus**  
**Harold and Bibby Alfond Center for Health Sciences**  
**Parcel ID 145 B018001 780 Stevens Avenue**  
**Responses to staff comments**

Dear Austen;

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to provide this response to review comments provided by the city in your July 08, 2022 review memorandum. We have listed each of your comments in the order they were presented in your memorandum followed by our responses.

**1. General comments:**

**Comment:** For the benefit of the Planning Authority's review, as well as the Planning Board and members of the public that may wish to review plans, staff are requesting an illustrative site plan that uses color to denote areas of new construction and landscaping. The current overall site plan is sufficient for review, though an additional supplemental plan, less heavily annotated and using color, would be greatly beneficial as an overview.

**Response:** *An illustrative site plan is included with this response, as Attachment 1.*

**Comment:** The driveway at the northern edge of the lot should be separated from the parking lot of the adjacent church, and will need a technical manual waiver as it is within 20 feet of the adjacent driveway.

**Response:** *Section 1.7.1 of the technical manual which requires the 20 ft separation is not applicable to the proposed use. Section 1.7.1 is applicable to residential development with 9 or less parking spaces.*

**Comment:** Staff recommend that a pedestrian walkway be extended from Stevens Avenue to the newly created quad to discourage students, staff, and faculty from walking through the parking lot between the Innovation Center and Oral Health Building.

23 Whitney Way Topsham, Maine 04086  
Phone: (207) 449-4275 email: [info@sitedesignassociates.biz](mailto:info@sitedesignassociates.biz)

**Response:** *The recommended walk and cross walk have been added to the plan as requested. Please see the attached drawing CP101, Attachment 2.*

**Comment:** Increased UNE presence in Portland will certainly lead to students, staff, and faculty locating to the surrounding neighborhoods. The TDM shows the conceptual Riverton Neighborhood Byway along the UNE Shuttle Road. This road is currently not open to the public but staff suggest allowing cyclists or pedestrians to use the road as an alternative connection to neighborhoods to the north of campus.

**Response:** *Future improvements are planned for the access drive between Bishop Street and the campus, including curbs, sidewalk, lighting, and emergency call boxes. When the improvements have been permitted and constructed, cyclists and pedestrian access along the drive will be permitted.*

**Comment:** Though grading may make this difficult to achieve, construction of an ADA-accessible ramp from the parking lot to the proposed quad and university walkways should be explored.

**Response:** *This concept was explored during the initial conceptual design and planning. The area that would be occupied and the cost make this prohibitive.*

## **2. Comments from Traffic and Circulation Reviewers:**

**Response:** *For the responses to the first three paragraphs of the memo, please see attached a memorandum from Diane Morabito. (Attachment 3)*

**Comment:** The proposed driveway location on Stevens Avenue does not meet driveway separation standards with the abutting Stevens Avenue Congregational Church driveway. Given the increase in traffic volume intensity it is recommended that the applicant coordinate with the abutter and create a shared driveway that serves both UNE and Church traffic or close the church driveway closest to UNE.

**Response:** *Please consider this response a request for a waiver from the separation requirement of section 1.7.2.7 of the city Technical Manual. The drive is an existing condition, approved by the city as part of a site plan approval on November 30, 2011, and then as part of an amended site plan approval on February 1, 2012. The original approvals were for construction of a new drive through the church parking lot to access 83 parking spaces westerly of the armory facility on the Maine Army National Guard MEARNG owned parcel. In addition to the 83 parking spaces on the MEARNG parcel, UNE leased 35 spaces in the church parking lot, and 12 spaces closer to Stevens Avenue from the MEARNG, for a total of 130 spaces for UNE, and the remaining area westerly of the armory included 93 spaces for MEARNG personnel and equipment. A total of 223 spaces were*



*accessed by UNE and the MEARNG through the two drives. The current proposal involves a total of 182 parking spaces.*

*At the time of the 2011 application there was no separation between the church and armory drives. UNE was able to realign the church drive and increase the separation from 28 ft to 38 ft by installing a concrete pedestrian landing area between the two drives.*

*In 2016 UNE acquired the former armory and received a site plan approval to change the use of the building and occupy the front portion of the armory, with MEARNG remaining in the Field Maintenance Shop at the rear of the building. The renovated facility contains offices, classrooms, a simulation center, a large meeting space, and study rooms, as well as the traditional support areas including restrooms, locker areas, kitchen, mechanical spaces and storage areas.*

*Currently, UNE is the primary user of the church parking on weekdays, while the church's primary use occurs on Sundays, religious holidays, and events such as funerals. UNE's primary peak use of their drive will occur when the church is not in session, and the church's primary use will occur when UNE is not in session. Therefore, there will be very minimal conflicts with the use of the two drives. UNE currently continues to lease the 36 spaces from the church. This will end with the construction of the science center, and UNE will no longer lease the 36 spaces. Therefore, there will be minimal use of the lot and drive by the church on weekdays when school is in session. It seems there should be no issues associated with both drives remaining in place, particularly in consideration of the fact that UNE will no longer be leasing parking spaces on the church property during the week.*

*Additionally, UNE met with the church to discuss consolidation of the entrances, and the church would prefer to keep the drives as is. Although the church has two access points to Stevens Avenue, the northerly access is a narrow one way in drive into the site. The only two-way access from the church property to Stevens Avenue would be lost if the drives were consolidated.*

*We also reviewed the possibility of moving the drive, but there is no feasible way to meet the 100 ft separation requirement.*

*Also, section 1.7.2 of the city technical manual indicates that the driveway standards of that section, including the separation requirement apply to "Multi-Family Residential with 10 (ten) parking spaces or more, Commercial and Industrial" development. The proposed project is not one of those uses. Is section 1.7.2 applicable to a post-secondary school use?*

*Two pre-application meetings were held for this project, one of which focused specifically on traffic and access. The access drive layout and cross-section were reviewed with staff in both meetings, and at no point during these reviews did anyone mention that the location of the drive would be an issue. The drive has*

*been at this location for a very long time, and has received multiple waivers and approvals from the city for the location. The proposed drives are not a high crash location, which would be indicative of a problem.*

*Lastly, UNE is proposing to more formally define the separation between the two properties with the installation of a sidewalk, vertical curb, ramps and an esplanade between the drives as noted on the attached drawing CU401. (Attachment 4)*

*We are in hopes that staff will concur with our finding that there is no viable alternative for access to the site other than the existing drive.*

**Comment:** The applicant should note if the Church driveway on the connector road is to remain. This may not be relevant given the request to change the driveway on Stevens Avenue.

**Response:** *The connector drive from the church will not remain. The pavement will be removed and the area loamed and seeded. See drawing CP101 Attachment 2.*

**Comment:** The parking area on the northwest side of the Oral Health Building is being modified. Three parallel parking spaces are being created but is unclear if the loading dock will remain active and thus block these spaces.

**Response:** *The three spaces are for the service vehicles associated with the Dining Services Department that primarily utilizes the loading dock. There will be no issue with the spaces being briefly blocked during a delivery.*

**Comment:** A crosswalk shall be painted on the connector road at Stevens Avenue. Additionally, a stop bar and stop sign shall be provided.

**Response:** *We have shown a stop bar and sign on the attached drawing CP101. A concrete apron is proposed to be installed across the drive as an extension of the concrete sidewalk, and will have bituminous pavement on both sides. Is it necessary to stripe this as well?*

**Comment:** The applicant should note if delivery trucks will be accessing the proposed building and if so, provide vehicle turning templates for maneuvering.

**Response:** *The largest vehicle that will need to regularly access the COM building will be the front-loading trash trucks to service the dumpsters. A turning analysis for those vehicles is attached as Attachment 5.*

**Comment:** The applicant should conduct a parking study documenting current

demand and expected demand with the proposed project. This shall include a supply/demand analysis. (The TDM Plan includes information that will inform the parking study). The study should attempt to document the number of vehicles associated with UNE that parking on local streets.

**Response:** *Parking counts have been undertaken semiannually in the fall and spring. As noted in the TDM plan, there are currently a total of 1,261 parking spaces on the campus, with the peak utilization of 651 of the on-campus spaces in 2021. The number of vehicles parked along College Street ranges from 18 to 22 during the peak periods. Most likely, the majority of these are UNE community members. As also noted in the TDM, the peak number of vehicles recorded in Stevens Ave is 109. Counts indicated a range of 91-109, for an average of 99. Obviously, not all of these are UNE community members, as there are private single and multi-family residences, local businesses, a daycare center, a school, churches, and larger housing complexes located along Stevens Ave in this area. It is our understanding that parking on the easterly side of Stevens Ave, as well as parking on the neighborhood streets in the area of the campus, is regulated by the city, while parking on the majority of the westerly side is not.*

*For previous projects approved by the city, UNE's parking needs have been typically based on the student population, at a calculated rate of 0.58 spaces per student, which has been accepted by the city. With a campus dominated by health professions graduate students, who often spend their entire day and week on campus, the parking demand is significantly more than the Institute of Transportation Engineers (ITE) guidance would predict for a typical college or university.*

*The construction of the HBACHS will result in a net increase of 92 spaces in this area of campus. The recently approved repair facility near the Bishop Street parking lot, results in the loss of 256 spaces while adding additional green space, resulting in a total of 1087 spaces on campus. When the HBACHS is ready for occupancy, the lease with the church will not be renewed, resulting in an additional reduction of 36 spaces. Therefore, in 2024, the total number of spaces on campus will be 1051, which is a net reduction of 210 parking spaces from the 2021 conditions. Note in the attached parking analysis (Attachment 6) that the anticipated surplus of spaces on campus from 2021 to 2024 will also decrease from 610 to 183.*

*As part of the future master plan, an academic building is envisioned on campus, located over existing parking adjacent to the art gallery. This will displace an additional 104 parking spaces, reducing the parking surplus on campus to 79 spaces. If the city begins to regulate the parking on the east side of Stevens Ave., moving vehicles into UNE parking spaces, these surplus spaces may be necessary to accommodate that demand.*

*Note in the attached parking analysis, the ratio was 0.61 spaces per student in 2018 prior to the pandemic, and is now 0.54 spaces per student subsequent to the peak of the pandemic. As more people return to in person work and learning, the required parking may actually increase above the 0.54 spaces per student utilized in the analysis closer to the pre-pandemic ratio, and spaces may be necessary.*

*Summarizing, with the construction of the proposed HBACHS, and future improvements on campus, it is anticipated that the total parking on campus will be reduced from the current 1261 spaces, to 947 spaces from 2021 to 2028. UNE intends to continue to monitor parking demand, twice a year, with the goal as stated in the TDM, being to reduce the parking supply rate over time. UNE does and will continue to encourage and support alternative means of transportation.*

### **3. Comments from Zoning Reviewers:**

**Comment:** In the provided zoning analysis, the maximum height allowable height is given as 55'. In Table 7-A it is 35' in the R-5 zone. The proposed height is given as 54.8' which exceeds 35'. Please provide information on how this proposal fits within what is permissible.

**Response:** *Please refer to section 6.5.6.F.8.a.-d. of the land use code and the conditional use application submitted. A height of 55 ft. is permitted as a conditional use, when those standards outlined are met, which is the case for the proposed project.*

**Comment:** The average grade on the elevations is given as 122' .5". Please provide information on how the average grade was calculated.

**Response:** *Attachment 7 is documentation of the proposed grades around the building perimeter and a calculation of height, which demonstrates that the height of the building will be less than the 55 ft permitted as a conditional use in the R-5 zone. This information was reviewed and approved by former planner Matthew Grooms on February 1, 2022 (see Attachment 8).*

### **4. Comments from Stormwater Management Reviewers:**

**Comment:** The project is required to comply with Maine DEP Chapter 500 and City of Portland Section 5 Stormwater management regulations.

- I believe based on the size and scale of this project it would be reviewed as a Site Location of Development permit. Applicability for SLOD comes into play when there is 3 acres or more of “structure”, which per the state statute for SLOD includes “buildings, parking lots, roads, paved areas, wharves, or areas to be stripped or graded and not to be revegetated.” This

project will result in almost 4 acres of redeveloped impervious area, and based on past experience with Maine DEP, the standard applies to redeveloped/reconstructed structure area. SLOD requires an evaluation of existing and proposed surfaces to determine the extent of treatment required, and the minimum percentage of treatment is 50%, which is the level of treatment currently proposed to meet the City of Portland redevelopment standard.

- Basic Standards – The project plans include standard details and notes to address erosion control measures and a plan showing locations of erosion control materials has been provided in accordance with the Basic Standards. The Applicant should review the plan to ensure that adequate sediment barrier will be utilized around all proposed work, including at culverts located near the edge of the site. In addition, there are resource areas shown around the site. Double rows of sediment barrier should be utilized when protecting resource areas.
- General/Redevelopment Standards – 50% of the redeveloped area is being treated utilizing grassed underdrained soil filters.
- Flooding Standards – The project will be reducing or maintaining flow at each of the evaluated study points.
- Urban Impaired Stream – The project is located within the Capisic UIS watershed, and will be reducing impervious surface.

**Response:** *Comments acknowledged, with one clarification. It is our understanding the threshold for the SLODA review as defined in Title 38: Waters and Navigation, Chapter 3: Protection and Improvement of Waters, Subchapter 1: Environmental Protection Board, Article 6: Site Location of Development, Section 482.6. is when structure area on a site including buildings, parking lots, roads, paved areas, wharves or areas to be stripped or graded and not to be revegetated, since 1975, occupies a ground area in excess of 3 acres. To date, this threshold has not been exceeded on the campus and larger projects have not been subject to SLODA review. Additionally, the current project will result in the removal of approximately one acre of structure area.*

*In addition, even though the SLODA thresholds have **not** been exceeded, the site plan application documentation and plans address those SLODA items that would be applicable to this project.*

**Comment:** The project will be required to provide a stormwater maintenance agreement – it is referenced, but I did not see a copy.

**Response:** For the most recent project approved on campus last fall, the execution of a Stormwater Maintenance Agreement was a condition of approval, which we will be happy to prepare at that time, or when requested by staff.

## 5. Standards in Need of a Waiver

**Comment:** Technical Manual Section 1.7.1: Driveway Design

A driveway shall be located on the lot in a manner to provide a minimum distance of twenty (20) feet spacing between it and adjacent driveways. This spacing shall be measured between the edge of driveways at the property line.

**Response:** *Section 1.7.1 is applicable to residential development with 9 or less parking spaces.*

## 6. Comments from Historic Preservation and Urban Design Staff

**Comment:** As the parcels on which development is proposed are within 100 feet of the Westbrook College Historic District, a meeting was held with Historic Preservation and Urban Design Staff. The site does not trigger either a Historic Preservation Advisory Review, or a Design Review. Suggestions in this section are therefore not mandatory, but are encouraged.

### **Historic Preservation:**

The preservation of the facilities building is recommended. This may be an opportunity to enhance this structure as a visual landmark viewed from both College Street and Stevens Ave. The UNE Portland campus has many contributions of building typologies in form and time period and the Facilities Building connects to this diversity.

The preservation of the Facilities Building also creates an opportunity to improve the network of pedestrian paths and gathering spaces as a linkage between the collection of buildings at the northern portion of the campus

**Response:** *The existing facilities building is in a complete state of disrepair. UNE's opinion is that if left in place, the existing facilities building will impede the improved pedestrian network to Innovation Hall.*

### **Urban Design:**

The connectivity from the public way and within the campus to the proposed Center for Health Sciences can be enhanced. The existing building entrance and stair tower at the east of Innovation Hall is a visual destination but creates unique challenges with the existing parking lot, service areas and indirect pedestrian pathways that should be considered into the current proposal. Additional pathway connections from Stevens Ave. are recommended, especially from the existing bus shelter to access Innovation Hall and the proposed Center of Health Sciences.

Consider the addition of this visual elements, similar to the existing brick pillars and campus gateways prevalent along Stevens Avenue and at the historic Westbrook College quad. This would enhance and demarcate the boundaries and entrances to the UNE campus and provide clear pedestrian connections to the campus from Stevens Ave.

**Response:** *A walk and cross walk from the Stevens Avenue bus shelter to Innovation Hall is now shown. A brick pillar exists at the point where the walk will connect to the sidewalk in Stevens Ave.*

If you or the applicant have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,  
Site Design Associates

A handwritten signature in black ink, appearing to read 'Tom Saucier', is positioned above the printed name.

Tom Saucier, P.E.  
President

c: Alan Thibeault, Vice President for Campus Operations













July 26, 2022

Mr. Alan Thibeault  
Vice President for University Operations  
University of New England

## RE: COM RELOCATION - RESPONSE TO PORTALND TRAFFIC COMMENTS

This is written to respond to the Traffic Review comments prepared by Tom Errico and other traffic reviewers, summarized in Austen Davis's Planner review comments dated July 8, 2022. The original review comments are repeated below for ease of the reader. My response follows each comment in italics:

When comparing the existing traffic count data to the ITE estimate, I am concerned the trip generation calculation for the project is underestimated. According to the traffic counts at the three driveway locations, UNE Drive, College Street and Finley Center Drive, the site currently generates 246 AM peak hour trips and 219 PM peak hour trips. The ITE estimate for the existing campus is 179 AM peak hour trips during both the AM and PM peak hours.

*The trip generation analysis was provided in a memorandum that was submitted to the city on 11/8/21 so it could be reviewed and approved by the city before proceeding with all of the analysis work. It was to be discussed at the pre-application meeting, but Tom Errico was unable to attend. Hence, a second "pre-application traffic" meeting was held on January 25 with Tom Errico in attendance to review trip generation and determine study area. At that meeting, trip generation according to ITE was discussed and accepted. It was requested that we count the Bishop Street lot and send the existing volume diagrams and trip assignments to the city. These trip assignments and the study area were sent to the city on February 14, 2022 for review and were accepted by Tom Errico on February 16, 2022. A point of clarification, there is an error in your PM calculation. Based upon the Figure 2 volumes, the total PM trips at the 3 primary drives are 190, not 219. The AM cited are correct at 246.*

In addition, not all of the UNE trips currently generated by the campus was captured at the noted driveway locations as vehicles generated by UNE park on local streets, in the Bishop Street lot, behind the Armory and in other off-street lots.

*The vast majority of trips entering and exiting the campus were counted at these 3 drives plus at the Bishop Street lot. The Bishop Street counts were included in the appendix and sent to the city in the February 14<sup>th</sup> email. At the Bishop Street lot there were 96 AM peak hour trips (86 in and 10 out) and 37 PM peak hour trips (3 in and 34 out). Adding these trips to the other 3 drive results yields 342 AM peak hour trips and 227 PM peak hour trips.*

In general, I am concerned the trip generation estimate using ITE data does not accurately reflect local conditions. According to ITE, Land Use Code 550 University/College had on average 24,000 students for the sites sampled during the AM peak hour and 19,000 students on average for the sites sampled during the PM peak hour. Clearly, the sites sampled were large institutions that do not have similar characteristics to the UNE campus. Accordingly, I do not accept the methodology used to estimate traffic for the project.

*While the average students in the ITE data is higher than the UNE campus it is important to point out that there are data points with enrollments in the range of UNE. There are data points with student enrollments as low as 150, 1200 and 1650. The average is not as important as having data within the range. The lower enrollment data points fit the average curve quite well. I expected the ITE data for a community college (LUC 540) would better reflect the UNE Portland campus since most students are commuters. However, that data set gave us even lesser trips, so the higher University/College results were utilized.*

The applicant should consider other methods for estimating trip generation.

*The trip generation analysis was specifically submitted early on in this process to gain approval prior to performing all of the analysis work and completing the study. It is very late in the game to now state the method is inappropriate. We could approximate specific UNE rates given that the vast majority of drives (all major) were counted.*

- The AM trips could be rounded from the counted 342 by 15 % to 393 to allow for the other smaller lots, which would yield a trip rate of 0.328 per student. The 400 new COM students would therefore generate 131 trips. This is an increase of 70 AM peak hour trips from those utilized in the study. When these 70 trips are split between entering and exiting, and then assigned to the multiples UNE drives and access routes little impact on study results would be expected. More discussion will follow on this in the following findings section.*

- *The PM trips could be rounded up 15 % from the counted 227 to 261, yielding a PM trip rate of 0.218 per student. The 400 new COM students would generate 87 new trips on this basis. This is an increase of just 26 trips in the PM peak hour and would not be expected to significantly impact study findings.*

*More on the potential impact of those additional trips from using specific UNE trip rates in the following response comments:*

The applicant conducted a capacity analysis at nearby intersections both with and without the project. It should be noted that revisions to the trip generation estimate may alter the following comments. o The SimTraffic reports in the appendix should be clearly labeled as to the scenario for which they apply. Some seem to be for a rezoning scenario. The applicant should also forward the Synchro network files for review.

*Most of the modelling was originally developed for the rezoning process but all was updated to current volumes, etc. All of the data inputs were reviewed and checked. All reports are clearly labelled at the top as to Base 2021 volumes, 2024 No Build and 2024 Build.*

o Morrill's Corner: The study evaluated conditions at the Stevens Avenue/Bishop Street and Allen Avenue/McDonalds intersections. Conditions at the Forest Avenue/Warren Avenue intersection does influence conditions at Allen Avenue and to some degree at Stevens Avenue. Accordingly, the analysis does not accurately estimate delay within Morrill's Corner. Long delays and vehicle queuing are common. MaineDOT and the City are currently in the process of redesigning Morrill's Corner with the objective of improving conditions for all users. I need to coordinate with MaineDOT and the City on the need for additional analysis and next steps for this review.

*The study area was what was requested and approved by the city in an email on February 16, 2022. The Morrill's corner intersection has been studied extensively and there are known safety and capacity concerns there. There is a major planned improvement project at this intersection. Additional analysis of this intersection would not yield any different results.*

- o Stevens/Walton Street: The analysis indicates the intersection will operate at acceptable levels of service.
- o Warren Avenue/Bishop Street: The analysis indicates the intersection will operate at acceptable levels of service.
- o Stevens Avenue/College Street: The analysis indicates the intersection will operate at acceptable levels of service.
- o Stevens Avenue/Finley Center Drive: The analysis indicates the intersection will operate at acceptable levels of service.
- o Stevens Avenue/UNE Driveway/Poland Street: The analysis indicates the intersection will operate at acceptable levels of service.

*There are no capacity concerns at any of the preceding intersections. The additional trips of a UNE specific trip generation approach would not be expected to alter these study results.*

A safety analysis was performed at High Crash Locations in the vicinity of the project. My comments for each location are noted as follows.

O Stevens Avenue between Arbor Street and .03 miles south of Forest Avenue: This location did have some pedestrian and bicycle crashes that concern me. I'm coordinating with City staff on suggested improvement strategies.

*There were three bike or ped crashes but all were attributed to bicyclist or pedestrian errors. I understand and concur if the city wishes to reevaluate the crosswalk locations in this area given these crashes.*

O Forest Avenue between Bishop Street and Allen Avenue: I concur that access management improvements would help to reduce crashes. The concept improvement plan being proposed by MaineDOT and the City should help to mitigate driveway movement crashes.

*Agreed.*

O Forest Avenue/Bishop Street: The MaineDOT/City project is proposing to restrict movements in and out of Bishop Street and thus I would expect improvements to safety conditions.

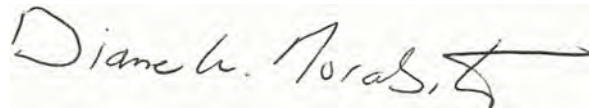
*Agreed.*

O Forest Avenue/Allen Avenue/McDonald's: The MaineDOT/City project is proposing to restrict movements in and out of McDonald's and thus I would expect improvements to safety conditions.

*Agreed.*



Respectfully submitted,



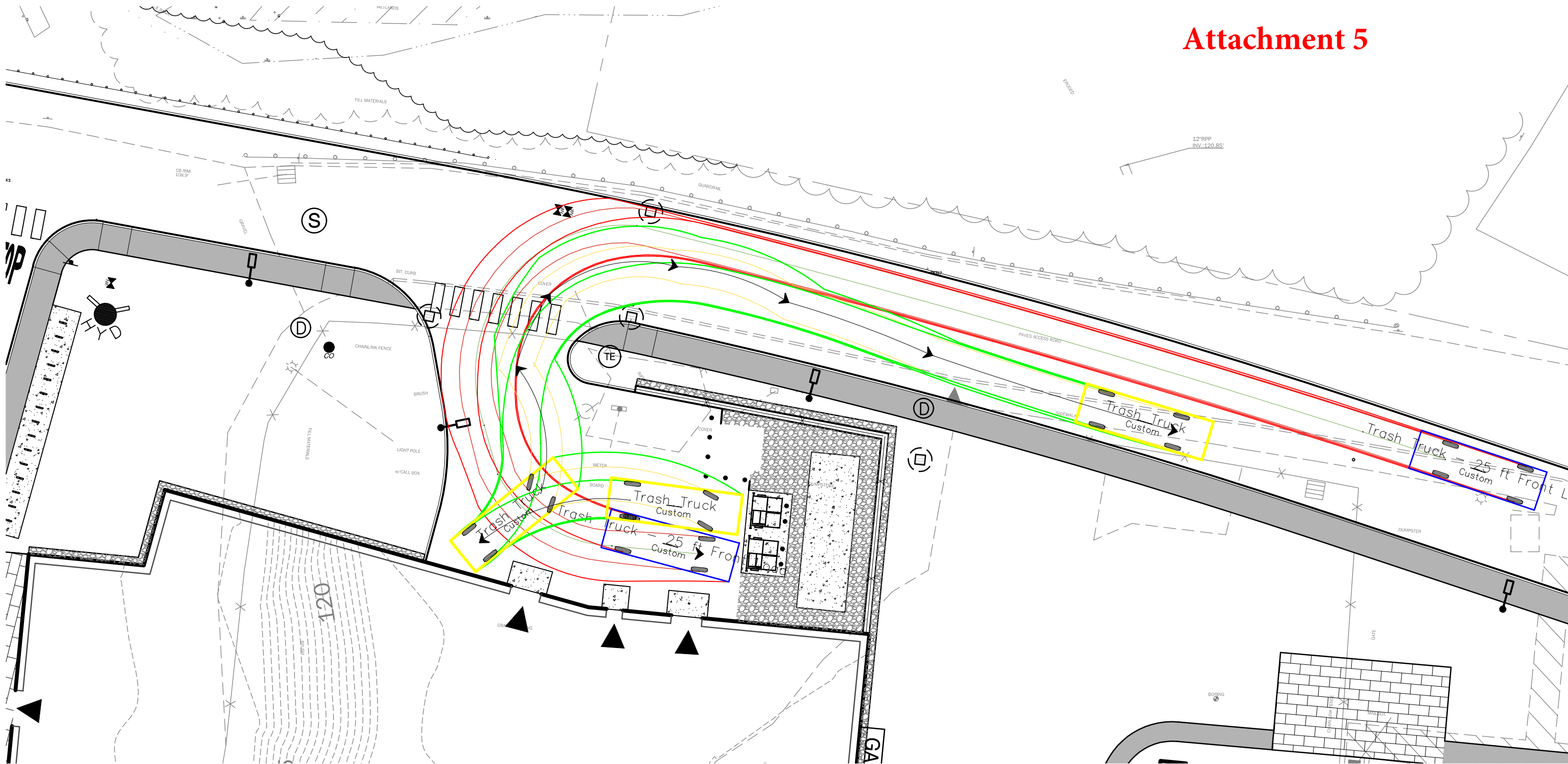
A handwritten signature in black ink that reads "Diane W. Morabito" followed by a stylized flourish.

Diane W. Morabito, P.E. PTOE  
Vice President Traffic Engineering









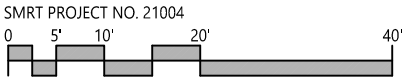
LEGEND

ENTRY ————  
EXIT ————

| TRASH TRUCK    |           |
|----------------|-----------|
| OVERALL LENGTH | 27.0 FEET |
| WHEEL BASE     | 16.0 FEET |
| LOCK           | 38.1°     |

Vehicle Turning Template

The Harold and Bibby Alfond Center for Health Sciences  
27 July 2022



## Attachment 6

### Portland Campus Parking Analysis

| 2018 Students | Staff          | Total Pop. | Spaces |                                                                                          |
|---------------|----------------|------------|--------|------------------------------------------------------------------------------------------|
| 1257          | 588            | 1845       | 1261   | Bishop St lot capacity at 600                                                            |
| 1.003182      | Spaces/Student |            |        |                                                                                          |
| 770           | Max Occupancy  |            | 491    | Surplus                                                                                  |
| 0.61257       | Max Occ./Stud. |            |        |                                                                                          |
| 0.417344      | Max Occ/Pop    |            |        |                                                                                          |
| 2021 Students | Staff          | Total Pop. | Spaces | (Post pandemic)                                                                          |
| 1198          | 578            | 1776       | 1261   |                                                                                          |
| 1.052588      | Spaces/Student |            |        |                                                                                          |
| 651           | Max Occupancy  |            | 610    | Surplus                                                                                  |
| 0.543406      | Max Occ./Stud. |            |        |                                                                                          |
| 0.366554      | Max Occ/Pop    |            |        |                                                                                          |
| 2024 Students | Staff          | Total Pop. | Spaces |                                                                                          |
| 1598          | 738            | 2336       | 1051   | (1261+82 (COM project)-256 (new Bishop Street green space and DOCS building)-36(church)) |
| 0.657697      | Spaces/Student |            |        |                                                                                          |
| 868           | (0.54 x 1598)  |            | 183    | Surplus                                                                                  |
| 0.543406      | Max Occ./Stud. |            |        |                                                                                          |
| 0.37173       | Max Occ/Pop    |            |        |                                                                                          |
| 2028 Students | Staff          | Total Pop. | Spaces |                                                                                          |
| 1598          | 738            | 2336       | 947    | (104 parking spaces displaced by new academic building)                                  |
| 0.592616      | Spaces/Student |            |        |                                                                                          |
| 868           | Max Occupancy  |            | 79     | Surplus                                                                                  |
| 0.543179      | Max Occ./Stud. |            |        |                                                                                          |
| 0.371575      | Max Occ/Pop    |            |        |                                                                                          |

## Attachment 7

### Building Height Evaluation

| <u>elevation</u>           | <u>building perimeter</u> | <u>total</u> | <u>description</u>                               |                                   |
|----------------------------|---------------------------|--------------|--------------------------------------------------|-----------------------------------|
| 115.34                     | 6<br>78.9                 | 9792.366     | ground level FFE with grading changes to parking | south door<br>west entrance patio |
| 115.3                      | 92.37                     | 10650.26     | loading                                          |                                   |
| 115.84                     | 95<br>207.73              | 35068.24     | building west and south                          | 6" above finish floor             |
| 129.34                     | 42.45<br>98.26            | 18199.43     | east side, both pieces<br>connector              | 6" below FFE                      |
| 129.84                     | 78.93<br>6                | 11027.31     | quad patio/entrance<br>south door                |                                   |
| 129.66 avg                 | 20.85                     | 2703.411     | quad patio/entrance west side                    |                                   |
| 129.34                     | 148.94                    | 19263.9      | quad, building east side                         | 6" below FFE                      |
| 124.67 avg                 | 51.5                      | 6420.505     | south side of building                           |                                   |
|                            |                           |              |                                                  |                                   |
| total                      | 926.93                    | 113125.4     |                                                  |                                   |
|                            |                           |              |                                                  |                                   |
| Avg total elevation        | 122.0431                  |              |                                                  |                                   |
|                            |                           |              |                                                  |                                   |
| Top of structure elevation | 176.84                    |              |                                                  |                                   |
|                            |                           |              |                                                  |                                   |
| Building Height            | 54.79688                  |              |                                                  |                                   |

| <i>FFE</i> |        | <i>floor to floor</i> |
|------------|--------|-----------------------|
| Ground     | 115.34 | 14.5                  |
| Quad       | 129.84 | 17                    |
| Third      | 146.84 | 15                    |
| Fourth     | 161.84 | 15                    |
| Roof       | 176.84 |                       |





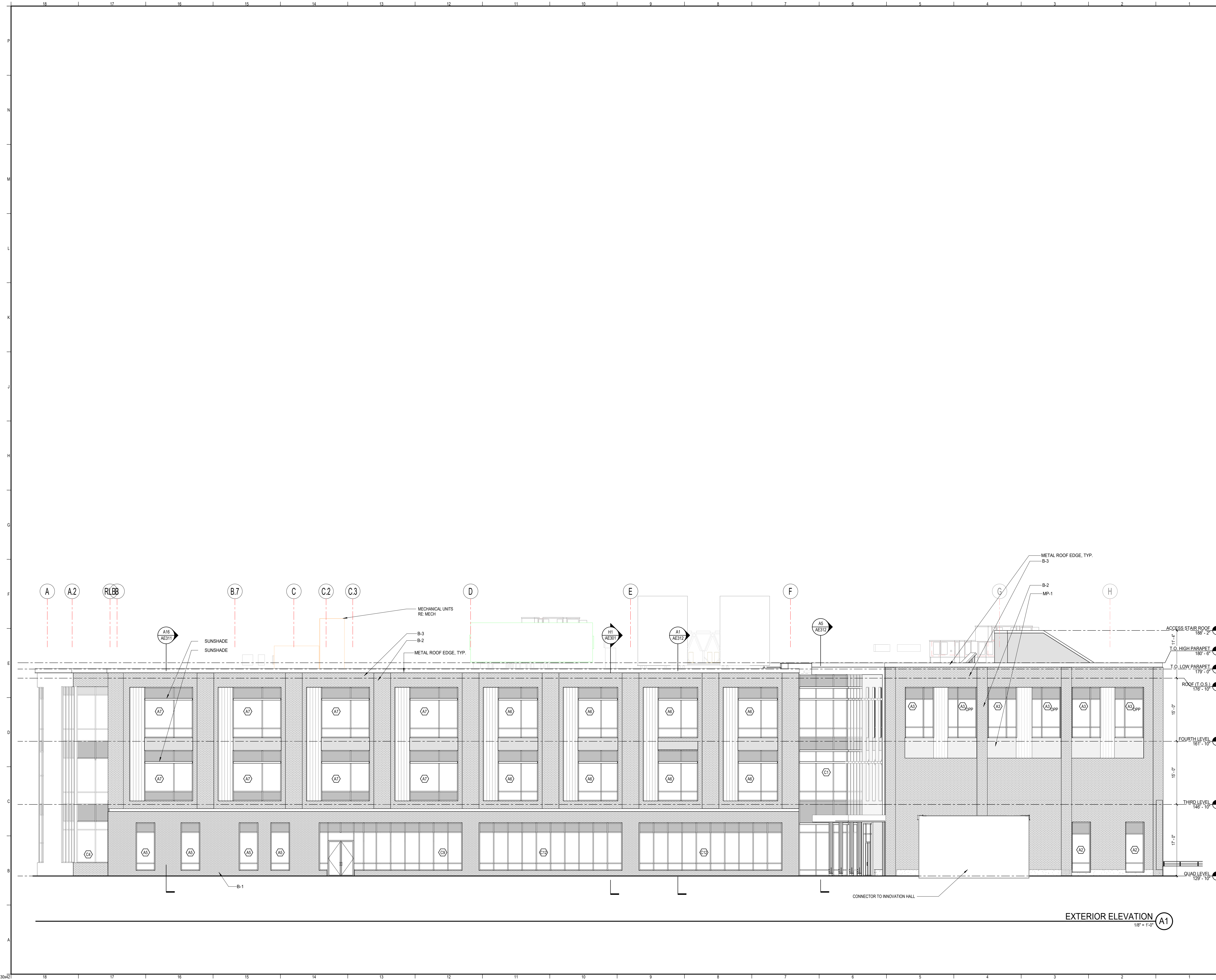




## NOT FOR CONSTRUCTION

$1/8" = 1'-0"$  (A1)





EXTERIOR ELEVATION NOTES:

1. REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.  
2. PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

EXTERIOR FINISH LEGEND:

- B-1 - BRICK TYPE 1 - DARK BRICK
- B-2 - BRICK TYPE 2 - RED BRICK
- B-3 - BRICK TYPE 3 - RECESSED RED BRICK
- G-1 - GRANITE WATER COURSE
- P-1 - PHENOLIC PANEL
- MP-1 - METAL PANEL TYPE 1

KEY PLAN  
N.T.S. F0

| REV | DESCRIPTION | DATE |
|-----|-------------|------|
|     |             |      |
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|     |             |      |
|     |             |      |

PROGRESS PRINT  
02-04-2022

CURRENT ISSUE STATUS:

TRUE NORTH

PROJECT NORTH:

**SMRT**  
Architecture • Engineering • Planning

SMRT Architects and Engineers  
75 Washington Ave., Suite 3A  
Portland, Maine 04101  
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University of New England  
**THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES**  
STEVENS AVENUE, PORTLAND MAINE

**EXTERIOR ELEVATIONS - EAST**

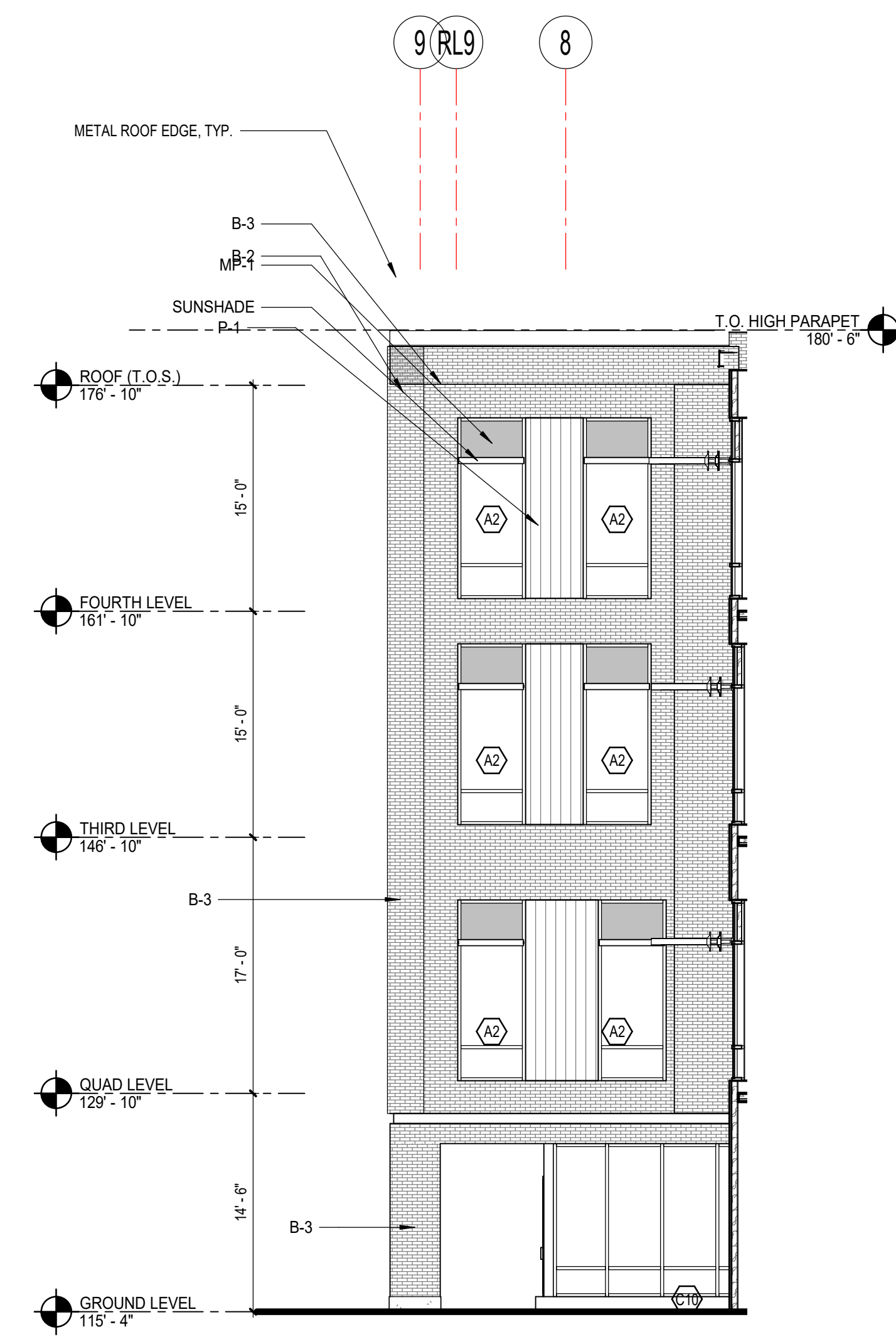
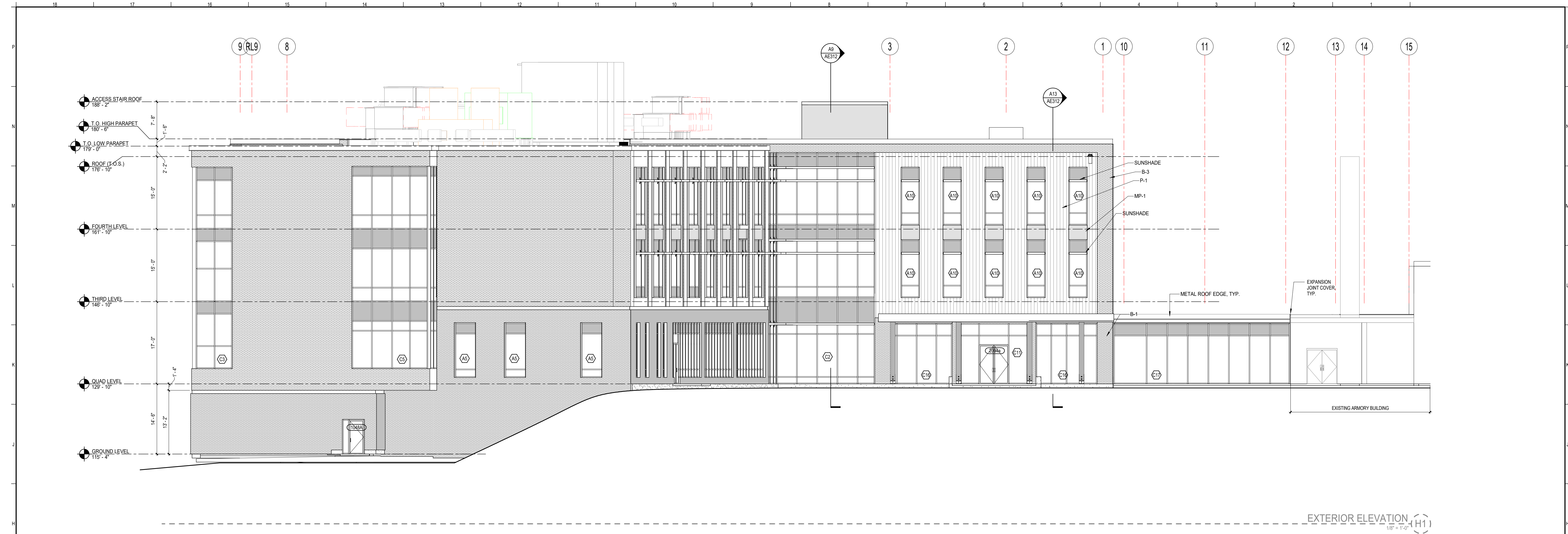
SHEET TITLE:

SCALE: AS NOTED

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| AVE OF RECORD:   | MTR         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | ECC         |             |       |
| SMRT FILE:       | AE202-21004 | SHEET No.   | AE202 |

NOT FOR CONSTRUCTION



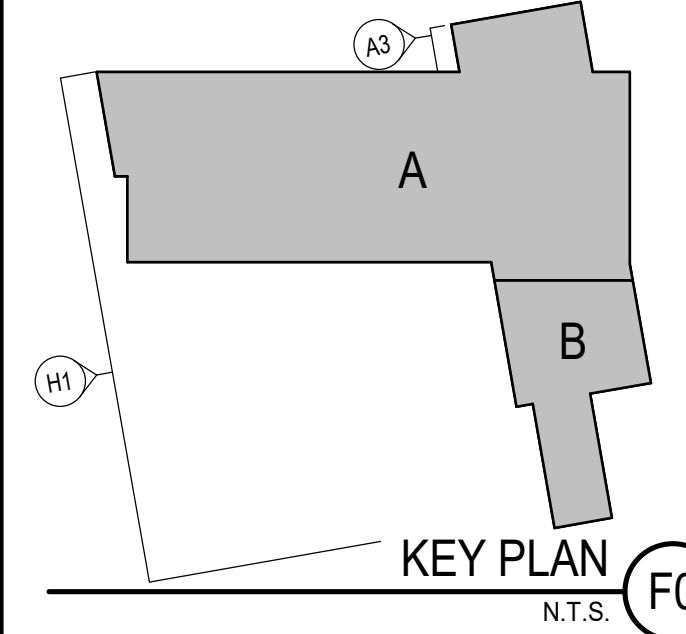


EXTERIOR ELEVATION NOTES:

1. REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.
2. PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

EXTERIOR FINISH LEGEND:

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| REV | DESCRIPTION | DATE |
|-----|-------------|------|
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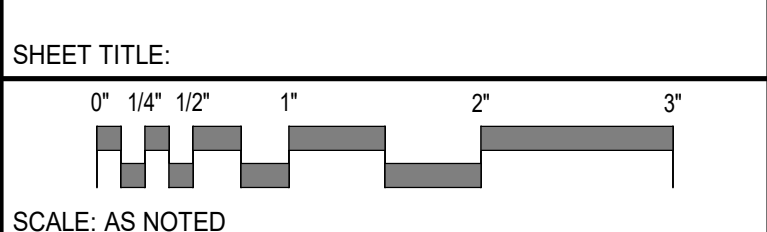
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02-04-2022

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**THE HAROLD AND BIBBY ALFOND  
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STEVENS AVENUE, PORTLAND MAINE  
**EXTERIOR ELEVATIONS - SOUTH**



|                        |                   |
|------------------------|-------------------|
| PROJECT MANAGER: KD    | PROJECT NO: 21004 |
| A/E OF RECORD: MTR     |                   |
| JOB CAPTAIN: ECC       |                   |
| DRAWN BY: ECC          |                   |
| SMRT FILE: AE203-21004 | SHEET No. 21004   |

AE203

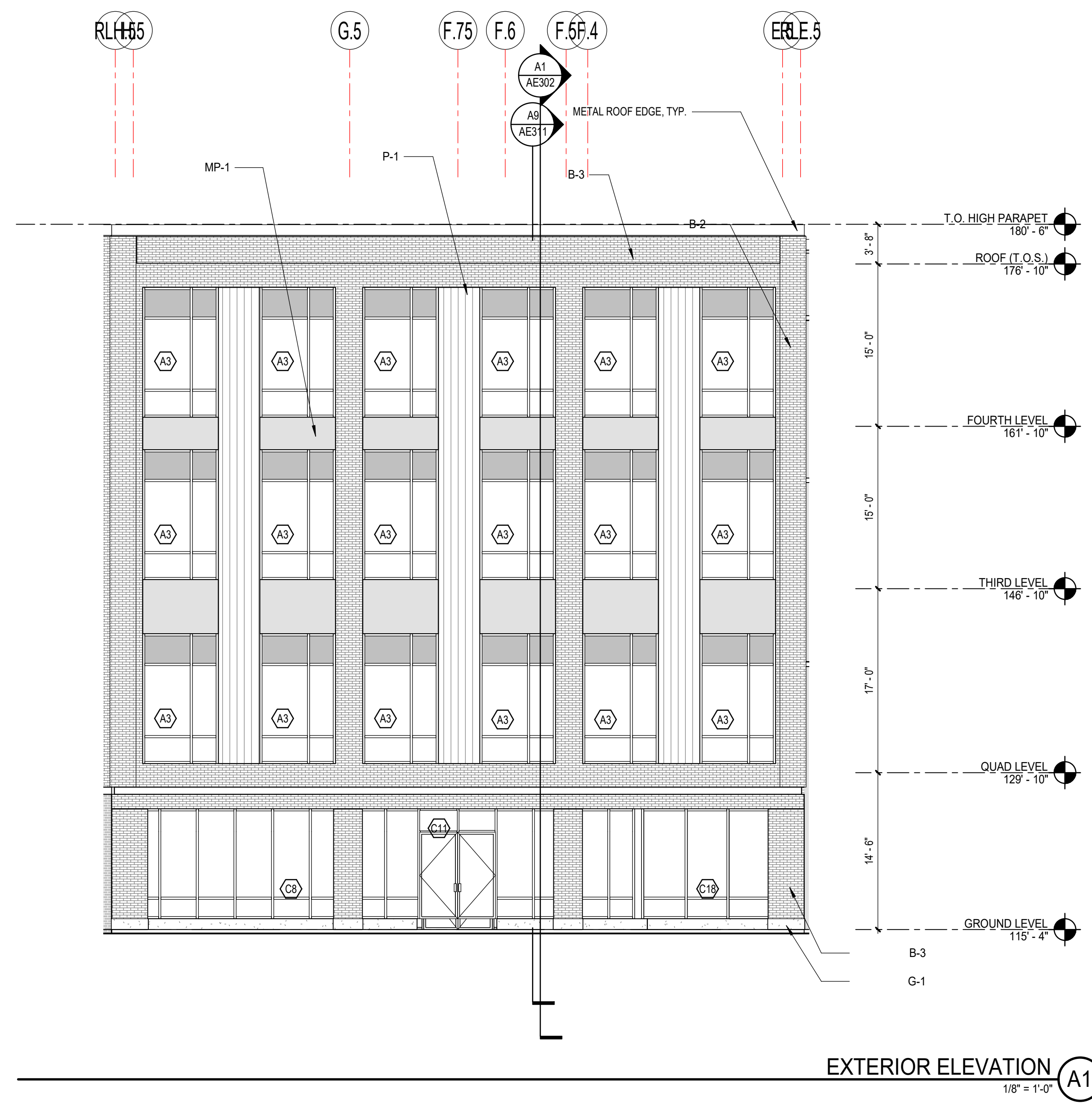
NOT FOR CONSTRUCTION





EXTERIOR ELEVATION (H1)

1/8" = 1'-0"



EXTERIOR ELEVATION (A1)

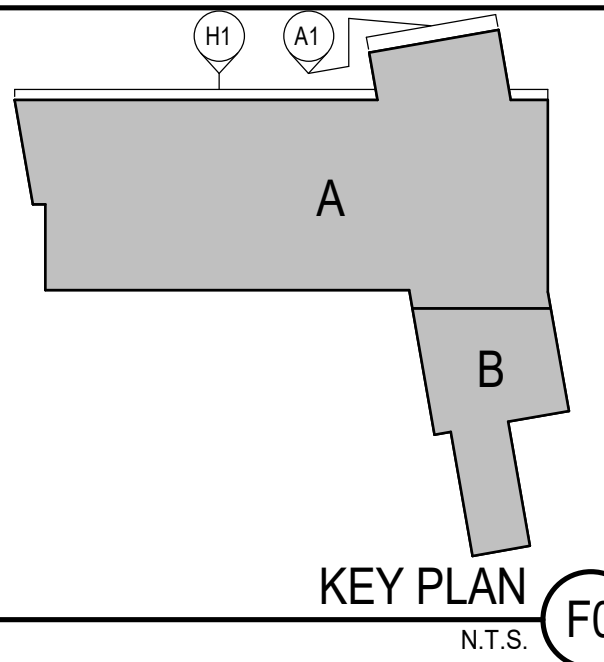
1/8" = 1'-0"

EXTERIOR ELEVATION NOTES:

1. REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.
2. PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

EXTERIOR FINISH LEGEND:

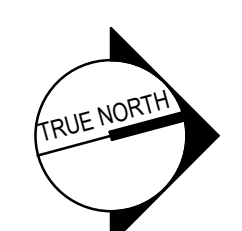
- B-1 - BRICK TYPE 1 - DARK BRICK
- B-2 - BRICK TYPE 2 - RED BRICK
- B-3 - BRICK TYPE 3 - RECESSED RED BRICK
- G-1 - GRANITE WATER COURSE
- P-1 - PHENOLIC PANEL
- MP-1 - METAL PANEL TYPE 1



| REV | DESCRIPTION | DATE |
|-----|-------------|------|
|     |             |      |
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|     |             |      |
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PROGRESS PRINT  
02-04-2022

CURRENT ISSUE STATUS:



PROJECT NORTH:  
**SMRT** Architects and Engineers  
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University of New England  
**THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES**  
STEVENS AVENUE, PORTLAND MAINE  
**EXTERIOR ELEVATIONS - WEST**

|                        |                   |
|------------------------|-------------------|
| SHEET TITLE:           |                   |
| SCALE: AS NOTED        |                   |
| PROJECT MANAGER: KD    | PROJECT NO: 21004 |
| AVE OF RECORD: MTR     |                   |
| JOB CAPTAIN: ECC       |                   |
| DRAWN BY: ECC          |                   |
| SMRT FILE: AE204-21004 | SHEET No. 21004   |

AE204

NOT FOR CONSTRUCTION



Tom Saucier

---

**From:** Matthew Grooms <mgrooms@portlandmaine.gov>  
**Sent:** Tuesday, February 1, 2022 11:49 AM  
**To:** Tom Saucier  
**Subject:** Re: UNE COM Height Study

Hi Tom,

Thanks for sharing this. Based on the plan you shared, yes, this is consistent with our rules for measuring building height, and would have the building at less than 55' feet.

Thanks,

Matt

On Tue, Feb 1, 2022 at 10:28 AM Tom Saucier <[tsaucier@sitedesignassociates.biz](mailto:tsaucier@sitedesignassociates.biz)> wrote:

Hi Matthew

As we move forward with the COM building, the first step is to verify that the city is on board with the height calculation.

Attached is documentation of the proposed grades around the building perimeter, building elevation drawings, and a calculation of height, which demonstrates that the height of the building will be less than the 55 ft permitted as a conditional use in the R-5 zone.

The average grade around the building will be 122.04 and the top of the roof beams elevation is 176.84.

Can you please review and let us know whether the calculation is accurate?

Thanks

Tom

Tom Saucier, P.E.

# Site Design Associates

## Consulting Engineering and Land Planning

September 13, 2022

Mr. Austen Davis, Planner  
City of Portland  
Via email

**RE: University of New England - Portland Campus  
Harold and Bibby Alfond Center for Health Sciences  
Parcel ID 145 B018001 780 Stevens Avenue  
Additional responses to planning board and staff comments**

Dear Austen;

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to provide this response to various planning board comments relative to previous waiver requests, and to follow-up on discussions with staff relative to other issues.

### **1. Planning Board Comments:**

**Comment:** The board was not comfortable with waiving the parking lot landscape requirements. The landscape plan has been revised to incorporate 1 tree and 3 shrubs per 5 parking spaces, planted in landscaped islands and around the lot, per Land Use Code (LUC) section 14.6.2.C.3.a. With the additional landscaped islands, there are no more than 27 parking spaces in any one bay, fulfilling the requirements of LUC section 14.6.2.C.3.b. A revised drawing LP101 is attached. Based on this, we withdraw our request for a waiver of these standards.

**Comment:** The board was not comfortable with waiving the EV parking requirements. We have attached a revised drawing CU101 showing 36 of the total 182 parking spaces as EV charging spaces, which is 20%, meeting the requirements of section 1.17 of the Technical Manual. Conduit pathways to each row, the transformer, below grade pull boxes, and the electrical panel will be in place to serve the remaining spaces as the need arises. Per our discussions with staff, we believe the current plan fulfills the requirements of the standard. Therefore, a waiver of this standard is not required.

### **2. Need for a Traffic Movement Permit:**

On August 29, we met with you, Tom Errico, and additional city staff to discuss

23 Whitney Way Topsham, Maine 04086  
Phone: (207) 449-4275 email: [info@sitedesignassociates.biz](mailto:info@sitedesignassociates.biz)

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the traffic study methodology, results and the potential need for a Traffic Movement Permit for the project. As a result of that discussion, state traffic engineer Steve Landry was consulted about the need for a TMP. Based on that discussion Tom Errico agreed that a TMP would not be necessary, and no additional work was required in regards to trip generation. Planner's comments of September 7 confirm this.

**3. Waiver of section 1.7.2.7 of the Technical Manual:**

Please consider this response a request for a waiver from the separation requirement of section 1.7.2.7 of the city Technical Manual, spacing of driveways. This standard requires a spacing of 100 ft between driveways serving adjacent properties. The request is to allow the 38 ft spacing that exists today, which was provided as a result of a previous city site plan approval for parking access. In addition to the information below from our August 2, 2022 response to staff comments which requested a waiver of this standard, we further discussed this at our August 29 meeting with staff. Staff requested an alternatives analysis in additional support of this waiver request.

Alternatives:

**A. Utilize Existing Drive**

- a. Two 12 ft lanes (Current Plan); a width of 24 ft is the preferred driveway width for two-way drives per the Technical Standards. Provides travel ways with adequate space for bikes and which is the typical width for a local street/drive. Provides ideal emergency access.
- b. Two 10 ft lanes; would gain an additional 4 ft in spacing from the SACC drive and reduce the width of the travel ways, increasing the potential for conflicts with bicycles. Access for emergency vehicles would also be compromised.
- c. Provide two reverse curves from the end of the building to increase separation; would require short radii and would not meet standards for an access of this nature, which are a minimum radius of 110 ft and a minimum distance of 100 ft between two curves with reverse alignment. Access for emergency vehicles would also be compromised.

**B. Combined drive with Stevens Ave Congregational Church (SACC); drive on SACC property**

- a. Deeded access for UNE and "permanent" maintenance/easement encumbers SACC property
- b. Restricts future sale options for SACC
- c. Lack of interest from SACC

**C. Combined drive with SACC on UNE property**

- a. Eliminates only SACC owned two-way access to Stevens Ave from SACC property
- b. Deeded access and “permanent” maintenance/agreement encumbers UNE property
- c. UNE will discontinue renting the SACC lot with completion of HBACHS, but the SACC parking lot would appear to be readily open and available to UNE, which will result in continual parking conflicts.
- d. Restricts future sale options for SACC
- e. Lack of interest from SACC

**D. Relocate SACC Drive to the north**

- a. Not UNE owned property
- b. Decreases separation of drive from second church drive, which is one way, and would require a waiver.
- c. Diminishes use of existing driveway in front of SACC residential garage on the two way drive
- d. Left turn onto UNE property required

**E. Oral Health Center parking lot entrance**

- a. Significant pedestrian and patient conflicts
- b. Would require backing into the drive travel way
- c. Conflict with only loading dock on campus
- d. Increased neighbor impact
- e. Grades prohibitive

**F. College Street**

- a. Adds traffic in the center of the campus
- b. Increased pedestrian conflicts
- c. Increased neighbor impact
- d. Public street
- e. Narrow
- f. Abuts historic district
- g. No viable vehicular access route to the site from College Street

**G. Bishop Street Access**

- a. Increases traffic in Morrill’s Corner
- b. More vehicles on public streets
- c. Would require additional environmental permitting
- d. Planned for the future, and still requires Stevens Avenue access to limit traffic through Morrill’s Corner.

**H. Mayfield Street**

- a. No connectivity to campus
- b. Increases traffic in Morrill’s Corner
- c. Increased neighbor impact



d. Increased environmental impacts

The results of this analysis clearly indicate that the current proposal is the most feasible for providing access to the parking lot on UNE property while minimizing off site and on-site issues associated with other alternatives. We are in hopes that staff and the planning board are in agreement.

**From August 2, 2022 response:**

The drive is an existing condition, approved by the city as part of a site plan approval on November 30, 2011, and then as part of an amended site plan approval on February 1, 2012. The original approvals were for construction of a new drive through the church parking lot to access 83 parking spaces westerly of the armory facility on the Maine Army National Guard MEARNG owned parcel. In addition to the 83 parking spaces on the MEARNG parcel, UNE leased 35 spaces in the church parking lot, and 12 spaces closer to Stevens Avenue from the MEARNG, for a total of 130 spaces for UNE, and the remaining area westerly of the armory included 93 spaces for MEARNG personnel and equipment. A total of 223 spaces were accessed by UNE and the MEARNG through the two drives. The current proposal involves a total of 182 parking spaces to be utilized by UNE, and no spaces by the MEARNG.

At the time of the 2011 application there was no separation between the church and armory drives. UNE was able to realign the church drive and increase the separation from 28 ft to 38 ft by installing a concrete pedestrian landing area between the two drives.

In 2016 UNE acquired the former armory and received a site plan approval to change the use of the building and occupy the front portion of the armory, with MEARNG remaining in the Field Maintenance Shop at the rear of the building. The renovated facility contains offices, classrooms, a simulation center, a large meeting space, and study rooms, as well as the traditional support areas including restrooms, locker areas, kitchen, mechanical spaces and storage areas.

Currently, UNE is the primary user of the church parking on weekdays, while the church's primary use occurs on Sundays, religious holidays, and events such as funerals. UNE's primary peak use of their drive will occur when the church is not in session, and the church's primary use will occur when UNE is not in session. Therefore, there will be very minimal conflicts with the use of the two drives. UNE currently continues to lease the 36 spaces from the church. This will end with the construction of the science center, and UNE will no longer lease the 36 spaces. Therefore, there will be minimal use of the lot and drive by the church on weekdays when school is in session. It seems there should be no issues associated with both drives remaining in place, particularly in consideration of the fact that UNE will no longer be leasing parking spaces on the church property during the week.

Additionally, UNE met with the church to discuss consolidation of the entrances, and the church would prefer to keep the drives as is. Although the church has two access points to Stevens Avenue, the northerly access is a narrow one way drive into the site. The only two-way access from the church property to Stevens Avenue would be lost if the drives were consolidated.

We also reviewed the possibility of moving the drive, but there is no feasible way to meet the 100 ft separation requirement.

Also, section 1.7.2 of the city technical manual indicates that the driveway standards of that section, including the separation requirement apply to “Multi-Family Residential with 10 (ten) parking spaces or more, Commercial and Industrial” development. The proposed project is not one of those uses. Is section 1.7.2 applicable to a post-secondary school use?

Two pre-application meetings were held for this project, one of which focused specifically on traffic and access. The access drive layout and cross-section were reviewed with staff in both meetings, and at no point during these reviews did anyone mention that the location of the drive would be an issue. The drive has been at this location for a very long time, and has received multiple waivers and approvals from the city for the location. The proposed drives are not a high crash location, which would be indicative of a problem.

Lastly, UNE is proposing to more formally define the separation between the two properties with the installation of a sidewalk, vertical curb, ramps and an esplanade between the drives as noted on the attached drawing CU401. (Attachment 4)

We are in hopes that staff will concur with our finding that there is no viable alternative for access to the site other than the existing drive.

#### **4. Additional planner’s comments dated September 7, 2022**

**Comment:** DPW is looking for further rationale for the proposed Stevens Avenue driveway location separation waiver request as discussed in a meeting conducted on 8/29/22. We are primarily looking to understand what alternatives were explored and why the alternatives were considered infeasible for this project.

**Response:** *Please see alternatives analysis above.*

**Comment:** The construction management plan narrative should be updated to include language on what standard ESC measures will be implemented to protect surrounding wetlands and urban stream watersheds and how the construction project will manage/clean up any sediment which tracks into surrounding City Streets including Stevens Avenue and Bishop Street. The CMP/ESC plans should

also specify that prior to any required construction dewatering, a formal dewatering plan will need to be reviewed and approved by the Water Resources Division at DPW.

**Response:** *The Construction Management Plan (CMP) has been updated to refer to drawing C-300 for the erosion control details and specifications. Sediment from the access road should not be an issue since the existing road is paved for a width of 20-22 ft for most its length. In the updated CMP we call for regular inspections and inspections before storm events and sweeping as required. The CMP has been updated to show a stabilized construction entrance at the east end of the construction access road. The plan is for the access between the paved road and the westerly end of the existing gravel parking lot to be 18" +/- of gravel to support the heavier vehicles that will be utilizing the access route, and we believe ongoing erosion should not be an issue.*

**Comment:** The ESC plan and construction management plan should be updated to include ESC measures for the proposed construction entrance access route from the Bishop Street parking lot to the project site. This access route is adjacent to Capisic Brook, the City's priority Urban Stream watershed. The plan should be updated to add ESC measures along this corridor during construction. The ESC plan should be updated to show a secondary stabilized construction entrance where the primary construction access route enters the westerly end of the site. The construction management plan indicates that the Bishop Street parking lot is a potential material storage location. The ESC plan should be updated to include ESC measures for this area

**Response:** *As noted above the access is paved for a width of 20-22 ft. We do not expect erosion and sedimentation issues due to traffic on the road. We have updated the CMP and ESC to include inspections and sweeping if required. The CMP has been updated to include the stabilized construction entrance where the access enters the site. The CMP has been updated to show erosion control measures schematically at Bishop Street and reference is made to drawing C-300, the Erosion and Sedimentation Control Details and Specifications.*

**Comment:** A comment made during the initial stormwater review stated that double rows of sediment barriers should be utilized when protecting resource areas. The ESC plan should be updated to address this comment.

**Response:** *An updated drawing, EC101 is attached, and includes this request*

**Comment:** Stormwater reviewers are in agreement that the proposed development does not meet/exceed requirements for SLODA review.

**Response:** *As we discussed, we concur that a SLODA permit is unnecessary for the project.*

If you require any additional information in support of our responses to these final comments, please do not hesitate to contact me. UNE is hoping to receive approval for the project at the September 27, 2022 planning board meeting, and is hopeful that the staff report will support that goal.

Sincerely,  
Site Design Associates

A handwritten signature in black ink, appearing to read 'Tom Saucier', with a stylized flourish at the end.

Tom Saucier, P.E.  
President

c: Alan Thibeault, Vice President for Campus Operations



# Access Alternatives

Write a description for your map.





**PLANTING LEGEND**

**EXISTING**

- DECIDUOUS TREES
- PROTECT TREE IN PLACE
- EVERGREEN TREES
- TREE LINE

**PROPOSED**

- DECIDUOUS TREES
- EVERGREEN TREES
- TREE LINE
- IRRIGATED LAWN
- EVERGREEN SHRUBS
- ORNAMENTAL GRASS
- PERENNIALS

NOTE:  
SCOPE OF IRRIGATED LAWN  
AREAS NEEDS BE CONFIRMED  
BY OWNER.

|   |                                                          |            |
|---|----------------------------------------------------------|------------|
| 3 | REVISED PER CITY COMMENTS                                | 08-11-2022 |
| 2 | REVISED PER CITY COMMENTS                                | 08-05-2022 |
| 1 | REVISED PER CITY COMMENTS                                | 07-25-2022 |
| 0 | ISSUED FOR MAJOR SITE PLAN AND<br>CONDITIONAL USE REVIEW | 04-29-2022 |

ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW  
04-29-2022

CURRENT ISSUE STATUS:

TRUE NORTH:

**SMRT** Architects and Engineers  
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780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018

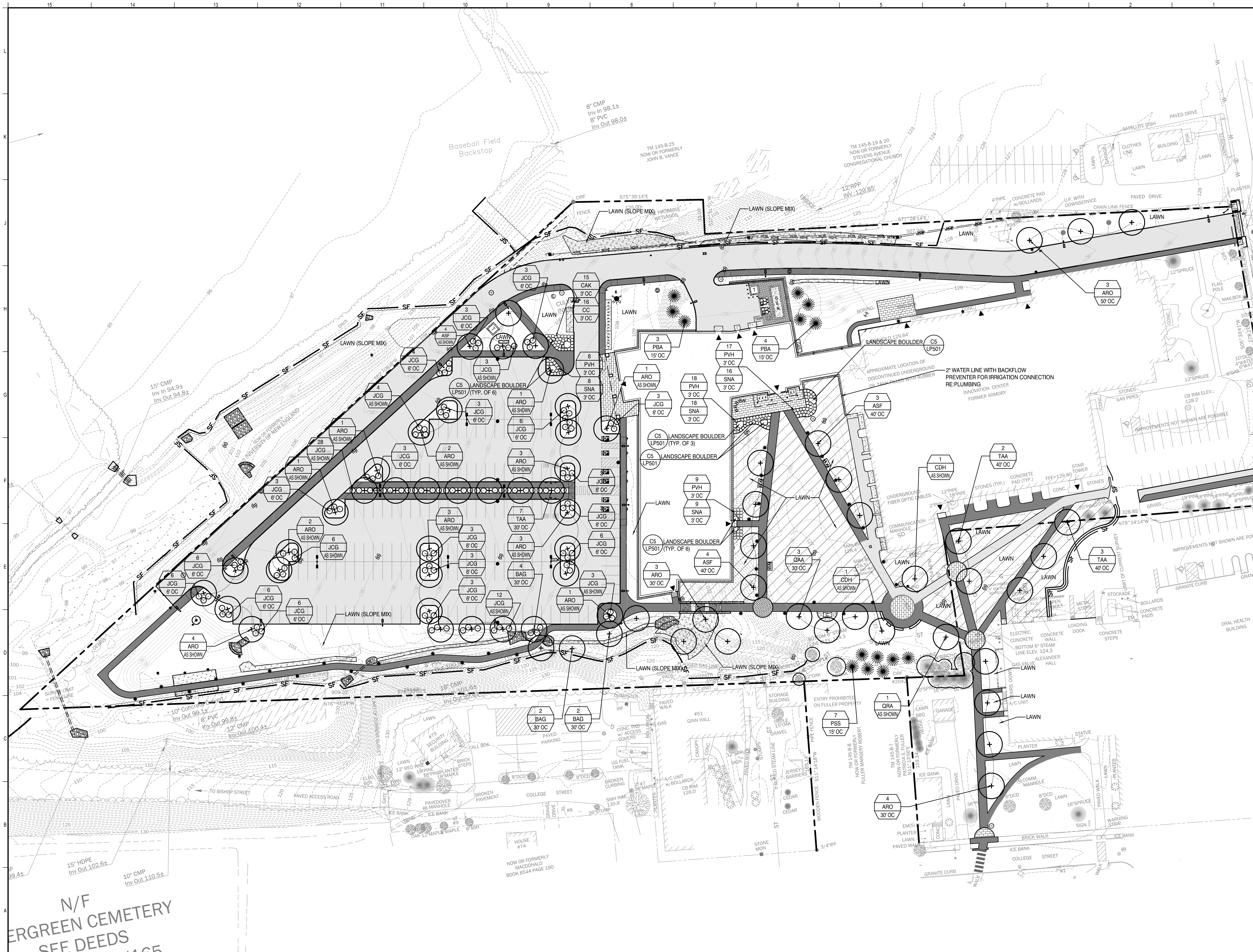
**PLANTING PLAN**

SHEET TITLE:

SCALE: 1" = 40'

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TNL         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | TNL         |             |       |
| SMRT FILE:       | LP101-21004 | SHEET No.   | LP101 |

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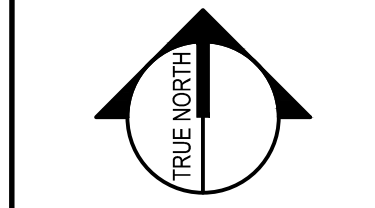
**KEYNOTES:**

- 1 FIRST 14' OF WATER MAIN (STARTING FROM THE STREET LINE VALVE) SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 2 ALL JOINTS ON HYDRANT BRANCH SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 3 ALL PIPE 14" LEADING TO BLOWOFF SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 4 ALL JOINTS ON EACH SERVICE TO BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 5 MAINTAIN 6" MINIMUM OF SEPARATION BETWEEN NUGE AND PROPOSED AIR RELEASE VALVE
- 6 MAINTAIN 4' OF SEPARATION BETWEEN FACE OF CURB AND CENTER LINE OF WATER MAIN
- 7 MAINTAIN 11' OF SEPARATION BETWEEN NEW WATER MAIN AND NEW SEWER MAIN
- 8 INITIAL WATER MAIN CONNECTION TO THE STUB SHALL BE DEFLECTED SUCH THAT IT COMES INTO THE REQUIRED ALIGNMENT (I.E. FITTING SHALL NOT BE USED TO BRING WATER MAIN INTO ALIGNMENT)
- 9 NUGE SHALL RUN PARALLEL WITH NEW WATER MAIN AND/OR CROSS PERPENDICULARLY
- 10 INSTALL 1" AIR RELEASE VALVE AT HIGH POINT ON WATER MAIN (ROUGHLY STA 30+50)

| REV | DESCRIPTION             | DATE       |
|-----|-------------------------|------------|
| 08  | REISSUED FOR PWD REVIEW | 08-23-2022 |
| 07  | REISSUED FOR PWD REVIEW | 08-19-2022 |
| 06  | REISSUED FOR PWD REVIEW | 08-13-2022 |
| 05  | REISSUED FOR PWD REVIEW | 08-01-2022 |
| 04  | REISSUED FOR PWD REVIEW | 06-02-2022 |
| 03  | REISSUED FOR PWD REVIEW | 03-22-2022 |
| 02  | REISSUED FOR PWD REVIEW | 02-18-2022 |
| 01  | ISSUED FOR PWD REVIEW   | 02-03-2022 |

REISSUED FOR PWD REVIEW  
08-23-2022

CURRENT ISSUE STATUS:

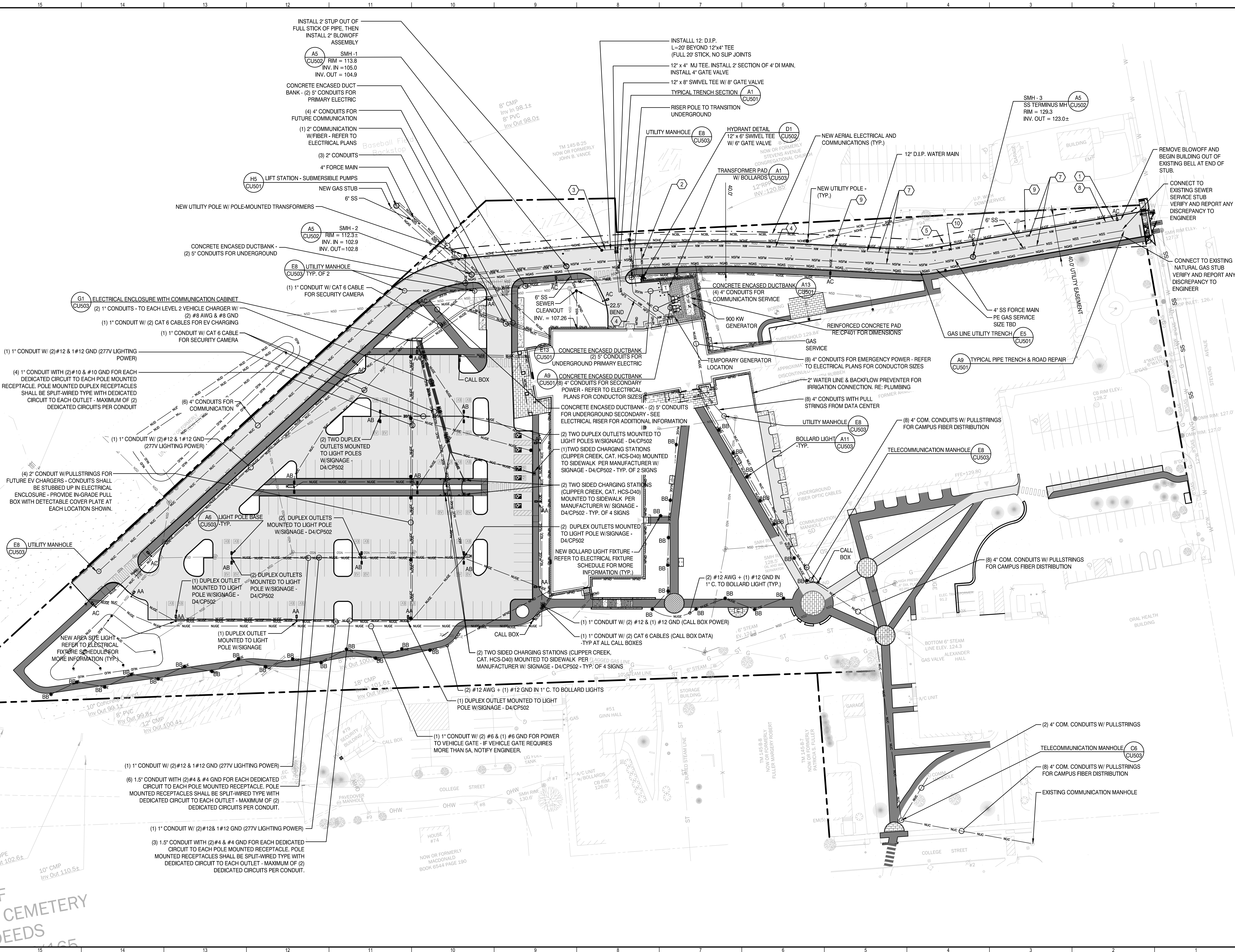


TRUE NORTH:  
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University of New England  
**THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES**  
780 STEVENS AVE, PORTLAND, ME

**UTILITIES PLAN**

|                        |                   |
|------------------------|-------------------|
| SHEET TITLE:           |                   |
| 0 10' 20' 40' 80' 120' |                   |
| SCALE: 1" = 40'        |                   |
| PROJECT MANAGER: KD    | PROJECT NO: 21004 |
| A/E OF RECORD: TWS     |                   |
| JOB CAPTAIN: ECC       |                   |
| DRAWN BY: TNL          |                   |
| SMRT FILE: CU101-21004 | SHEET No. CU101   |





**Construction Management Plan**  
University of New England –  
Harold and Bibby Alfond Center  
for Health Sciences

**Overview:** The Construction Management Plan depicts the overall planning, coordination, and control of the construction site. The goal for the construction management plan is to support a safe construction site and protect the public safety, accessibility, and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

**The Harold and Bibby Alfond Center for Health Sciences project** consists of construction of a new 111,813 SF 4 story facility. The construction consists of excavation, utilities, paving, landscaping, concrete foundations, steel and timber frame structure, complete weather barrier system, exterior and interior building insulation, masonry veneer, metal siding, phenolic panel siding, doors, frames, aluminum storefront and curtainwall, membrane roofing; interior partitions; finishes; and complete fire suppression, mechanical, plumbing and electrical systems.

**Safety:** Ledgewood Construction safety program is designed to guide our site management personnel in supervising our projects with safety as a prime concern. Ledgewood Construction subcontractors are required by their contracts to perform their work in a manner that provides a safe workplace for the public, their employees and other trades. Ledgewood promotes a jobsite culture of safety through constant and open communication of work and associated hazards. All subcontractors are required, in accordance with their contractual agreements, to comply with the requirements of Ledgewood Construction's Safety Program and code of conduct. A copy of the Ledgewood Safety program is attached.

**Housekeeping** on any construction site is essential in maintaining a safe workplace. The following guidelines will be adhered to: Adequate dumpsters will be provided by either the individual Subcontractor or Ledgewood Construction dependent on contract requirements. All construction debris will be picked up daily by all Subcontractors.

**Fire Safety:** Ledgewood's Fire Safety Program is attached. Up to date extinguishers will be posted and maintained at strategic locations throughout the site as required by OSHA regulations. Additional extinguishers will be required at high fire hazard activities. Emergency numbers will be posted in the site office and communicated at weekly meetings.

**Construction operations** will be limited to the areas indicated on the plans. Driveways, loading areas, and entrances serving premises will be kept clear and available to the University, University employees and students. Emergency vehicles access will always be maintained. Construction parking and storage of materials will be within the construction work limits. Deliveries will be directed to enter the site from the Bishops Street side .

**Contact** information for the University of New England and Ledgewood Construction and personnel who are available 24 hours is attached.

**A Construction Sign** will be posted on the site with Contact Information for the University of New England and Ledgewood Construction.

**A Preliminary Construction Schedule** is attached

**On-Site Work** will be performed during normal business hours of 7:00 a.m. to 7:00 p.m.,

Monday through Friday. Limited weekend hours are expected. Weekend Hours will be 7:00 a.m. to 5:00 p.m. Some Early Morning Hours are anticipated these will be as permitted by City of Portland.

**Construction Parking:** Adequate parking for construction workers will be provided on site, overflow will be at the Bishops street maintenance facility parking area.

#### **Construction Administration and Communication**

The University of New England and Ledgewood Construction will work closely with adjacent abutters, businesses, nearby construction sites, and all other stake holders. All of these parties will be keep informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or alterations to traditional travel paths.

**High noise** level construction activities are not anticipated. Construction worksites noise will be monitored and may be lowered by using commonly accepted engineering and administrative controls.

**Vibration** caused by construction activities are expected to be minimal due to the construction site location and there will be no pile driving operations, or any blasting activities. Roller compactors will likely be in use at certain times during the project. Geotechnical reports do not indicated conditions that would readily transmit excessive vibrations to surrounding structures. We will monitor this when these activities commence.

**Dust** will be controlled with periodic watering of the exposed soil surface with adequate watering to control dust from becoming airborne. Repetitive treatments of watering shall be applied as needed to control dust throughout construction until areas have been stabilized.

**Rodent Control** if needed will be performed by a professional exterminator and consistent with Chapter 22 of the City Code.

**Snow Removal** from the site is not anticipated. Snow in the work area will be stock piled on site. Sand or Salt will be used as needed. All basin or drainage devices will be kept clear to help with snow melt and appropriate erosion and sediment controls will be in place.

**Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits:** Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the University of New England and Ledgewood Construction shall meet all the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code

**Other permits**, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

**Construction activity** that impacts the existing public street system are anticipated for utility connections. A Maintenance of Traffic (MOT) plan will be produced if needed once utility mains in the street are located and traffic impact is assessed.

**Construction Activity in Public Streets:** Construction activity in the public right-of- way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can

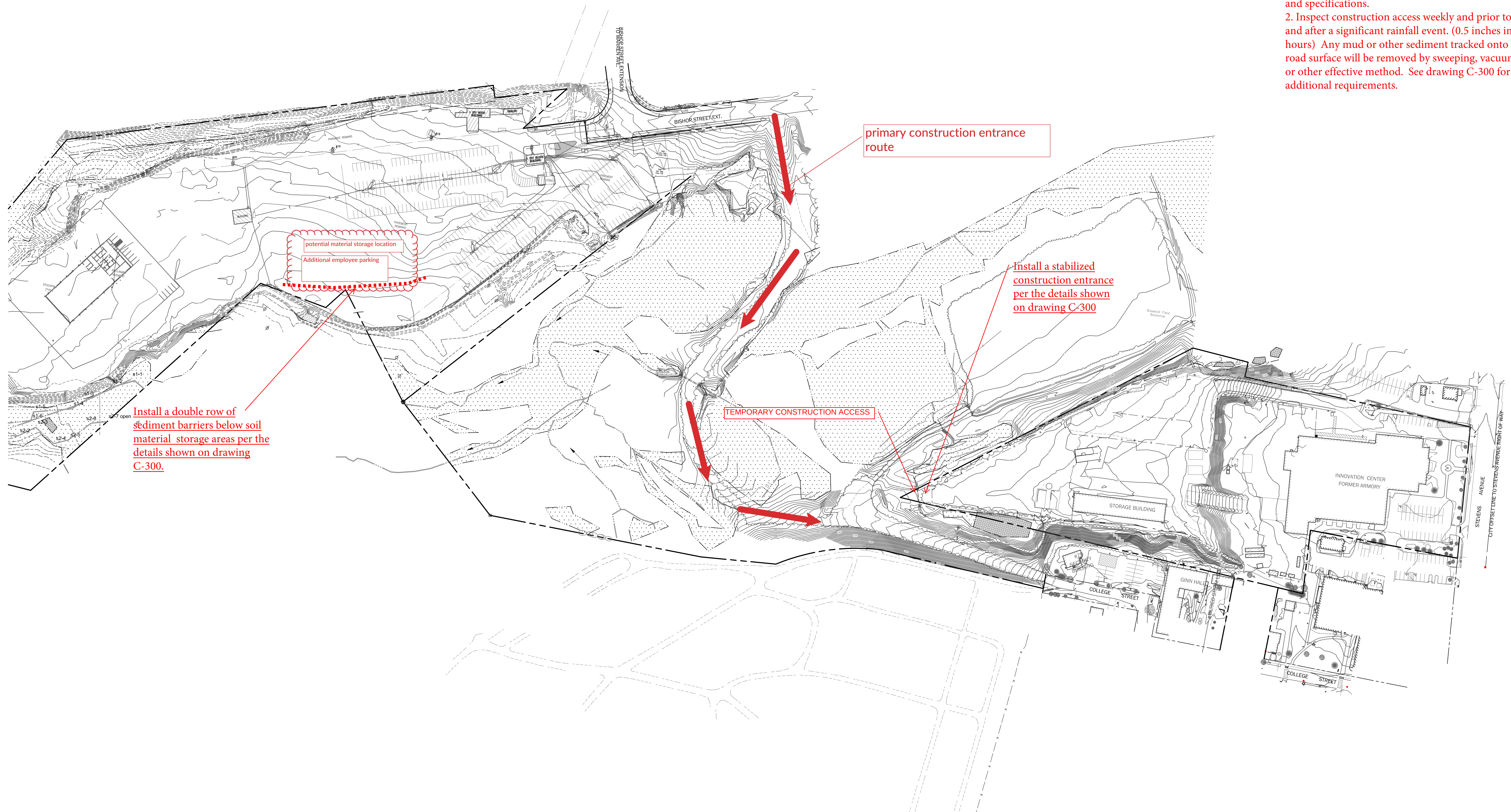
construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.



$$DV \perp WIS \mid = 0^\circ$$

Erosion Control Notes:

1. Refer to drawing C-300 for erosion control details and specifications.
2. Inspect construction access weekly and prior to and after a significant rainfall event. (0.5 inches in 24 hours) Any mud or other sediment tracked onto the road surface will be removed by sweeping, vacuum, or other effective method. See drawing C-300 for additional requirements.



**THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SITE DESIGN ASSOCIATES, ANY ALTERATIONS, OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SITE DESIGN ASSOCIATES.**

[illegible]

Site Design Associates

Consulting Engineering & Land  
Planning

23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275

CLIENT: \_\_\_\_\_

UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

|              |
|--------------|
| DESIGN: DEPT |
|--------------|

DRAWN: DEPT.

CHKD: TWS

DATE: SEPT 2021

SCALE: 1" = 100'

|          |                                                                        |
|----------|------------------------------------------------------------------------|
| PROJECT: | <b>HAROLD AND BIBBY ALFOND CFHS</b><br>780 STEVENS AVE PORTLAND, MAINE |
|----------|------------------------------------------------------------------------|

CONSTRUCTION MANAGEMENT PLAN EXHIBIT

|              |           |      |
|--------------|-----------|------|
| PROJ.<br>NO. | 21-216-00 | REV. |
|--------------|-----------|------|

|             |           |   |
|-------------|-----------|---|
| NO.         | 27 215 33 | A |
| DWG.<br>NO. | C-100     |   |

Drawing Name: N:\2020 Projects\20-216-05 IFE-COM Permitting\Site Plan Review\CONSTRUCTION MANAGEMENT PLAN\CMP 03-22-22 / Plot Date / Time: Mar. 22, 22 / 4:52 PM



**Fr. Paul Sullivan, SJ (Our Lady of Hope - Portland)** <paul.sullivan@portlanddiocese.org>

1:22 PM

to me 

Hello Jennifer:

I am reaching out to find out how to register my questions and concerns regarding the UNE Medical School development on Stevens Ave.

In many ways UNE has been a good neighbor. They have offered dental screening for the students at St. Bridget School and other positive contacts. We welcome further med school facilities.

However, in one significant way, UNE has not been a good neighbor: the issue of use of on-street parking.

Some years ago, I attended a neighborhood meeting on the UNE campus. A large number of area residents were there, raising the issue that on class days, UNE students currently use all or nearly all the on-street parking on Stevens Ave (down past Baxter Woods) and the area side streets. I have raised the question directly with campus officials and been told, to effect, "what can we do? The students don't use the existing lot."

I have been told that USM solved a similar problem by providing on campus parking and including the cost for its use in the fees regularly charged students. Parishioners have told me that they have spoken with students parking on Stevens and asked them, "why do you park here – there is a lot on campus." They say the answer is "the school charges us to use the lot."

I agree with Planning Board member Justin Baker, as quoted in the *Phoenix*, that UNE is not taking the parking issue seriously. The problem is not just the addition of more students to the campus with the expansion of the medical school, there is an existing and ongoing problem with the present campus population. I believe there are ways UNE can take action to remedy this situation. Up to now, they have not.

Our Lady of Hope Parish (St. Joseph Church) was built in the days before such a need for parking. We do have a lot behind St. Brigid School, so our school population is not using on-street spaces. However, when our school is in session, the parish is dependent on street parking. We are unable to schedule daytime meetings here that involve more than the need for one or two parking spaces because if UNE is in session, there likely will be no street parking available. Unless the City is diligent in patrolling the area, it is common that cars will be left all day, so the existing parking time limits are not solving the problem.

The Planning Board does seem to have room for leveraging some University response. I hope that you take that possibility.

Sincerely,

(Fr) Paul Sullivan SJ  
Pastor – Our Lady of Hope Parish  
673 Stevens Ave, Portland





# Our Lady of Hope Parish

## A Jesuit Ministry



9 August 2022

Mr. Justin Baker  
Portland Planning Board  
389 Congress Street  
Portland, ME 04101

Dear Mr. Baker: I appreciate your questioning the approach UNE is taking toward the parking issue in relation to its plans for expansion of campus activities. I read of your position in a recent edition of the *Phoenix*.

I have sent the following text, in an email, to Jennifer Munson who responded that she would send it on to Austen Davis. I also asked her to send a copy to you. She responded that she would send it to Mr. Davis.

I believe you are correct and that, up to now, UNE has ignored the parking issue its current student population is causing our neighborhood. In other ways UNE is a good neighbor and I welcome expansion of the medical school. However, it appears that the Planning Board may be the only entity that could require UNE make some changes here. I hope that you are not a lone voice in this on the Board. I know at that meeting at UNE several years ago a large number of neighbors were raising this issue.

Thank you for your efforts,

My email:

I am reaching out to find out how to register my questions and concerns regarding the UNE Medical School development on Stevens Ave.

In many ways UNE has been a good neighbor. They have offered dental screening for the students at St. Bridget School and other positive contacts. We welcome further med school facilities.

However, in one significant way, UNE has not been a good neighbor: the issue of use of on-street parking.

673 Stevens Avenue, Portland, ME 04103-2640 207-797-7026

[www.ladyofhopemaine.org](http://www.ladyofhopemaine.org)



## Our Lady of Hope Parish

### A Jesuit Ministry



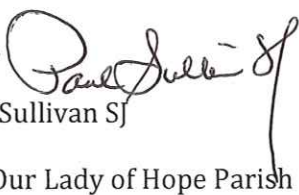
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I agree with Planning Board member Justin Baker, as quoted in the *Phoenix*, that UNE is not taking the parking issue seriously. The problem is not just the addition of more students to the campus with the expansion of the medical school, there is an existing and ongoing problem with the present campus population. I believe there are ways UNE can take action to remedy this situation. Up to now, they have not.

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The Planning Board does seem to have room for leveraging some University response. I hope that you take that possibility.

Sincerely,   
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# UNIVERSITY OF NEW ENGLAND

# THE HAROLD AND BIBBY

# ALFOND CENTER FOR

# HEALTH SCIENCES

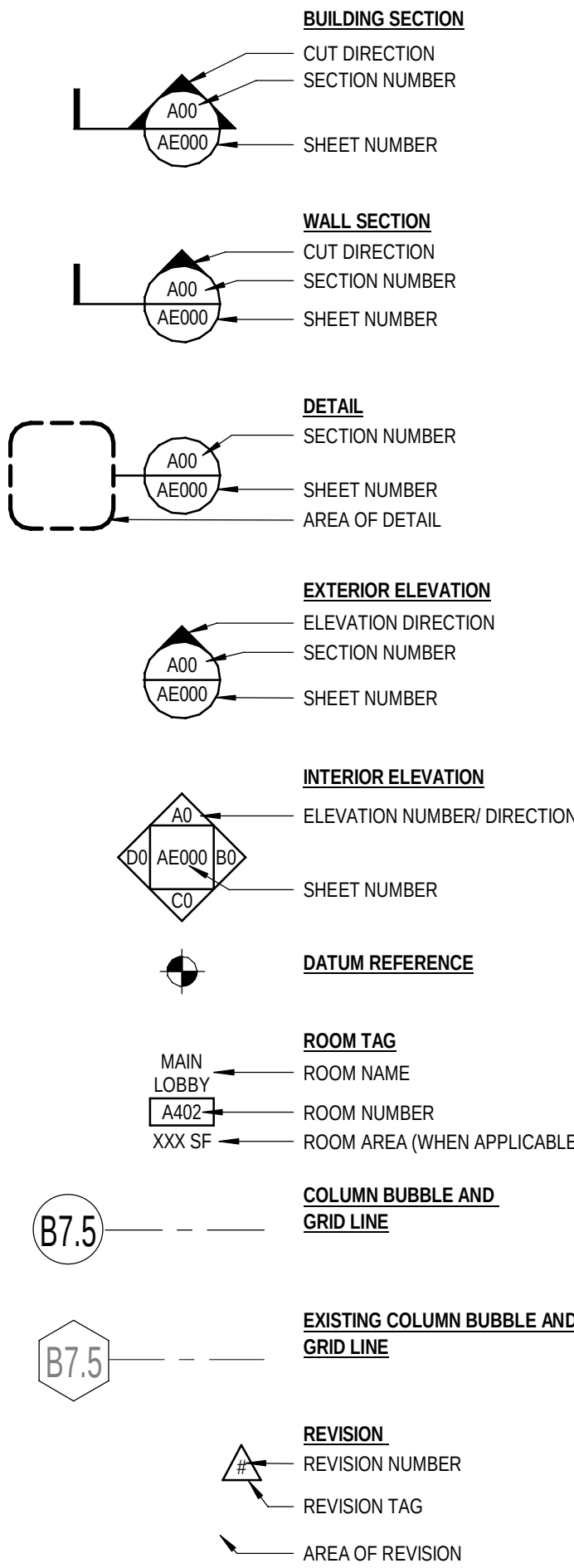
780 STEVENS AVENUE, PORTLAND, MAINE



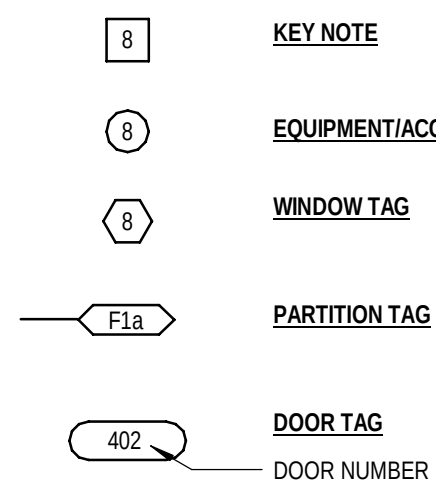
## ARCHITECTURAL ABBREVIATIONS:

|        |                                    |      |                                           |       |                                     |
|--------|------------------------------------|------|-------------------------------------------|-------|-------------------------------------|
| AB     | ANCHOR BOLT                        | GA   | GAUGE                                     | R     | RISER / RADIUS                      |
| AC     | AIR CONDITIONING                   | GALV | GALVANIZED                                | RB    | RESILIENT BASE                      |
| ACCU   | AIR CONDITIONING CONDENSER UNIT    | GB   | GRAB BAR                                  | RD    | ROOF DRAIN                          |
| ACPLAS | ACCOUSTICAL PLASTER                | GC   | GENERAL CONTRACTOR                        | REINF | REINFORCED                          |
| ACT    | ACOUSTIC CEILING TILE              | GDT  | GYP SUM DROP-IN TILE                      | REQ'D | REQUIRED                            |
| AFF    | ABOVE FINISH FLOOR                 | GV   | GRAVITY VENT                              | RT    | RIGHT                               |
| AGG    | AGGREGATE                          | GWB  | GYP SUM WALL BOARD                        | RO    | ROUGH OPENING                       |
| ALT    | ALTERNATE                          |      |                                           | ROW   | RIGHT OF WAY                        |
| AP     | ACCESS PANEL                       | H    | HORIZONTAL                                | RR    | RUB-RAIL                            |
| APROX  | APPROXIMATE                        | HC   | HANDICAPPED / HOLLOW CORE                 | RTU   | ROOF-TOP UNIT (HVAC)                |
| ARCH   | ARCHITECTURAL                      | HC   | HORIZONTAL                                |       |                                     |
| BCX    | BOTTOM CORD EXTENSION              | HM   | HOLLOW METAL                              | SACT  | SUSPENDED ACOUSTIC TILE CEILING     |
| BD     | BOARD                              | HRU  | HEAT RECOVERY UNIT                        | SC    | SOLID CORE                          |
| BIT    | BITUMINOUS                         | HV   | HEATING AND VENTILATING                   | SF    | SQUARE FOOT / SUPPLY FAN            |
| BLDG   | BUILDING                           | HVAC | HEATING, VENTILATING AND AIR CONDITIONING | SFRM  | SPRAYED FIRE-RESISTIVE MATERIAL     |
| BLP    | BORROWED LIGHT PANEL               | I    | INCLUDED ANGLE                            | SHT   | SHEET                               |
| BO     | BOTTOM OF                          | ID   | INSIDE DIAMETER                           | SK    | SIMILAR                             |
| BOF    | BOTTOM OF FOOTING                  | IF   | INSIDE FACE                               | SK    | SHEAR KEY                           |
| BOS    | BOTTOM OF STEEL                    | IJ   | ISOLATION JOINT                           | SN    | SANITARY NAPKIN (DISPENSER)         |
| ROT    | BOTTOM                             | IMP  | IMPACT RESISTANT                          | SP    | SPECIAL                             |
| BRDG   | BRIDGING                           | INS  | INSULATED                                 | SS    | STAINLESS STEEL                     |
| BRG    | BEARING                            | INV  | INVERT                                    | STA   | STATION                             |
| BS     | BOTH SIDES                         | JS   | JOINT SUBSTITUTE                          | STL   | STEEL                               |
| BSE    | BRICK SHELF ELEVATION              |      |                                           | STRUC | STRUCTURAL                          |
| C      | CHANNEL                            | K    | KIPS                                      | T     | TREAD                               |
| CB     | CATCH BASIN / CHALKBOARD           | L    | ANGLE / LENGTH                            | TB    | TACKBOARD                           |
| CEM BD | CEMENTITIOUS BACKER BOARD          | LF   | LEFT                                      | T&B   | TOP AND BOTTOM                      |
| CFM    | CUBIC FEET PER MINUTE              | LINO | SHEET LINOLEUM                            | TCE   | TEMPORARY BENCHMARK                 |
| CIP    | CAST IN PLACE                      | LL   | LIVE LOAD                                 | TJ    | TIE JOIST                           |
| CJ     | CONTROL JOINT / CONSTRUCTION JOINT | LLH  | LONG LEG HORIZONTAL                       | TO    | TOP OF                              |
| CL     | CENTER LINE                        | LLV  | LONG LEG VERTICAL                         | TOC   | TOP OF CONCRETE                     |
| CLL    | CONTRACT LIMIT LINE                | LP   | LIGHTING PANEL / LIQUIFIED PROPANE        | TOF   | TOP OF FOOTING                      |
| CLR    | CLEAR                              |      |                                           | TOM   | TOP OF MASONRY                      |
| CMU    | CONCRETE MASONRY UNIT              |      |                                           | TOP   | TOP OF PIER                         |
| COL    | COLUMN                             | MAX  | MAXIMUM                                   | TOS   | TOP OF STEEL                        |
| CONC   | CONCRETE                           | MB   | MARKER BOARD                              | TOW   | TOP OF WALL                         |
| CONT   | CONTINUOUS                         | MDO  | MEDIUM DENSITY OVERLAY                    | TP    | TOILET PAPER (DISPENSER) / TEST PIT |
| CT     | CERAMIC TILE                       | MFR  | MECHANICAL MANUFACTURER                   | TS    | TUBE STEEL                          |
| CUH    | CABINET UNIT HEATER                | MIN  | MINIMUM                                   | TYP   | TYPICAL                             |
| D      | DIAMETER                           | MISC | MISCELLANEOUS                             | UH    | UNIT HEATER                         |
| DBL    | DOUBLE                             | MO   | MASONRY OPENING                           | UNO   | UNLESS NOTED OTHERWISE              |
| DF     | DRINKING FOUNTAIN                  | MR   | MOISTURE-RESISTANT                        |       |                                     |
| DL     | DEAD LOAD                          | MUA  | MAKE-UP AIR                               | V     | VENT PIPE / VERTICAL                |
| DR     | DISPLAY RAIL                       | N    | NOSING                                    | VB    | VAPOR BARRIER                       |
| DTL    | DETAIL                             | NB   | NEW CATCH BASIN                           | VCT   | VINYL COMPOSITION TILE              |
| DWG    | DRAWING                            | NDMH | NEW DRAIN MANHOLE                         | VERT  | VERTICAL                            |
| EA     | EACH                               | NFM  | NEW FORCE MAIN                            | VP    | VISION PANEL                        |
| EF     | EXHAUST FAN / EACH FACE            | NIC  | NOT IN CONTRACT                           | VTR   | VENT THROUGH THE ROOF               |
| EJ     | EXPANSION JOINT                    | NS   | NEAR SIDE                                 | W     | WITH                                |
| EL     | ELEVATION                          | NSD  | NEW STORM DRAIN LINE                      | WC    | WATER CLOSET                        |
| ELEC   | ELECTRICAL                         | NSS  | NEW SANITARY SEWER LINE                   | WD    | WOOD                                |
| EOP    | EDGE OF PAVEMENT                   | NTS  | NOT TO SCALE                              | WF    | WIDE FLANGE                         |
| EPDM   | ETHYLENE PROPYLENE DIENE MONOMER   | NW   | NEW WATER LINE                            | WH    | WATER HEATER                        |
| EQ     | EQUAL                              | OC   | ON CENTER                                 | W/O   | WITH OUT                            |
| EW     | EACH WAY                           | OF   | OUTSIDE FACE                              | WP    | WORKING POINT                       |
| EWC    | ELECTRIC WATER COOLER              | OH   | OVERHEAD                                  | WS    | WEB STIFFENER                       |
| EXIST  | EXISTING                           | OPP  | OPPOSITE HAND/OPPOSITE                    | WWF   | WELDED WIRE FABRIC                  |
| EXP    | EXPANSION                          | PA   | PUBLIC ADDRESS                            |       |                                     |
| EXT    | EXTERIOR                           | PAF  | POWER-ACTUATED FASTENER                   |       |                                     |
| FB     | FLAT BAR                           | PDU  | POOL DEHUMIDIFICATION UNIT                |       |                                     |
| FBO    | FURNISHED BY OTHERS                | PL   | PLATE / PROPERTY LINE                     |       |                                     |
| FCO    | FLOOR CLEA-OUT                     | PLAM | PLASTIC LAMINATE                          |       |                                     |
| FD     | FLOOR DRAIN                        | PLF  | POUNDS PER LINEAR FOOT                    |       |                                     |
| FE     | FIRE EXTINGUISHER                  | PP   | POWER PANEL                               |       |                                     |
| FEC    | FIRE EXTINGUISHER CABINET          | PSF  | POUNDS PER SQUARE FOOT                    |       |                                     |
| FF     | FINISH FLOOR / FAR FACE            | PSI  | POUNDS PER SQUARE INCH                    |       |                                     |
| FFE    | FINISH FLOOR ELEVATION             | PT   | PRESSURE-TREATED                          |       |                                     |
| FO     | FRAMED OPENING                     | PVC  | POLYVINYL CHLORIDE                        |       |                                     |
| FRP    | FIBER REINFORCED PLASTIC           | PVMT | PAVEMENT                                  |       |                                     |
| FS     | FAR SIDE                           |      |                                           |       |                                     |
| FTG    | FOOTING                            |      |                                           |       |                                     |

## SYMBOL LEGEND:



## ARCHITECTURAL SYMBOL LEGEND:



## DRAWING LIST:

|        |                                                                 |
|--------|-----------------------------------------------------------------|
| GI-001 | COVER SHEET - LEGEND & ABBREVIATIONS                            |
| A-101  | GROUND LEVEL - FACILITY PLAN                                    |
| A-102  | QUAD LEVEL - FACILITY PLAN                                      |
| A-103  | THIRD LEVEL - FACILITY PLAN                                     |
| A-104  | FOURTH LEVEL - FACILITY PLAN                                    |
| A-201  | EXTERIOR ELEVATIONS - NORTH                                     |
| A-202  | EXTERIOR ELEVATIONS - EAST                                      |
| A-203  | EXTERIOR ELEVATIONS - SOUTH                                     |
| A-204  | EXTERIOR ELEVATIONS - WEST                                      |
| C-001  | SITE NOTES & LEGENDS                                            |
| CD101  | SITE DEMOLITION PLAN                                            |
| CE001  | SITE EROSION & SEDIMENT CONTRL NOTES                            |
| CE101  | EROSION & SEDIMENT CONTROL PLAN                                 |
| CE501  | EROSION & SEDIMENT CONTROL DETAILS                              |
| CG101  | SITE GRADING & DRAINAGE PLAN (Tom)                              |
| CG102  | GRADING & DRAINAGE SCHEDULE (Tom)                               |
| CG201  | CONNECTOR ROAD PLAN & PROFILE STA 02+50 TO 28+50 (1 OF 2) (Tom) |
| CG202  | CONNECTOR ROAD PLAN & PROFILE STA 28+50 TO 33+00 (2 OF 2) (Tom) |
| CG501  | GRADING & DRAINAGE DETAILS                                      |
| CG502  | GRADING & DRAINAGE DETAILS                                      |
| CP101  | LAYOUT & MATERIALS PLAN                                         |
| CP401  | SITE LAYOUT & MATERIALS ENLARGEMENTS                            |
| CP501  | SITE LAYOUT DETAILS                                             |
| CP502  | SITE LAYOUT DETAILS                                             |
| CP503  | SITE LAYOUT DETAILS                                             |
| CP504  | SITE LAYOUT DETAILS                                             |
| CU101  | UTILITIES PLAN                                                  |
| CU501  | UTILITY DETAILS                                                 |
| CU502  | UTILITY DETAILS                                                 |
| CU503  | UTILITY DETAILS                                                 |
| LP101  | PLANTING PLAN                                                   |
| LP502  | PLANTING DETAIL AND PLANT SCHEDULE                              |

## LOCATION MAP:

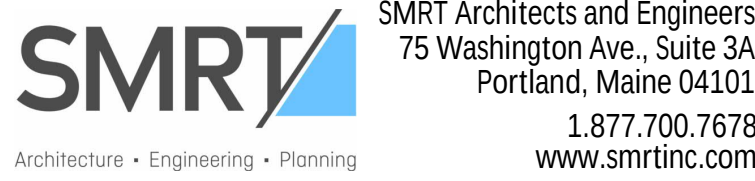


| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
| 0   | MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |

## MAJOR SITE PLAN AND CONDITIONAL USE REVIEW

04-29-2022

CURRENT ISSUE STATUS:



## University of New England

## THE HAROLD AND BIBBY ALFOND CENTER FOR HEALTH SCIENCES

780 STEVENS AVENUE, PORTLAND MAINE

## COVER, LEGEND & ABBREVIATIONS

|                           |                         |
|---------------------------|-------------------------|
| SHEET TITLE:              | TAX PARCEL #145 B018    |
| SCALE: AS NOTED           |                         |
| PROJECT MANAGER: Approver | PROJECT NO: 21004       |
| A/E OF RECORD: Designer   |                         |
| JOB CAPTAIN: Checker      |                         |
| DRAWN BY: Author          |                         |
| SMRT FILE: GI-001-21004   | SHEET No. <b>GI-001</b> |



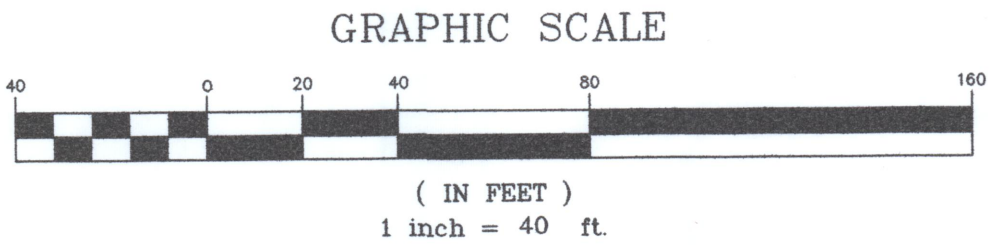
SURVEYOR'S NOTES

- 1 THIS SURVEY PLAN IS ONLY VALID IF AUTHENTIC EMBOSSED SEAL AND SIGNATURE OF CERTIFYING PROFESSIONAL APPEAR ON THE FACE OF THIS SURVEY PLAN.
- 2 NO CERTIFICATION IS MADE TO THE EXISTENCE OR NONEXISTENCE OF HAZARDOUS SUBSTANCES, ENVIRONMENTALLY SENSITIVE AREAS, UNDERGROUND UTILITIES, UNDERGROUND STRUCTURES, ZONING REGULATIONS OR REAL ESTATE TITLE.
- 3 HORIZONTAL DATUM BASED UPON 1983 N.A.D. MAINE STATE PLANE GRID WEST ZONE. VERTICAL DATUM BASED UPON N.G.V.D. 1929.
- 4 ON THE BASIS OF MY KNOWLEDGE, INFORMATION AND BELIEF I CERTIFY TO THE CLIENT THAT THIS SURVEY PLAN, MADE TO THE NORMAL STANDARD OF CARE, CONFORMS TO THE MAINE BOARD OF LICENSURE FOR LAND SURVEYOR STANDARDS CATEGORY I, CONDITION III, EXCEPTING FROM THESE STANDARDS DEED DESCRIPTION AND SURVEY REPORT.
- 5 THE PROPERTY SURVEYED IS DESCRIBED IN A DEED TO THE STATE OF MAINE FROM THE CUMBERLAND COUNTY POWER AND LIGHT COMPANY DATED 10-14-40 AND IS RECORDED IN THE CUMBERLAND REGISTRY OF DEEDS IN BOOK 1607, PAGE 418.
- 6 THE PROPERTY IS DEPICTED ON THE CITY ASSESSOR'S MAP 145 BLOCK B AS LOT 18.
- 7 THE PROPERTY SURVEYED IS BENEFITED BY A SEWER LINE EASEMENT AS DESCRIBED IN A DEED FROM WESTBROOK COLLEGE TO THE STATE OF MAINE DATED 11-15-93 AND RECORDED IN DEED BOOK 11094, PAGE 270.
- 8 AN UNDERGROUND STEAM LINE FOR HEATING PURPOSES CROSSES THE SURVEYED PROPERTY, AND WAS LOCATED PER DIG SAFE MARKINGS AND IS DEPICTED HEREON.
- 9 REFERENCE IS MADE TO COLLEGE STREET LINE DATED DECEMBER 18, 1975 BY THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT.
- 10 REFERENCE IS MADE TO PLAN OF STEVENS PLAINS AVENUE CITY OF DEERING FROM FOREST AVENUE TO PLEASANT STREET AS RELOCATED BY H.W. FOSTER JULY 1896 RECORDED IN CUMBERLAND COUNTY COMMISSIONERS RECORDS VOLUME 16 PAGE 951.
- 11 REFERENCE IS MADE TO PLAN OF LAND IN PORTLAND, MAINE FOR WESTBROOK COLLEGE DATED 8-20-74 BY OWEN HASKELL, INC.
- 12 REFERENCE IS MADE TO PLAN OF A SURVEY FOR FRED E. BRIGGS DATED MAY 1913 BY E.C. JORDAN & CO. AND RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 12 PAGE 68.
- 13 REFERENCE IS MADE TO PLAN SHOWING WESTBROOK COLLEGE PROPERTY LINES DATED OCTOBER 26, 1981 BY WELLS ENGINEERING INC.
- 14 REFERENCE IS MADE TO PLAN OF (MORRILLS) CAR BARN LOT DEERING, ME. P.R.R. BY HSLEY & CUMMINGS IN PORTLAND, MAINE. ON FILE AT THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT IN FILE 798/14.
- 15 INFORMATION IN PARENTHESES IS ON FILE AT A PUBLIC REPOSITORY.
- 16 THE PROPERTY IS DEPICTED ON THE CITY ASSESSOR'S MAP 145-B-18 (K6SE).
- 17 DIG SAFE MUST BE CONTACTED AND CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DIMENSIONS OF ALL UTILITIES PRIOR TO EXCAVATION.
- 18 REFERENCE IS MADE TO THE CONTRACTUAL AGREEMENT BETWEEN THE PROFESSIONAL LAND SURVEYOR AND THE CLIENT.
- 19 THIS SURVEY PLAN IS SUBJECT TO POSSIBLE REVISION UPON RECEIPT OF A CERTIFIED TITLE OPINION.
- 20 ON THE BASIS OF MY KNOWLEDGE, INFORMATION AND BELIEF I CERTIFY EXCLUSIVELY TO THE CLIENT THAT THIS SURVEY PLAN, MADE TO THE NORMAL STANDARD OF CARE, SUBSTANTIALLY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR LAND SURVEYOR STANDARDS.
- 21 THIS SURVEY PLAN IS COPYRIGHT PROTECTED. THIS PLAN IS THE PROPERTY OF BOUNDARY POINTS, AND SHALL NOT BE USED FOR ANY PURPOSE WITHOUT THE WRITTEN CONSENT OF AN AUTHORIZED AGENT OF BOUNDARY POINTS. ALL RIGHTS RESERVED.

LEGEND

| EXISTING | DESCRIPTION              | PROPOSED |
|----------|--------------------------|----------|
| ---      | PROPERTY/ROW             | ---      |
| ---      | EASEMENT                 | ---      |
| ---      | CENTERLINE               | ---      |
| ---      | MONUMENT                 | ---      |
| ---      | IRON PIPE/ROD            | ---      |
| ---      | 5/8" IRON REBAR SET 2001 | ---      |
| ---      | CURVE/LINE NO. BUILDING  | ---      |
| ---      | SIGN                     | ---      |
| ---      | EDGE PAVEMENT            | ---      |
| ---      | GRAVEL ROAD              | ---      |
| ---      | CURBLINE                 | ---      |
| ---      | TREELINE                 | ---      |
| ---      | CONTOURS                 | ---      |
| ---      | GAS                      | ---      |
| ---      | WATER                    | ---      |
| ---      | SEWER                    | ---      |
| ---      | STORM DRAIN              | ---      |
| ---      | OVERHEAD ELEC. & TEL.    | ---      |
| ---      | UNDERGROUND ELEC. & TEL. | ---      |
| ---      | UTILITY VALVE            | ---      |
| ---      | LIGHT POLE               | ---      |
| ---      | UTILITY POLE             | ---      |
| ---      | HYDRANT                  | ---      |
| ---      | MANHOLE                  | ---      |
| ---      | CATCH BASIN              | ---      |
| ---      | CULVERT                  | ---      |
| ---      | SPOT GRADE               | ---      |
| ---      | CHAIN LINK FENCE         | ---      |
| ---      | DECIDUOUS TREE           | ---      |
| ---      | CONIFEROUS TREE          | ---      |
| ---      | GUARDRAIL                | ---      |

EVERGREEN CEMETERY



NOW OR FORMERLY  
JOHN B. VANCE  
BOOK 3418, PAGE 133

NOW OR FORMERLY  
THE FREE CONGREGATIONAL CHURCH  
BOOK 749, PAGE 299

NOW OR FORMERLY  
UNIVERSITY OF NEW ENGLAND  
FORMERLY  
WESTBROOK SEMINARY  
BOOK 3481, PAGE 255  
SEE NOTE 11

NEW GRAVEL  
PARKING LOT

LOT AREA  
8.59+/- ACRES  
SEE NOTE 14

STORAGE BUILDING

FOUND  
6"x6" STONE MONUMENT  
FLUSH WITH GRADE  
HELD FOR LINE  
N: 310215.56  
E: 2918478.87

NOW OR FORMERLY  
UNIVERSITY OF NEW ENGLAND  
FORMERLY  
WESTBROOK SEMINARY  
BOOK 2767, PAGE 397

NOW OR FORMERLY  
UNIVERSITY OF NEW ENGLAND  
FORMERLY  
WESTBROOK SEMINARY  
BOOK 1876, PAGE 271  
SEE NOTE 13

NOW OR FORMERLY  
MARGERY F. FULLER  
BOOK 3171, PAGE 197  
SEE NOTE 13

NOW OR FORMERLY  
ROSEMARY S. KIMBALL  
BOOK 7620, PAGE 201

NOW OR FORMERLY  
UNIVERSITY OF NEW ENGLAND  
FORMERLY  
WESTBROOK SEMINARY  
BOOK 2599, PAGE 319  
BOOK 2604, PAGE 11

STEVENS  
AVENUE

HELD FOUND  
6"x6" GRANITE MONUMENT  
4" BELOW ACCESS COVER  
IN CONCRETE SIDEWALK  
3' OFFSET MONUMENT  
SEE NOTE 10

PROJECT BENCHMARK  
FRONT BOLT TOP FLANGE  
ELEV 129.57 NGVD 1929

N: 310221.65  
E: 2919118.19

|                                                                                                                                                                                              |                                          |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------|
|                                                                                                                                                                                              |                                          | Scale: 1" = 40'       |
|                                                                                                                                                                                              |                                          | Project No: 201608    |
|                                                                                                                                                                                              |                                          | AutoCAD Release: 2011 |
|                                                                                                                                                                                              |                                          | Drawn By: DB          |
| 2                                                                                                                                                                                            | MAINE STATE GRID PLANE COORDINATES ADDED | 6-15-16               |
| 1                                                                                                                                                                                            | ADDITIONAL TOPO BASED ON 1929 NGVD       | 3-9-16                |
| No.                                                                                                                                                                                          | Revision                                 | Date                  |
|                                                                                                                                                                                              |                                          | Plan Date: 3-14-16    |
| THIS PLAN IS PROVIDED EXCLUSIVELY FOR THE CLIENT STATED HEREON. ANY USE OR ALTERATION OF THIS PLAN BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO BOUNDARY POINTS, LLC. |                                          |                       |
| EXISTING CONDITIONS & BOUNDARY SURVEY<br>FOR<br>SITE DESIGN ASSOCIATES<br>OF<br>772 STEVENS AVENUE PROPERTY<br>PORTLAND MAINE                                                                |                                          |                       |
| Boundary Points<br>PROFESSIONAL LAND SURVEYING, LLC<br>P.O. BOX 175<br>CUMBERLAND MAINE 04021-0175<br>207-854-1015<br>© 2016 BOUNDARY POINTS                                                 |                                          |                       |

1

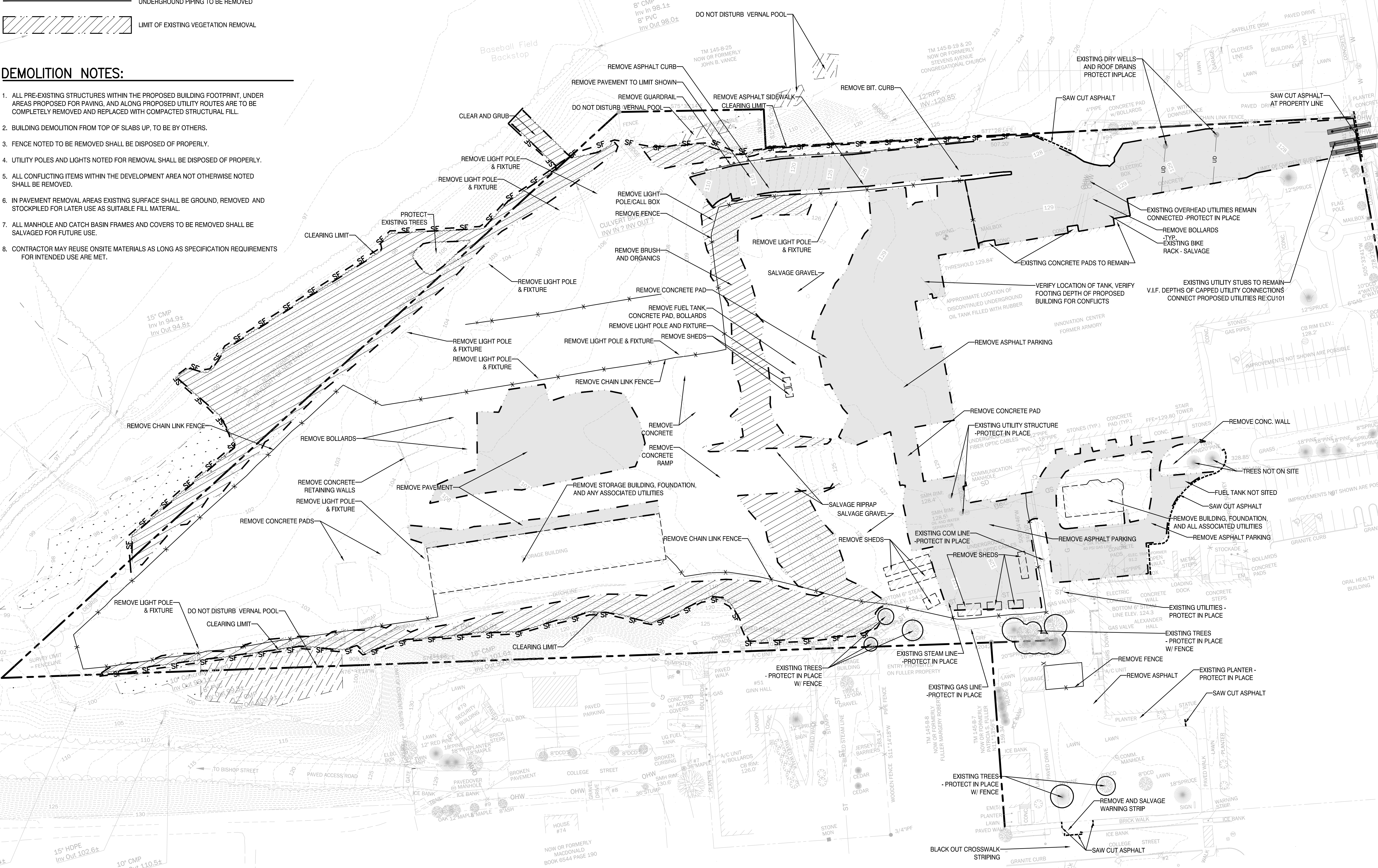


DEMOLITION LEGEND:

- MATERIALS TO BE REMOVED
- [Hatched Box] LIMIT OF ASPHALT REMOVAL
- [Diagonal Hatched Box] LIMIT OF MILL & OVERLAY AREA
- UNDERGROUND PIPING TO BE REMOVED
- [Cross-hatched Box] LIMIT OF EXISTING VEGETATION REMOVAL

DEMOLITION NOTES:

- ALL PRE-EXISTING STRUCTURES WITHIN THE PROPOSED BUILDING FOOTPRINT, UNDER AREAS PROPOSED FOR PAVING, AND ALONG PROPOSED UTILITY ROUTES ARE TO BE COMPLETELY REMOVED AND REPLACED WITH COMPACTED STRUCTURAL FILL.
- BUILDING DEMOLITION FROM TOP OF SLABS UP, TO BE BY OTHERS.
- FENCE NOTED TO BE REMOVED SHALL BE DISPOSED OF PROPERLY.
- UTILITY POLES AND LIGHTS NOTED FOR REMOVAL SHALL BE DISPOSED OF PROPERLY.
- ALL CONFLICTING ITEMS WITHIN THE DEVELOPMENT AREA NOT OTHERWISE NOTED SHALL BE REMOVED.
- IN PAVEMENT REMOVAL AREAS EXISTING SURFACE SHALL BE GROUND, REMOVED AND STOCKPILED FOR LATER USE AS SUITABLE FILL MATERIAL.
- ALL MANHOLE AND CATCH BASIN FRAMES AND COVERS TO BE REMOVED SHALL BE SALVAGED FOR FUTURE USE.
- CONTRACTOR MAY REUSE ONSITE MATERIALS AS LONG AS SPECIFICATION REQUIREMENTS FOR INTENDED USE ARE MET.





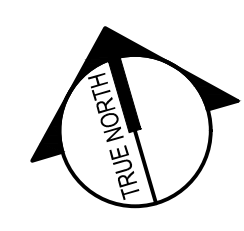
UNIVERSITY OF  
NEW ENGLAND

11 HILLS BEACH ROAD  
BIDDEFORD, MAINE 04005

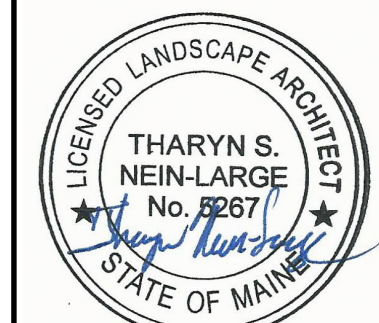
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|-----|-------------------------------------------------------|------------|
| 0   | ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |

ADDENDUM #4  
04-29-2022

CURRENT ISSUE STATUS:



TRUE NORTH:



4/29/2022



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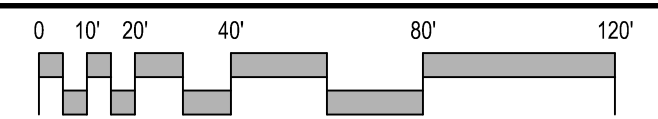
University of New England

THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES

780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018

SITE DEMOLITION PLAN

SHEET TITLE:



SCALE: 1" = 40'

PROJECT MANAGER: KD PROJECT NO: 21004

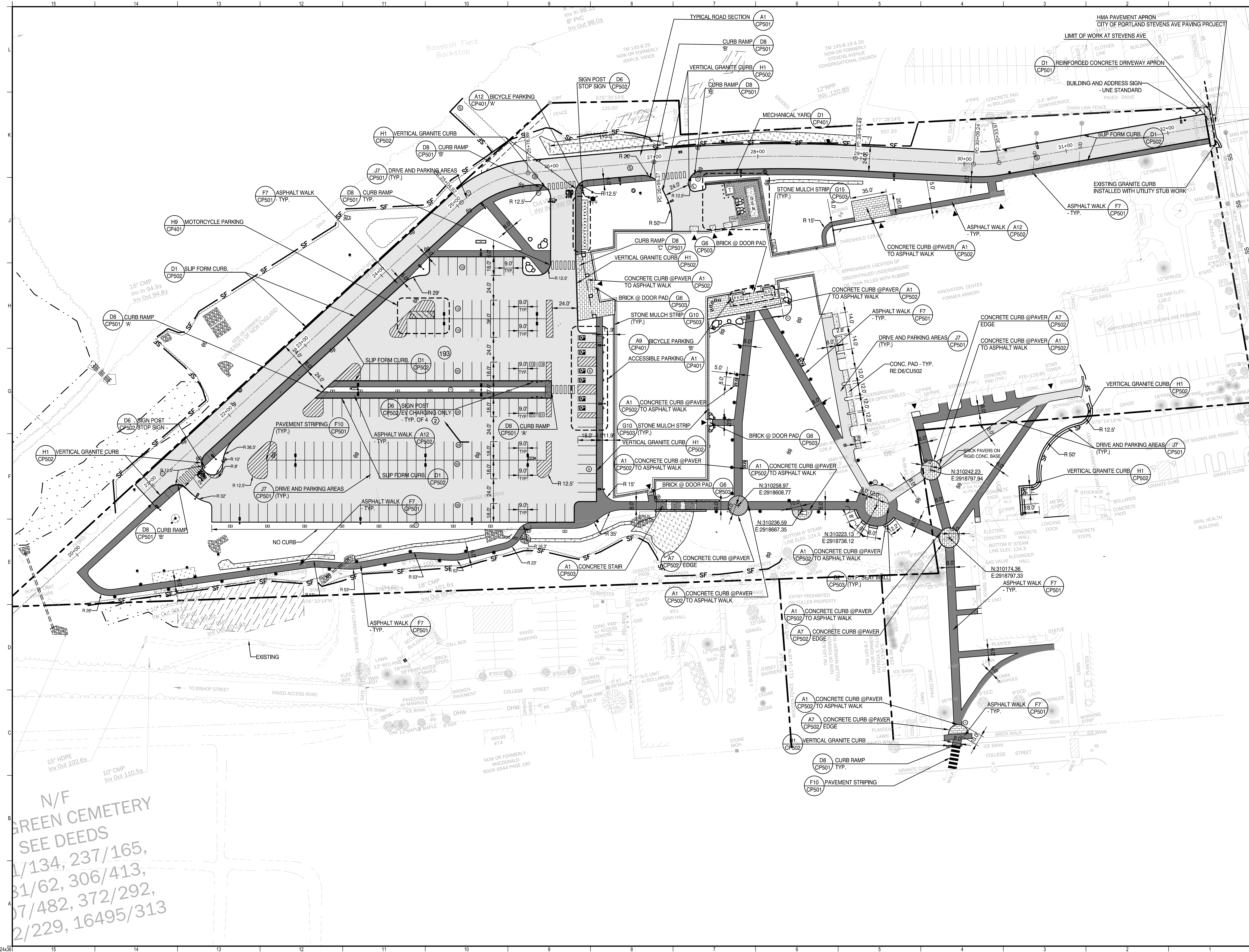
A/E OF RECORD: TNL

JOB CAPTAIN: ECC

DRAWN BY: TNL

SMRT FILE: CD101-21004 SHEET No. CD101







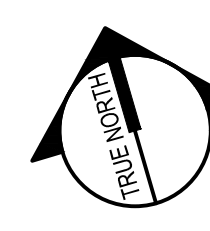
UNIVERSITY OF  
NEW ENGLAND

11 HILLS BEACH ROAD  
BIDDEFORD, MAINE 04005

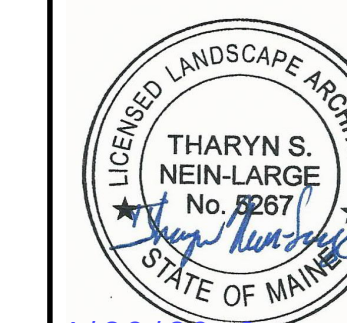
| REV | DESCRIPTION                                           | DATE       |
|-----|-------------------------------------------------------|------------|
| 0   | ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |

ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW  
04-29-2022

CURRENT ISSUE STATUS:



TRUE NORTH:



4/29/2022



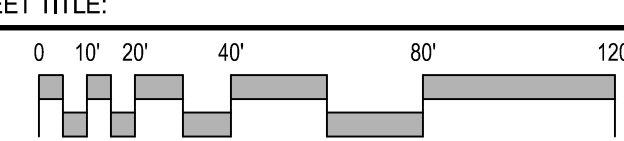
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THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES  
780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018

OVERALL SITE PLAN

SHEET TITLE:



SCALE: 1" = 40'

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TNL         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | TNL         |             |       |
| SMRT FILE:       | CP101-21004 | SHEET No.   | CP001 |

NOT FOR CONSTRUCTION

N/F  
GREEN CEMETERY  
SEE DEEDS  
1/134, 237/165,  
31/62, 306/413,  
07/482, 372/292,  
2/229, 16495/313



- THE SCOPE OF SITE WORK FOR THIS PROJECT INCLUDES PROTECTION OF EXISTING STRUCTURES AND UTILITIES, AND REINSTATEMENT OF DISTURBED AREAS OF THE SITE TO MATCH EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ON THE PROJECT DRAWINGS ARE TAKEN FROM RECORD DRAWINGS AND HISTORICAL INFORMATION. THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SITE CONDITIONS PRIOR TO THE START OF WORK AND CONTACT THE PROJECT ARCHITECT IMMEDIATELY IF DISCREPANCIES ARE FOUND.
2. EXISTING UNDERGROUND UTILITIES HAVE BEEN LOCATED FROM HISTORICAL RECORDS AND PREVIOUS DESIGN DRAWINGS. NO GUARANTEE IS MADE THAT THE UTILITIES SHOWN WILL BE FOUND IN THE LOCATIONS INDICATED, OR THAT THE INFORMATION SHOWN IS COMPLETE. INFORMATION ON EXISTING UTILITY LOCATIONS IS PROVIDED FOR REFERENCE ONLY AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING EXISTING UTILITY LOCATIONS AND DEPTHS AND COORDINATING THE WORK ACCORDINGLY. SEE UTILITY NOTES THIS SHEET.
3. THE CONTRACTOR IS REQUIRED TO NOTIFY DIGSAFE (811 OR 1-888-DIGSAFE) PRIOR TO COMMENCEMENT OF EXCAVATION WORK. IN MAINE AND VERMONT, THE CONTRACTOR IS REQUIRED TO NOTIFY ALL OWNERS OF UNDERGROUND UTILITIES WHO ARE NOT MEMBERS OF DIGSAFE. SUCH UTILITY OWNERS CAN BE LOCATED THROUGH THE 'OK-TO-DIG' DIRECTORY (1-866-OKTODIG).
4. THE CONTRACTOR SHALL UNDERTAKE TEST PITS AT THE SITE AND ENGAGE PRIVATE UTILITY DETECTION SERVICE, AS NECESSARY, TO ACCURATELY IDENTIFY UTILITIES IN ORDER TO EFFICIENTLY PLAN AND COMPLETE THE WORK.
5. THE CONTRACTOR SHALL PROTECT EXISTING STRUCTURES AND UTILITIES ADJACENT TO THE WORK. ANY DAMAGE TO EXISTING STRUCTURES, ROADS, SIDEWALKS, UTILITIES, OR OTHER SITE FEATURES CAUSED BY THE WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
6. ANY UTILITY REPAIRS OR RECONFIGURATION REQUIRED AS PART OF THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE AUTHORITY HAVING JURISDICTION.
7. TEMPORARY WORKS, SUPPORT AND PROTECTION OF STRUCTURES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COSTS SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT SUM.
8. ALL WORK SHALL BE UNDERTAKEN IN STRICT ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY STANDARDS.
9. OPEN EXCAVATIONS AND WORK AREAS SHALL BE CLEARLY DELINEATED AND FENCED, AS NECESSARY TO PREVENT UNAUTHORIZED ACCESS
10. DRIVEWAYS, WALKWAYS AND ENTRANCES SERVING PREMISES SHALL BE KEPT CLEAR AND AVAILABLE TO OWNER, OWNER'S EMPLOYEES, AND EMERGENCY VEHICLES, AS NECESSARY TO MAINTAIN THE FUNCTION OF THE FACILITY. COORDINATE ALL WORK WITH OWNER TO ENSURE THAT ADEQUATE ACCESS AND CIRCULATION IS MAINTAINED AT ALL TIMES.
11. DE-WATERING, IF NECESSARY, SHALL BE UNDERTAKEN IN ACCORDANCE WITH CITY OF PORTLAND, STATE AND FEDERAL STANDARDS. NO DISCHARGE OF SEDIMENT LADEN RUNOFF TO SURFACE WATERS OR TO THE PIPED STORM DRAIN SYSTEM AT THE SITE SHALL BE ALLOWED.
12. ALL DISTURBED PAVEMENT AREAS, ROADS AND SIDEWALKS SHALL BE REINSTATED TO MATCH EXISTING GRADES, MATERIALS AND DEPTHS.
13. EXISTING PAVEMENT SHALL BE SAW-CUT AT LEAST TWELVE INCHES INTO SOUND MATERIAL TO PROVIDE A CLEAN, STRAIGHT EDGE BETWEEN EXISTING SOUND SURFACE MATERIAL AND THE REPAIRED AREA.
14. A SMOOTH TRANSITION SHALL BE PROVIDED BETWEEN REPAIR WORKS AND EXISTING PAVEMENT. ALL REINSTATED AREAS SHALL BE GRADED TO PITCH UNIFORMLY TO ENSURE POSITIVE DRAINAGE.

1. **DO NOT SCALE THE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE ARCHITECT FOR DECISION. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES, AND SPECIFICATIONS SHALL IMMEDIATELY BE REPORTED TO THE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.**
2. **ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.**
3. **ALL DIMENSIONS FROM BUILDING ARE TO FACE OF BUILDING FOUNDATION. ALL DIMENSIONS FROM CURBS ARE TO FACE OF CURB.**
4. **PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING WORK.**
5. **CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR WORK SHOWN ON THESE PLANS.**
6. **ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS AND MEET OR EXCEED CITY OF PORTLAND STANDARDS.**
7. **PROVIDE TAPERED END SECTIONS AT ALL CURB ENDS.**
8. **EXISTING CONDITIONS AND TOPOGRAPHIC DATA ARE BASED UPON TOPOGRAPHIC SURVEY PREPARED BY UNIVERSITY OF NEW ENGLAND.**

1. SOIL DISTURBANCE IS TO BE KEPT TO A MINIMUM AND ALL DISTURBED AREAS SHALL BE STABILIZED (WITH PERMANENT OR TEMPORARY MEASURES) AS QUICKLY AS POSSIBLE.
2. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDED (6" DEPTH).
3. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED ON A REGULAR BASIS AND AS REQUIRED AFTER STORM EVENTS.
4. GULLIES OR OTHERWISE ERODED AREAS IN SEEDED AREAS SHALL BE RESTORED AS SOON AS POSSIBLE FOLLOWING OBSERVATION, USING EROSION CONTROL MESH TO STABILIZE AS REQUIRED.
5. FILL IN AND AROUND THE AREA OF THE NEW BUILDING ADDITION SHALL MEET THE SPECIFICATION FOR 'STRUCTURAL FILL'.
6. ALL EMBANKMENTS AND OTHER FILL SECTION SHALL BE CONSTRUCTED USING GRANULAR BORROW - A MIXTURE OF SAND AND GRAVEL MEETING MDOT SPECIFICATION 703.19 GRANULAR BORROW. SUITABLE SOIL BORROW MAY BE USED IN PLACE OF GRANULAR BORROW ONLY WHERE MOISTURE CONTENT CAN BE CONTROLLED TO MEET THE SPECIFIED COMPACTION.

1. THE CONTRACTOR SHALL EMPLOY A DEWATERING SYSTEM THAT ACHIEVES THE FOLLOWING FUNCTIONS DURING CONSTRUCTION:
  - A. DEVELOP A SUBSTANTIALLY DRY AND STABLE SUBGRADE DURING EXECUTION OF THE WORK,
  - B. PREVENT DAMAGE TO STRUCTURES ADJACENT TO THE WORK,
  - C. RETAIN SEDIMENTS ON-SITE AND WITHIN THE WORK AREA. DEWATERING OPERATIONS SHALL BE SUSPENDED IF THE TURBIDITY OF DISCHARGES TO THE DOWNSTREAM DRAINAGE SYSTEM IS INCREASED ABOVE AMBIENT LEVELS.
2. FLOCCULANTS MAY BE USED TO CONTROL THE TURBIDITY OF DISCHARGE WATER. REFER TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS (2014, OR AS CURRENTLY REVISED) FOR RECOMMENDATIONS AND SPECIFICATIONS OR THE CITY OF PORTLAND DEWATERING STANDARD, USE WHICHEVER IS MORE STRINGENT.
3. SURFACE WATER ENTERING THE CONSTRUCTION SITE SHALL BE INTERCEPTED AND DIVERTED AROUND THE WORK AREA THROUGH THE USE OF DIKES, CURB WALLS, DITCHES, SUMPS, PUMPING, OR OTHER APPROVED MEANS.
4. ANY ENFORCEMENT ACTIONS OR FINES RESULTING FROM THE IMPROPER DISCHARGE OF TURBID WATER AND SEDIMENT TO DOWNSTREAM AREAS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. DIRT BAGS AND TEMPORARY DEWATERING PONDS SHALL BE CONSTRUCTED AND MAINTAINED AS NEEDED TO CAPTURE AND TREAT PUMPATE FROM DEWATERED AREAS.

1. THE LANDSCAPE CONTRACTOR SHALL SUPPLY AND INSTALL ALL PLANTS IN SUFFICIENT QUANTITIES TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS. DISCREPANCIES BETWEEN QUANTITIES NOTED ON THE DRAWINGS AND THOSE GRAPHICALLY SHOWN SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT AND SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL REMUNERATION.
2. THE LANDSCAPE CONTRACTOR IS ADVISED THAT BELOW GROUND UTILITIES EXIST ON SITE, THE LOCATIONS OF WHICH SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF OPERATIONS (SEE GENERAL NOTES REGARDING DIGSAFE). SHOULD THE LOCATION OF ANY PROPOSED PLANTING CONFLICT WITH ANY UTILITY, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY FOR DECISION.
3. ANY AND ALL PAVING, CURBING, UTILITIES, LAWNS, ETC., DAMAGED AS A RESULT OF THE LANDSCAPE CONTRACTOR'S OPERATIONS SHALL BE REPLACED OR REPAIRED TO ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
4. LOCATIONS OF PROPOSED PLANTINGS AND BED LINES SHALL BE REVIEWED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
5. PLANTS SHALL BE PLACED NO CLOSER THAN ONE-HALF THE NOTED SPACING TO PAVEMENT EDGES, BED LINES, OR STRUCTURE FACES, UNLESS NOTED OR SHOWN OTHERWISE.
6. PLANT MASSES SHALL BE LAID OUT AND INSTALLED STARTING AT THE PRINCIPAL, FORM-DEFINING PERIMETER, THEN FILLING INWARD IN DOUBLE-ROW-STAGGERED FASHION, UNLESS NOTED OR SHOWN OTHERWISE.
7. ALL PLANTING BEDS INCLUDING TREE AND SHRUB PITS AS INDICATED SHALL RECEIVE 3" APPROVED CLEAN, UNIFORMLY GROUND OR SHREDDED PINE OR HEMLOCK BARK MULCH.
8. THE LANDSCAPE CONTRACTOR SHALL RELOCATE ANY PLANT ACCORDING TO THE DIRECTION OF THE LANDSCAPE ARCHITECT.
9. ALL PLANT MATERIALS CALLED FOR AND INSTALLED SHALL MEET OR EXCEED SPECIFICATIONS OF THE 'AMERICAN STANDARDS FOR NURSERY STOCK' (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
10. ALL PLANTING BEDS SHALL BE DEFINED BY A NEAT, SHOVEL-CUT BED LINE. BED LINES SHALL BE TRUE TO FORM AS SHOWN ON THE DRAWINGS, CONSISTING OF SMOOTH CURVES AND SHARP LINES AND CORNERS.
11. IF, BECAUSE OF CULTURE REQUIREMENTS, AVAILABILITY, OR OTHER CIRCUMSTANCES, THE LANDSCAPE CONTRACTOR BELIEVES A PARTICULAR PLANT CALLED FOR IS INAPPROPRIATE, THE LANDSCAPE CONTRACTOR SHALL REPORT THE SITUATION IMMEDIATELY TO THE LANDSCAPE ARCHITECT FOR DECISION.
12. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL RECEIVE 6" LOAM AND SEED.

1. PROVIDE AND INSTALL MATERIALS NECESSARY TO COMPLETE UTILITY FEATURES AND DESIGN UNLESS OTHERWISE INDICATED.
2. ALL WORK SHALL MEET OR EXCEED STANDARDS OF THE CITY OF PORTLAND AND THE PORTLAND WATER DISTRICT AND SHALL BE INSPECTED AND APPROVED BY THE CITY OF PORTLAND.
3. CONTRACTOR TO VERIFY EXISTING UTILITY CONNECTION POINTS PRIOR TO SUBMISSION OF BIDS AND INCLUDE ALL EXTRA WORK REQUIRED TO EXTEND UTILITIES AS REQUIRED.
4. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND HAVE BEEN DETERMINED BY SURFACE EVIDENCE AND/OR PREVIOUSLY GENERATED PLANS. NO GUARANTEE IS MADE THAT ALL UTILITIES ARE SHOWN OR WILL BE FOUND IN LOCATIONS INDICATED. THIS INFORMATION IS PROVIDED FOR REFERENCE AND THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES AND POINTS OF CONNECTION IN THE FIELD. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND RESTORATION OF ALL UTILITIES DISTURBED DURING CONSTRUCTION AT NO EXTRA EXPENSE TO THE OWNER.
5. THE OWNER, CONSTRUCTION MANAGER AND ARCHITECT SHALL BE NOTIFIED AT LEAST TWO DAYS PRIOR TO ANY INTERRUPTION TO ANY UTILITY SERVICE.
6. ADJUST ALL UTILITY STRUCTURE TOPS/RIMS TO MATCH PROPOSED GRADES UNLESS NOTED OTHERWISE.
7. LOCATIONS OF EXISTING SEWER LINES ARE BASED ON THE LIMITED SURVEY PRODUCED BY UNIVERSITY OF NEW ENGLAND FOR USE ON THIS PROJECT.
8. EXISTING UTILITY CONNECTIONS TO THE BUILDINGS AT THE SITE ARE TAKEN FROM PREVIOUS PLANS AND A SURVEY OF SURFACE FEATURES. THE CONTRACTOR SHALL EXCAVATE TEST PITS IN AREAS ADJACENT TO EXISTING BUILDINGS AS NECESSARY TO VERIFY THE LOCATION, DEPTH AND SIZE OF EXISTING SERVICES. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT AND OWNER.
9. CONTRACTOR SHALL MAKE PROVISION FOR CONNECTING NEW UTILITY SERVICES TO THE EXISTING WITHOUT INTERRUPTION BY USE OF LIVE TAPPING AND OVER-PUMPING WHERE APPROPRIATE.

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4,000 PSI AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPECIFICATION C-478.
3. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND HAVE ONE 7/8" DIAMETER DRILLED PICK-LOCK LOCATED 8" FROM THE CENTER OF THE COVER.
4. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER / DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVED EQUAL.
6. SEWER BRICK SHALL CONFORM TO ASTM SPECIFICATION DESIGNATION C-32-63, GRADE MA AND SA.
7. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS TO BE REMOVED SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.

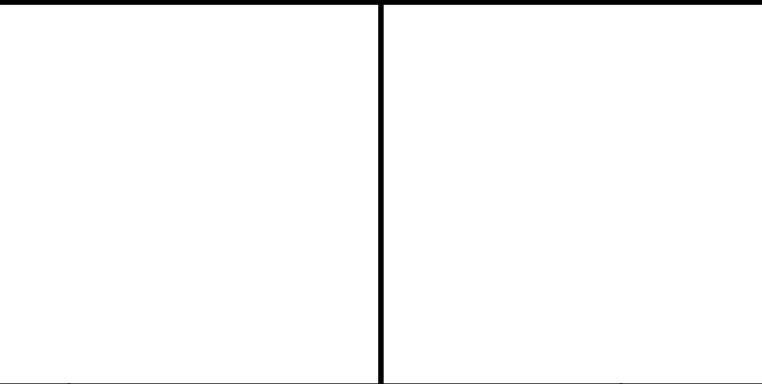
| SITE LEGEND            |          |          |
|------------------------|----------|----------|
|                        | EXISTING | PROPOSED |
| BOLLARD                |          |          |
| BUILDING W/ DOOR       |          |          |
| BUILDING CANOPY        |          |          |
| CATCH BASIN            |          |          |
| COMMUNICATIONS LINE-OH |          |          |
| COMMUNICATIONS LINE-UG |          |          |
| CONCRETE PAD           |          |          |
| CULVERT                |          |          |
| CURB - FLUSH           |          |          |
| CURB - SLOPED GRANITE  |          |          |
| CURB - VERT GRANITE    |          |          |
| DRAIN INLET            |          |          |
| DRAIN MANHOLE          |          |          |
| DRIP STRIP             |          |          |
| ELECTRIC MANHOLE       |          |          |
| ELECTRIC - OVERHEAD    |          |          |
| ELECTRIC - UNDERGROUND |          |          |
| ELEVATION BOT OF CURB  |          |          |
| ELEVATION BOT OF STEP  |          |          |
| ELEVATION TOP OF CURB  |          |          |
| ELEVATION TOP OF STEP  |          |          |
| ELEVATION - SPOT       |          |          |
| FENCE - CHAINLINK      |          |          |
| FIRE HYDRANT           |          |          |
| FLAG POLE              |          |          |
| FORCE MAIN PIPE        |          |          |
| GAS & FUEL EQUIPMENT   |          |          |
| GAS LINE               |          |          |
| GAS VALVE              |          |          |
| GENERATOR ON CONC PAD  |          |          |
| GUARDRAIL              |          |          |

| SITE LEGEND             |          |          |
|-------------------------|----------|----------|
|                         | EXISTING | PROPOSED |
| GUARDRAIL               |          |          |
| LANDMARK SIGN           |          |          |
| LIGHT - BOLLARD         |          |          |
| LIGHT POLE              |          |          |
| LOW POINT ELEVATION     |          |          |
| MAJOR CONTOUR           |          |          |
| MINOR CONTOUR           |          |          |
| PARKING AREA-BITUMINOUS |          |          |
| PAVEMENT STRIPING       |          |          |
| PROPERTY LINE           |          |          |
| PROPERTY LINE - ABUTTER |          |          |
| RETAINING WALL          |          |          |
| RIPRAP                  |          |          |
| ROADWAY                 |          |          |
| SANITARY SEWER PIPE     |          |          |
| SANITARY SEWER MANHOLE  |          |          |
| SETBACK                 |          |          |
| SIGN                    |          |          |
| SPRINKLER               |          |          |
| STORM DRAIN PIPE        |          |          |
| TELEPHONE EQUIPMENT     |          |          |
| TRANSFORMER ON CONC     |          |          |
| UNDERDRAIN PIPE         |          |          |
| UTILITY POLE            |          |          |
| WALKWAY - BITUMINOUS    |          |          |
| WALKWAY - BRICK COBBLE  |          |          |
| WALKWAY - CONCRETE      |          |          |
| WATER GATE VALVE        |          |          |
| WATER PIPE (DOMESTIC)   |          |          |
| WATER SHUTOFF           |          |          |
| WETLAND BOUNDARY        |          |          |

NOTE:  
THIS LEGEND IS FOR REFERENCE ONLY AND APPLIES ONLY TO THE CIVIL/SITE LAYOUT DRAWINGS. NOT ALL ITEMS SHOWN HEREIN MAY APPEAR ON THE DRAWINGS, OR BE INCORPORATED IN THE DESIGN.

| SITE ABBREVIATIONS |                           |       |                    |
|--------------------|---------------------------|-------|--------------------|
| ALT                | ALTERNATE                 | GALV  | GALVANIZED         |
| BOC                | BOTTOM OF CURB            | GC    | GENERAL CONTRACTOR |
| BOW                | BOTTOM OF WALL            | HC    | HANDICAPPED        |
| CIP                | CAST-IN-PLACE             | HMA   | HOT MIX ASPHALT    |
| CL                 | CENTER LINE               | HP    | HIGH POINT         |
| CLL                | CONTRACT LIMITS LINE      | ID    | INSIDE DIAMETER    |
| ECB                | EXISTING CATCH BASIN      | LP    | LOW POINT          |
| FFE                | FINISHED FLOOR ELEVATION  | LT    | LEFT               |
| GA                 | GAUGE                     | MAX.  | MAXIMUM            |
|                    |                           | MIN.  | MINIMUM            |
| MISC.              | MISCELLANEOUS             | S     | SLOPE              |
| NSD                | NEW STORM DRAIN (LINE)    | T & B | TOP & BOTTOM       |
| NSS                | NEW SANITARY SEWER (LINE) | TO    | TOP OF             |
| NW                 | NEW WATER (LINE)          | TOC   | TOP OF CURB        |
| O.C.               | ON CENTER                 | TOW   | TOP OF WALL        |
| OD                 | OUTSIDE DIAMETER          | TP    | TEST PIT           |
| R                  | RADIUS                    | TYP.  | TYPICAL            |
| RE                 | REFER (TO)                | UG    | UNDERGROUND        |
| ROW                | RIGHT-OF-WAY              | W/    | WITH               |
| RT                 | RIGHT                     | W/O   | WITHOUT            |



|     |                                                          |            |
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| 0   | ISSUED FOR MAJOR SITE PLAN AND<br>CONDITIONAL USE REVIEW | 04-29-2022 |
| REV | DESCRIPTION                                              | DATE       |

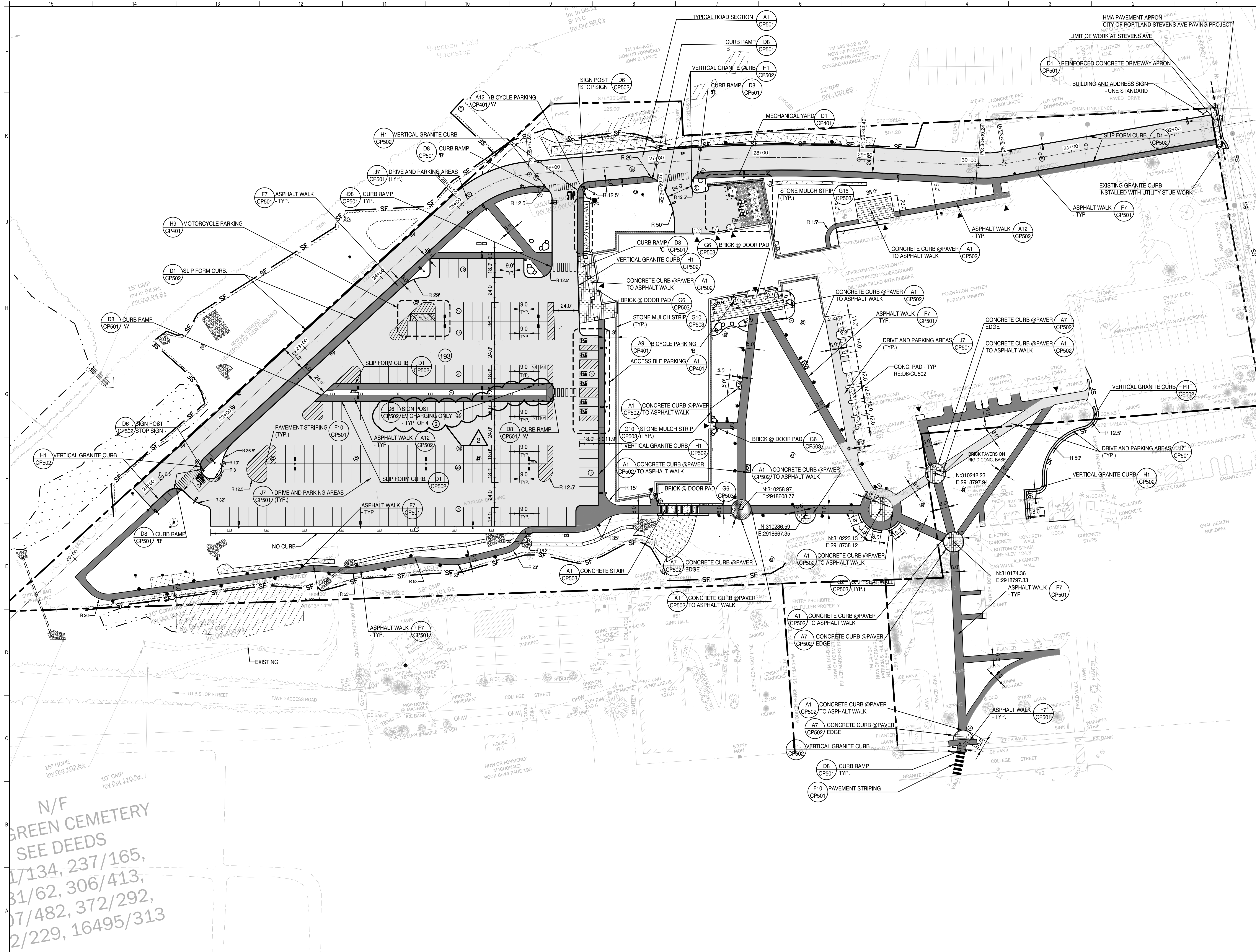
CURRENT ISSUE STATUS:



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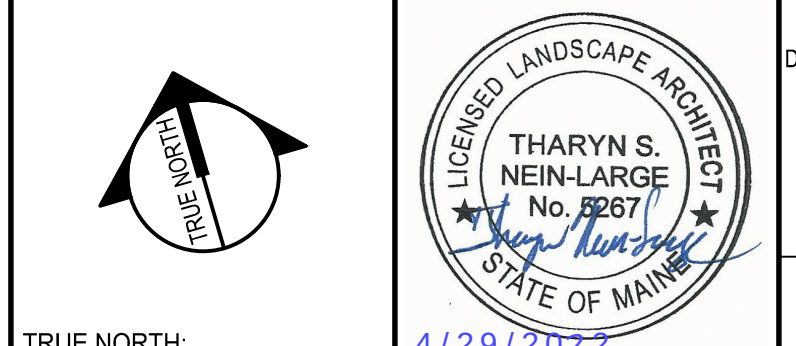
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| SCALE:                                                                                |             |
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| A/E OF RECORD:                                                                        | TNL         |
| JOB CAPTAIN:                                                                          | ECC         |
| DRAWN BY:                                                                             | TNL         |
| SMART FILE:                                                                           | C-001-21004 |
| SHEET No.                                                                             | C-001       |





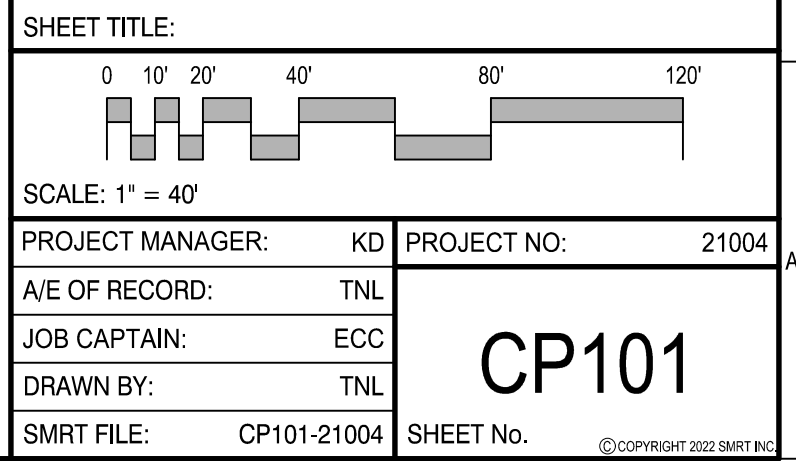
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| REV | DESCRIPTION                                              | DATE       |

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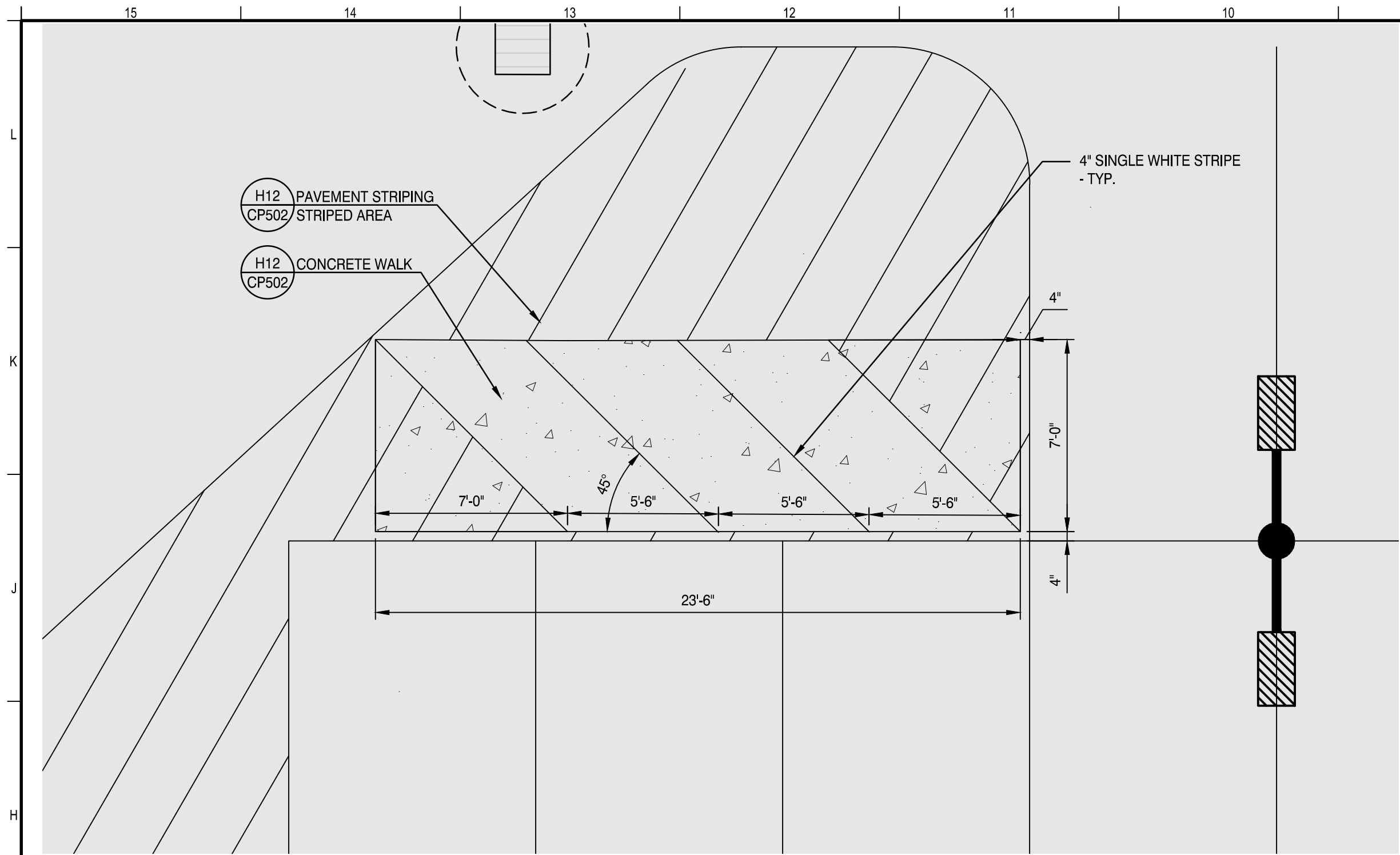


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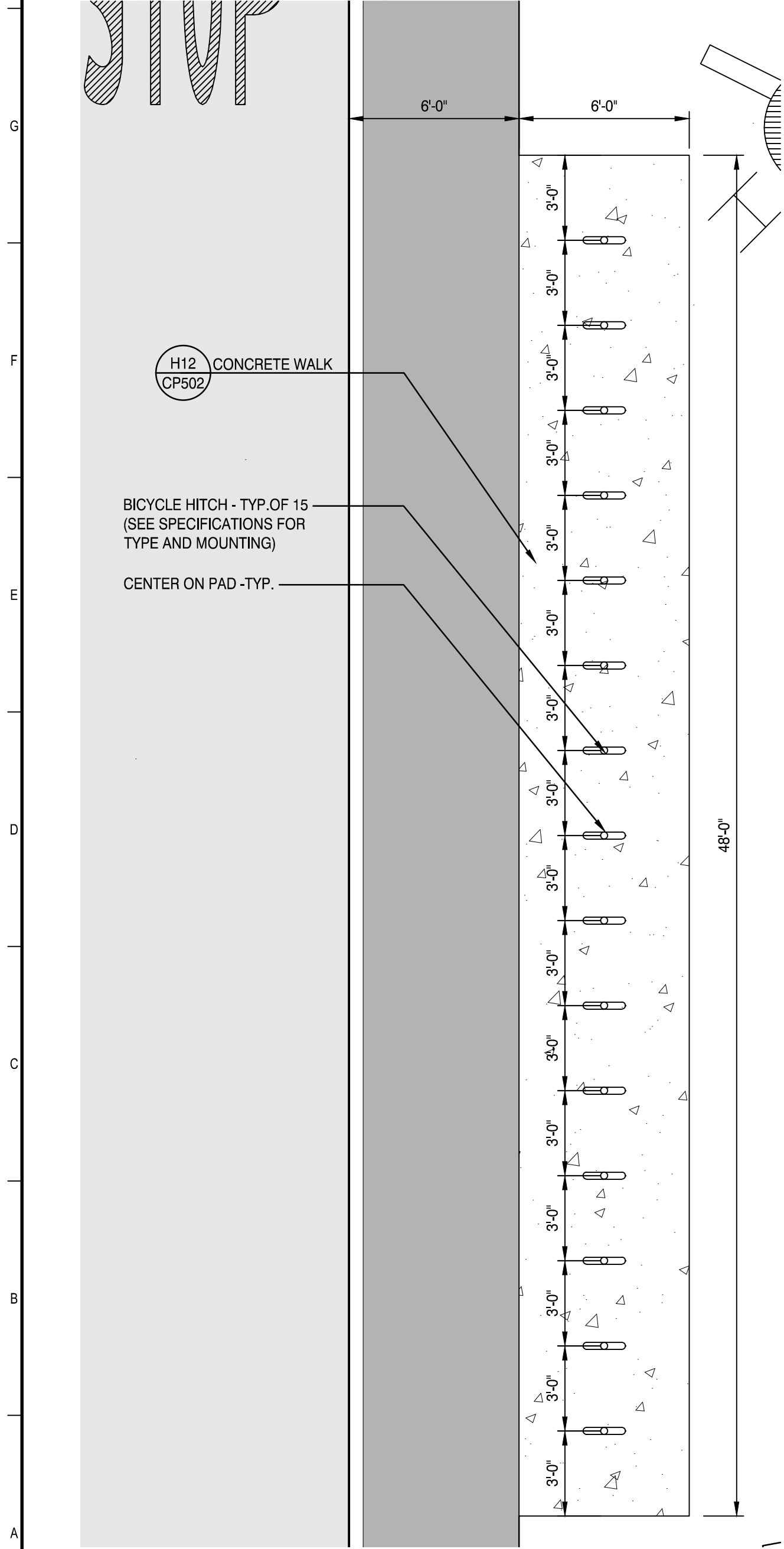
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LAYOUT & MATERIALS PLAN



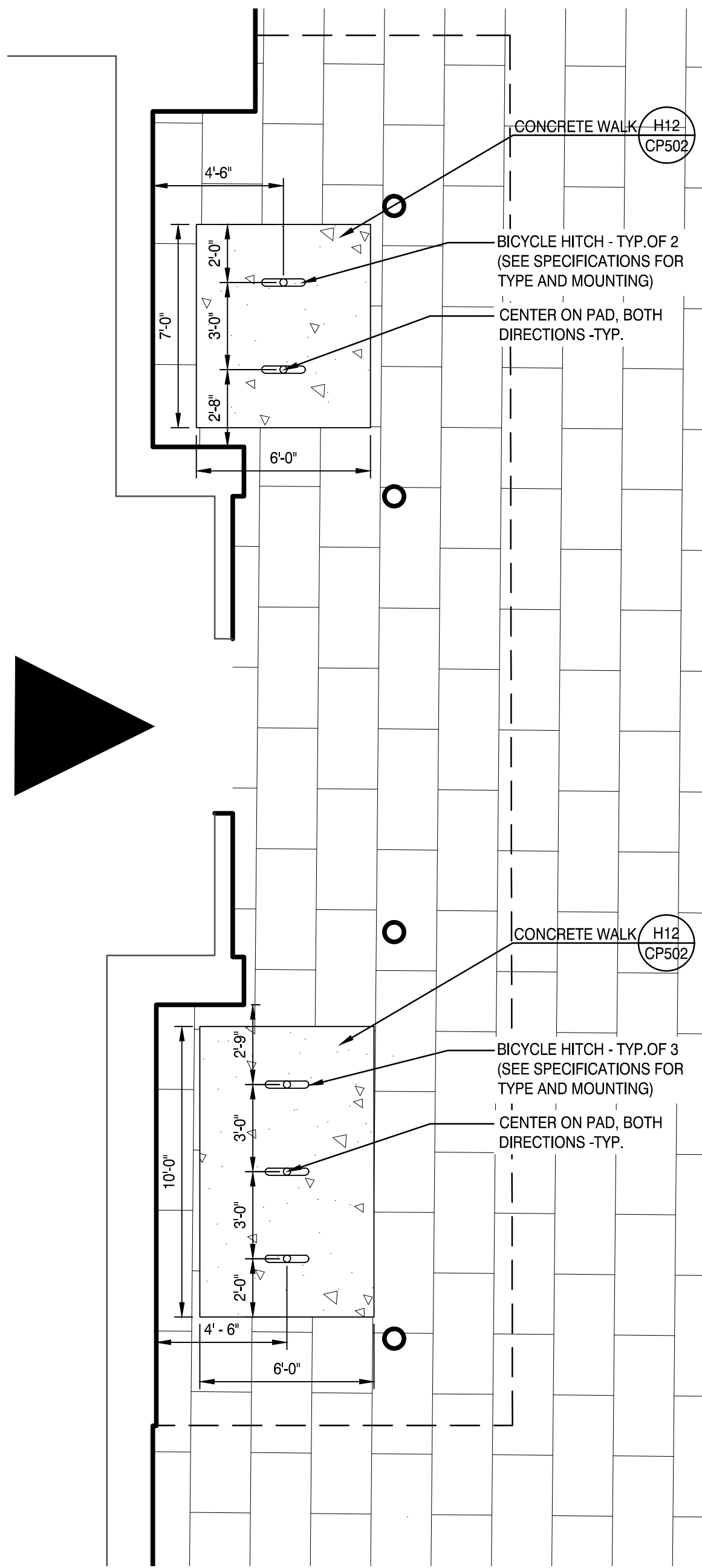




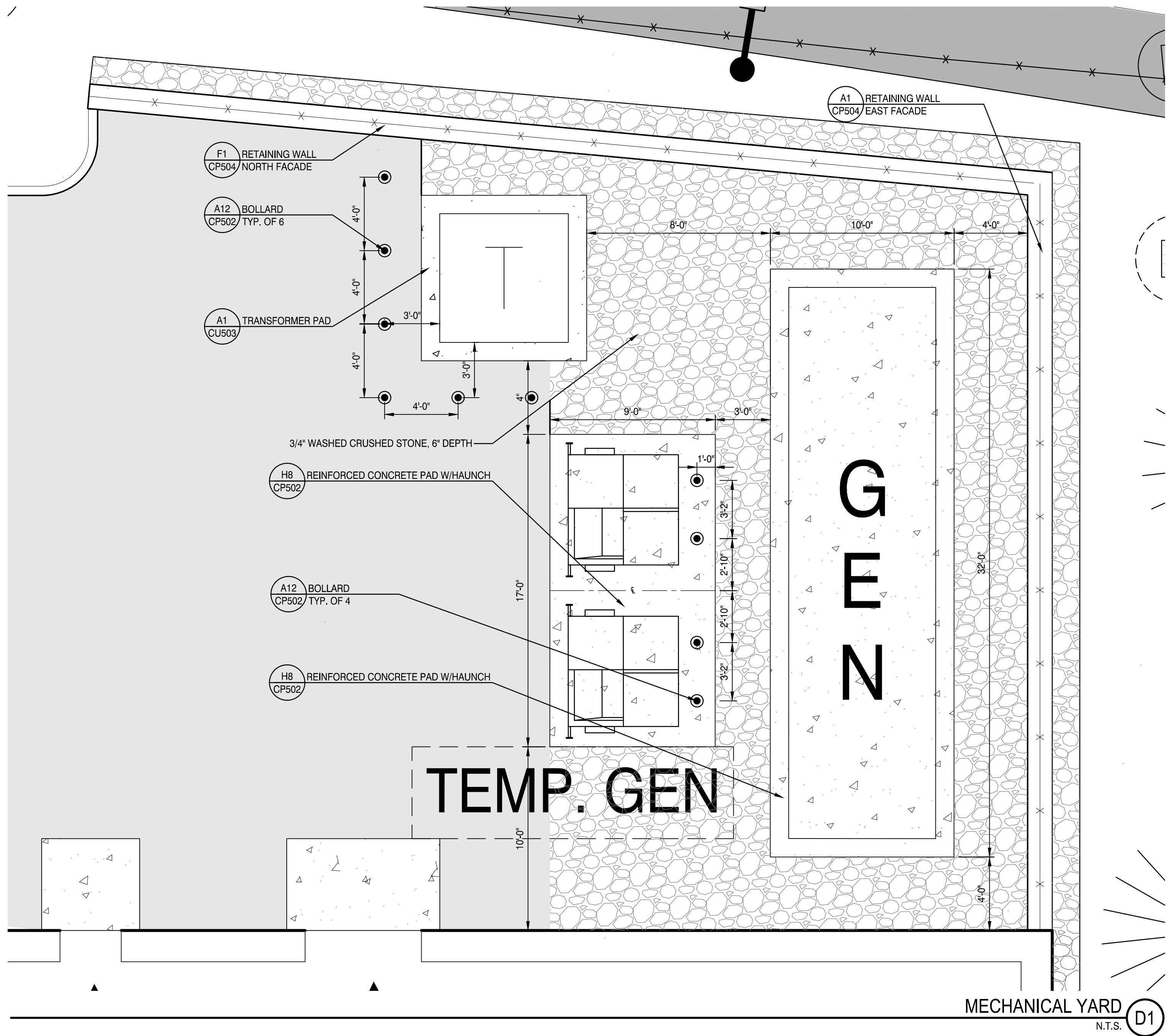
MOTORCYCLE PARKING H9  
N.T.S.



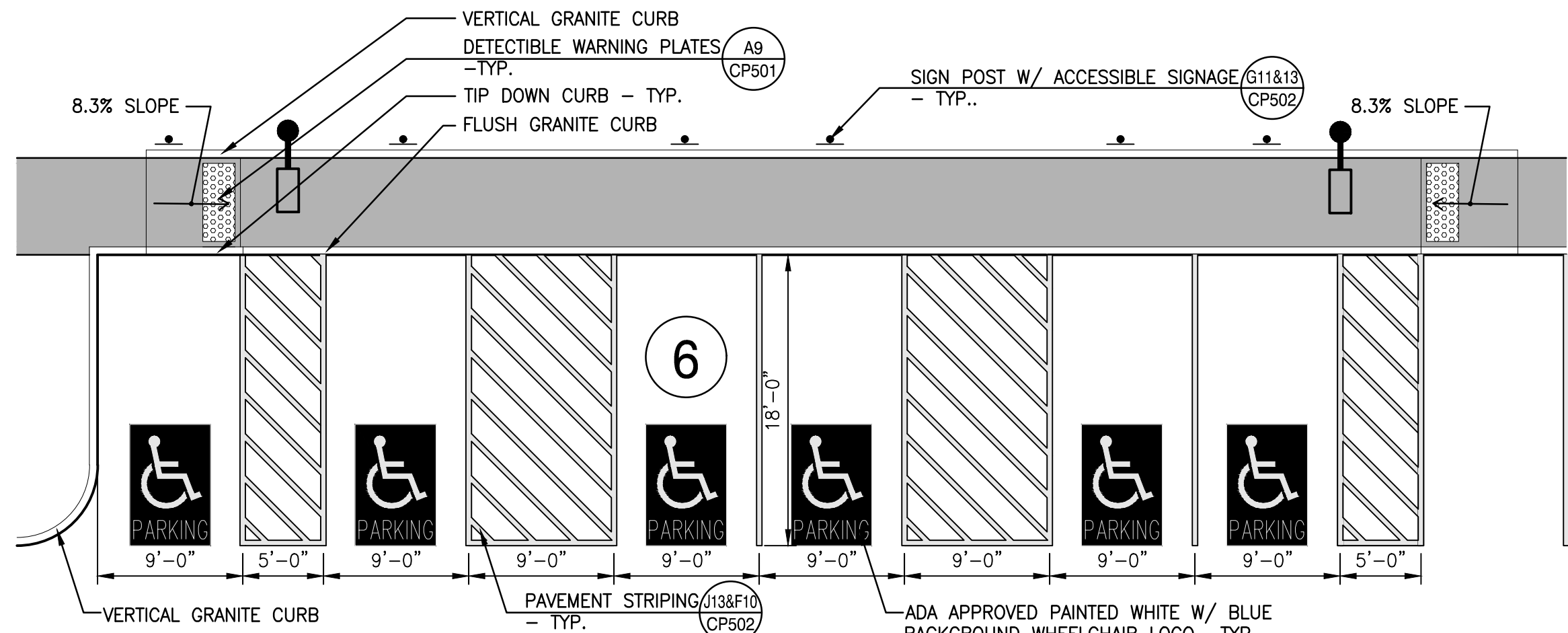
BICYCLE PARKING 'A' A12  
N.T.S.



BICYCLE PARKING 'B' A9  
N.T.S.



MECHANICAL YARD D1  
N.T.S.

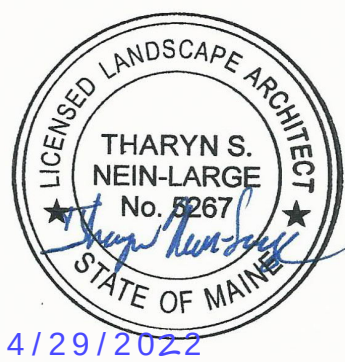


NOTE: ACCESSIBLE PARKING AREA SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION

ACCESSIBLE PARKING A1  
N.T.S.

|     |                                                       |            |
|-----|-------------------------------------------------------|------------|
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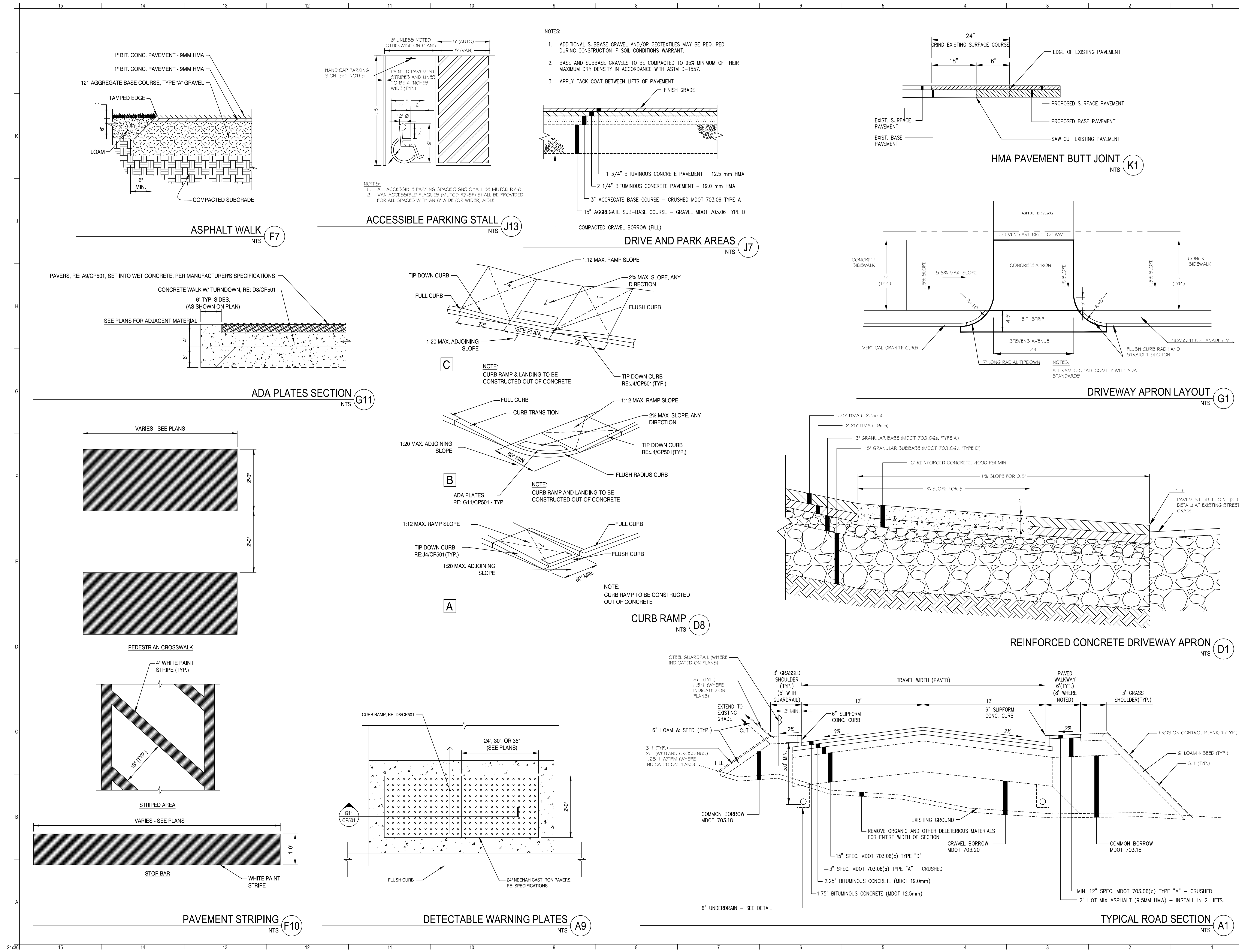
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SITE LAYOUT & MATERIALS  
ENLARGEMENTS

|                        |                    |
|------------------------|--------------------|
| SHEET TITLE:           | CP401              |
| SCALE: AS SHOWN        | PROJECT NO: 21004  |
| PROJECT MANAGER: KD    | A/E OF RECORD: TNL |
| JOB CAPTAIN: ECC       | DRAWN BY: TNL      |
| SMRT FILE: CP401-21004 | SHEET NO. 1        |

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11 HILLS BEACH ROAD  
BIDDEFORD, MAINE 04005

| REV | DESCRIPTION                                           | DATE       |
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**SITE LAYOUT DETAILS**

SHEET TITLE:

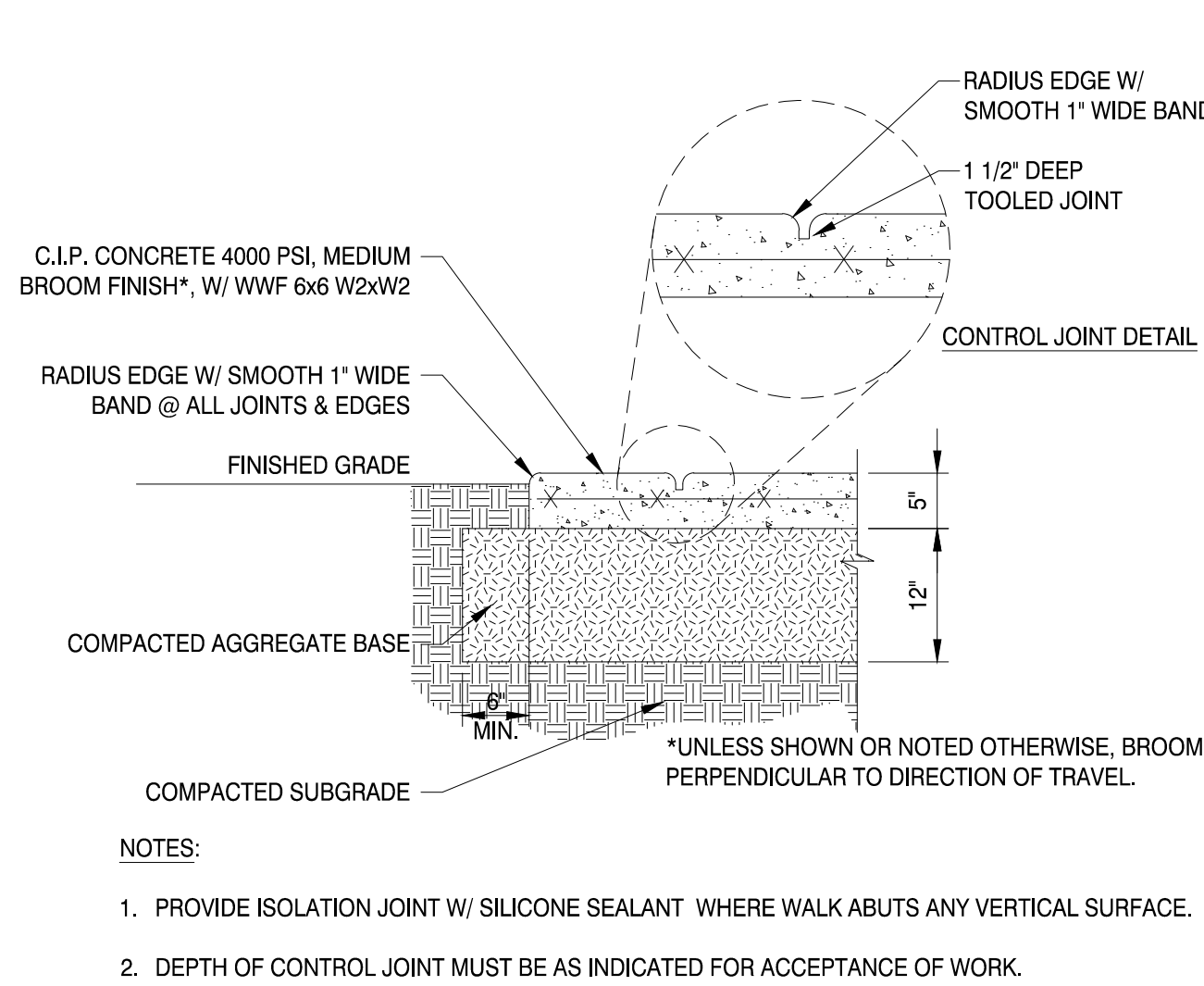
SCALE: AS SHOWN

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| PROJECT MANAGER: KD     | PROJECT NO: 21004 |
| A/E OF RECORD: TWS, TNL |                   |
| JOB CAPTAIN: ECC        |                   |
| DRAWN BY: TNL           |                   |
| SMRT FILE: CP501-21004  | SHEET NO. 21004   |

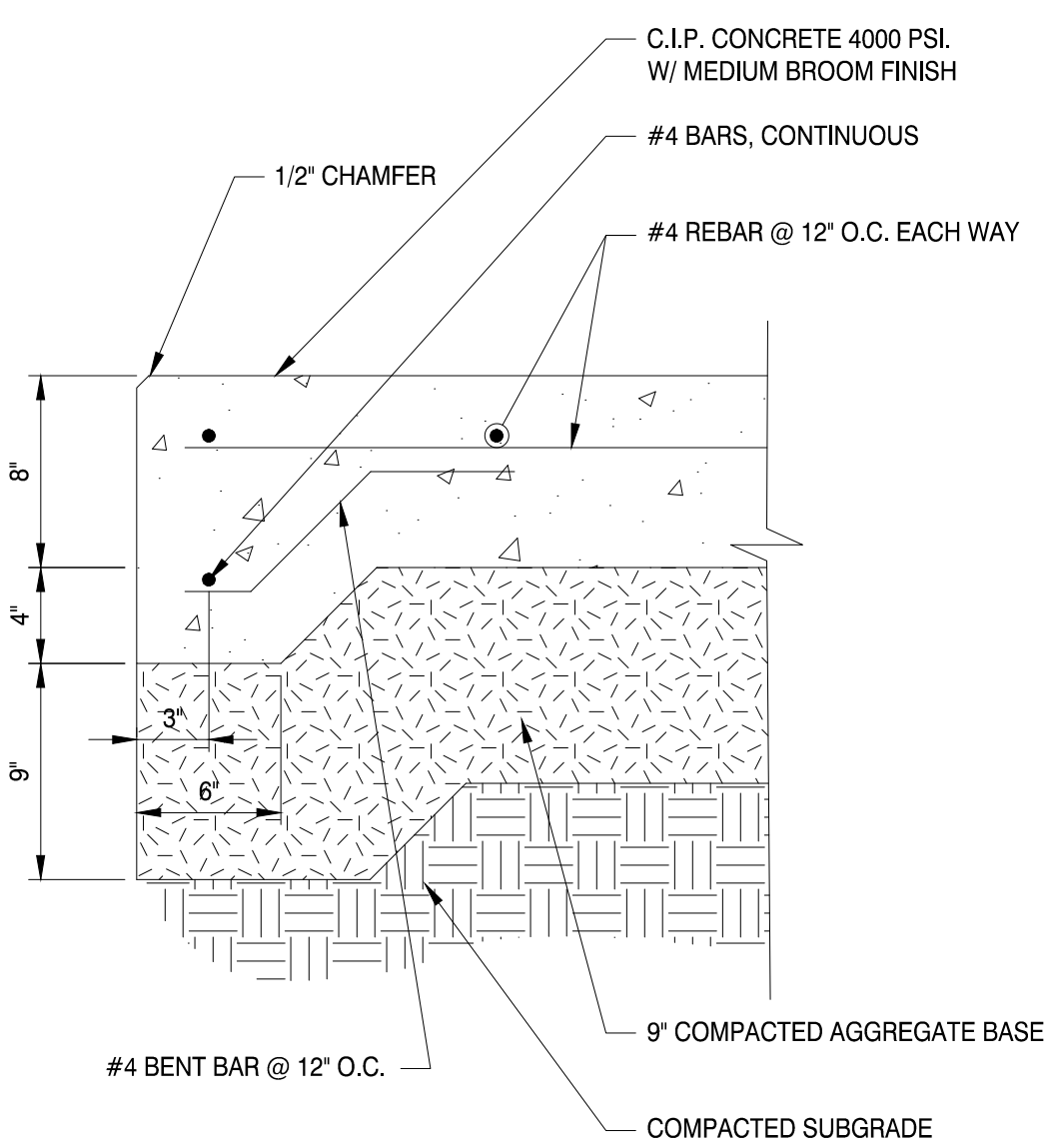
**CP501**

NOT FOR CONSTRUCTION

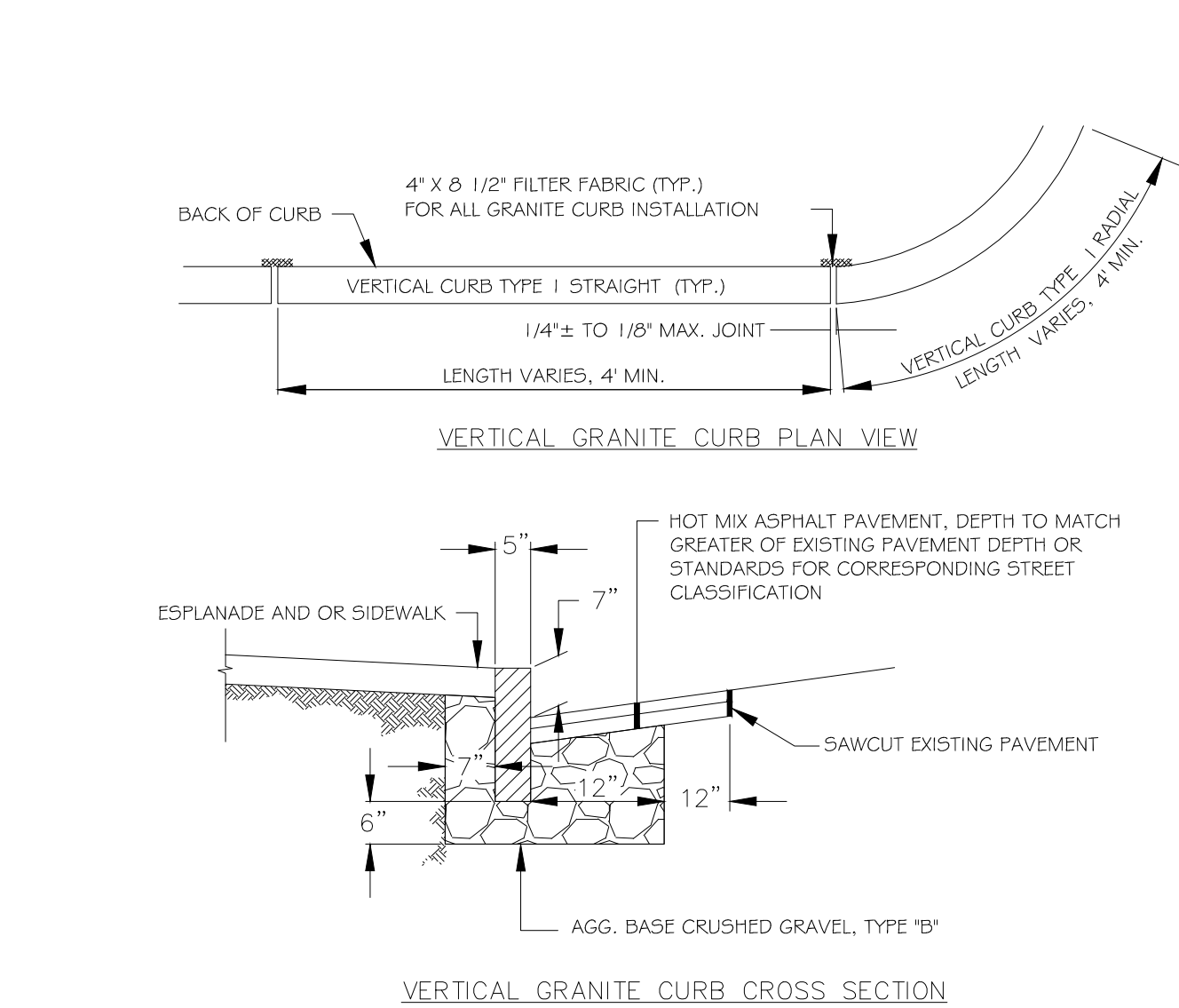




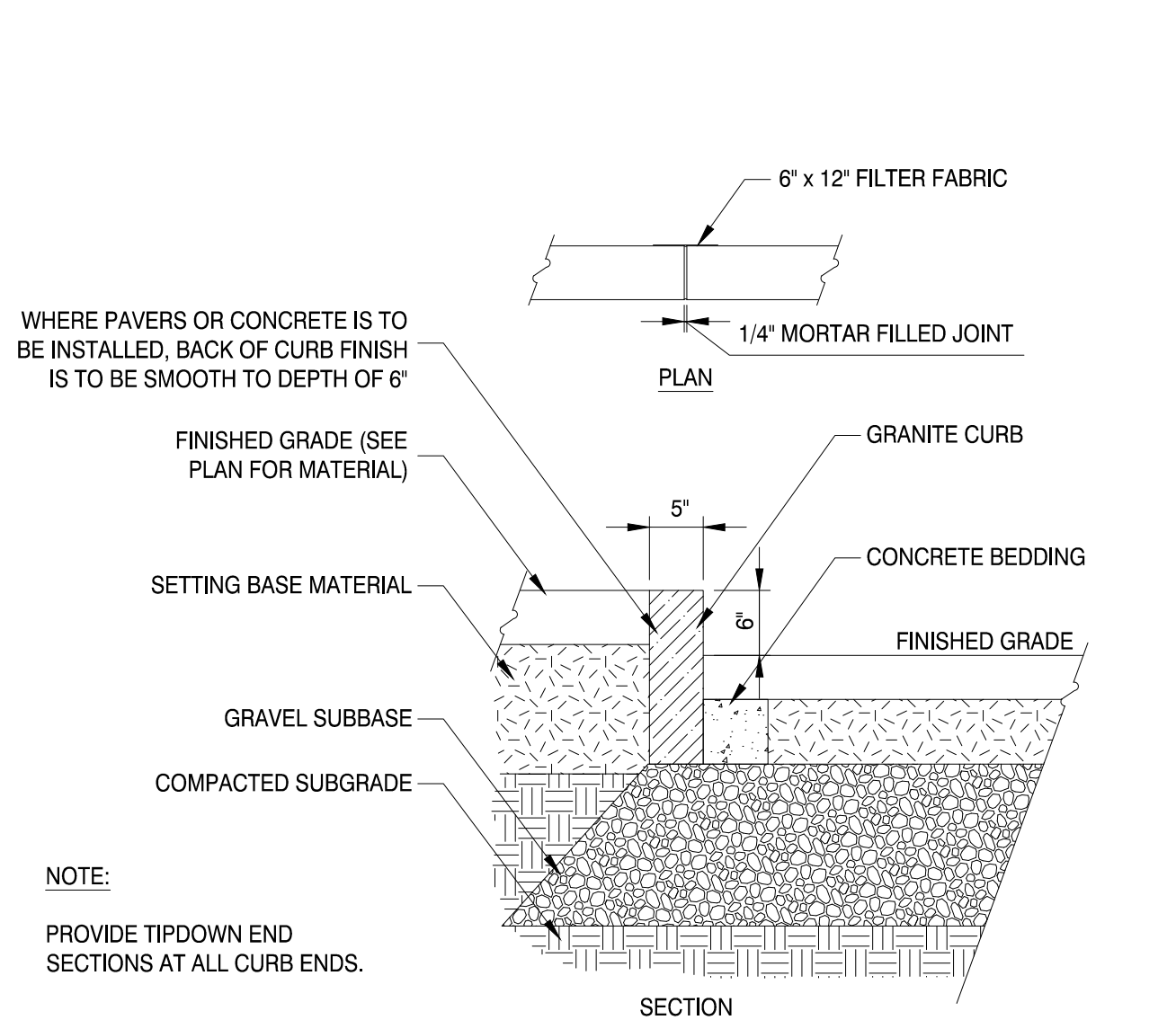
CONCRETE WALK H12 NTS



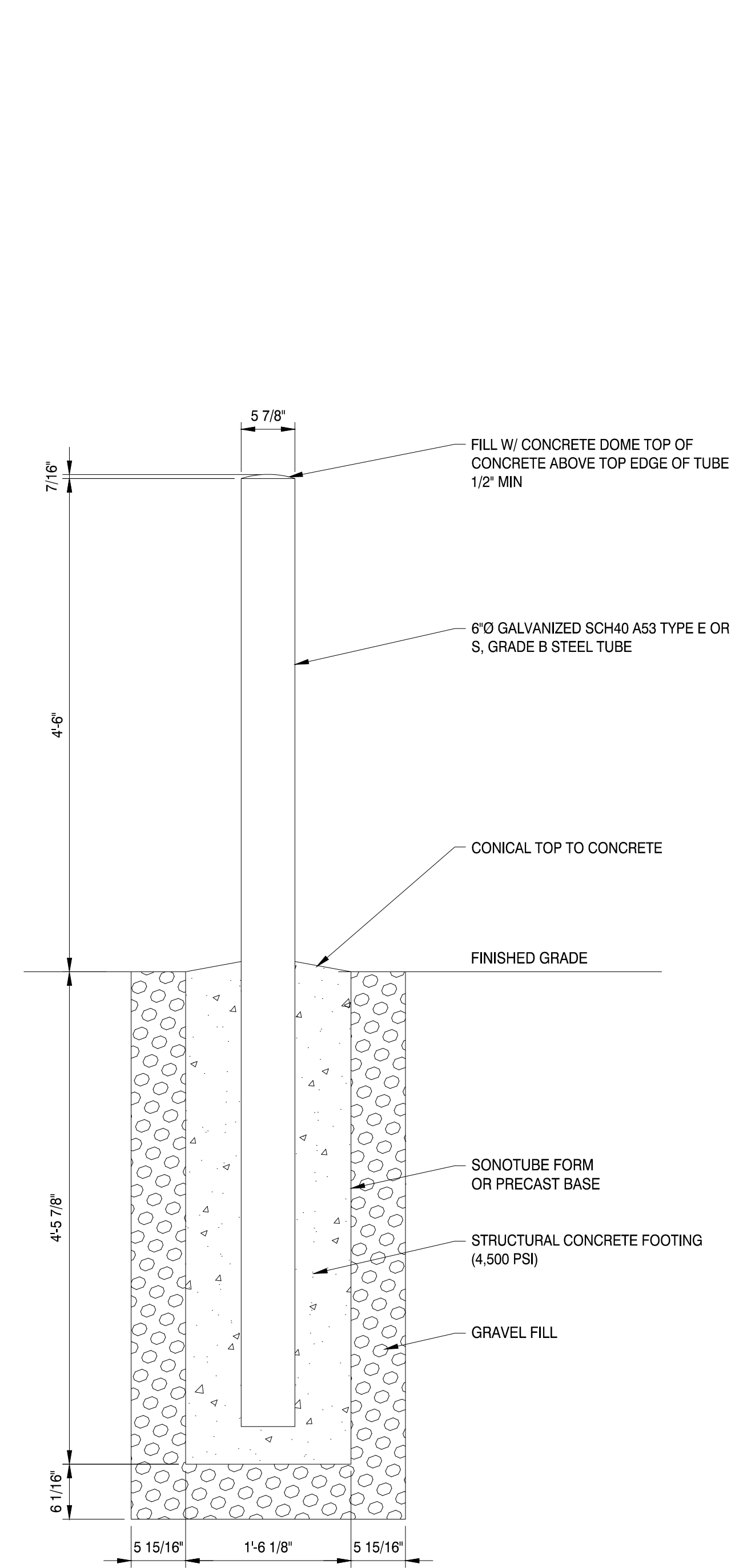
REINFORCED CONCRETE PAD W/HAUNCH H8 NTS



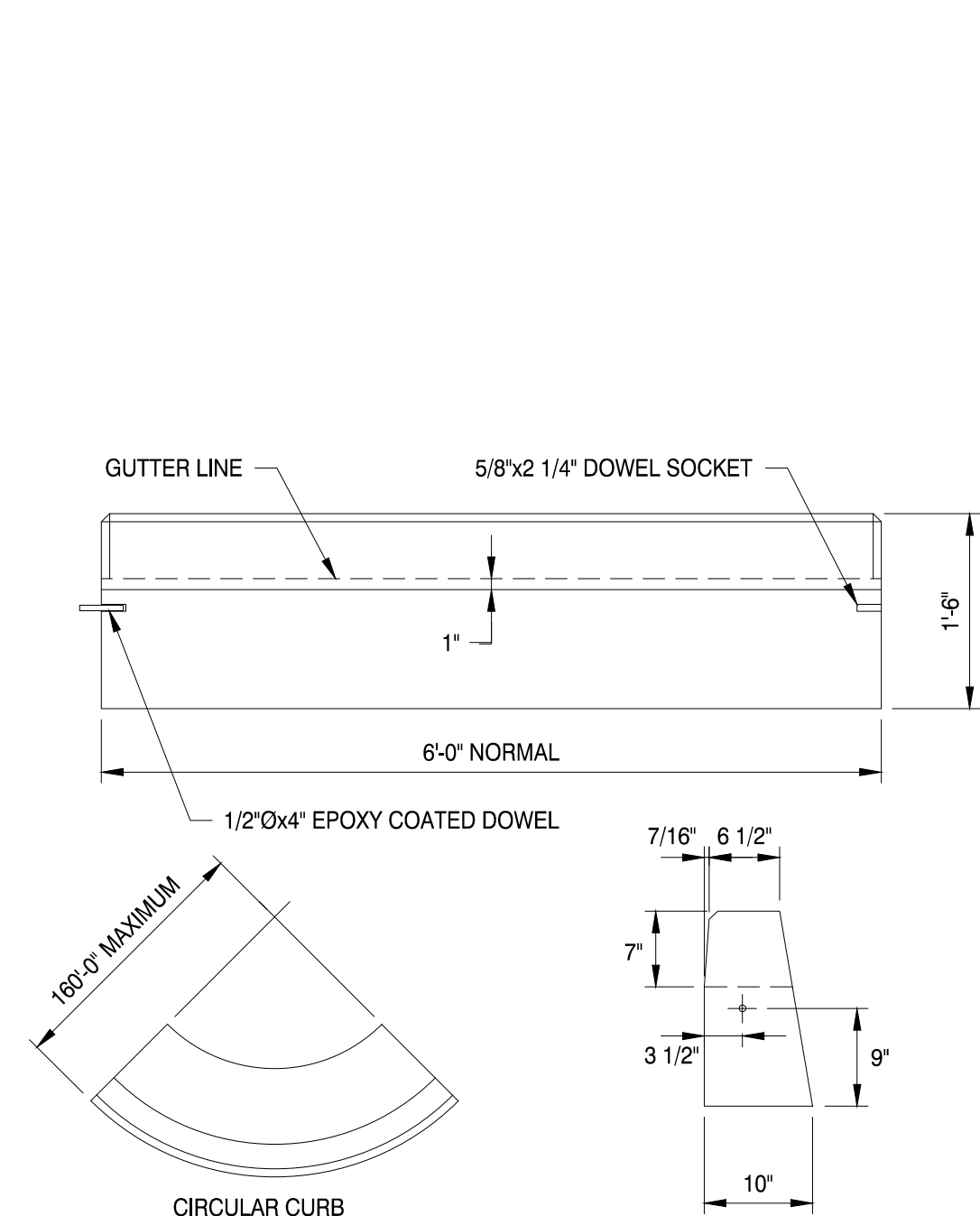
VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREET H4 NTS



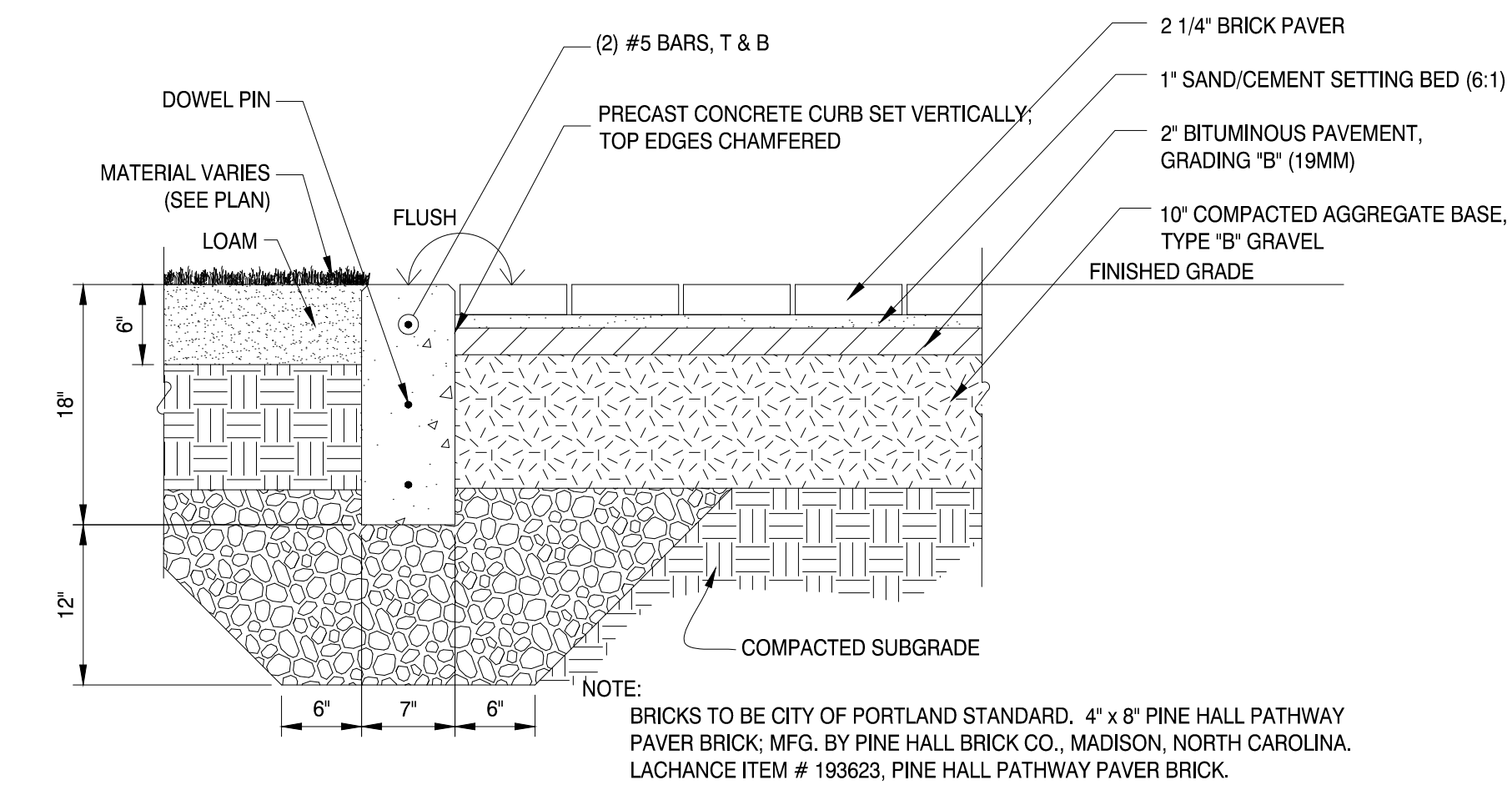
VERTICAL GRANITE CURB H1 3/4"=1"



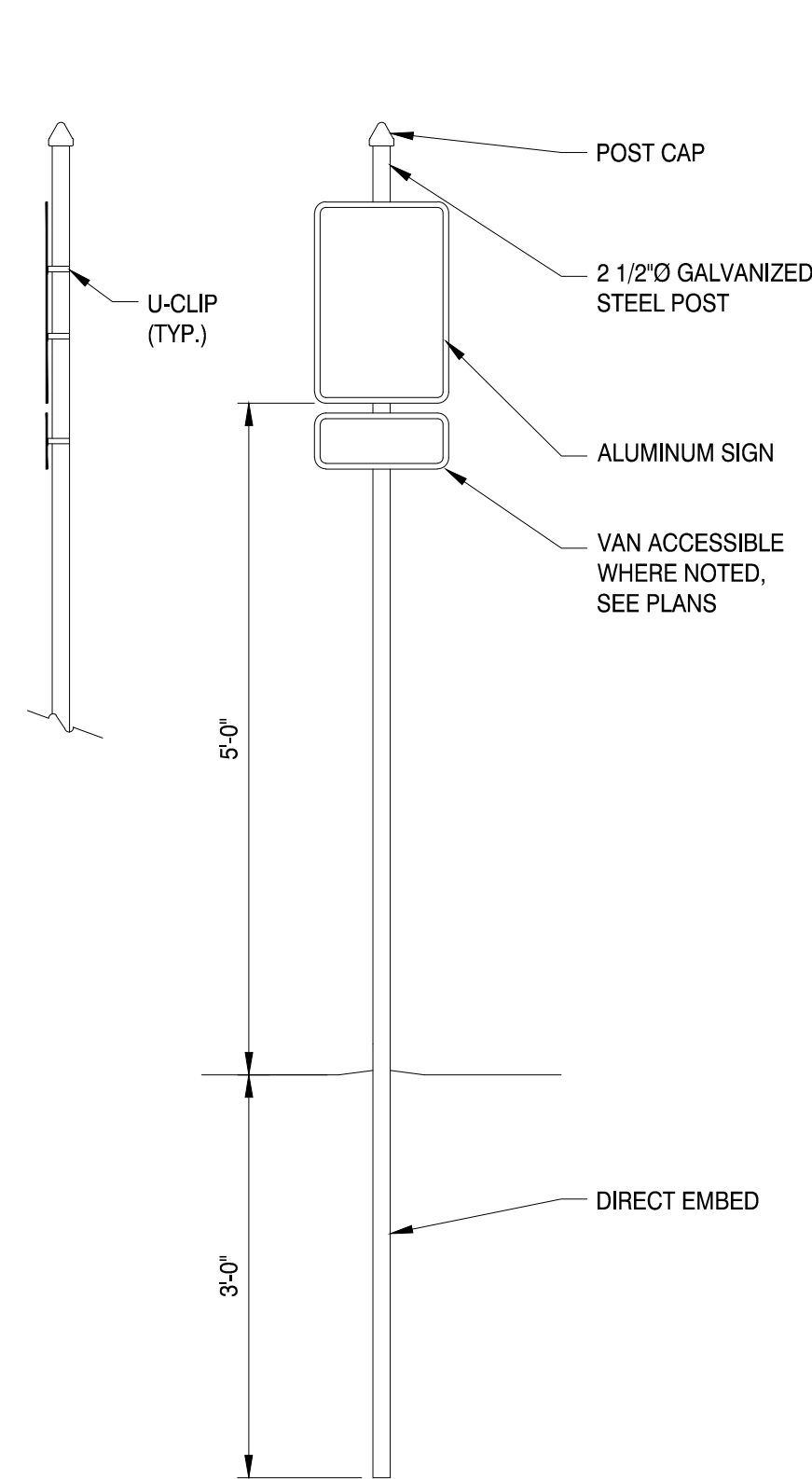
BOLLARD A12 1"=1"



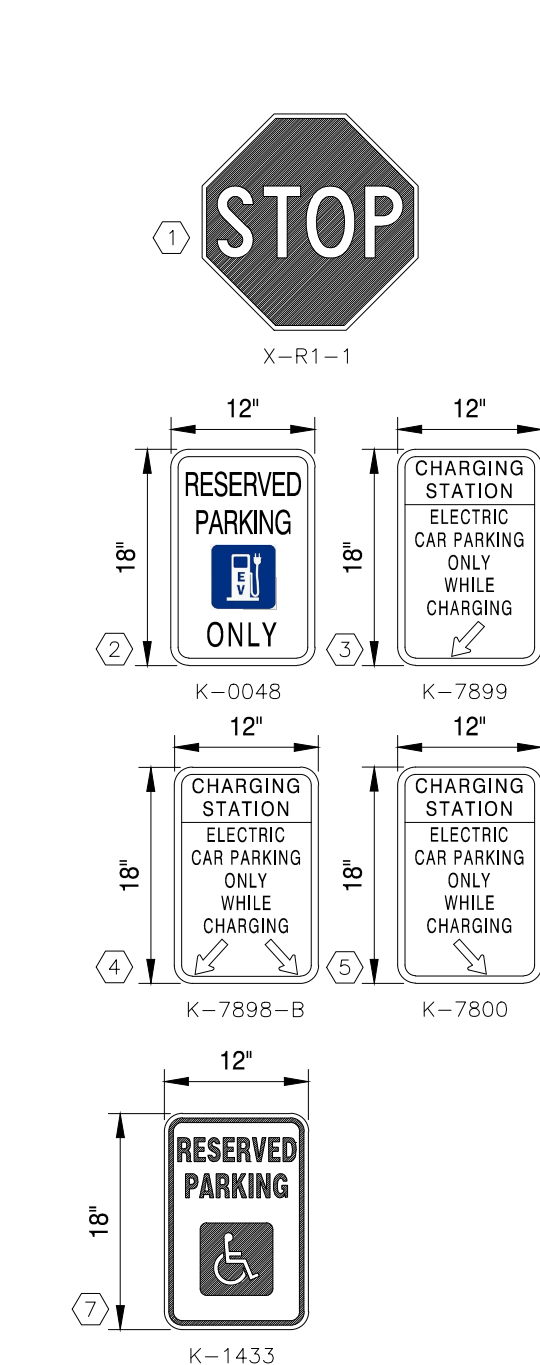
- NOTES:
1. SHALL BE IN ACCORDANCE WITH APPLICABLE DOT SPECIFICATIONS.
  2. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".
  3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
  4. CIRCULAR CURB IS REQUIRED ON CURVES W/ RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
  5. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
  6. PROVIDE TIPDOWN END SECTIONS AT ALL CURB ENDS.



CONCRETE CURB @ PAVER EDGE A7 1"=1"



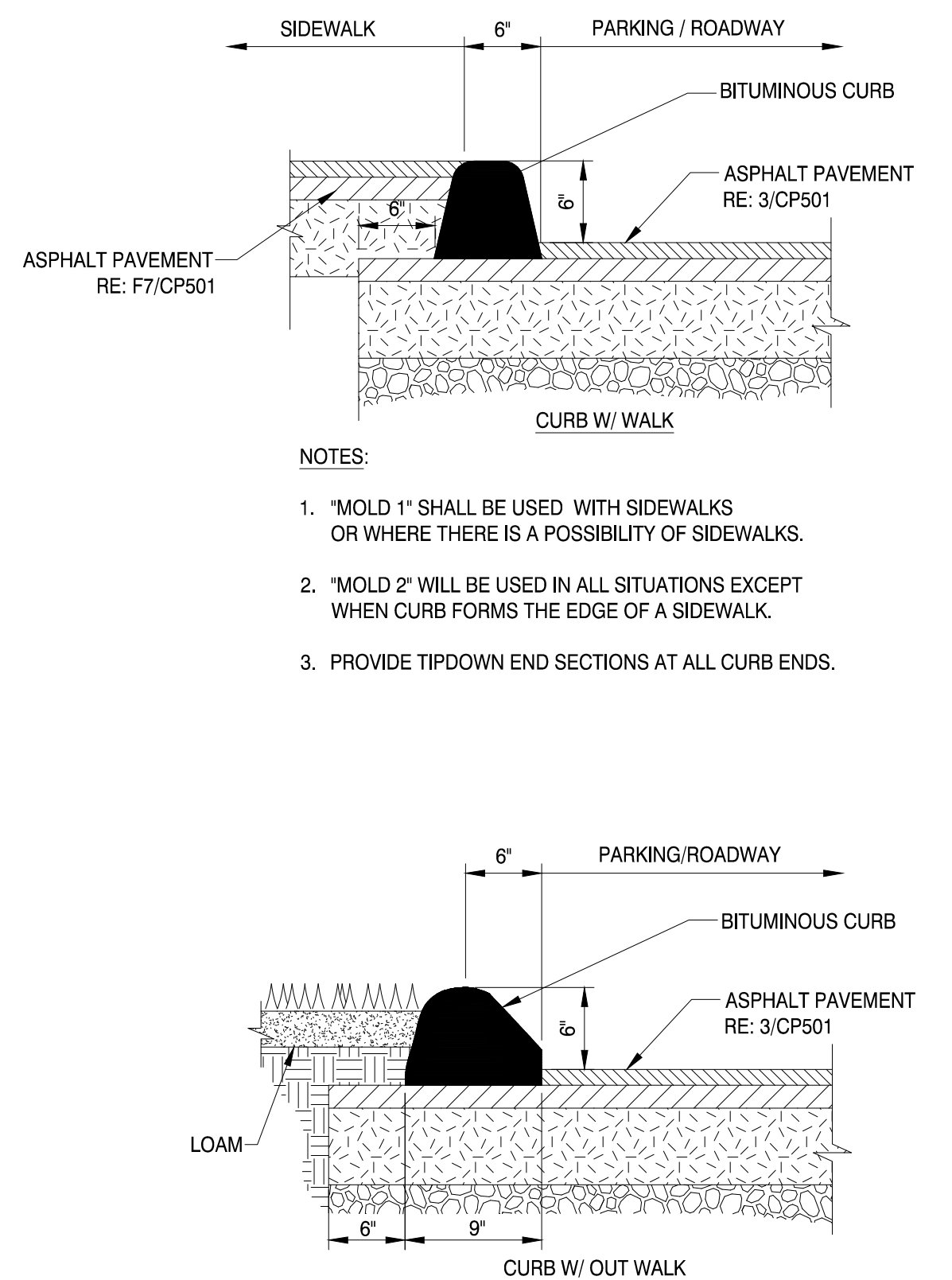
SIGN POST D6 3/4"=1"



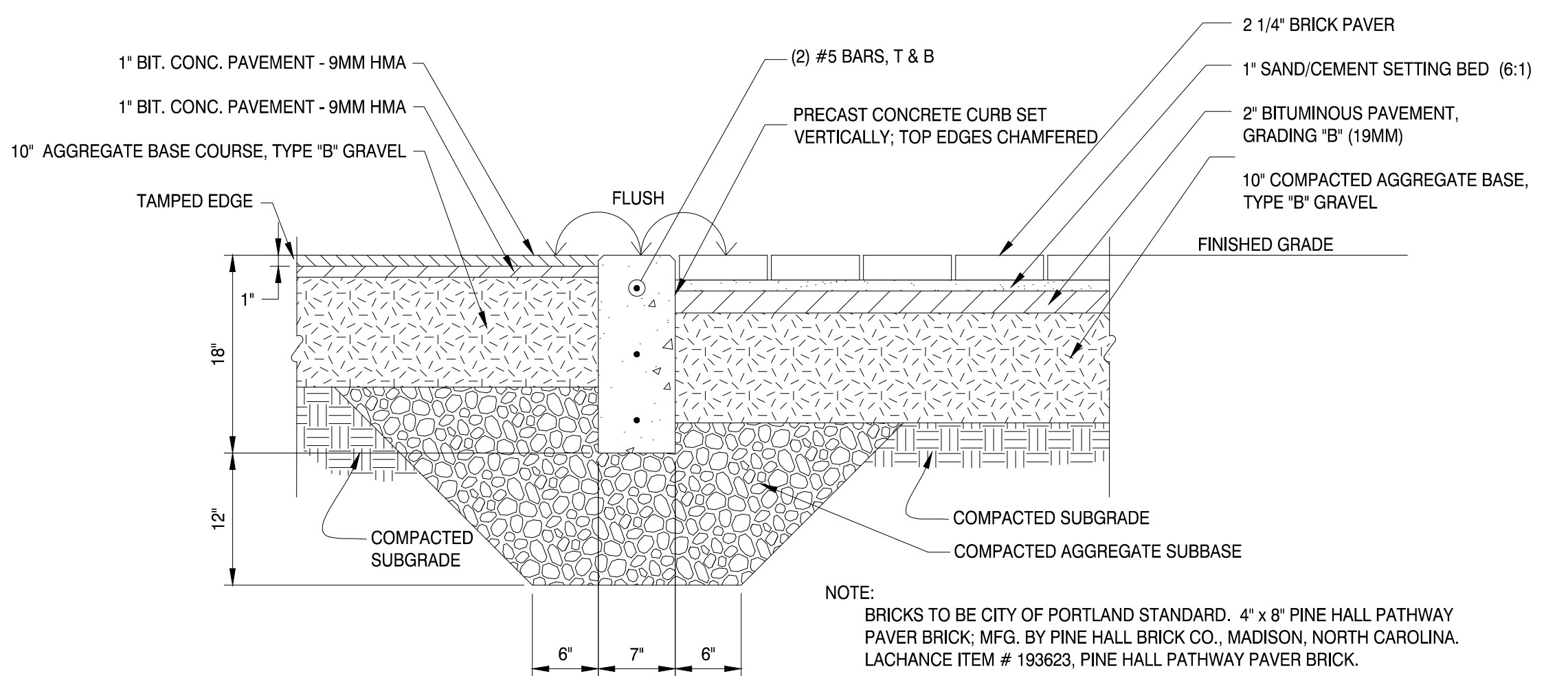
NOTE:

ALUMINUM SIGN PANEL FLUSH MOUNTED TO SUPPORT POST. PRESSURE-SENSITIVE VINYL GRAPHICS LETTERING STYLE AND COPY TO MEET CURRENT APPLICABLE STATE OF MAINE D.O.T. CODES, MUTCD STANDARDS, AND ADA REQUIREMENTS.

SIGN SCEDULE D4 NOT TO SCALE



SLIP FORM CURB D1 1"=1"

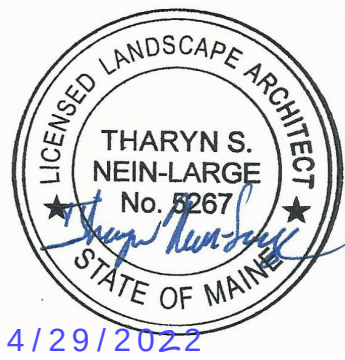


CONCRETE CURB @ PAVER TO ASPHALT WALK EDGE A1 1"=1"

| REV | DESCRIPTION                                           | DATE       |
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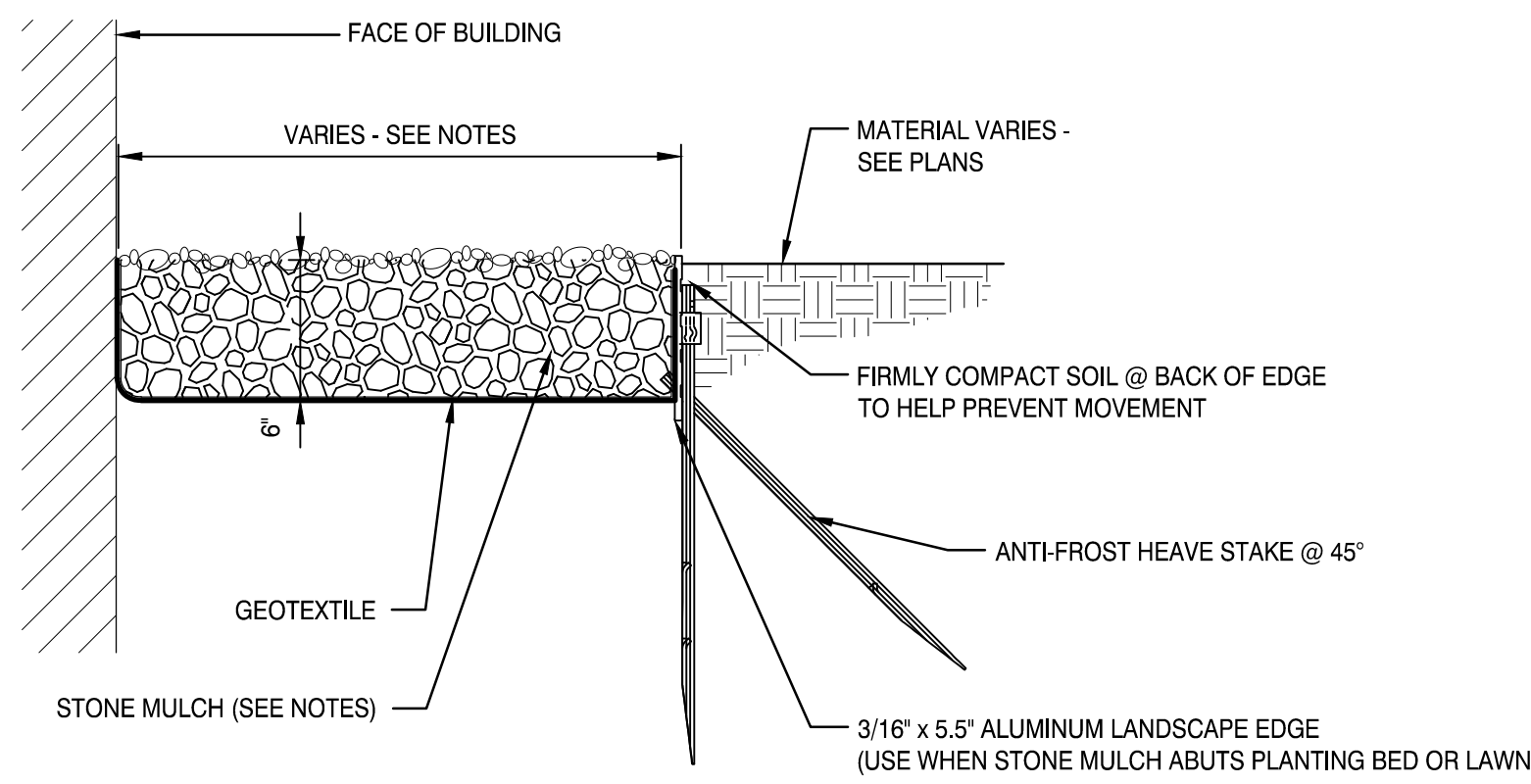
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SITE LAYOUT DETAILS

|                        |                   |
|------------------------|-------------------|
| SHEET TITLE:           | 0                 |
| SCALE: AS SHOWN        |                   |
| PROJECT MANAGER: KD    | PROJECT NO: 21004 |
| A/E OF RECORD: TNL     |                   |
| JOB CAPTAIN: ECC       |                   |
| DRAWN BY: TNL          |                   |
| SMRT FILE: CP502-21004 | SHEET NO. CP502   |

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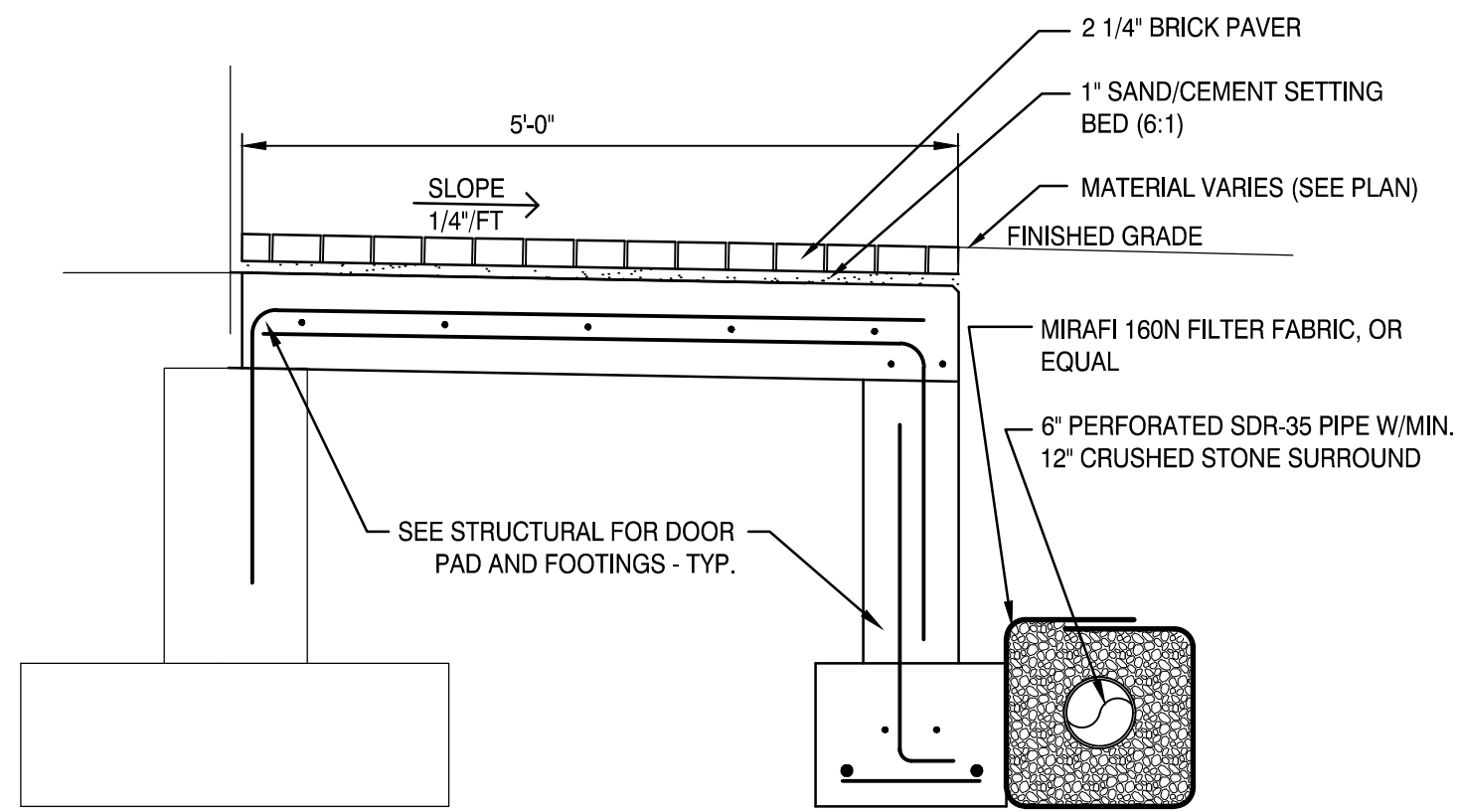




**NOTES:**

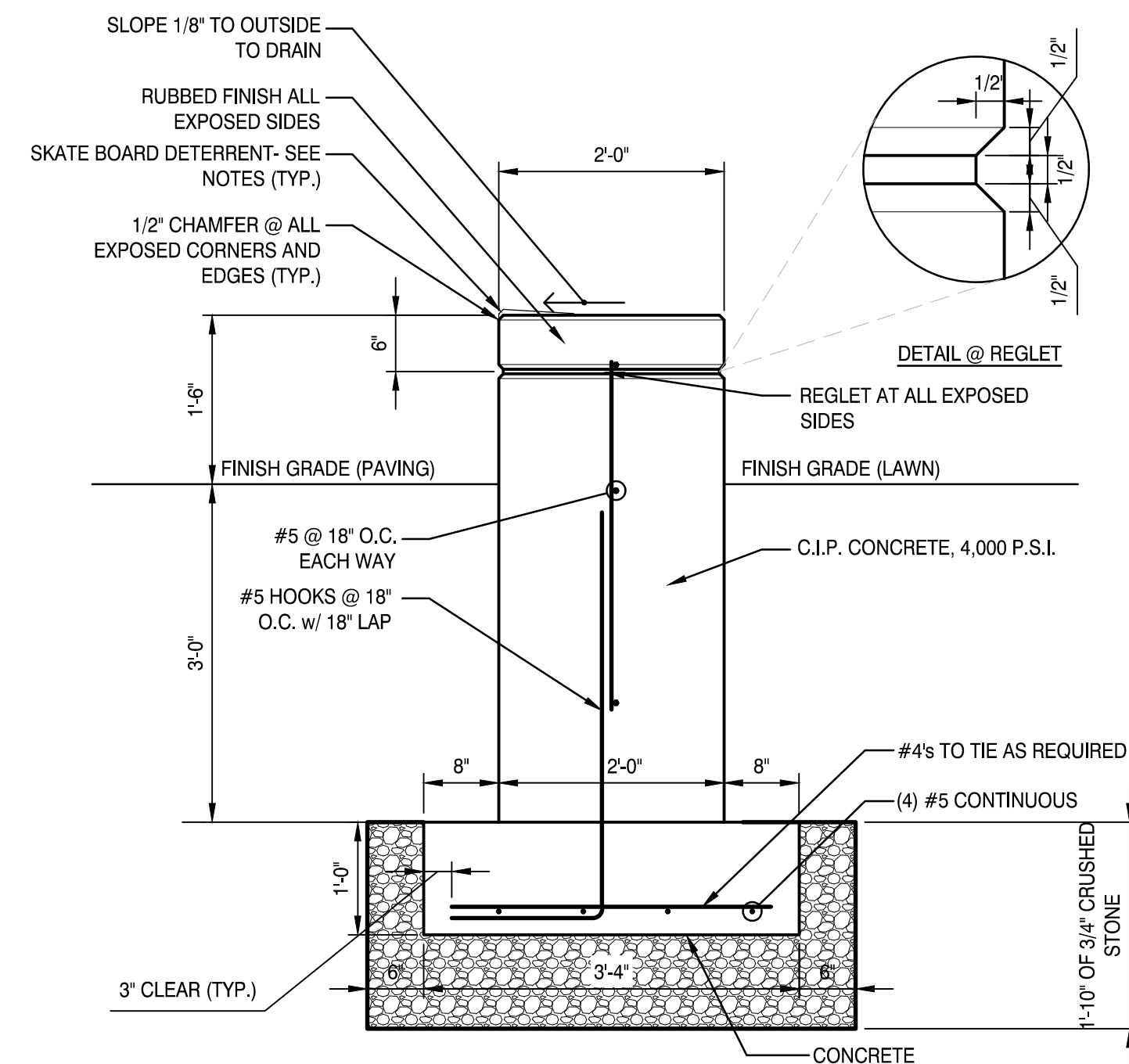
1. STONE MULCH TO BE ROUNDED RIVERSTONE, 3" INCHES DIA. MAX., WASHED AND FREE OF FOREIGN OR ORGANIC MATERIALS.
2. STANDARD MAINTENANCE STRIP TO BE 18" WIDE.
3. STANDARD DRIP STRIP TO BE WIDTH OF BUILDING EAVE PLUS 12" UNLESS SHOWN OTHERWISE.
4. EDGE TO BE BY SURE-LOC ALUMINUM EDGING CORP. OR APPROVED EQUAL.
  - MILL FINISH
  - 12" STAKES
  - ANTI-FROST HEAVE STAKE POCKETS @ 8" O.C.

**STONE MULCH STRIP** (G10)  
1/2"=1'



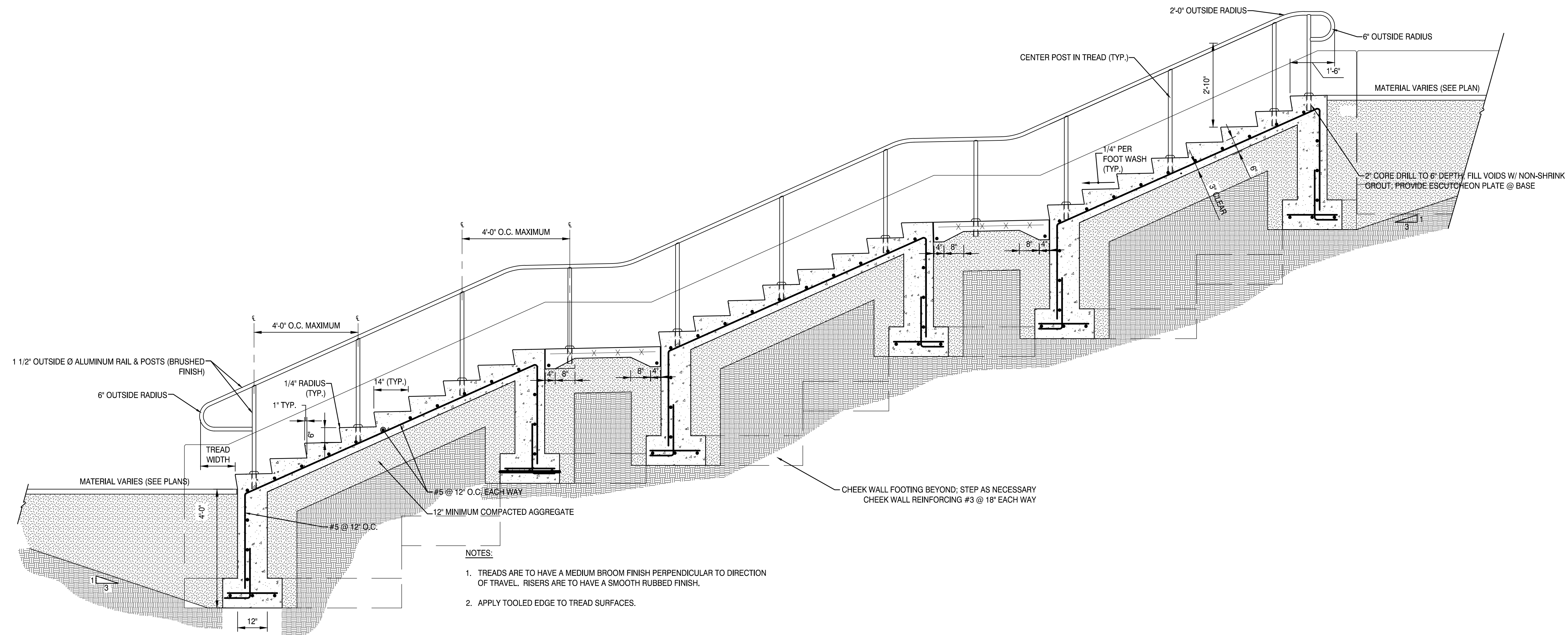
NOTE:  
BRICKS TO BE CITY OF PORTLAND STANDARD. 4" x 8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

**BRICK @ DOOR PAD** (G6)  
3/4"=1'



- NOTES:
1. SKATEBOARD DETERRENTS SHALL BE SURFACE MOUNTED ALUMINUM.
  2. MATERIAL SHALL BE 6061-T6 ALUMINUM WITH A TYPE II HARD ANODIZED FINISH.
  3. ANCHORING SHALL BE CONCEALED 'G' PIN ANCHORS WITH A TWO-PART EPOXY.
  4. SPACING SHALL BE 18" ON CENTER MAXIMUM.

**C.I.P. SEAT WALL** (G2)  
3/4"=1'



**NOTES:**

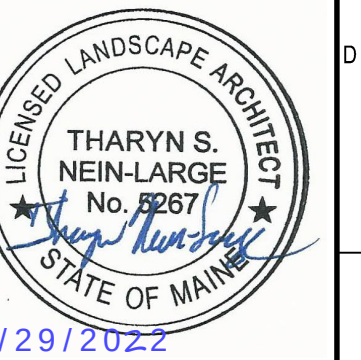
1. TREADS ARE TO HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL. RISERS ARE TO HAVE A SMOOTH RUBBED FINISH.
2. APPLY TOOLED EDGE TO TREAD SURFACES.

**CONCRETE STAIR** (A1)  
1/2"=1'

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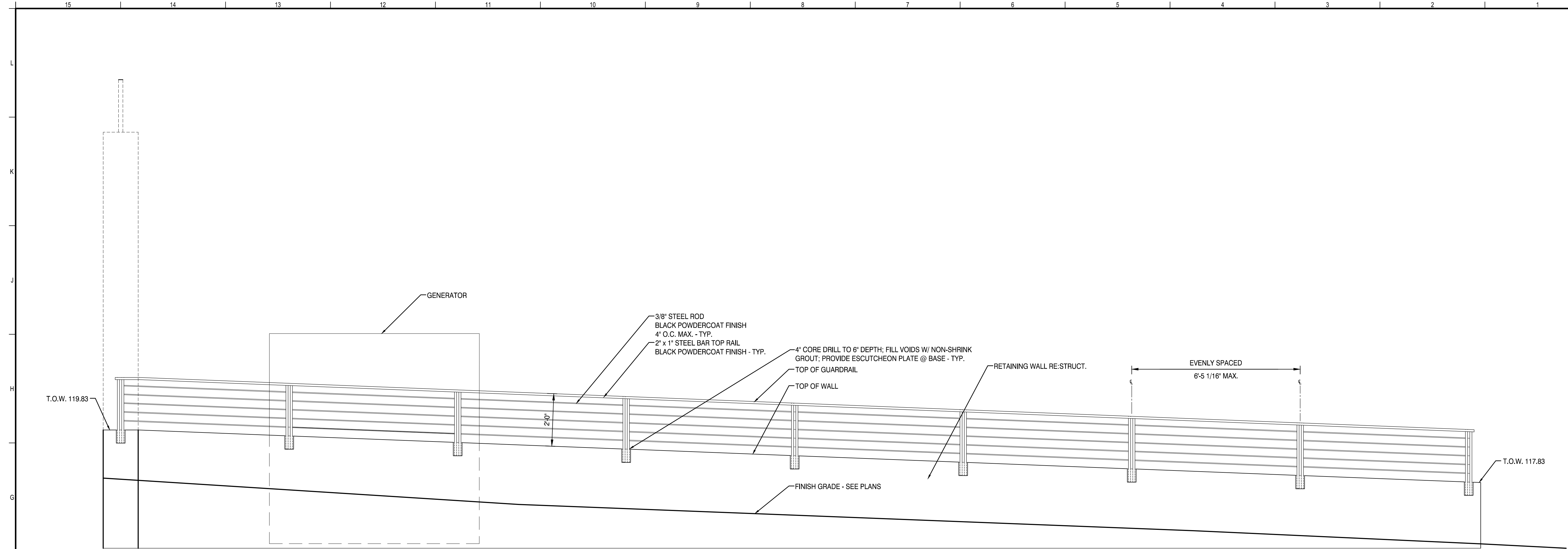
**SITE LAYOUT DETAILS**

SHEET TITLE:

|                     |                        |                   |
|---------------------|------------------------|-------------------|
| 0                   | SCALE: AS SHOWN        | PROJECT NO: 21004 |
| PROJECT MANAGER: KD | A/E OF RECORD: TNL     | JOB CAPTAIN: ECC  |
| DRAWN BY: TNL       | SMRT FILE: CP503-21004 | SHEET No. CP503   |

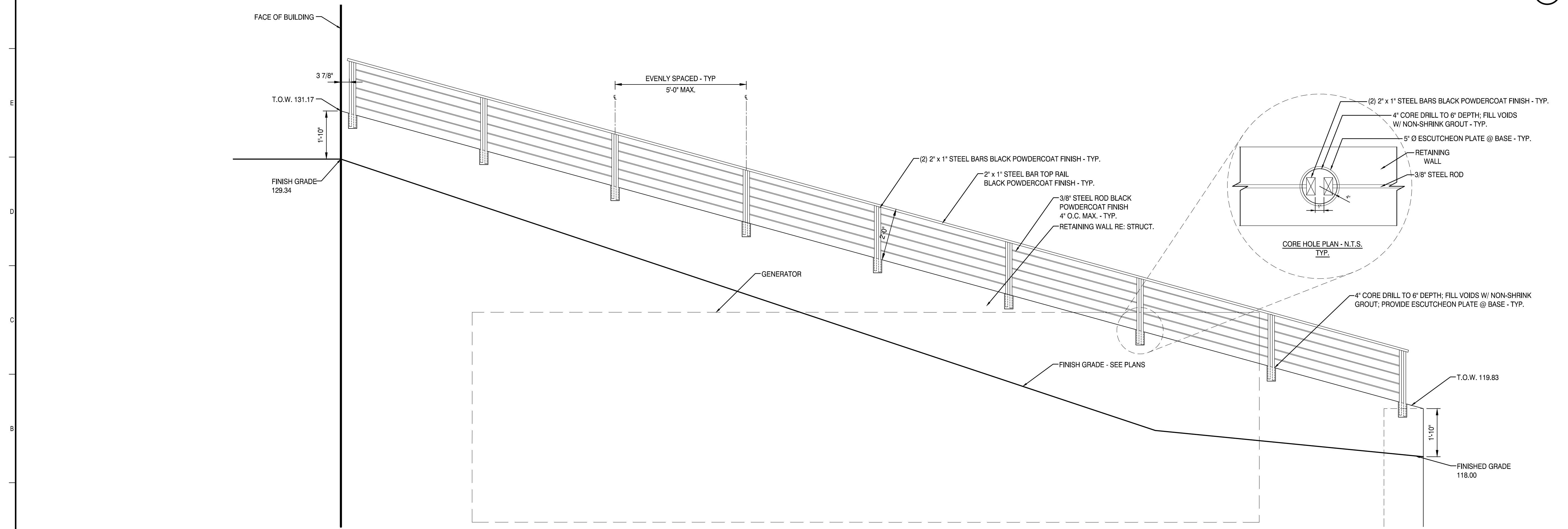
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NORTH FACADE

RETAINING WALL (F1)  
N.T.S.



EAST FACADE

RETAINING WALL (A1)  
N.T.S.

UNE

UNIVERSITY OF  
NEW ENGLAND

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BIDDEFORD, MAINE 04005

|     |                                                          |            |
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SITE LAYOUT DETAILS

SHEET TITLE:

0  
SCALE: AS SHOWN

PROJECT MANAGER: KD  
A/E OF RECORD: TNL  
JOB CAPTAIN: ECC  
DRAWN BY: TNL  
SMRT FILE: CP504-21004

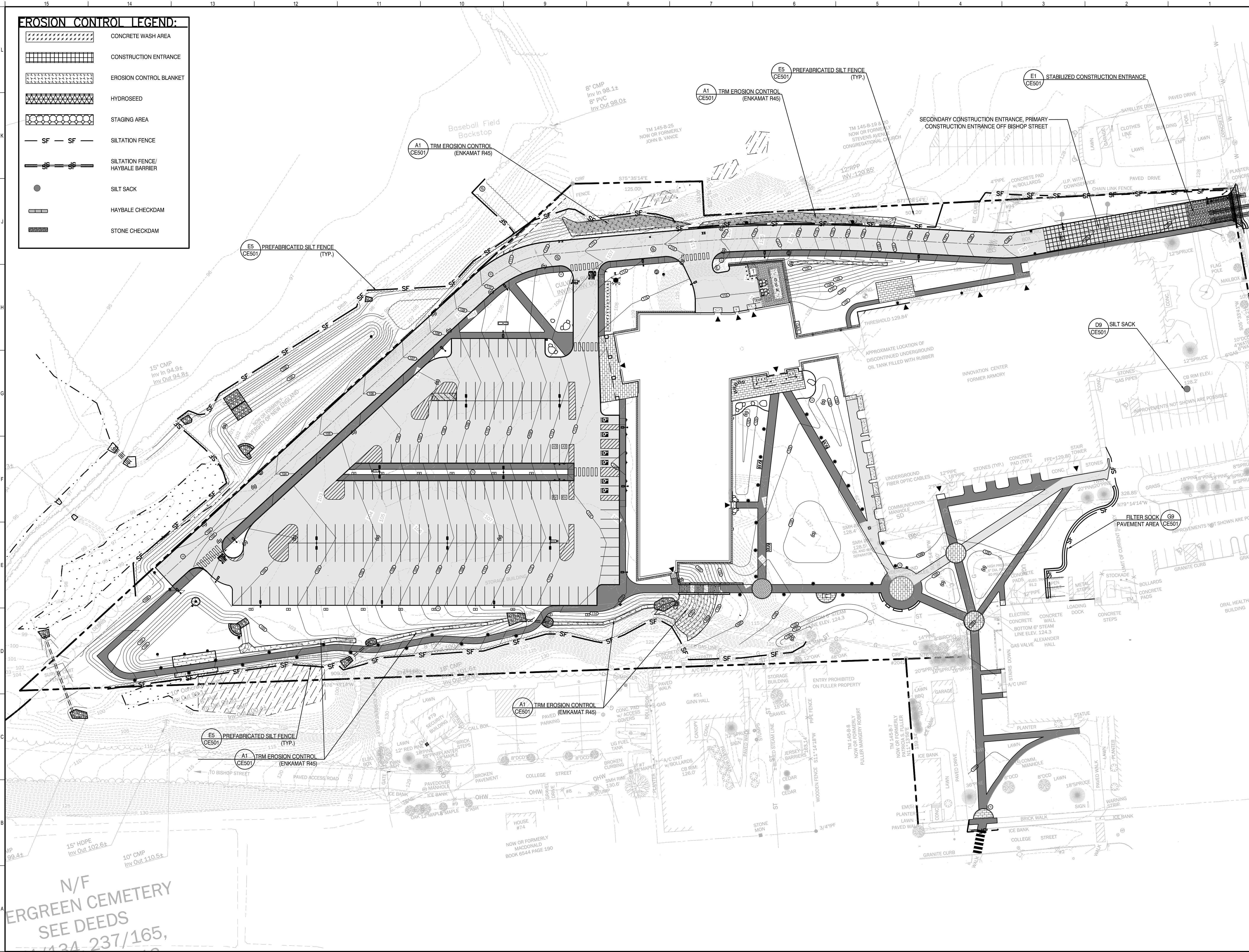
PROJECT NO: 21004  
CP504  
SHEET NO. 1  
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**EROSION CONTROL LEGEND:**

- CONCRETE WASH AREA
- CONSTRUCTION ENTRANCE
- EROSION CONTROL BLANKET
- HYDROSEED
- STAGING AREA
- SILTATION FENCE
- SILTATION FENCE/ HAYBALE BARRIER
- SILT SACK
- HAYBALE CHECKDAM
- STONE CHECKDAM



**UNE**  
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| REV | DESCRIPTION                                           | DATE       |
|-----|-------------------------------------------------------|------------|
| 0   | ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |
| 1   | ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |

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STATE OF MAINE  
THOMAS W. BAUCHER  
Professional Engineer  
4/29/2022

University of New England  
THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES  
780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018  
EROSION & SEDIMENT CONTROL  
PLAN

SHEET TITLE:

0 10' 20' 40' 80' 120'

SCALE: 1" = 40'

PROJECT MANAGER: KD PROJECT NO: 21004

A/E OF RECORD: TWS

JOB CAPTAIN: ECC

DRAWN BY: TNL

SMRT FILE: CE101-21004 SHEET No.

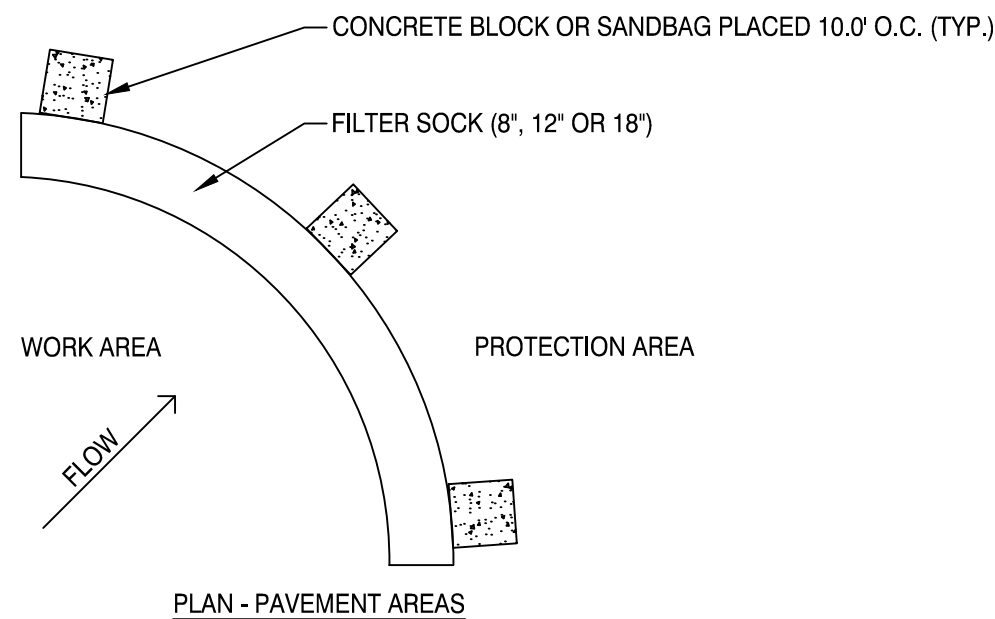
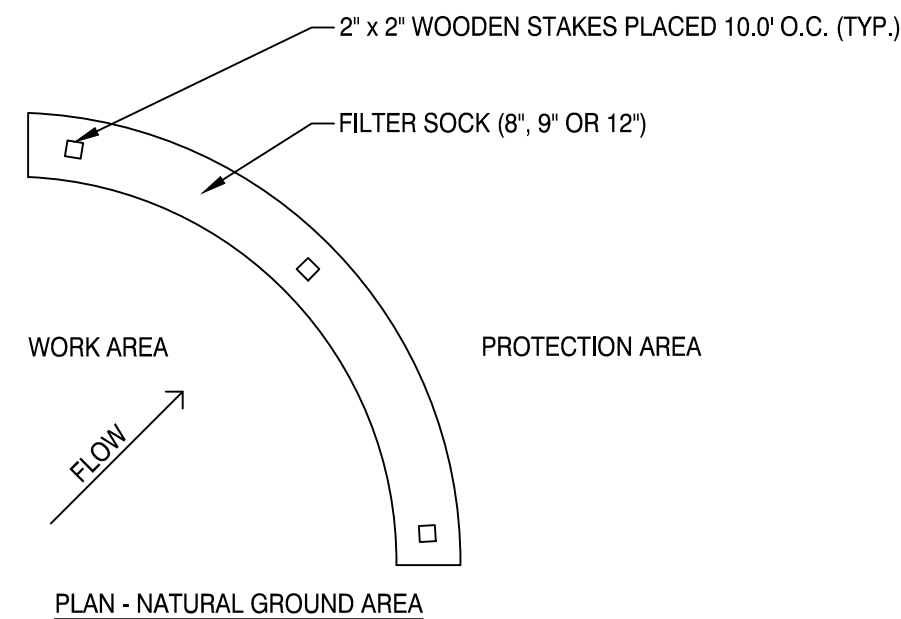
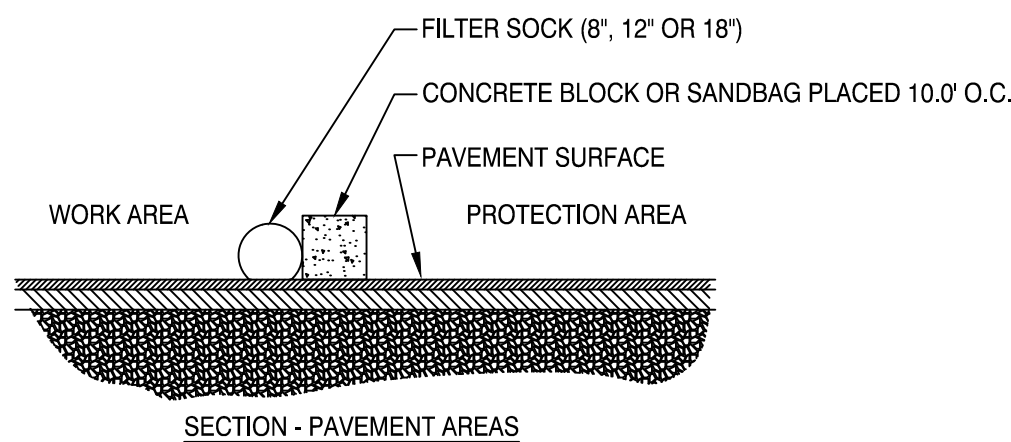
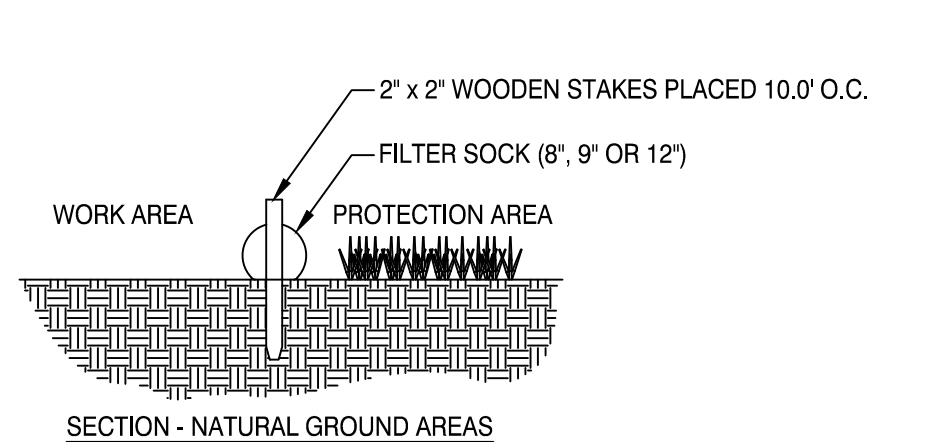
**CE101**

NOT FOR CONSTRUCTION



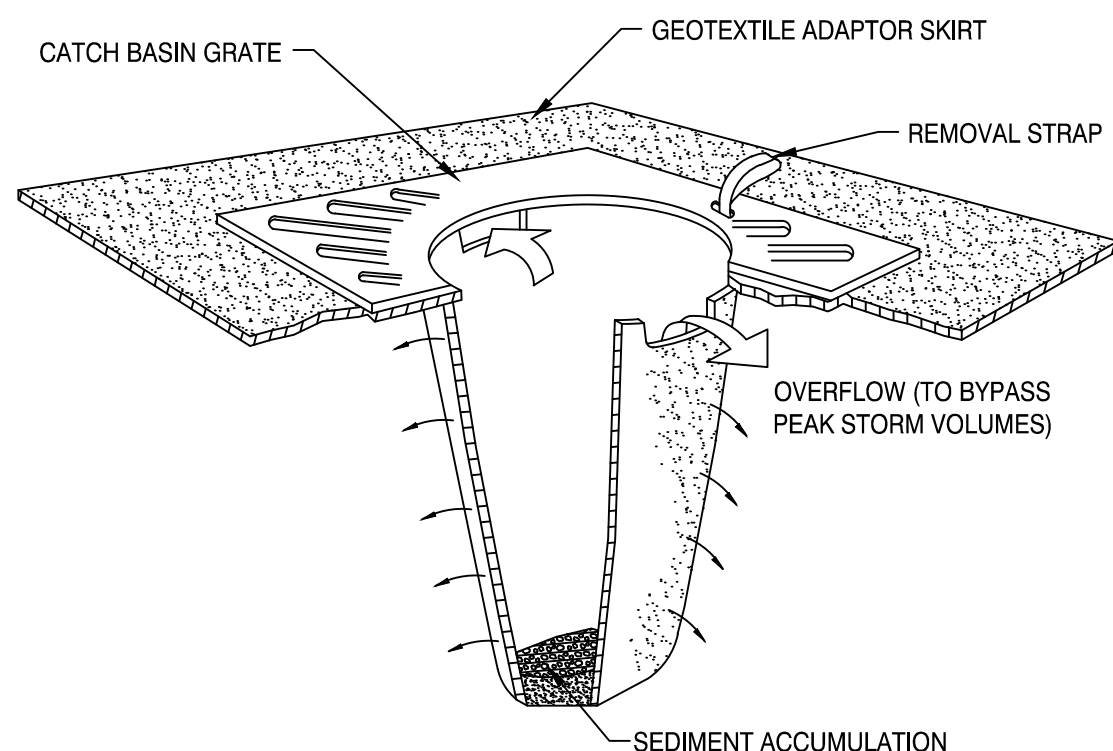






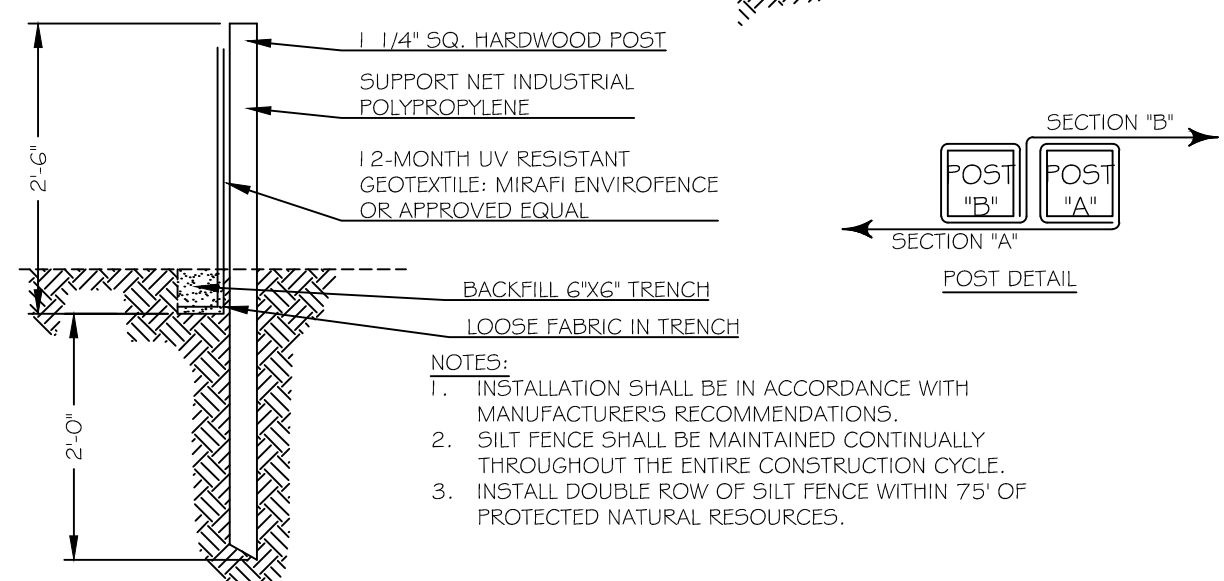
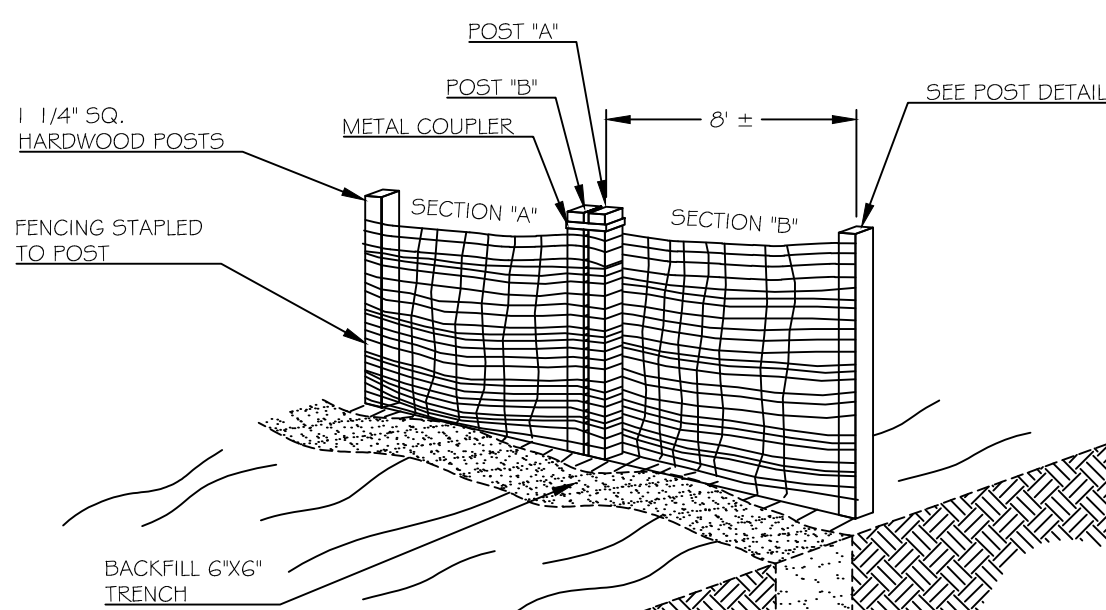
- NOTES:
1. SOCK SIZE TO BE PER MANUFACTURER'S RECOMMENDATION FOR THE APPLICATION.
  2. FILTER MATERIAL TO BE PER MANUFACTURER'S RECOMMENDATION FOR THE APPLICATION.
  3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER AFTER SITE IS PERMANENTLY STABILIZED.

FILTER SOCK  
NTS (G9)

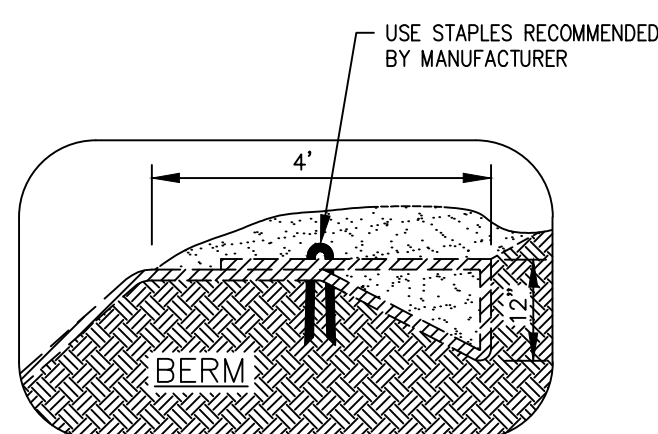


- NOTES:
1. CATCH BASIN PROTECTION TO BE "SILT SACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).
  2. INSERT TO BE EMPTIED IN AN APPROVED MANNER WHEN IT IS 1/2 FULL OF SEDIMENT.
  3. INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN AS REQUIRED.

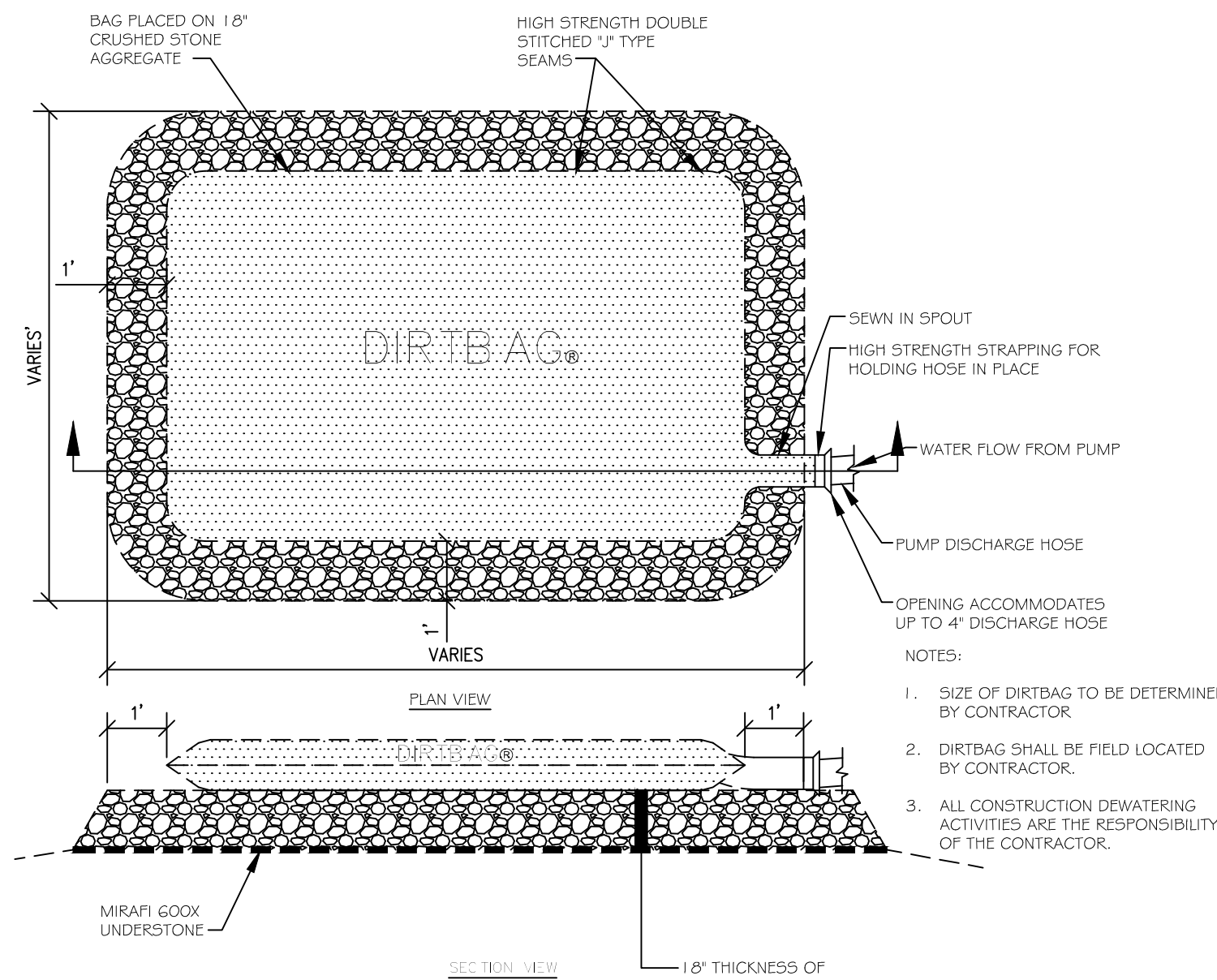
SILT SACK  
NTS (D9)



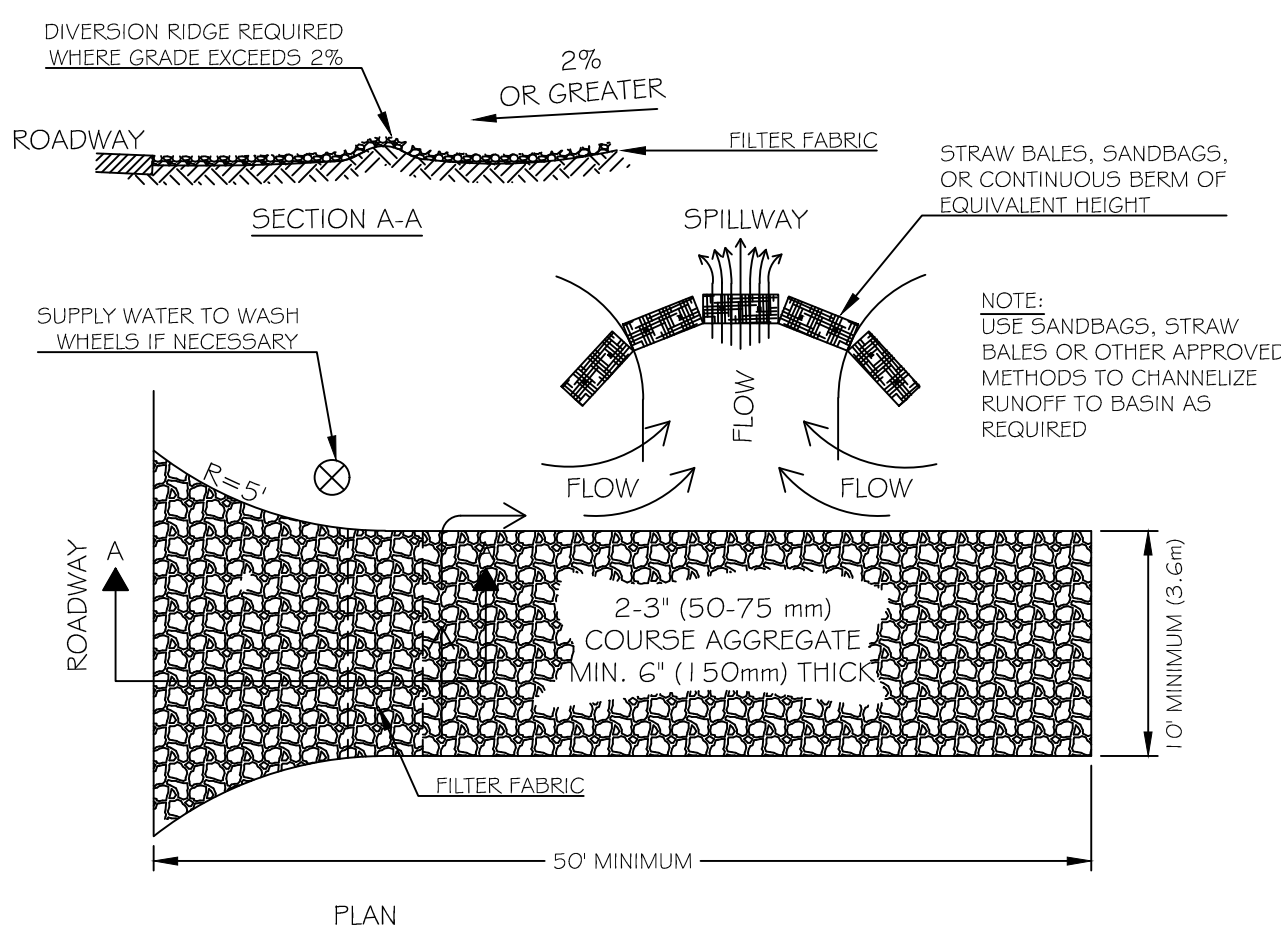
PREFABRICATED SILT FENCE  
NTS (E5)



- INSTALLATION INSTRUCTIONS:
1. TURF REINFORCEMENT MAT (TRM) MATERIAL SHALL BE ENKAMAT R45, OR APPROVED EQUAL.
  2. EROSION CONTROL BLANKET (ECB) SHALL BE BIONET 575BN SINGLE NET STRAW BLANKET BY NORTH AMERICAN GREEN OR APPROVED EQUAL.
  3. FOR TRM INSTALLATION ONLY:
    - 3.1. APPLY 5' OF LOAM ONTO THE GROUND SURFACE.
    - 3.2. OVER TOP THE 5' OF LOAM, UNROLL MAT IN THE DIRECTION OF WATER FLOW.
  4. MAT SHOULD LIE FLAT. DO NOT STRETCH MAT OVER GROUND. STRETCHING MAY CAUSE MAT TO BRIDGE DEPRESSIONS IN THE SURFACE AND ALLOW EROSION UNDERNEATH.
  5. BURY TRANSVERSE TERMINAL ENDS OF MAT TO SECURE AND PREVENT EROSION FLOW UNDERNEATH.
  6. SECURE MAT SNUGLY INTO ALL TRANSVERSE CHECK SLOTS.
  7. BACKFILL AND COMPACT TRENCHES AND CHECK SLOTS AFTER STAKING THE MAT IN BOTTOM OF TRENCH.
  8. OVERLAP ROLL ENDS BY THREE (3) FEET (MIN.) WITH UPSLOPE MAT ON TOP TO PREVENT UPLIFT OF MAT END BY WATER FLOW. IF INSTALLING IN THE DIRECTION OF A CONCENTRATED WATER FLOW, START NEW ROLLS IN A TRANSVERSE DITCH.
  9. OVERLAP ADJACENT EDGES OF MAT BY THREE (3) INCHES (MIN.) AND STAKE.
  10. USE WOOD STAKES OR STAPLES FOR PINNING MAT TO THE GROUND SURFACE, PER MANUFACTURER'S RECOMMENDATIONS.
  11. IN ALL TRANSVERSE TERMINAL TRENCHES AND CHECK SLOTS, STAKE EACH MAT AT ITS CENTER AND OVERLAP EDGES BEFORE BACKFILLING AND COMPACTING.
  12. STAKE OVERLAPS LONGITUDINALLY AT THREE (3) TO FIVE (5) FOOT INTERVALS.
  13. FOR TRM ONLY: WORK ADDITIONAL 1' OF LOAM INTO THE MAT AND THEN SEED AND MULCH.

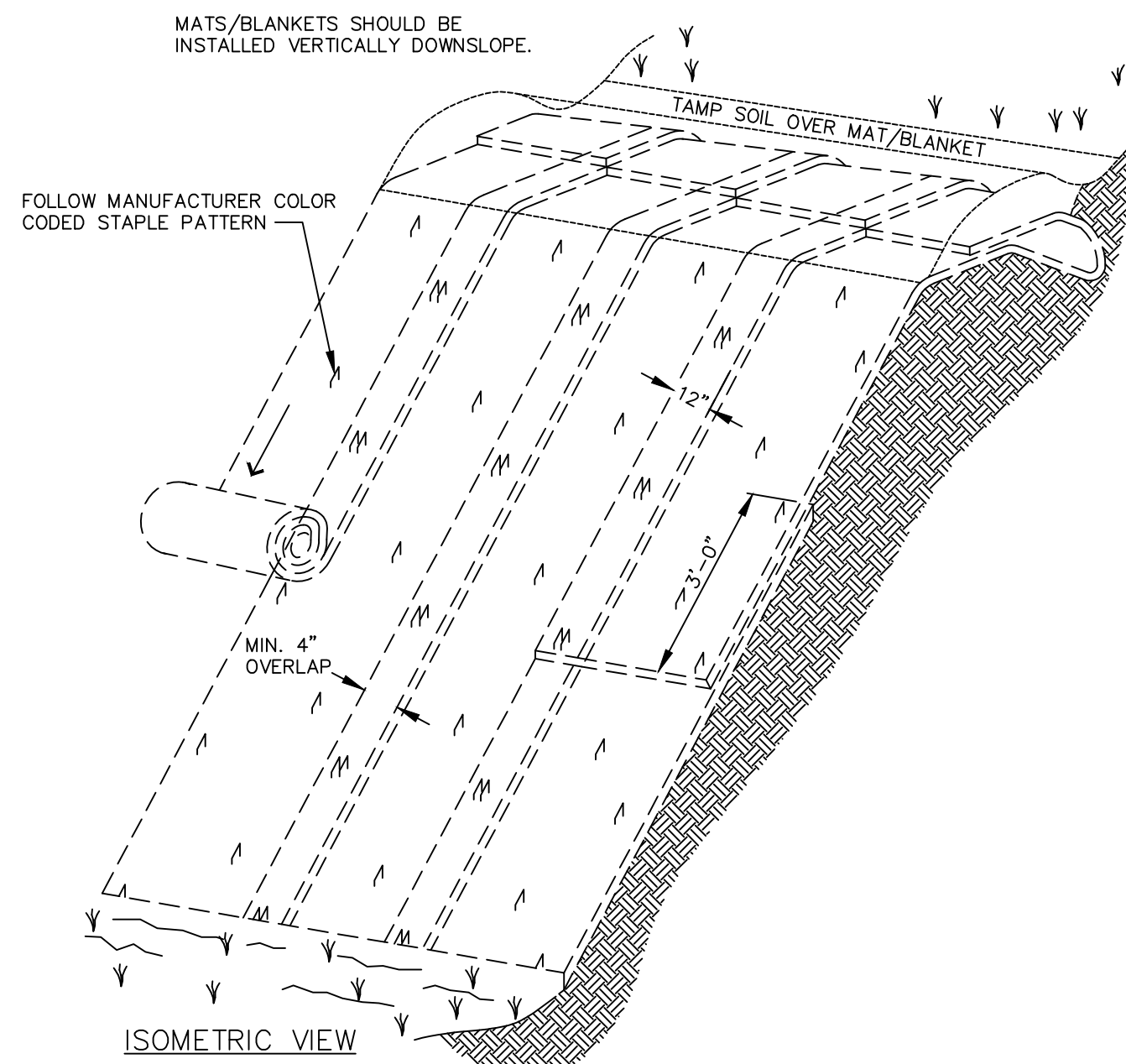


'DIRTBAG DEWATERING  
NTS (H1)



- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
  2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
  3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS ONTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
  4. TRACKED SEDIMENT SHALL BE REMOVED BY VACUUM SWEEPING (NOT MECHANICAL/BROOM SWEEPING) PRIOR TO THE NEXT STORM EVENT.

STABILIZED CONSTRUCTION ENTRANCE  
NTS (E1)

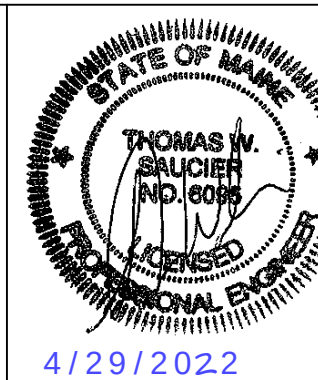


STRAW MATTING AND TRM EROSION CONTROL  
NTS (A1)

|     |                                                          |            |
|-----|----------------------------------------------------------|------------|
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| REV | DESCRIPTION                                              | DATE       |

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04-29-2022

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780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018

EROSION & SEDIMENT CONTROL  
DETAILS

SHEET TITLE:

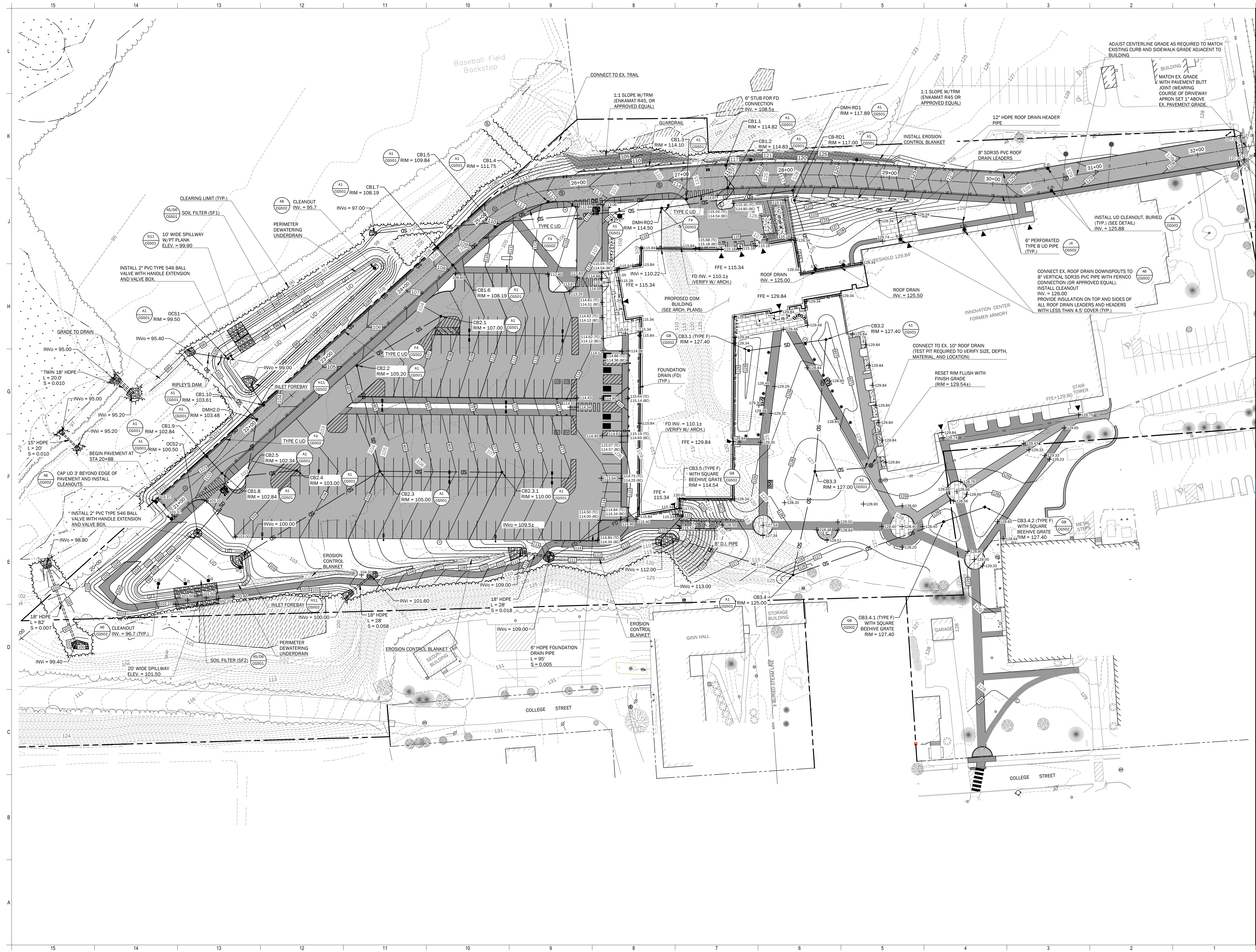


SCALE: AS SHOWN

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TWS         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | TNL         |             |       |
| SMRT FILE:       | CE501-21004 | SHEET No.   | CE501 |

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| REV | DESCRIPTION                                           | DATE      |
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**THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES**  
780 STEVENS AVE. PORTLAND, ME

**SITE GRADING & DRAINAGE PLAN**

SCALE: 1" = 40'

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TWS         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | TNL         |             |       |
| SMRT FILE:       | CG101-21004 | SHEET No.   | CG101 |

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DRainage Structure Table

| Structure Name:  | Structure Details:                                                                                               | Pipes In:                                                                                                                                                               | Pipes Out                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| CB-RD1           | RIM = 117.00<br>INV IN (12") = 112.40<br>INV IN (12") = 113.00<br>INV OUT (12") = 111.90                         | FROM : 12" HDPE, INV IN =112.40, L = 162', S = 0.083<br>FROM : 12" HDPE, INV IN =113.00, L = 70', S = 0.166                                                             | TO DMH-RD1: 12" HDPE, INV OUT =111.90, L = 6', S = 0.020               |
| CB1.1*           | RIM = 114.82<br>INV OUT (12") = 111.27                                                                           |                                                                                                                                                                         | TO CB1.2: 12" HDPE, INV OUT =111.27, L = 18', S = 0.031                |
| CB1.2*           | RIM = 114.83<br>INV IN (12") = 110.60<br>INV OUT (12") = 110.50                                                  | FROM CB1.1: 12" HDPE, INV IN =110.60, L = 18', S = 0.031                                                                                                                | TO CB1.3: 12" HDPE, INV OUT =110.50, L = 37', S = 0.010 (PERFORATED)   |
| CB1.3            | RIM = 114.10<br>INV IN (12") = 110.09<br>INV OUT (15") = 109.84                                                  | FROM CB1.2: 12" HDPE, INV IN =110.09, L = 37', S = 0.010 (PERFORATED)                                                                                                   | TO CB1.4: 15" HDPE, INV OUT =109.84, L = 129', S = 0.030 (PERFORATED)  |
| CB1.4            | RIM = 111.75<br>INV IN (15") = 105.82<br>INV OUT (15") = 105.72                                                  | FROM CB1.3: 15" HDPE, INV IN =105.82, L = 129', S = 0.030 (PERFORATED)                                                                                                  | TO CB1.5: 15" HDPE, INV OUT =105.72, L = 53', S = 0.025 (PERFORATED)   |
| CB1.5*           | RIM = 109.84<br>INV IN (15") = 104.31<br>INV OUT (15") = 104.21                                                  | FROM CB1.4: 15" HDPE, INV IN =104.31, L = 53', S = 0.025 (PERFORATED)                                                                                                   | TO CB1.6: 15" HDPE, INV OUT =104.21, L = 51', S = 0.033 (PERFORATED)   |
| CB1.6*           | RIM = 108.19<br>INV IN (15") = 102.39<br>INV OUT (15") = 102.29                                                  | FROM CB1.5: 15" HDPE, INV IN =102.39, L = 51', S = 0.033 (PERFORATED)                                                                                                   | TO CB1.7: 15" HDPE, INV OUT =102.29, L = 18', S = 0.020                |
| CB1.7*           | RIM = 108.19<br>INV IN (15") = 101.85<br>INV OUT (15") = 101.75                                                  | FROM CB1.6: 15" HDPE, INV IN =101.85, L = 18', S = 0.020                                                                                                                | TO CB1.10: 15" HDPE, INV OUT =101.75, L = 222', S = 0.011 (PERFORATED) |
| CB1.8*           | RIM = 102.84<br>INV OUT (12") = 99.60                                                                            |                                                                                                                                                                         | TO CB1.9: 12" HDPE, INV OUT =99.60, L = 18', S = 0.005                 |
| CB1.9            | RIM = 102.84<br>INV IN (12") = 99.48<br>INV OUT (15") = 99.48                                                    | FROM CB1.8: 12" HDPE, INV IN =99.48, L = 18', S = 0.005                                                                                                                 | TO CB1.10: 15" HDPE, INV OUT =99.48, L = 70', S = 0.005 (PERFORATED)   |
| CB1.10           | RIM = 103.61<br>INV IN (15") = 99.11<br>INV IN (15") = 99.20<br>INV OUT (15") = 99.11                            | (PERFORATED)<br>FROM CB1.9: 15" HDPE, INV IN =99.11, L = 70', S = 0.005<br>FROM CB1.7: 15" HDPE, INV IN =99.20, L = 222', S = 0.011 (PERFORATED)                        | TO : 15" HDPE, INV OUT =99.11, L = 20', S = 0.005                      |
| CB2.1            | RIM = 107.00<br>INV OUT (12") = 102.51                                                                           |                                                                                                                                                                         | TO CB2.2: 12" HDPE, INV OUT =102.51, L = 90', S = 0.010                |
| CB2.2            | RIM = 105.20<br>INV IN (12") = 101.57<br>INV OUT (15") = 101.57                                                  | FROM CB2.1: 12" HDPE, INV IN =101.57, L = 90', S = 0.010                                                                                                                | TO CB2.3: 15" HDPE, INV OUT =101.57, L = 100', S = 0.005               |
| CB2.3            | RIM = 105.00<br>INV IN (15") = 101.02<br>INV IN (12") = 101.27<br>INV OUT (18") = 100.77                         | FROM CB2.2: 15" HDPE, INV IN =101.02, L = 100', S = 0.005<br>FROM CB2.3.1: 12" HDPE, INV IN =101.27, L = 114', S = 0.027                                                | TO : 18" HDPE, INV OUT =100.77, L = 153', S = 0.005                    |
| CB2.3.1          | RIM = 110.00<br>INV OUT (12") = 104.50                                                                           |                                                                                                                                                                         | TO CB2.3: 12" HDPE, INV OUT =104.50, L = 114', S = 0.027               |
| CB2.4            | RIM = 103.00<br>INV OUT (12") = 99.00                                                                            |                                                                                                                                                                         | TO CB2.5: 12" HDPE, INV OUT =99.00, L = 44', S = 0.021                 |
| CB2.5            | RIM = 102.34<br>INV IN (12") = 98.00<br>INV IN (15") = 96.13<br>INV OUT (18") = 96.13                            | FROM CB2.4: 12" HDPE, INV IN =98.00, L = 44', S = 0.021<br>FROM OCS2: 15" HDPE, INV IN =96.13, L = 69', S = 0.005                                                       | TO DMH2.0: 18" HDPE, INV OUT =96.13, L = 51', S = 0.005                |
| CB3.1 (TYPE F)   | RIM = 127.40<br>INV OUT (12") = 123.80                                                                           |                                                                                                                                                                         | TO CB3.2: 12" HDPE, INV OUT =123.80, L = 71', S = 0.010                |
| CB3.2            | RIM = 127.40<br>INV IN (12") = 123.05<br>INV OUT (12") = 122.95                                                  | FROM CB3.1 (TYPE F): 12" HDPE, INV IN =123.05, L = 71', S = 0.010                                                                                                       | TO CB3.3: 12" HDPE, INV OUT =122.95, L = 124', S = 0.010               |
| CB3.3            | RIM = 127.00<br>INV IN (12") = 121.67<br>INV IN (10") = 122.95<br>INV OUT (15") = 121.42                         | FROM CB3.2: 12" HDPE, INV IN =121.67, L = 124', S = 0.010<br>FROM : 10" HDPE, INV IN =122.95, L = 47', S = 0.026                                                        | TO CB3.4: 15" HDPE, INV OUT =121.42, L = 98', S = 0.020                |
| CB3.4            | RIM = 125.00<br>INV IN (15") = 119.38<br>INV IN (12") = 121.00<br>INV OUT (15") = 119.28                         | FROM CB3.3: 15" HDPE, INV IN =119.38, L = 98', S = 0.020<br>FROM CB3.4.1 (TYPE F): 12" HDPE, INV IN =121.00, L = 150', S = 0.018                                        | TO : 15" HDPE, INV OUT =119.28, L = 119', S = 0.052                    |
| CB3.4.1 (TYPE F) | RIM = 127.40<br>INV IN (12") = 123.83<br>INV OUT (12") = 123.73                                                  | FROM CB3.4.2 (TYPE F): 12" HDPE, INV IN =123.83, L = 38', S = 0.010                                                                                                     | TO CB3.4: 12" HDPE, INV OUT =123.73, L = 150', S = 0.018               |
| CB3.4.2 (TYPE F) | RIM = 127.40<br>INV OUT (12") = 124.25                                                                           |                                                                                                                                                                         | TO CB3.4.1 (TYPE F): 12" HDPE, INV OUT =124.25, L = 38', S = 0.010     |
| CB3.5 (TYPE F)   | RIM = 114.54<br>INV OUT (8") = 112.16                                                                            |                                                                                                                                                                         | TO : 8" HDPE, INV OUT =112.16, L = 30', S = 0.005<br>D.I.,             |
| DMH-RD1          | RIM = 117.89<br>INV IN (12") = 111.71<br>INV OUT (12") = 110.73                                                  | FROM CB-RD1: 12" HDPE, INV IN =111.71, L = 6', S = 0.020                                                                                                                | TO DMH-RD2: 12" HDPE, INV OUT =110.73, L = 123', S = 0.005             |
| DMH-RD2          | RIM = 114.50<br>INV IN (10") = 109.38<br>INV IN (6") = 108.50<br>INV IN (12") = 110.10<br>INV OUT (15") = 108.40 | FROM : 10" HDPE, INV IN =109.38, L = 38', S = 0.021<br>FROM : 6" HDPE, INV IN =108.50, L = 2', S = 0.003<br>FROM DMH-RD1: 12" HDPE, INV IN =110.10, L = 123', S = 0.005 | TO : 15" HDPE, INV OUT =108.40, L = 276', S = 0.041                    |
| DMH2.0           | RIM = 103.48<br>INV IN (18") = 95.86<br>INV OUT (18") = 95.86                                                    | FROM CB2.5: 18" HDPE, INV IN =95.86, L = 51', S = 0.005                                                                                                                 | TO : 18" HDPE, INV OUT =95.86, L = 88', S = 0.005                      |
| OCS1             | RIM = 99.50<br>INV IN (6") = 95.50<br>INV OUT (12") = 95.50                                                      | FROM : 6" HDPE, INV IN =95.50, L = 23', S = -0.001                                                                                                                      | TO : 12" HDPE, INV OUT =95.50, L = 33', S = 0.003                      |
| OCS2             | RIM = 100.50<br>INV IN (6") = 96.50<br>INV OUT (15") = 96.50                                                     | FROM : 6" HDPE, INV IN =96.50, L = 61', S = -1.607                                                                                                                      | TO CB2.5: 15" HDPE, INV OUT =96.50, L = 69', S = 0.005                 |

\*PROVIDE FOR 6" UNDERDRAIN CONNECTION WITH INVERTS 3' BELOW RIM ELEVATION WHERE INDICATED ON PLAN.

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UNIVERSITY OF NEW ENGLAND

REV

DESCRIPTION

DATE

ISSUED FOR MAJOR SITE PLAN AND  
CONDITIONAL USE REVIEW

CURRENT ISSUE STATUS: 4/29/2022

TRUE NORTH:

STATE OF MAINE

THOMAS W. BRUCIER

NO. 0008

REGISTERED PROFESSIONAL ENGINEER

04-29-2022

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GRADING & DRAINAGE SCHEDULE

010'20'40'80'120'

SCALE: 1" = 40'

PROJECT MANAGER: KD

A/E OF RECORD: TWS

JOB CAPTAIN: ECC

DRAWN BY: TNL

SMRT FILE: CG102-21004

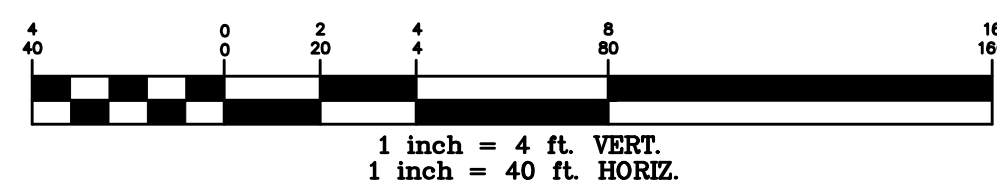
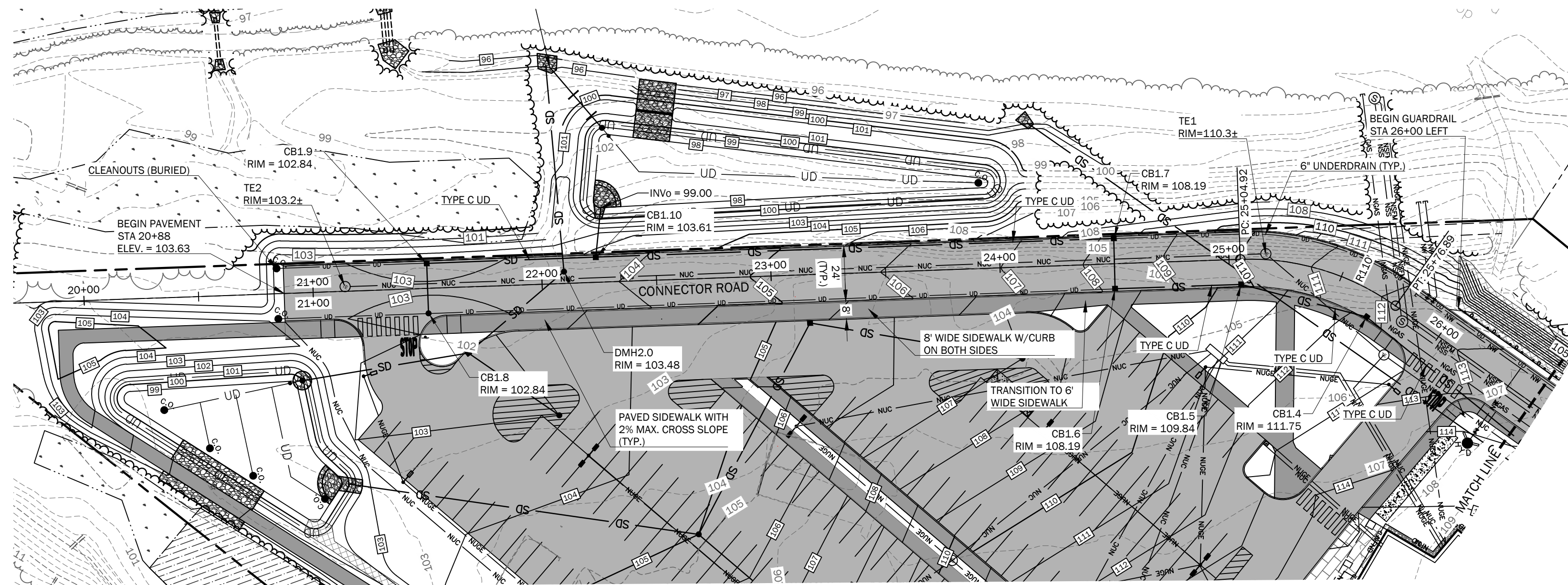
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CG102

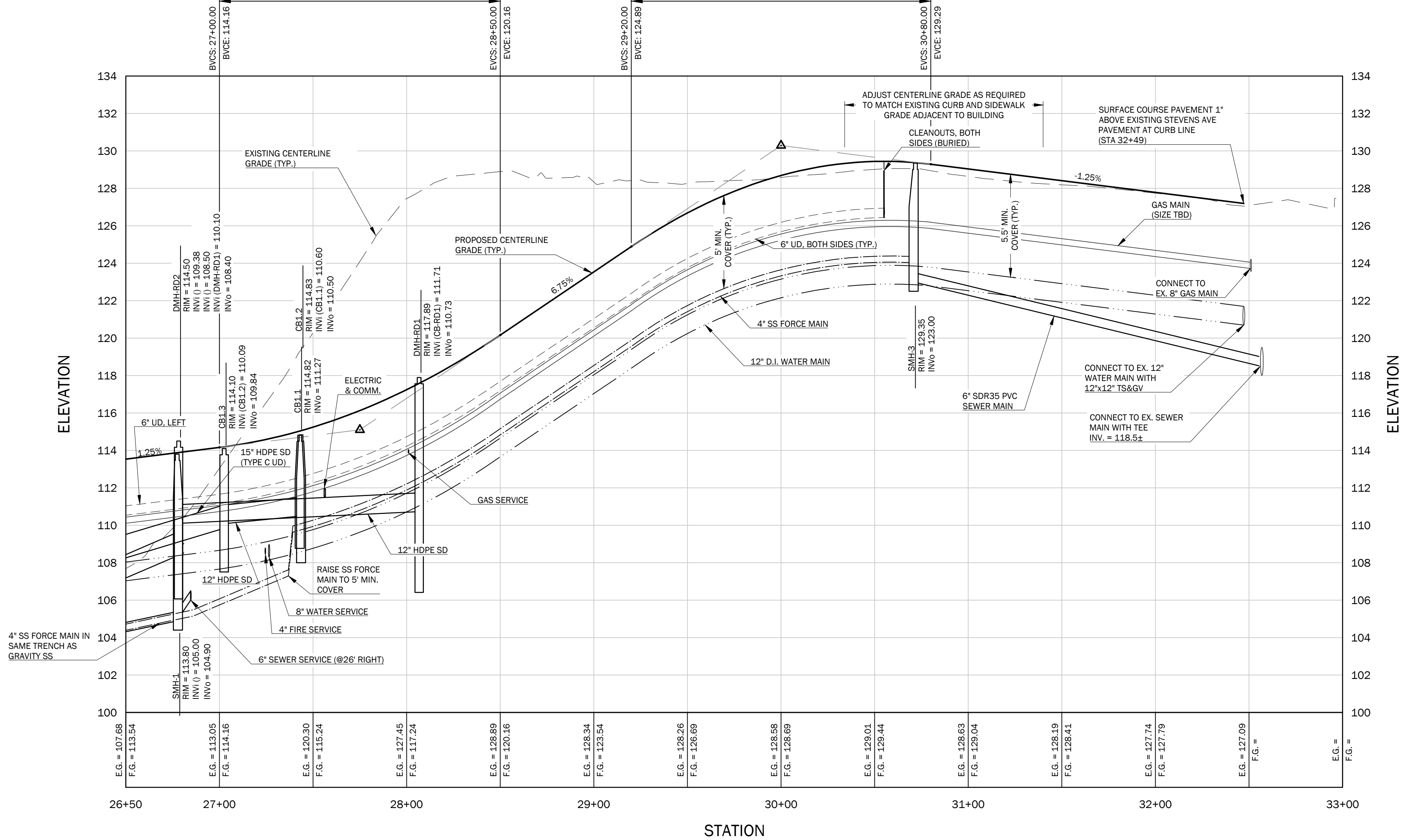
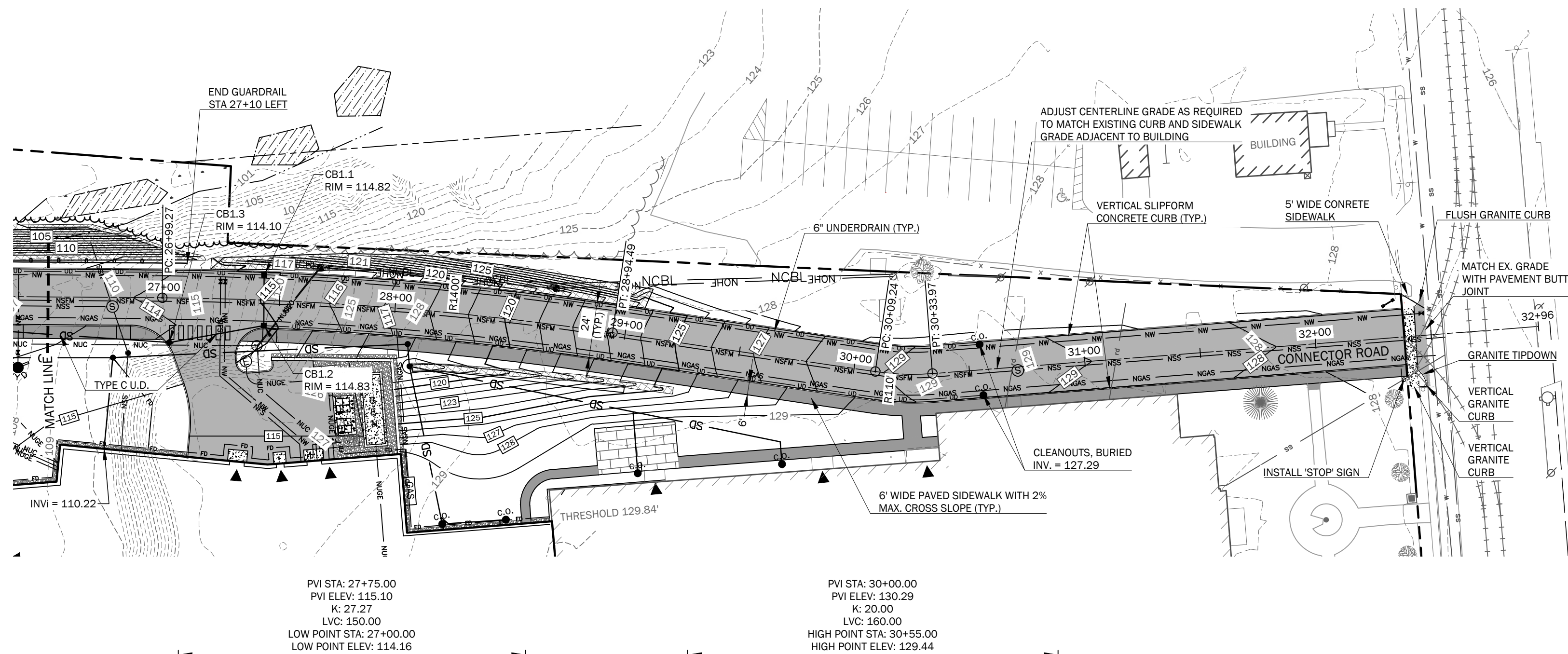
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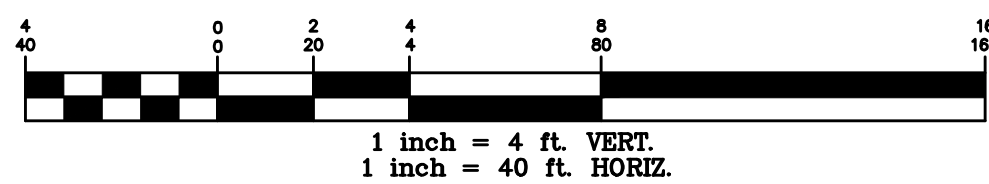




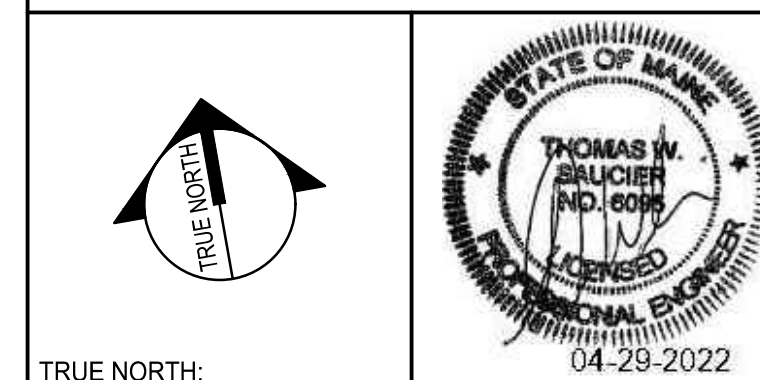




CONNECTOR ROAD PROFILE



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CURRENT ISSUE STATUS: 4/29/2022



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780 STEVENS AVE. PORTLAND, ME  
CONNECTOR ROAD PLAN & PROFILE  
STA 26+50 TO 33+00 (2 OF 2)



SCALE:  
PROJECT MANAGER: KD PROJECT NO: 21004  
A/E OF RECORD: TWS  
JOB CAPTAIN: ECC  
DRAWN BY: TNL  
SMRT FILE: CG202-21004

CG202



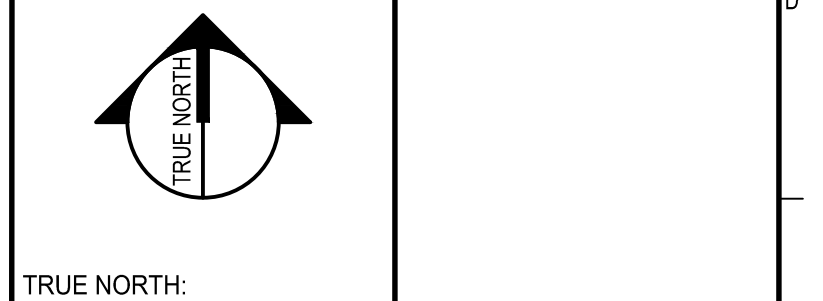
KEYNOTES:

- FIRST 14' OF WATER MAIN (STARTING FROM THE STREET LINE VALVE) SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- ALL JOINTS ON HYDRANT BRANCH SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- ALL PIPE 14" LEADING TO BLOWOFF SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- ALL JOINTS ON EACH SERVICE TO BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- MAINTAIN 6" MINIMUM OF SEPARATION BETWEEN NUGE AND PROPOSED AIR RELEASE VALVE
- MAINTAIN 4' OF SEPARATION BETWEEN NEW WATER MAIN AND CENTER LINE OF WATER MAIN
- MAINTAIN 11' OF SEPARATION BETWEEN NEW WATER MAIN AND NEW SEWER MAIN
- INITIAL WATER MAIN CONNECTION TO THE STUB SHALL BE DEFLECTED SUCH THAT IT COMES INTO THE REQUIRED ALIGNMENT (I.E. FITTING SHALL NOT BE USED TO BRING WATER MAIN INTO ALIGNMENT)
- NUGE SHALL RUN PARALLEL WITH NEW WATER MAIN AND/OR CROSS PERPENDICULARLY
- INSTALL 1" AIR RELEASE VALVE AT HIGH POINT ON WATER MAIN (ROUGHLY STA 30+50)

| REV | DESCRIPTION             | DATE       |
|-----|-------------------------|------------|
| 06  | REISSUED FOR PWD REVIEW | 08-13-2022 |
| 05  | REISSUED FOR PWD REVIEW | 08-01-2022 |
| 04  | REISSUED FOR PWD REVIEW | 06-02-2022 |
| 03  | REISSUED FOR PWD REVIEW | 03-22-2022 |
| 02  | REISSUED FOR PWD REVIEW | 02-18-2022 |
| 01  | ISSUED FOR PWD REVIEW   | 02-03-2022 |

REISSUED FOR PWD REVIEW  
08-13-2022

CURRENT ISSUE STATUS:

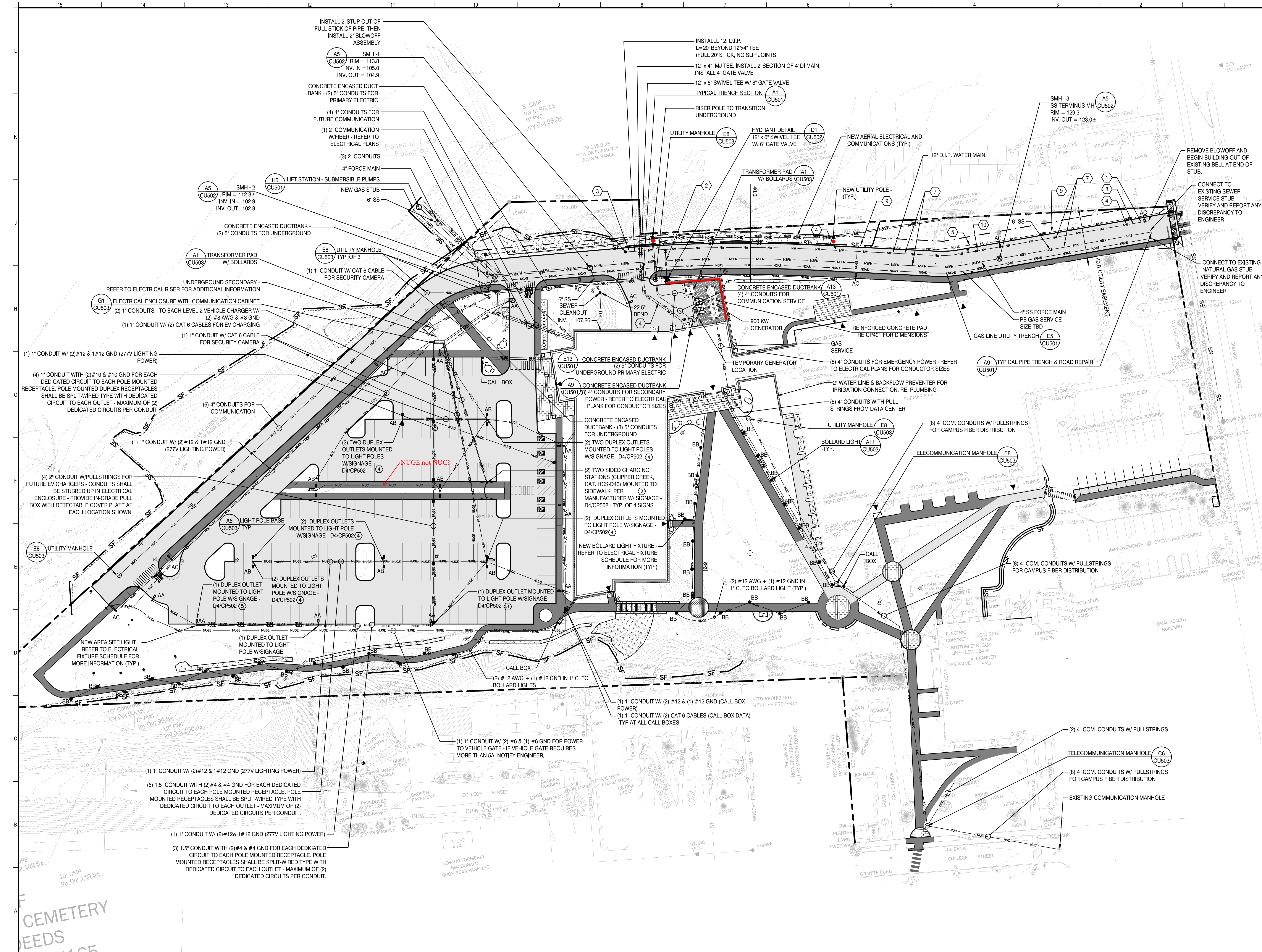


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CENTER FOR HEALTH SCIENCES  
780 STEVENS AVE, PORTLAND, ME

UTILITIES PLAN

|                        |                        |
|------------------------|------------------------|
| SHEET TITLE:           | 0 10' 20' 40' 80' 120' |
| SCALE: 1" = 40'        |                        |
| PROJECT MANAGER: KD    | PROJECT NO: 21004      |
| A/E OF RECORD: TWS     |                        |
| JOB CAPTAIN: ECC       |                        |
| DRAWN BY: TNL          |                        |
| SMRT FILE: CU101-21004 | SHEET No. CU101        |





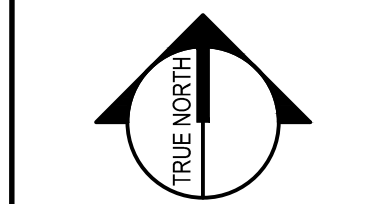
KEYNOTES:

- 1 FIRST 14' OF WATER MAIN (STARTING FROM THE STREET LINE VALVE) SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 2 ALL JOINTS ON HYDRANT BRANCH SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 3 ALL PIPE 14" LEADING TO BLOWOFF SHALL BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 4 ALL JOINTS ON EACH SERVICE TO BE RESTRAINED WITH RESTRAINED JOINT GASKETS
- 5 MAINTAIN 6" MINIMUM OF SEPARATION BETWEEN NUGE AND PROPOSED AIR RELEASE VALVE
- 6 MAINTAIN 4' OF SEPARATION BETWEEN FACE OF CURB AND CENTER LINE OF WATER MAIN
- 7 MAINTAIN 11' OF SEPARATION BETWEEN NEW WATER MAIN AND NEW SEWER MAIN
- 8 INITIAL WATER MAIN CONNECTION TO THE STUB SHALL BE DEFLECTED SUCH THAT IT COMES INTO THE REQUIRED ALIGNMENT (I.E. FITTING SHALL NOT BE USED TO BRING WATER MAIN INTO ALIGNMENT)
- 9 NUGE SHALL RUN PARALLEL WITH NEW WATER MAIN AND/OR CROSS PERPENDICULARLY
- 10 INSTALL 1" AIR RELEASE VALVE AT HIGH POINT ON WATER MAIN (ROUGHLY STA 30+50)

| REV | DESCRIPTION             | DATE       |
|-----|-------------------------|------------|
| 08  | REISSUED FOR PWD REVIEW | 08-23-2022 |
| 07  | REISSUED FOR PWD REVIEW | 08-19-2022 |
| 06  | REISSUED FOR PWD REVIEW | 08-13-2022 |
| 05  | REISSUED FOR PWD REVIEW | 08-01-2022 |
| 04  | REISSUED FOR PWD REVIEW | 06-02-2022 |
| 03  | REISSUED FOR PWD REVIEW | 03-22-2022 |
| 02  | REISSUED FOR PWD REVIEW | 02-18-2022 |
| 01  | ISSUED FOR PWD REVIEW   | 02-03-2022 |

REISSUED FOR PWD REVIEW  
08-23-2022

CURRENT ISSUE STATUS:



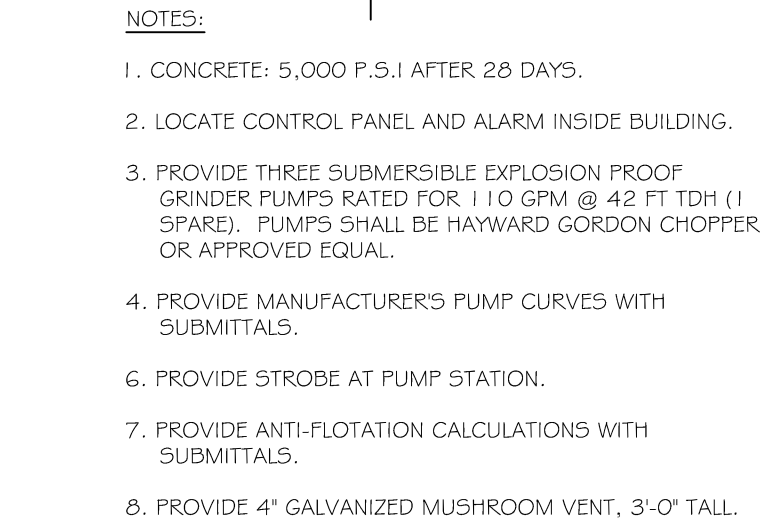
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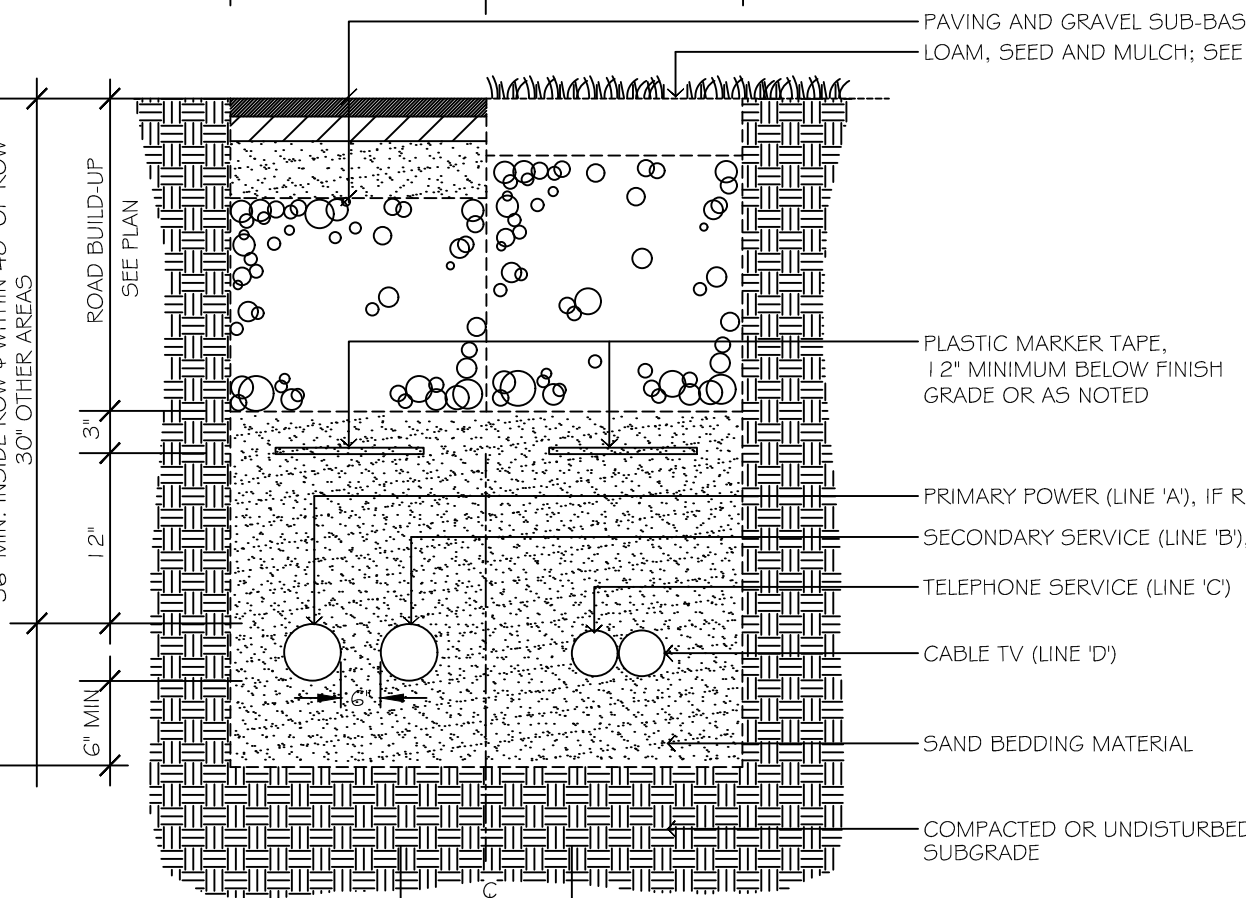
UTILITIES PLAN

|                        |                        |
|------------------------|------------------------|
| SHEET TITLE:           | 0 10' 20' 40' 80' 120' |
| SCALE: 1" = 40'        |                        |
| PROJECT MANAGER: KD    | PROJECT NO: 21004      |
| A/E OF RECORD: TWS     |                        |
| JOB CAPTAIN: ECC       |                        |
| DRAWN BY: TNL          |                        |
| SMRT FILE: CU101-21004 | SHEET No. CU101        |



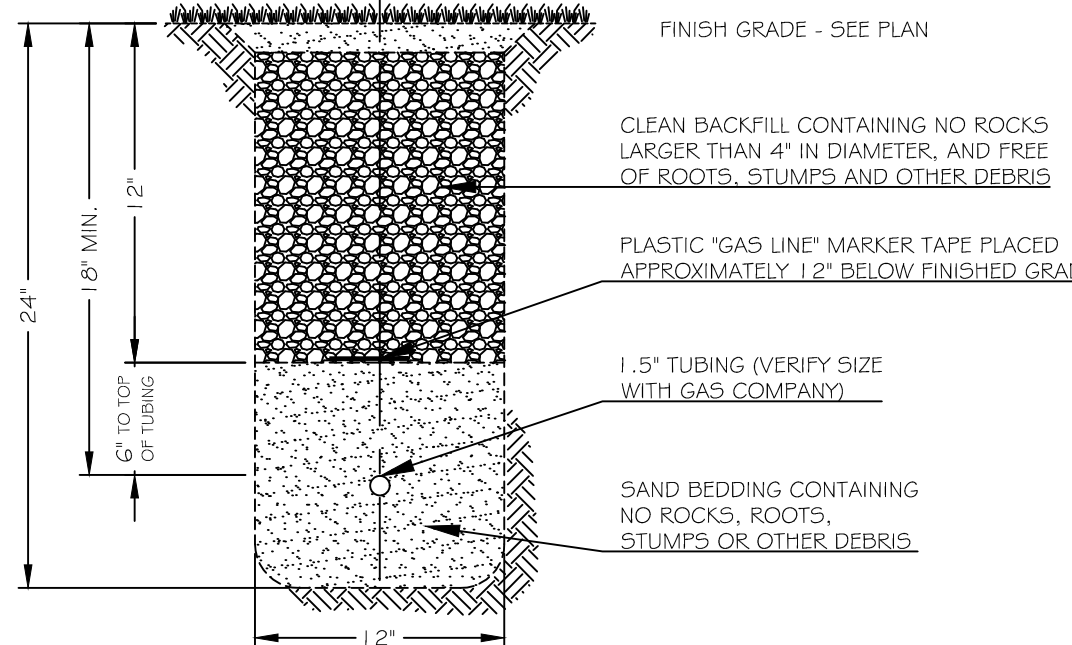


H5

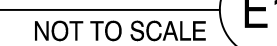


| SERVICE | CONDUIT SIZE" | CONDUIT TYPE                           | UTILITY         |
|---------|---------------|----------------------------------------|-----------------|
| 'A'     | 4"            | SCHEDULE 40 P.V.C.<br>ELECTRICAL GRADE | PRIMARY POWER   |
| 'B'     | 4"            | SCHEDULE 40 P.V.C.<br>ELECTRICAL GRADE | SECONDARY POWER |
| 'C'     | 3"            | SCHEDULE 40 P.V.C.<br>ELECTRICAL GRADE | TELEPHONE       |
| 'D'     | 3"            | SCHEDULE 40 P.V.C.<br>ELECTRICAL GRADE | CATV            |

- NOTES:**
1. ALL WORK SHALL COMPLY WITH THE RESPECTIVE UTILITY COMPANY STANDARDS. IF UTILITY REQUIREMENTS DIFFER FROM THIS DETAIL, THOSE REQUIREMENTS WILL SHALL BE FOLLOWED.
  2. SEE UTILITIES PLANS FOR CONDUIT LOCATIONS.
  3. CONTRACTOR TO PROVIDE PULL ROPES IN ALL CONDUITS PER UTILITY SPECIFICATIONS.
  4. **CONTRACTOR SHALL VERIFY CONDUIT SIZE, MATERIAL, AND QUANTITY WITH APPLICABLE UTILITY COMPANIES.**



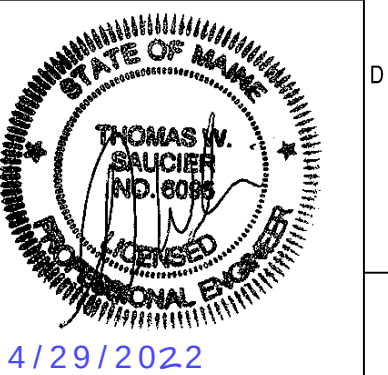
E5



|     |                                                          |            |
|-----|----------------------------------------------------------|------------|
| 0   | ISSUED FOR MAJOR SITE PLAN AND<br>CONDITIONAL USE REVIEW | 04-29-2022 |
| REV | DESCRIPTION                                              | DATE       |

ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW

04-29-2022



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|                 |   |
|-----------------|---|
| UTILITY DETAILS | B |
|-----------------|---|

SHEET TITLE:



SCALE: AS SHOWN

|                  |    |             |       |
|------------------|----|-------------|-------|
| PROJECT MANAGER: | KD | PROJECT NO: | 21004 |
|------------------|----|-------------|-------|

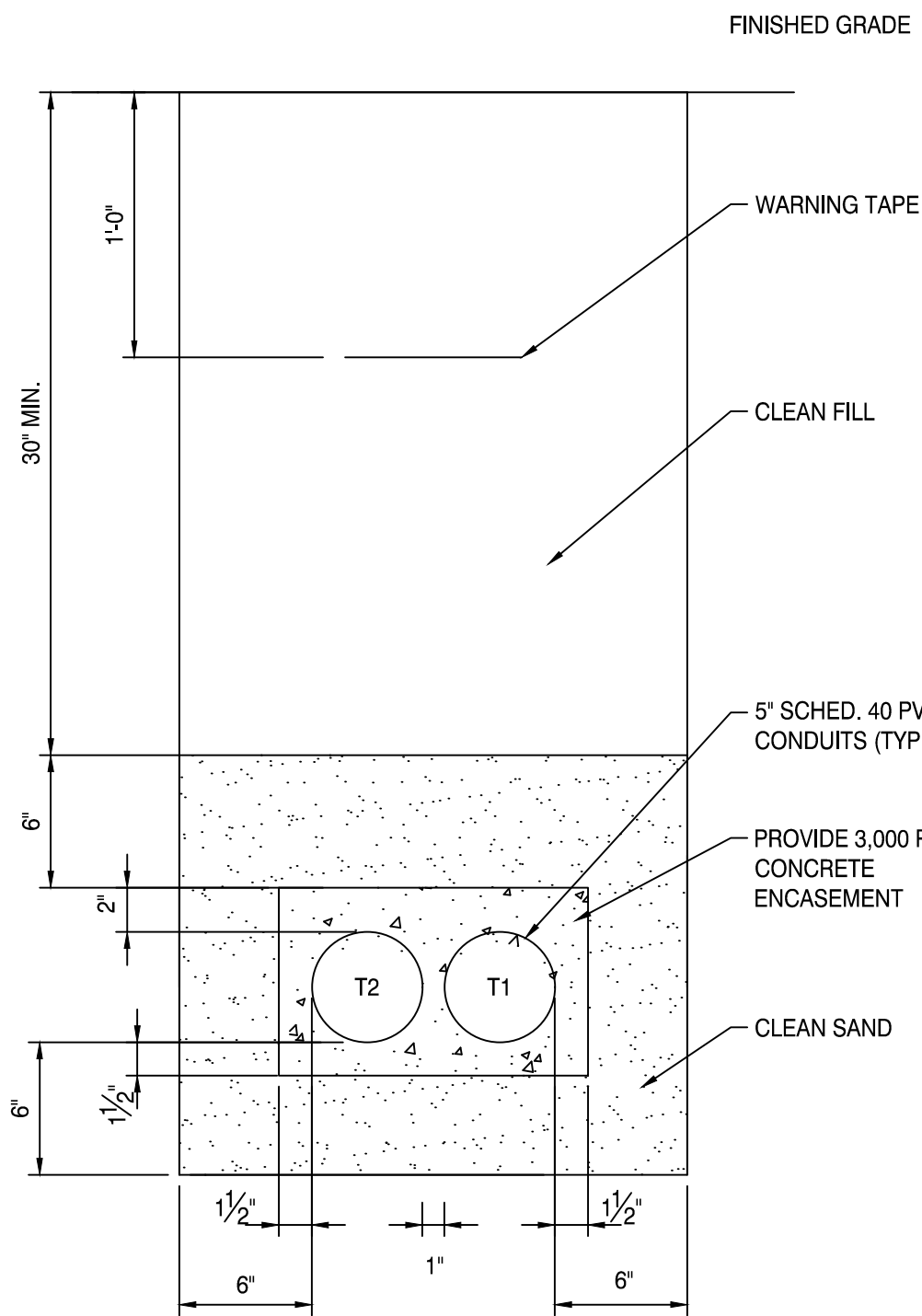
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|----------------|-----|
| A/E OF RECORD: | TWS |
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|              |     |        |
|--------------|-----|--------|
| JOB CAPTAIN: | ECC | CU1501 |
|--------------|-----|--------|

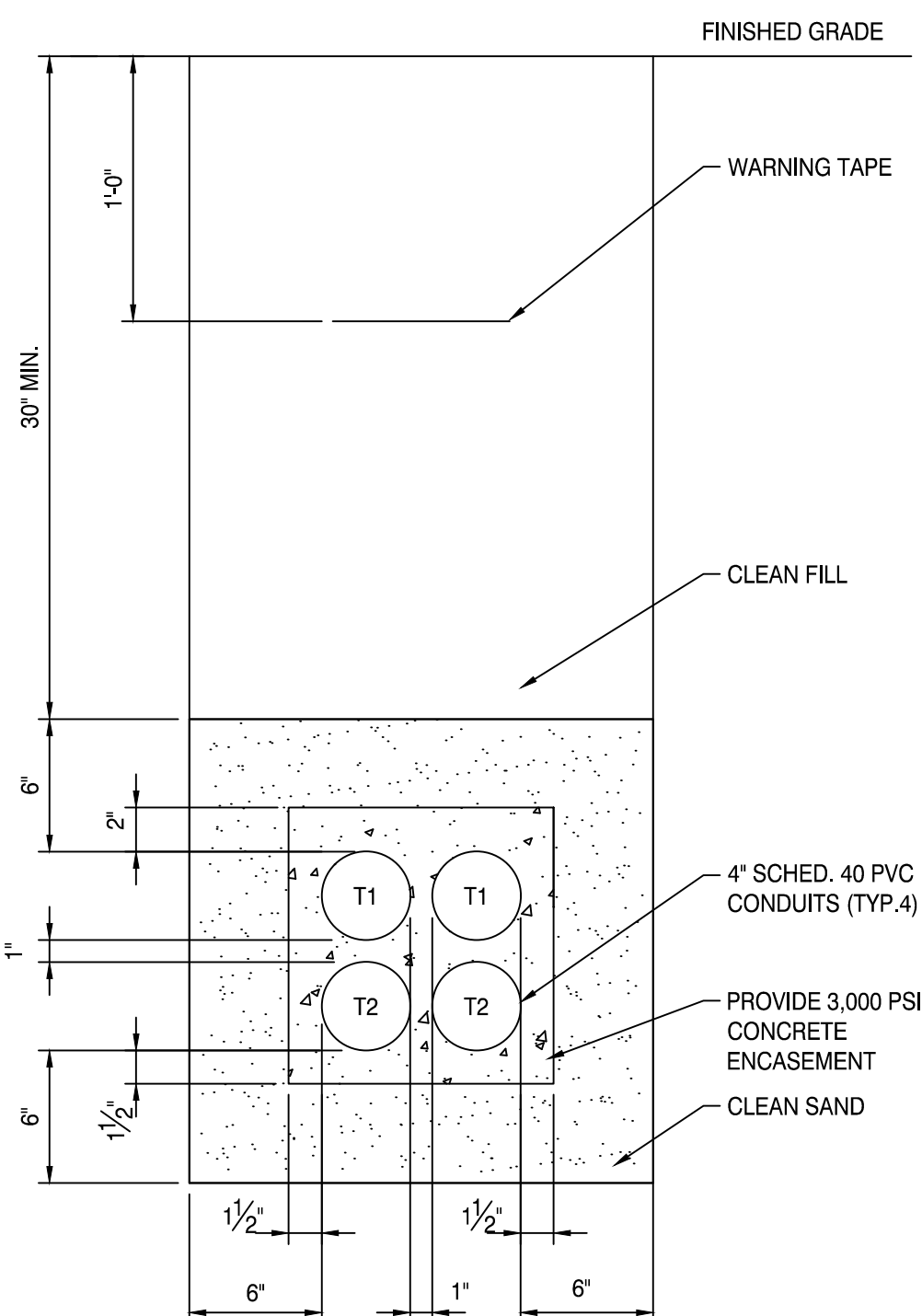
DRAWN BY: TNL

|            |             |           |                            |
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| SMRT FILE: | CU501-21004 | SHEET No. | © COPYRIGHT 2022 SMRT INC. |
|------------|-------------|-----------|----------------------------|

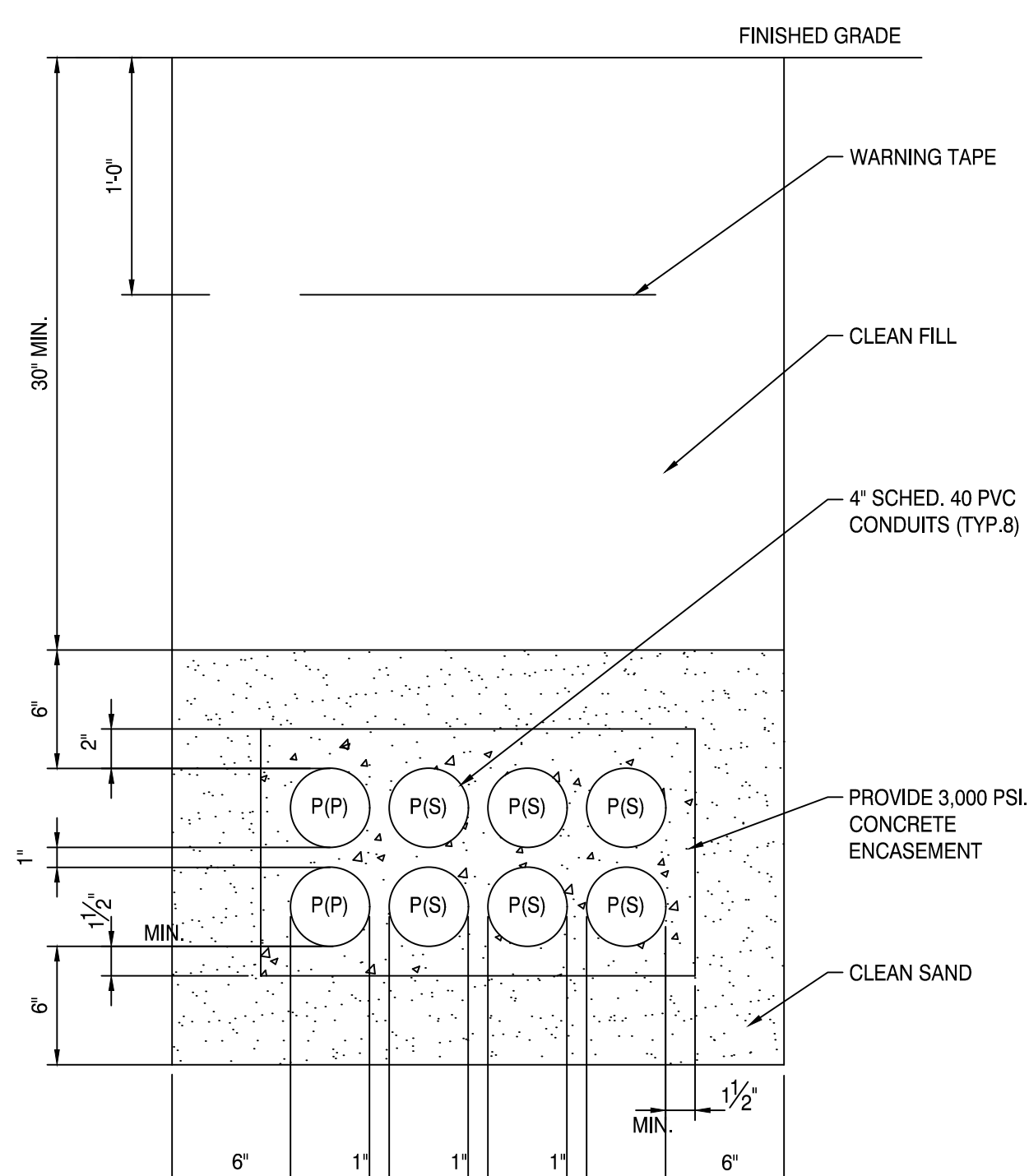
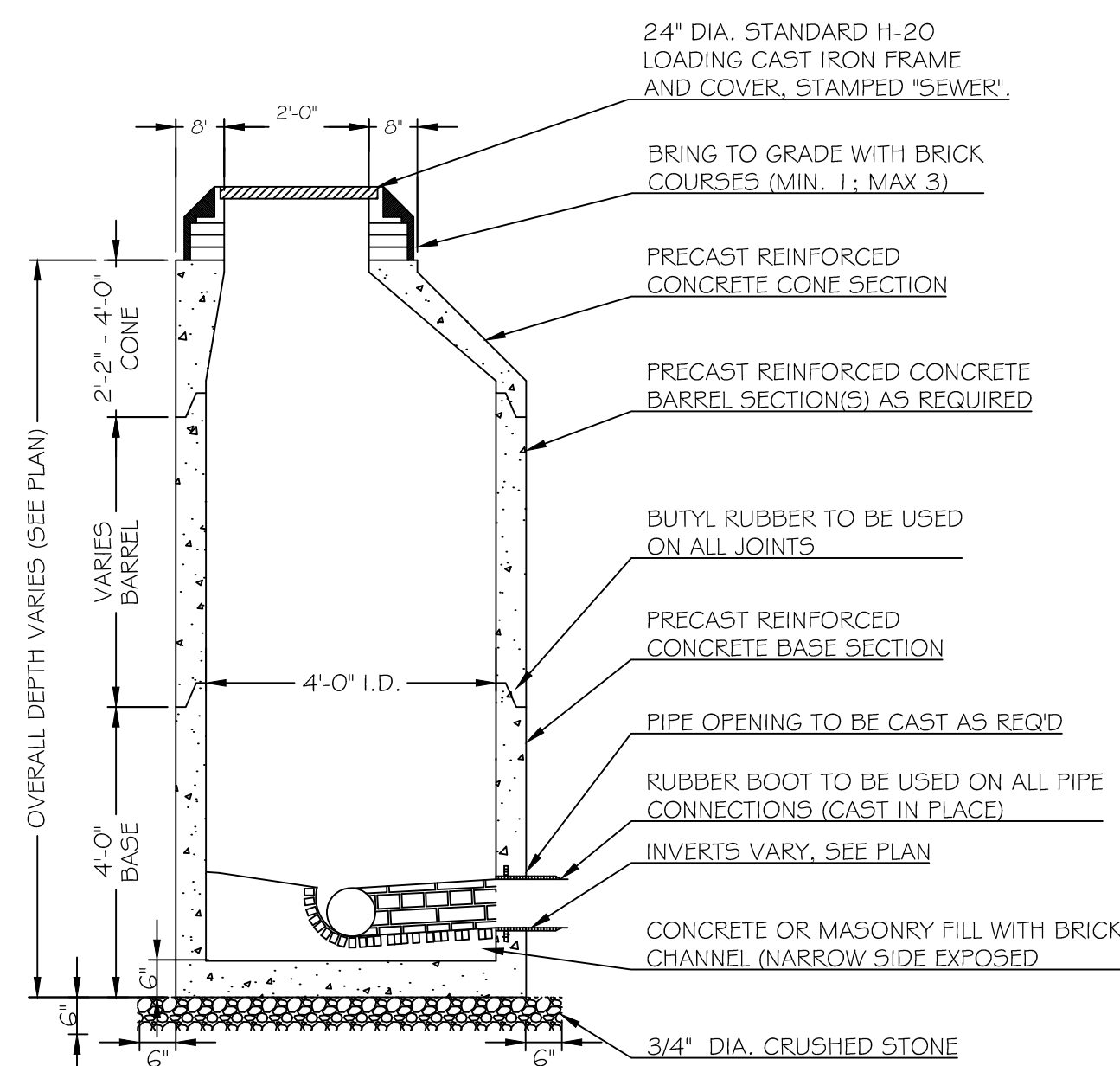
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E13

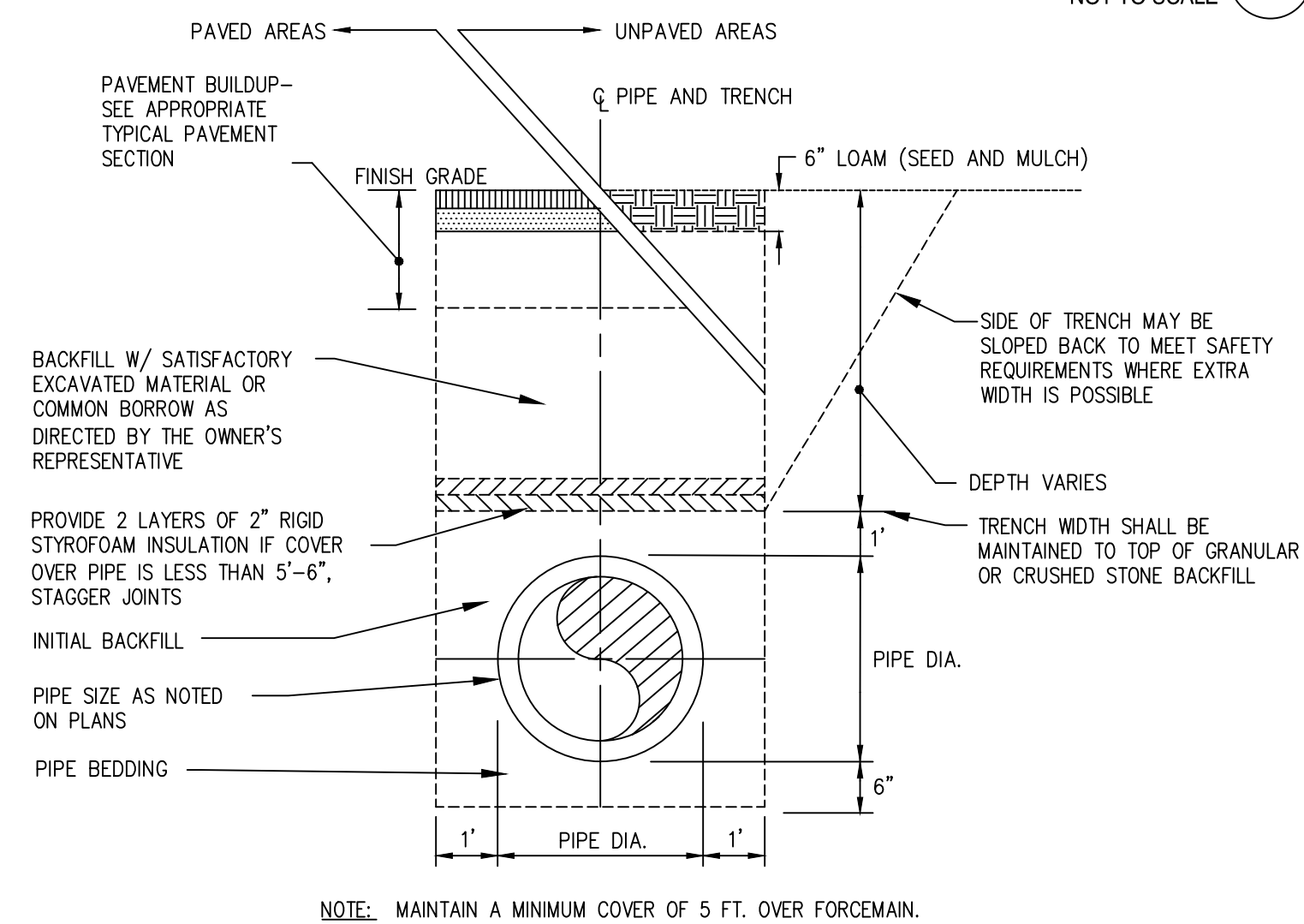


A13


$$A \rightarrow A$$


- NOTES:
1. CONCRETE 4000 PSI AFTER 28 DAYS.
  2. REINFORCING H-20 LOADING 4x4 / 4x4 WWM.
  3. EACH CASTING TO HAVE LIFTING HOLES TO BE FILLED WITH NON-SHRINK MORTAR.
  4. APPLY TWO COATS OF BITUMASTIC PAINT ON ALL EXTERIOR SECTIONS.
  5. MANHOLE CHANNELS REQUIRING CHANGE OF ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. CHANNEL TO BE SHAPED TO ACCEPT ADJUSTED INLET PIPES.
  6. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER.

A5)



NOTE: MAINTAIN A MINIMUM COVER OF 5 FT. OVER FORCEMAIN.

TRENCH BACKFILL SCHEDULE

| PIPE MATERIAL | BEDDING MATERIAL                        | INITIAL BACKFILL                        | BACKFILL MATERIAL                       |
|---------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| HDPE          | 3/4" CRUSHED STONE                      | 3/4" CRUSHED STONE                      | **EXCAVATED MATERIAL OR GRANULAR BORROW |
| PVC           | SAND                                    | 3/4" CRUSHED STONE                      | **EXCAVATED MATERIAL OR GRANULAR BORROW |
| CMP           | **EXCAVATED MATERIAL OR GRANULAR BORROW | **EXCAVATED MATERIAL OR GRANULAR BORROW | **EXCAVATED MATERIAL OR GRANULAR BORROW |
| DUCTILE IRON  | GRANULAR MATERIAL                       | GRANULAR MATERIAL                       | **EXCAVATED MATERIAL OR GRANULAR BORROW |

\*\*\* EXCAVATED MATERIAL MUST BE REVIEWED AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

GRANULAR MATERIAL TO BE SAND OR GRAVEL.

(A)

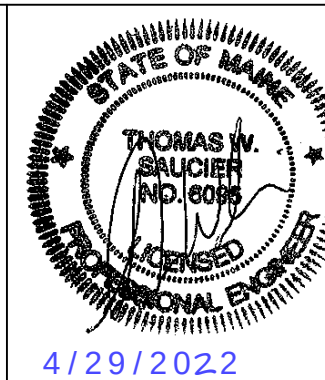


NOTE:  
1. ALL WORK TO CONFORM  
TO THE PORTLAND WATER  
DISTRICT STANDARDS AND  
REQUIREMENTS.

|     |                                                          |            |
|-----|----------------------------------------------------------|------------|
| 0   | ISSUED FOR MAJOR SITE PLAN AND<br>CONDITIONAL USE REVIEW | 04-29-2022 |
| REV | DESCRIPTION                                              | DATE       |

ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW  
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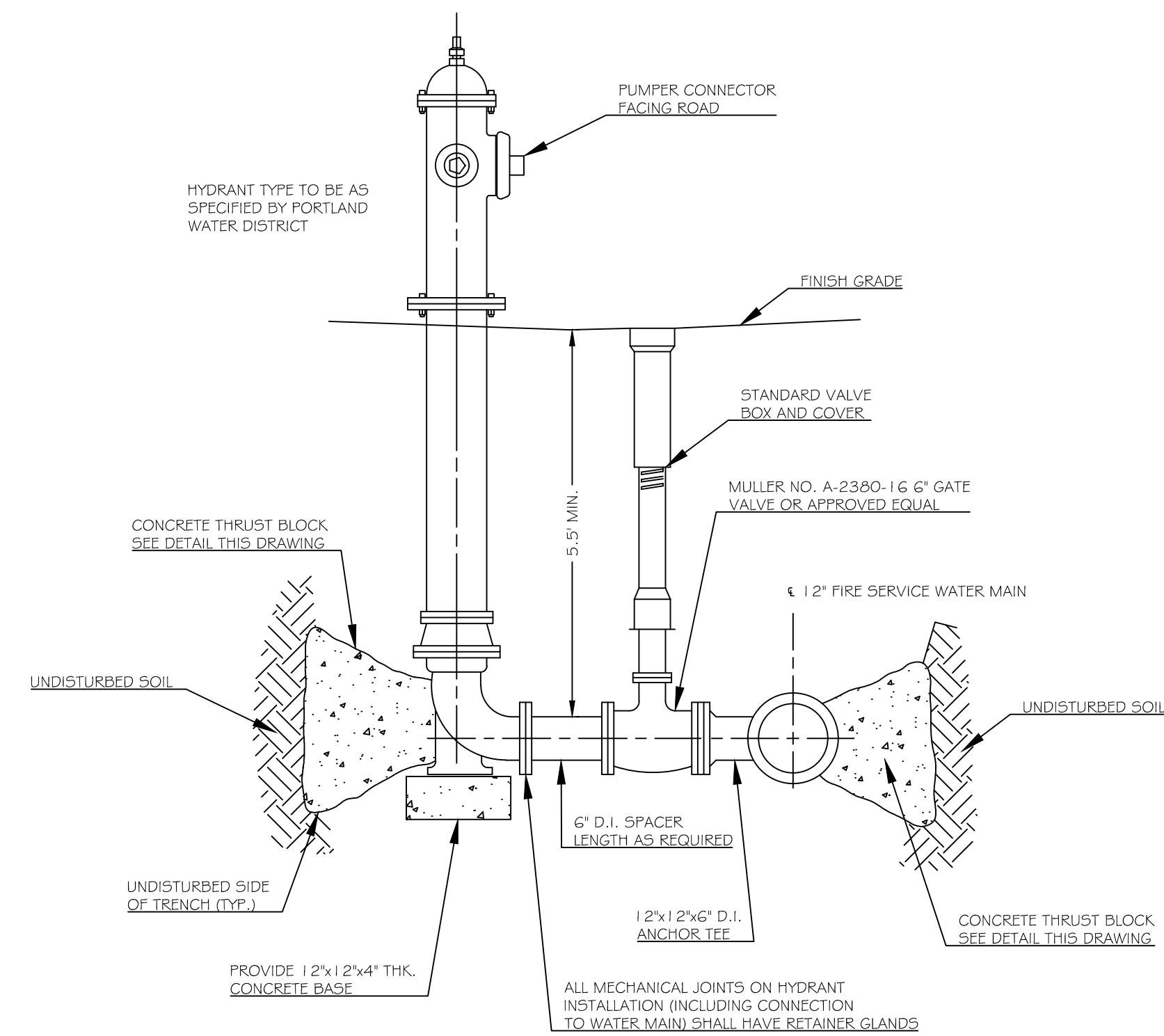
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UTILITY DETAILS

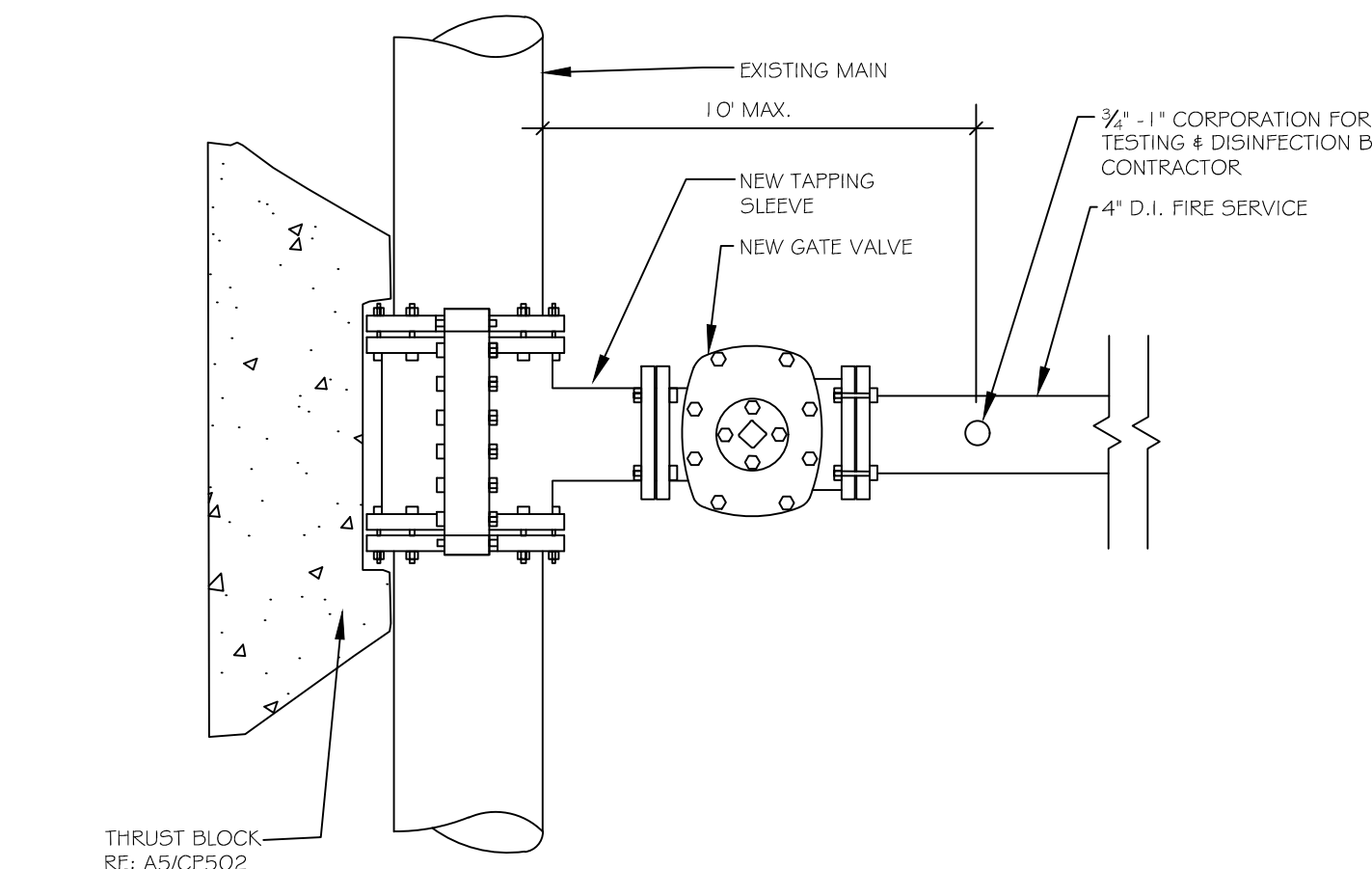
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|----------------|-----------------|--------------|-------------|
| 0              | SCALE: AS SHOWN | PROJECT NO:  | 21004       |
| A/E OF RECORD: | TWS             | JOB CAPTAIN: | ECC         |
| DRAWN BY:      | TNL             | SMRT FILE:   | CU502-21004 |
| SHEET No.      | CU502           | SHEET No.    | 1           |

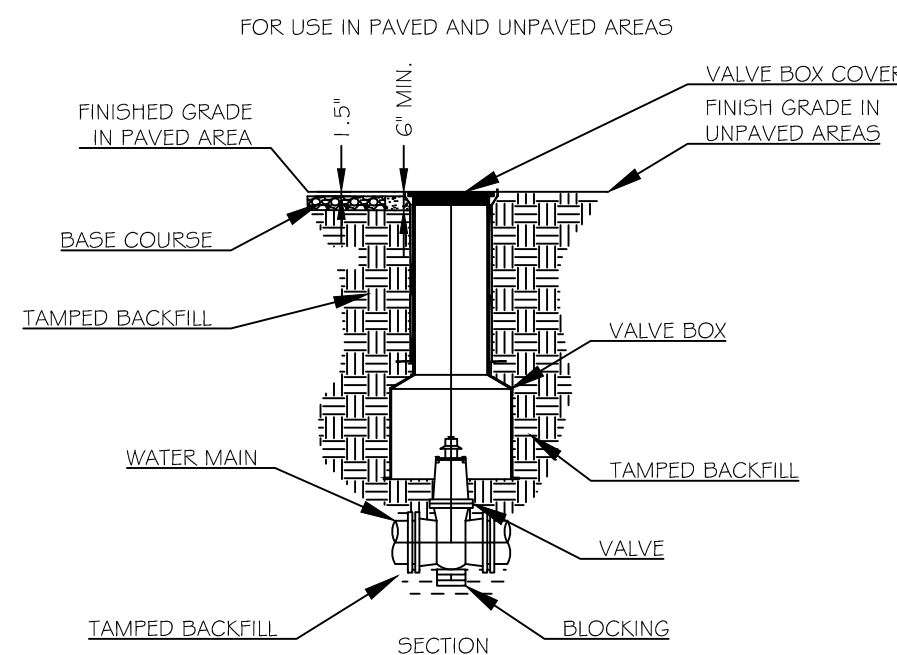
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HYDRANT DETAIL  
NOT TO SCALE D1



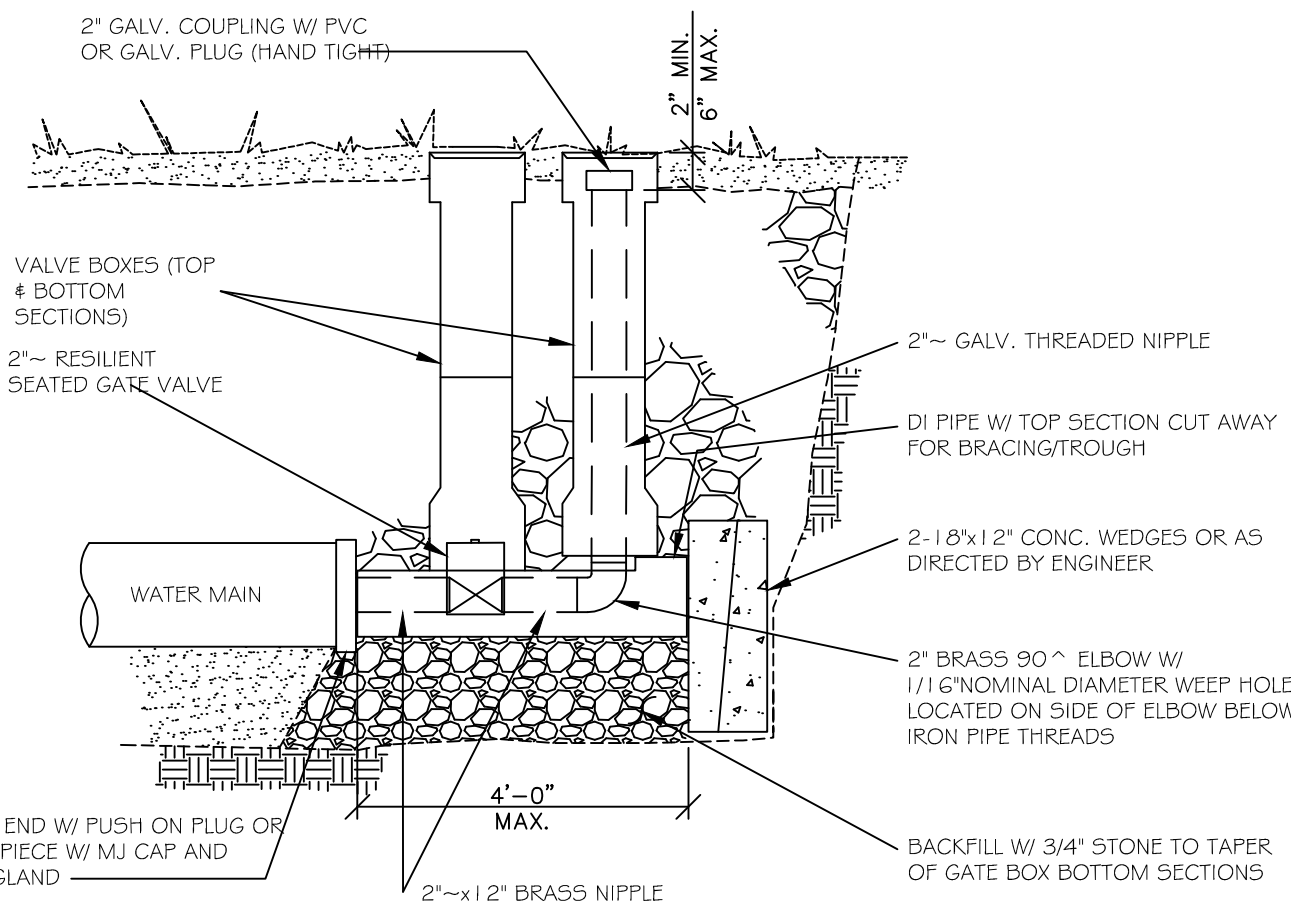
STANDARD TAPPING DETAIL  
NOT TO SCALE A1



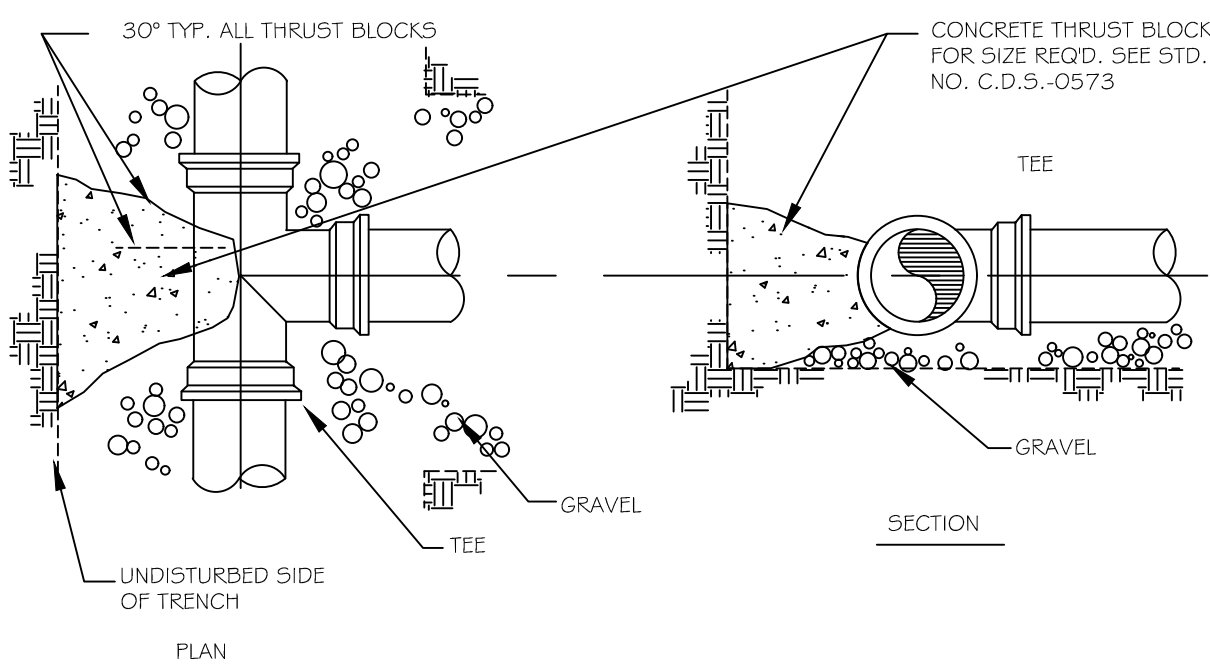
VALVE AND VALVE BOX INSTALLATION DETAIL  
NOT TO SCALE C4

| SIZE REQUIREMENTS FOR<br>CONCRETE THRUST BLOCKS |           |           |              |          |  |
|-------------------------------------------------|-----------|-----------|--------------|----------|--|
| BEARING ON UNDISTURBED SOIL (SQUARE FT.)        |           |           |              |          |  |
| FITTINGS                                        | 90° BENDS | 45° BENDS | TEES & PLUGS | HYDRANTS |  |
| 4"                                              | 2.0       | 1.0       | 1.0          | N/A      |  |
| 6"                                              | 3.0       | 2.0       | 2.0          | 6.0      |  |
| 8"                                              | 5.0       | 3.0       | 4.0          | N/A      |  |

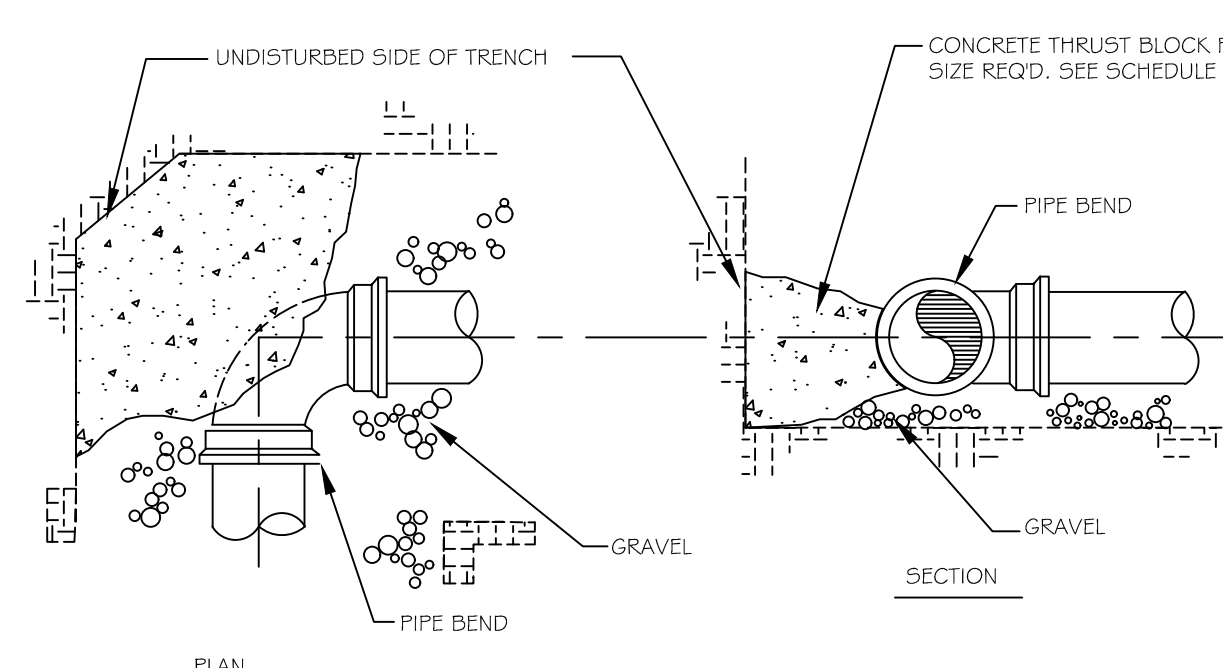
THRUST BLOCK SCHEDULE



BLOW-OFF DETAIL  
NOT TO SCALE C9



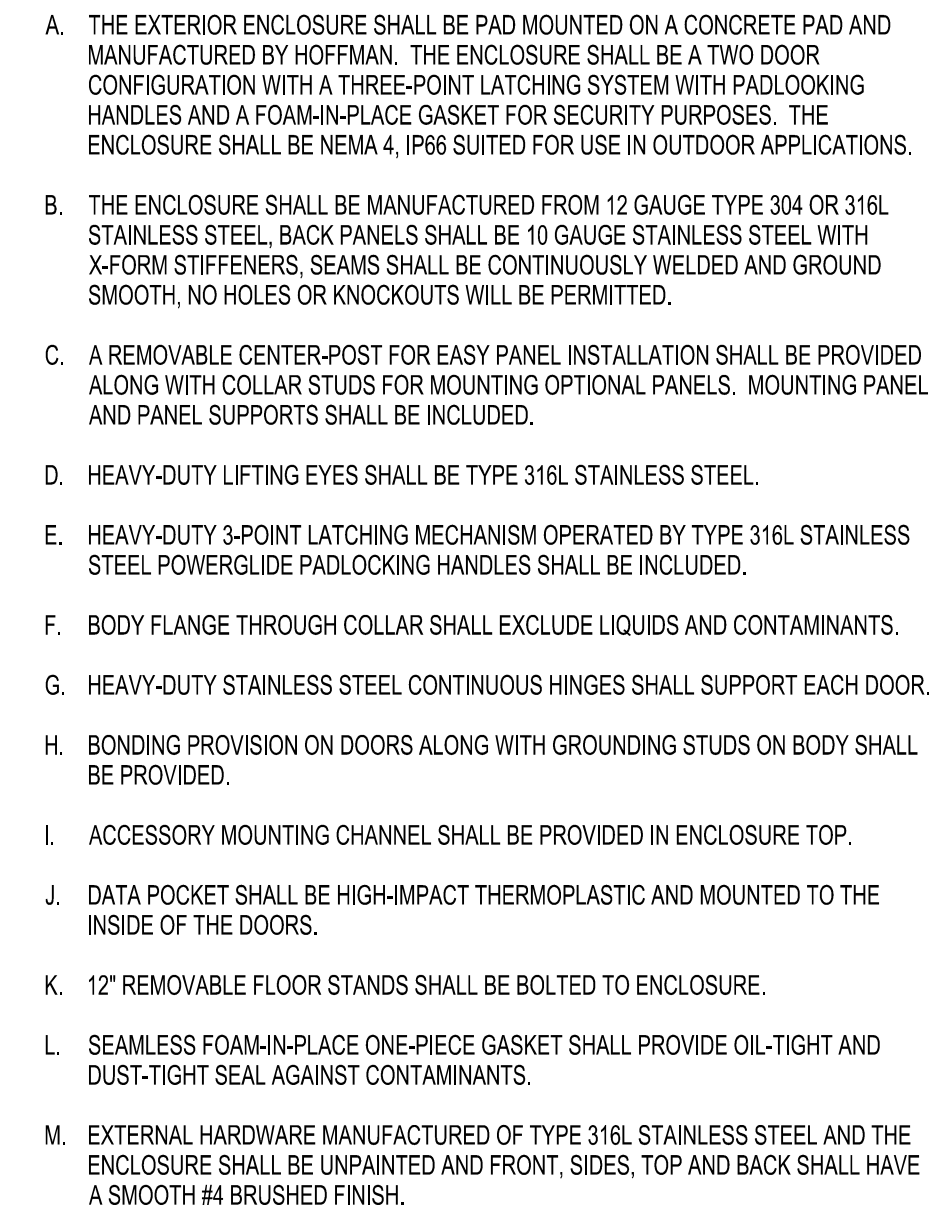
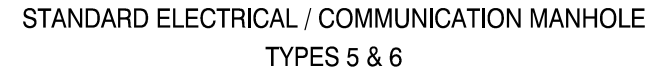
THRUST BLOCK PLACEMENT AT TEE(S)



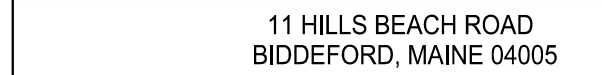
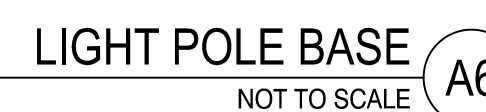
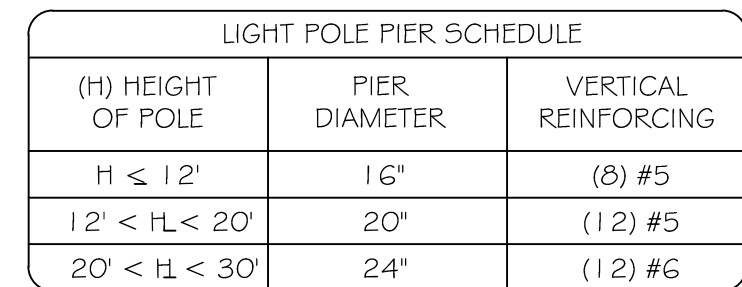
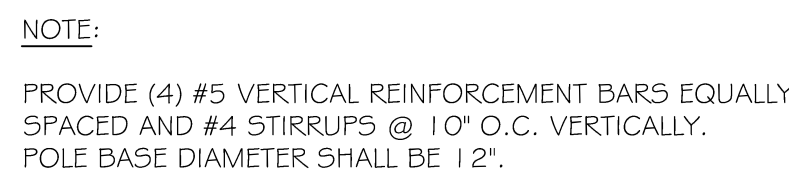
THRUST BLOCK PLACEMENT AT BEND(S)

THRUST BLOCK DETAIL  
NOT TO SCALE A5

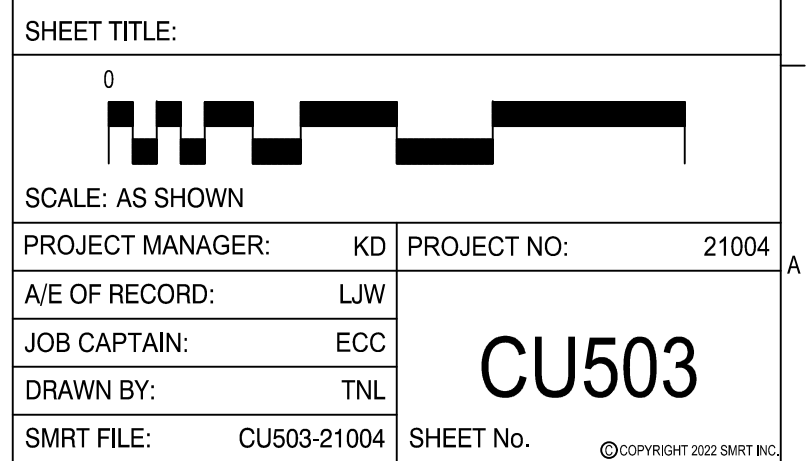




- PULL BOX  
NOT TO SCALE



CURRENT ISSUE STATUS:





**PLANTING LEGEND**

**EXISTING**

- DECIDUOUS TREES
- PROTECT TREE IN PLACE
- EVERGREEN TREES
- TREE LINE

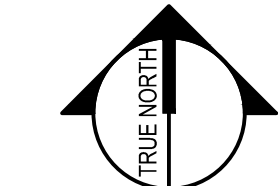
**PROPOSED**

- DECIDUOUS TREES
- EVERGREEN TREES
- TREE LINE
- IRRIGATED LAWN
- EVERGREEN SHRUBS
- ORNAMENTAL GRASS
- PERENNIALS

NOTE:  
SCOPE OF IRRIGATED LAWN  
AREAS NEEDS BE CONFIRMED  
BY OWNER.

| REV | DESCRIPTION                                              | DATE       |
|-----|----------------------------------------------------------|------------|
| 3   | REVISED PER CITY COMMENTS                                | 08-11-2022 |
| 2   | REVISED PER CITY COMMENTS                                | 08-05-2022 |
| 1   | REVISED PER CITY COMMENTS                                | 07-25-2022 |
| 0   | ISSUED FOR MAJOR SITE PLAN AND<br>CONDITIONAL USE REVIEW | 04-29-2022 |

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PLANTING PLAN

SHEET TITLE:

SCALE: 1" = 40'

PROJECT MANAGER: KD PROJECT NO: 21004

A/E OF RECORD: TNL

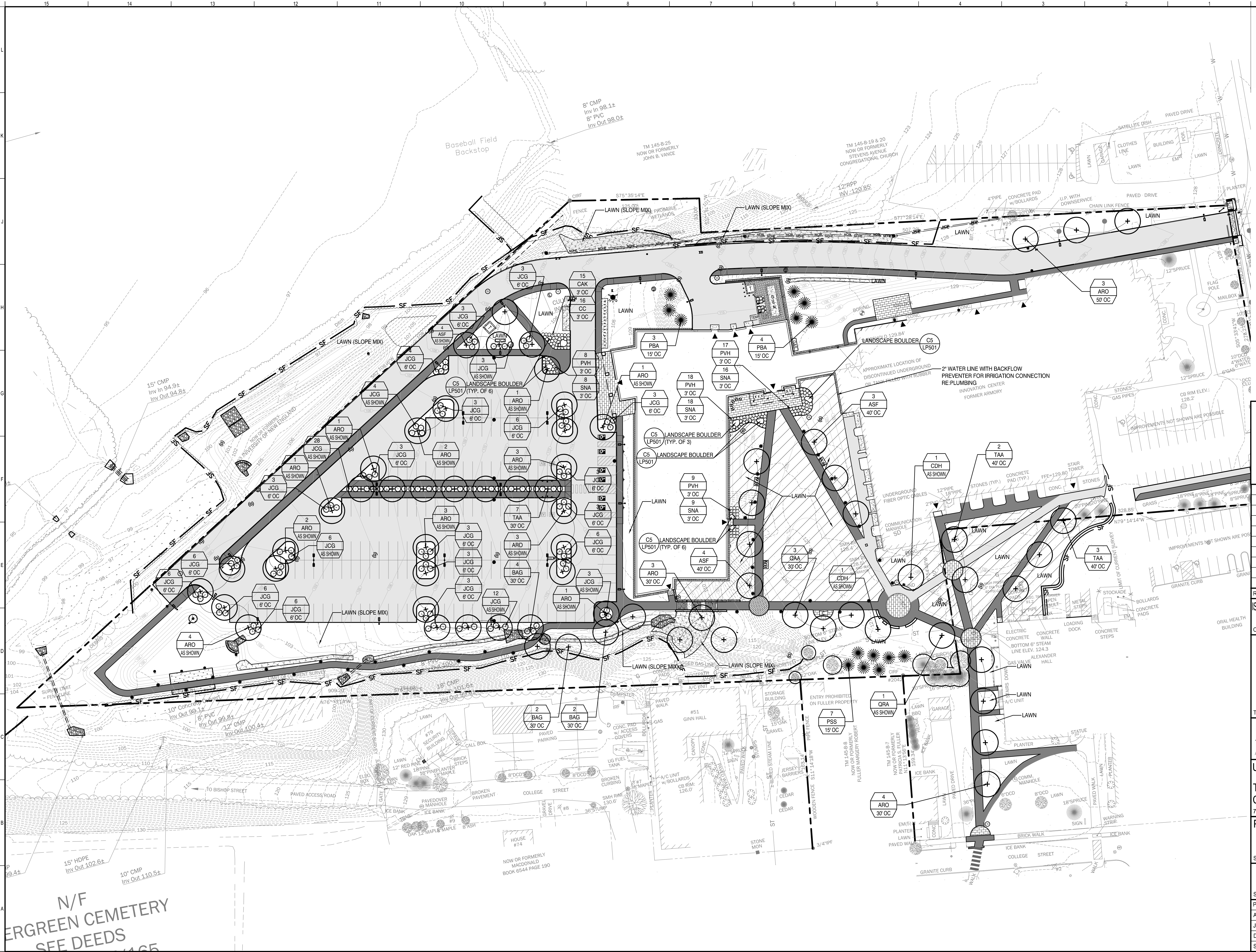
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DRAWN BY: TNL

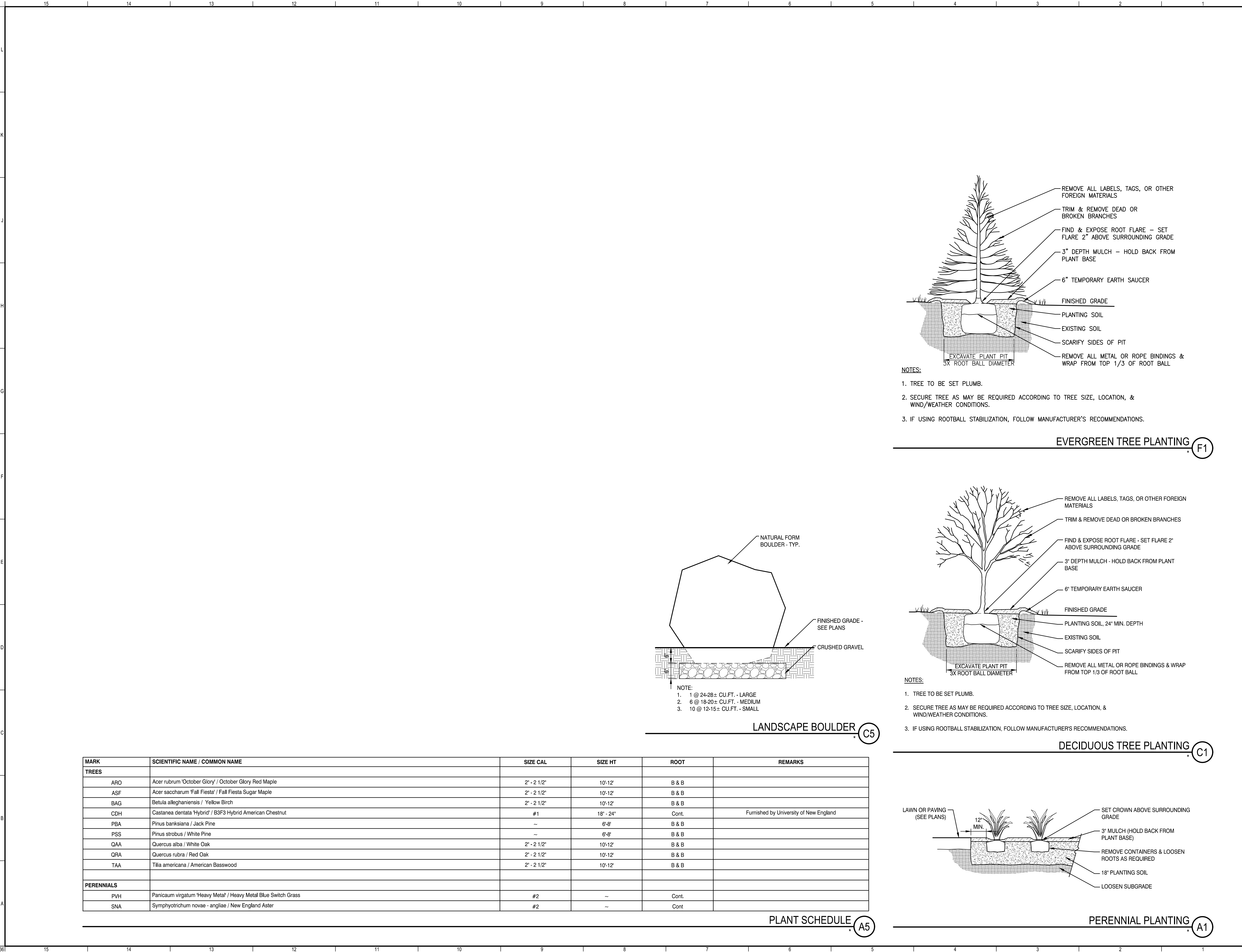
SMRT FILE: LP101-21004 SHEET No.

LP101

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11 HILLS BEACH ROAD  
BIDDEFORD, MAINE 04005

|     |                                                       |            |
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| REV | DESCRIPTION                                           | DATE       |

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PLANTING DETAIL AND  
PLANT SCHEDULE

SHEET TITLE:

SCALE: AS SHOWN

|                  |             |             |       |
|------------------|-------------|-------------|-------|
| PROJECT MANAGER: | KD          | PROJECT NO: | 21004 |
| A/E OF RECORD:   | TNL         |             |       |
| JOB CAPTAIN:     | ECC         |             |       |
| DRAWN BY:        | TNL         |             |       |
| SMRT FILE:       | LP501-21004 | SHEET No.   | LP501 |

NOT FOR CONSTRUCTION

REMOVE ALL LABELS, TAGS, OR OTHER FOREIGN MATERIALS

TRIM & REMOVE DEAD OR BROKEN BRANCHES

FIND & EXPOSE ROOT FLARE – SET FLARE 2" ABOVE SURROUNDING GRADE

3" DEPTH MULCH – HOLD BACK FROM PLANT BASE

6" TEMPORARY EARTH SAUCER

FINISHED GRADE

PLANTING SOIL

EXISTING SOIL

SCARIFY SIDES OF PIT

EXCAVATE PLANT PIT  
3X ROOT BALL DIAMETER

REMOVE ALL METAL OR ROPE BINDINGS & WRAP FROM TOP 1/3 OF ROOT BALL

NOTES:

- TREE TO BE SET PLUMB.
- SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
- IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

EVERGREEN TREE PLANTING (F1)

REMOVE ALL LABELS, TAGS, OR OTHER FOREIGN MATERIALS

TRIM & REMOVE DEAD OR BROKEN BRANCHES

FIND & EXPOSE ROOT FLARE - SET FLARE 2" ABOVE SURROUNDING GRADE

3" DEPTH MULCH - HOLD BACK FROM PLANT BASE

6" TEMPORARY EARTH SAUCER

FINISHED GRADE

PLANTING SOIL, 24" MIN. DEPTH

EXISTING SOIL

SCARIFY SIDES OF PIT

EXCAVATE PLANT PIT  
3X ROOT BALL DIAMETER

REMOVE ALL METAL OR ROPE BINDINGS & WRAP FROM TOP 1/3 OF ROOT BALL

NOTES:

- TREE TO BE SET PLUMB.
- SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
- IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

DECIDUOUS TREE PLANTING (C1)

LAWN OR PAVING (SEE PLANS)

12" MIN.

SET CROWN ABOVE SURROUNDING GRADE

3" MULCH (HOLD BACK FROM PLANT BASE)

REMOVE CONTAINERS & LOOSEN ROOTS AS REQUIRED

18" PLANTING SOIL

LOOSEN SUBGRADE

PERENNIAL PLANTING (A1)

NATURAL FORM BOULDER - TYP.

FINISHED GRADE - SEE PLANS

CRUSHED GRAVEL

NOTE:

- 1 @ 24-28± CU.FT. - LARGE
- 6 @ 18-20± CU.FT. - MEDIUM
- 10 @ 12-15± CU.FT. - SMALL

LANDSCAPE BOULDER (C5)

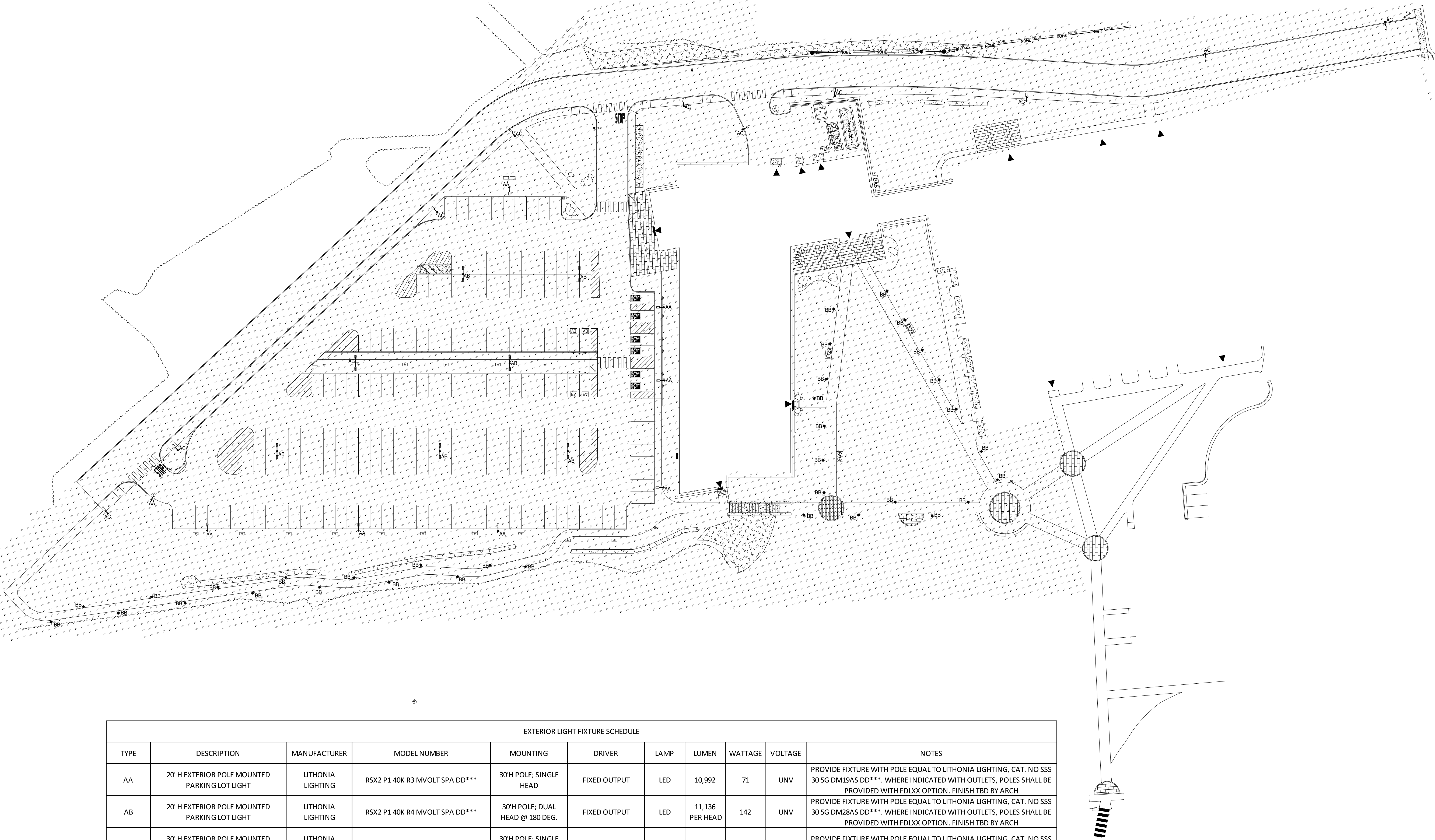
| MARK       | SCIENTIFIC NAME / COMMON NAME                                  | SIZE CAL    | SIZE HT   | ROOT  | REMARKS                                |
|------------|----------------------------------------------------------------|-------------|-----------|-------|----------------------------------------|
| TREES      |                                                                |             |           |       |                                        |
| ARO        | Acer rubrum 'October Glory' / October Glory Red Maple          | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| ASF        | Acer saccharum 'Fall Fiesta' / Fall Fiesta Sugar Maple         | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| BAG        | Betula alleghaniensis / Yellow Birch                           | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| CDH        | Castanea dentata 'Hybrid' / B3F3 Hybrid American Chestnut      | #1          | 18" - 24" | Cont. | Furnished by University of New England |
| PBA        | Pinus banksiana / Jack Pine                                    | ~           | 6'-8'     | B & B |                                        |
| PSS        | Pinus strobus / White Pine                                     | ~           | 6'-8'     | B & B |                                        |
| QAA        | Quercus alba / White Oak                                       | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| QRA        | Quercus rubra / Red Oak                                        | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| TAA        | Tilia americana / American Basswood                            | 2" - 2 1/2" | 10'-12'   | B & B |                                        |
| PERENNIALS |                                                                |             |           |       |                                        |
| PVH        | Panicum virgatum 'Heavy Metal' / Heavy Metal Blue Switch Grass | #2          | ~         | Cont. |                                        |
| SNA        | Symphotrichum novae-angliae / New England Aster                | #2          | ~         | Cont  |                                        |

PLANT SCHEDULE (A5)

Page 728



| EXTERIOR PHOTOMETRIC CALCULATIONS |              |              |              |         |         |         |
|-----------------------------------|--------------|--------------|--------------|---------|---------|---------|
| DESCRIPTION                       | AVERAGE (FC) | MAXIMUM (FC) | MINIMUM (FC) | MAX/MIN | MAX/AVG | AVG/MIN |
| OVERALL                           | 0.4          | 15.7         | 0.0          | N/A     | N/A     | N/A     |
| ROADWAY                           | 2.1          | 6.8          | 0.3          | 23:1    | 3       | 7:1     |
| PARKING LOT                       | 2.6          | 5.0          | 0.4          | 13:1    | 2       | 7:1     |
| PATHWAYS                          | 3.3          | 14.3         | 0.2          | N/A     | 4       | 17:1    |
| NOTES:                            |              |              |              |         |         |         |



| EXTERIOR LIGHT FIXTURE SCHEDULE |                                               |                   |                                |                                 |              |      |                 |         |         |                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------|-------------------|--------------------------------|---------------------------------|--------------|------|-----------------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TYPE                            | DESCRIPTION                                   | MANUFACTURER      | MODEL NUMBER                   | MOUNTING                        | DRIVER       | LAMP | LUMEN           | WATTAGE | VOLTAGE | NOTES                                                                                                                                                                             |
| AA                              | 20' H EXTERIOR POLE MOUNTED PARKING LOT LIGHT | LITHONIA LIGHTING | RSX2 P1 40K R3 MVOLT SPA DD*** | 30'H POLE; SINGLE HEAD          | FIXED OUTPUT | LED  | 10,992          | 71      | UNV     | PROVIDE FIXTURE WITH POLE EQUAL TO LITHONIA LIGHTING, CAT. NO SSS 30 5G DM19AS DD***. WHERE INDICATED WITH OUTLETS, POLES SHALL BE PROVIDED WITH FDLXX OPTION. FINISH TBD BY ARCH |
| AB                              | 20' H EXTERIOR POLE MOUNTED PARKING LOT LIGHT | LITHONIA LIGHTING | RSX2 P1 40K R4 MVOLT SPA DD*** | 30'H POLE; DUAL HEAD @ 180 DEG. | FIXED OUTPUT | LED  | 11,136 PER HEAD | 142     | UNV     | PROVIDE FIXTURE WITH POLE EQUAL TO LITHONIA LIGHTING, CAT. NO SSS 30 5G DM28AS DD***. WHERE INDICATED WITH OUTLETS, POLES SHALL BE PROVIDED WITH FDLXX OPTION. FINISH TBD BY ARCH |
| AC                              | 30' H EXTERIOR POLE MOUNTED ROADWAY LIGHT     | LITHONIA LIGHTING | RSX2 P1 40K R2 MVOLT SPA DD*** | 30'H POLE; SINGLE HEAD          | FIXED OUTPUT | LED  | 11,031          | 71      | UNV     | PROVIDE FIXTURE WITH POLE EQUAL TO LITHONIA LIGHTING, CAT. NO SSS 30 5G DM19AS DD***. FINISH TBD BY ARCH                                                                          |
| BB                              | EXTERIOR BOLLARD                              | LITHONIA LIGHTING | DSXB 12C 350 40K ASY MVOLT H36 | GROUND MOUNTED (3' H)           | FIXED OUTPUT | LED  | 1,283           | 16      | UNV     | FINISH TBD BY ARCH.                                                                                                                                                               |
| NOTES:                          |                                               |                   |                                |                                 |              |      |                 |         |         |                                                                                                                                                                                   |

UNE

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11 HILLS BEACH ROAD  
BIDDEFORD, MAINE 04005

|                                                       |                                                          |            |
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| REV                                                   | DESCRIPTION                                              | DATE       |
| ISSUED FOR MAJOR SITE PLAN AND CONDITIONAL USE REVIEW |                                                          |            |
| 02-18-2022                                            |                                                          |            |
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THE HAROLD AND BIBBY ALFOND  
CENTER FOR HEALTH SCIENCES

780 STEVENS AVE, PORTLAND, ME TAX PARCEL #145 B018

SITE PHOTOMETRIC PLAN

SHEET TITLE:

SCALE: 1" = 40'

PROJECT MANAGER: KD

PROJECT NO: 21004

A/E OF RECORD: LJW

JOB CAPTAIN: ECC

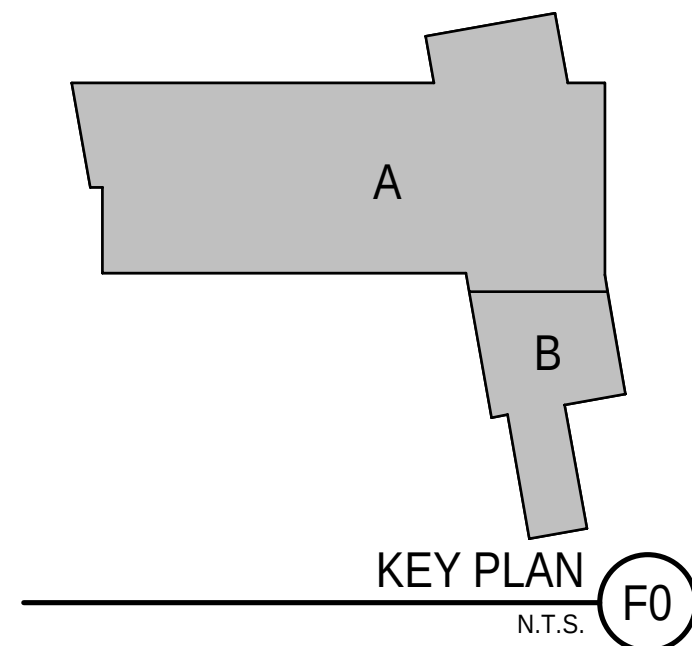
DRAWN BY: LJW

SMRT FILE: ES101-21004

ES101

SHEET No.





| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
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MAJOR SITE PLAN AND  
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780 STEVENS AVENUE, PORTLAND MAINE  
GROUND LEVEL - FACILITY PLAN

SHEET TITLE: TAX PARCEL #145 B018

SCALE: AS NOTED

PROJECT MANAGER: KD PROJECT NO: 21004

A/E OF RECORD: MTR

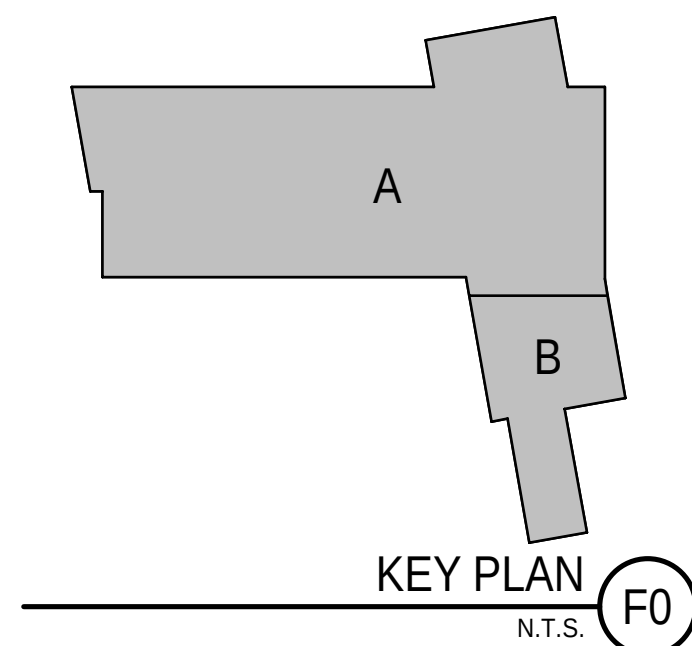
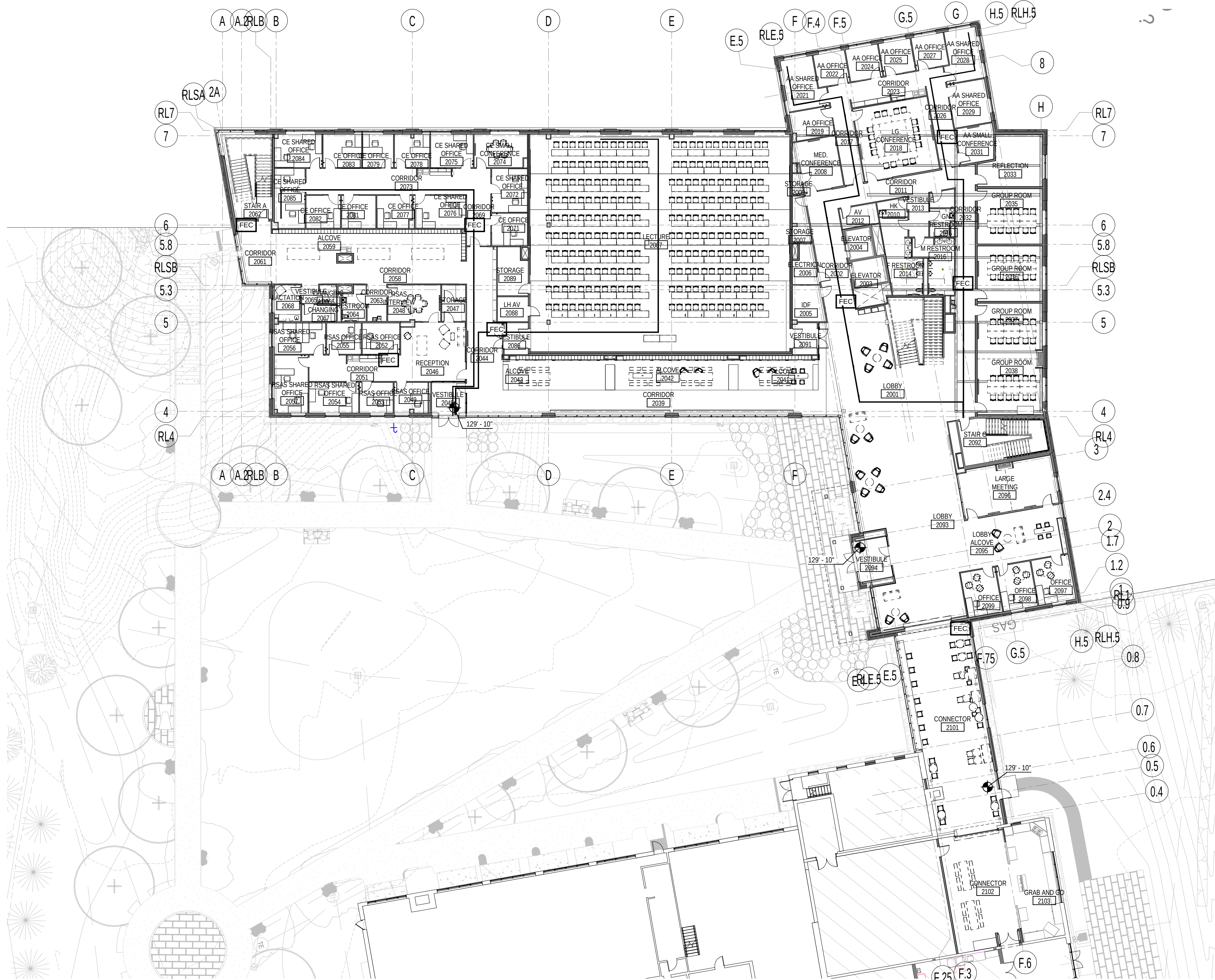
JOB CAPTAIN: ECC

DRAWN BY: ECC

SMRT FILE: A-101-21004 SHEET No. A-101

GROUND LEVEL - FACILITY PLAN (A1)

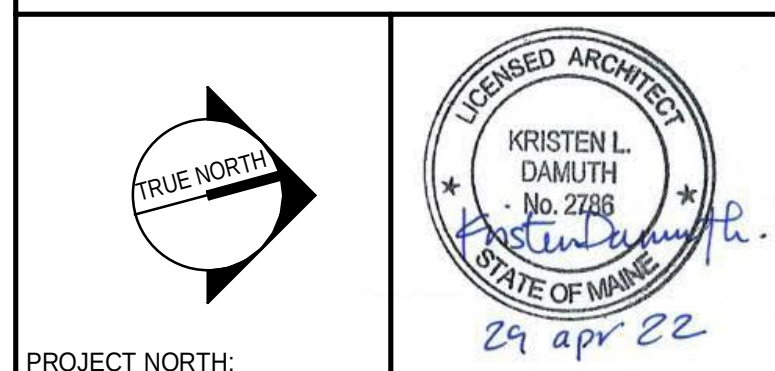




| REV | DESCRIPTION                                | DATE       |
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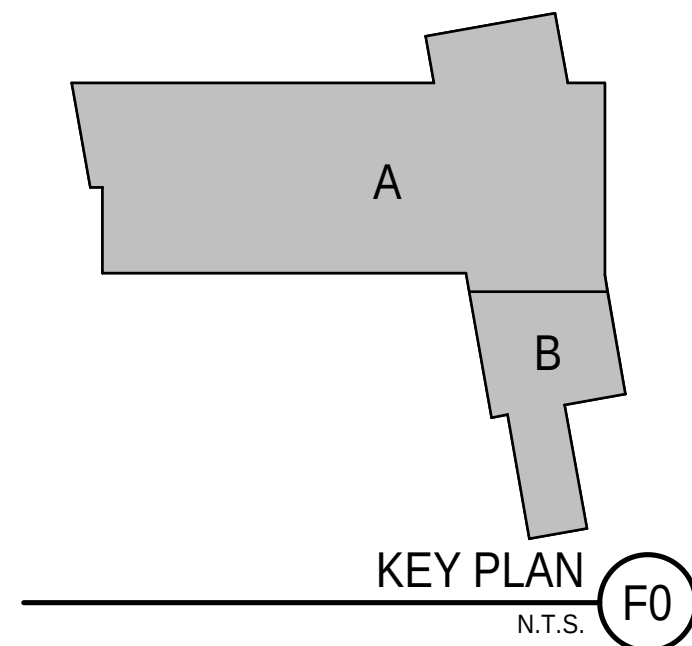
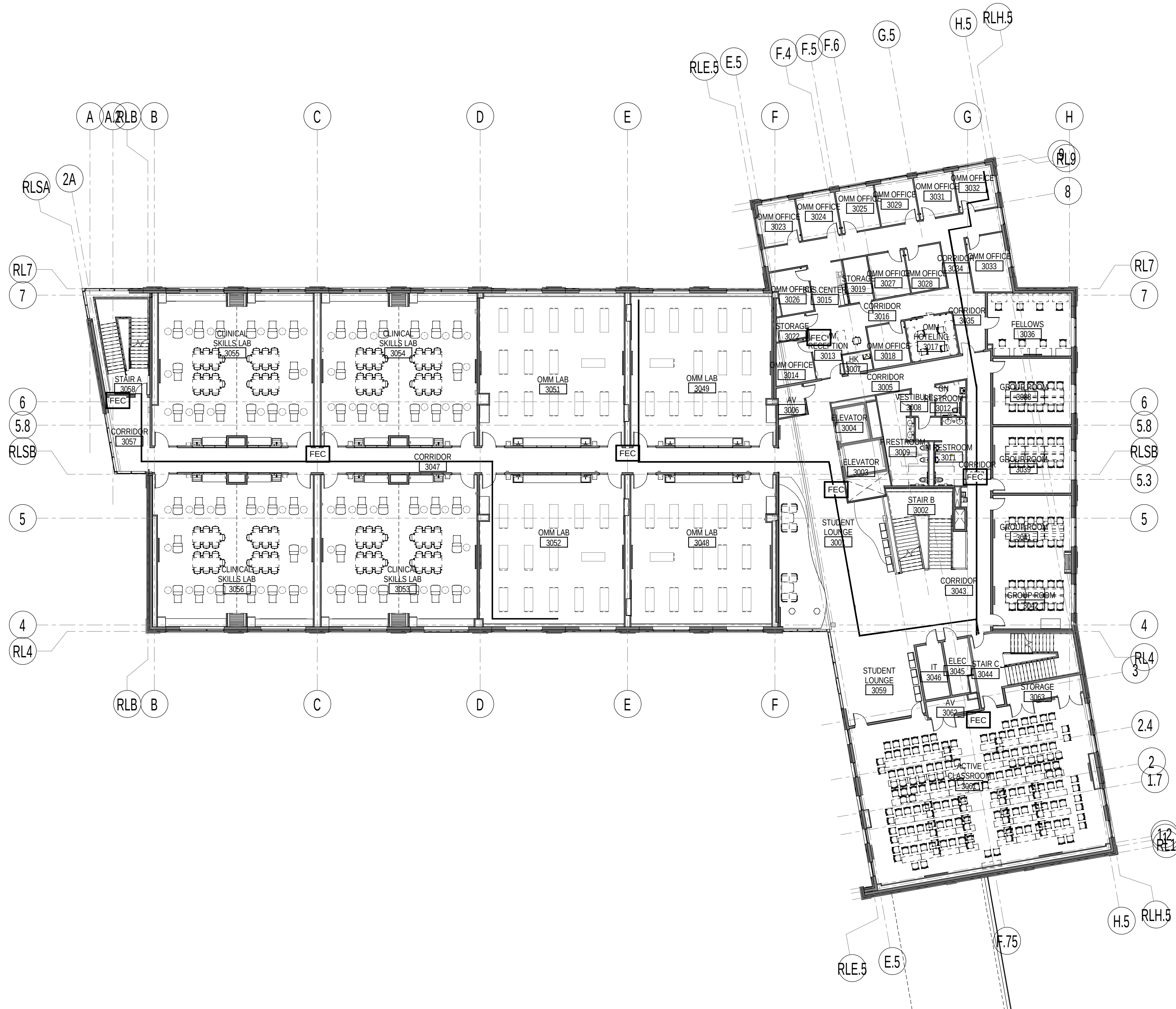
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QUAD LEVEL - FACILITY PLAN

|                        |                       |
|------------------------|-----------------------|
| SHEET TITLE:           | TAX PARCEL #145 B018  |
| SCALE: AS NOTED        | 0" 1/4" 1/2" 1" 2" 3" |
| PROJECT MANAGER: KD    | PROJECT NO: 21004     |
| A/E OF RECORD: MTR     |                       |
| JOB CAPTAIN: ECC       |                       |
| DRAWN BY: ECC          |                       |
| SMRT FILE: A-102-21004 | SHEET No. A-102       |

QUAD LEVEL - FACILITY PLAN  
1/16" = 1'-0" A1





| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
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MAJOR SITE PLAN AND  
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04-29-2022

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THIRD LEVEL - FACILITY PLAN

SHEET TITLE: TAX PARCEL #145 B018

SCALE: AS NOTED

PROJECT MANAGER: KD PROJECT NO: 21004

A/E OF RECORD: MTR

JOB CAPTAIN: ECC

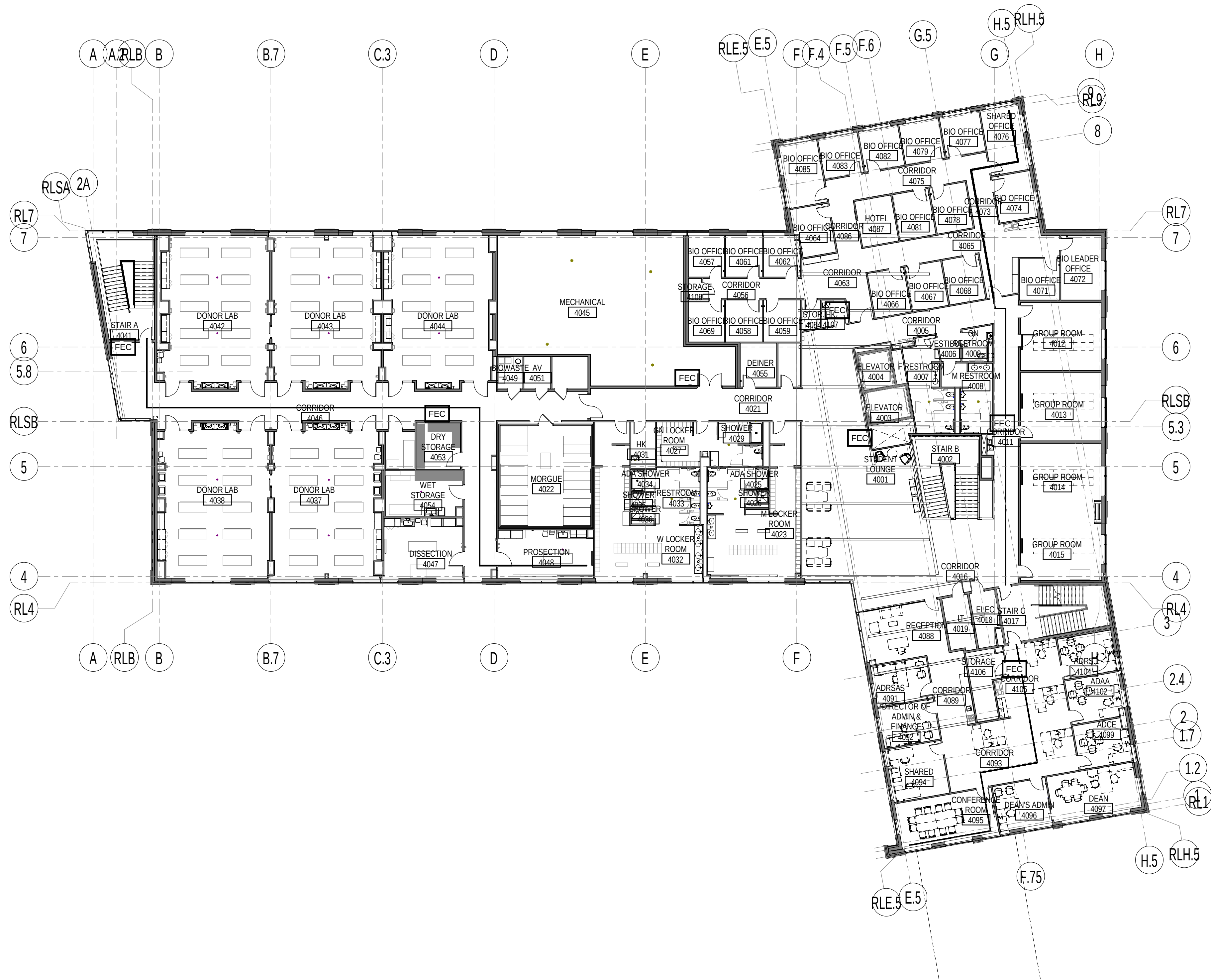
DRAWN BY: ECC

SMRT FILE: A-103-21004 SHEET No. A-103

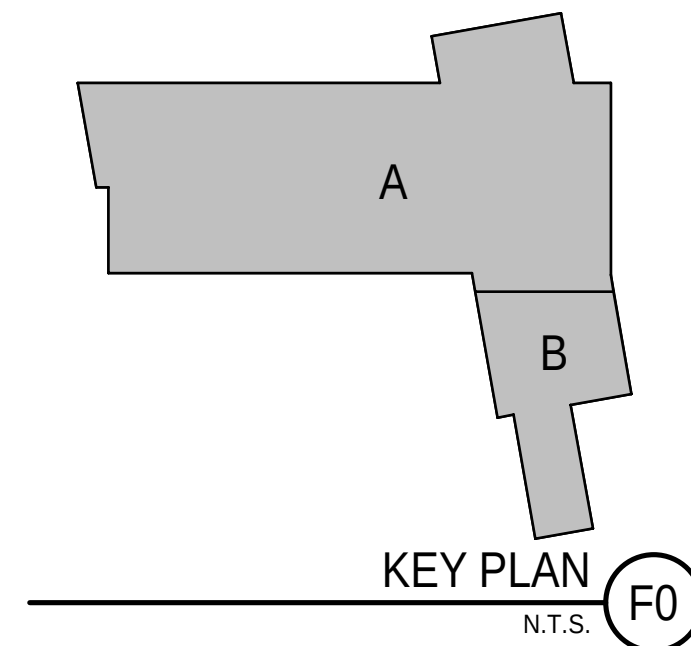
THIRD LEVEL - FACILITY PLAN

1/16" = 1'-0"





FOURTH LEVEL - FLOOR PLAN



| REV | DESCRIPTION                                | DATE       |
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MAJOR SITE PLAN AND  
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FOURTH LEVEL - FACILITY PLAN

SHEET TITLE:

TAX PARCEL #145 B018

SCALE: AS NOTED

PROJECT MANAGER: KD PROJECT NO: 21004

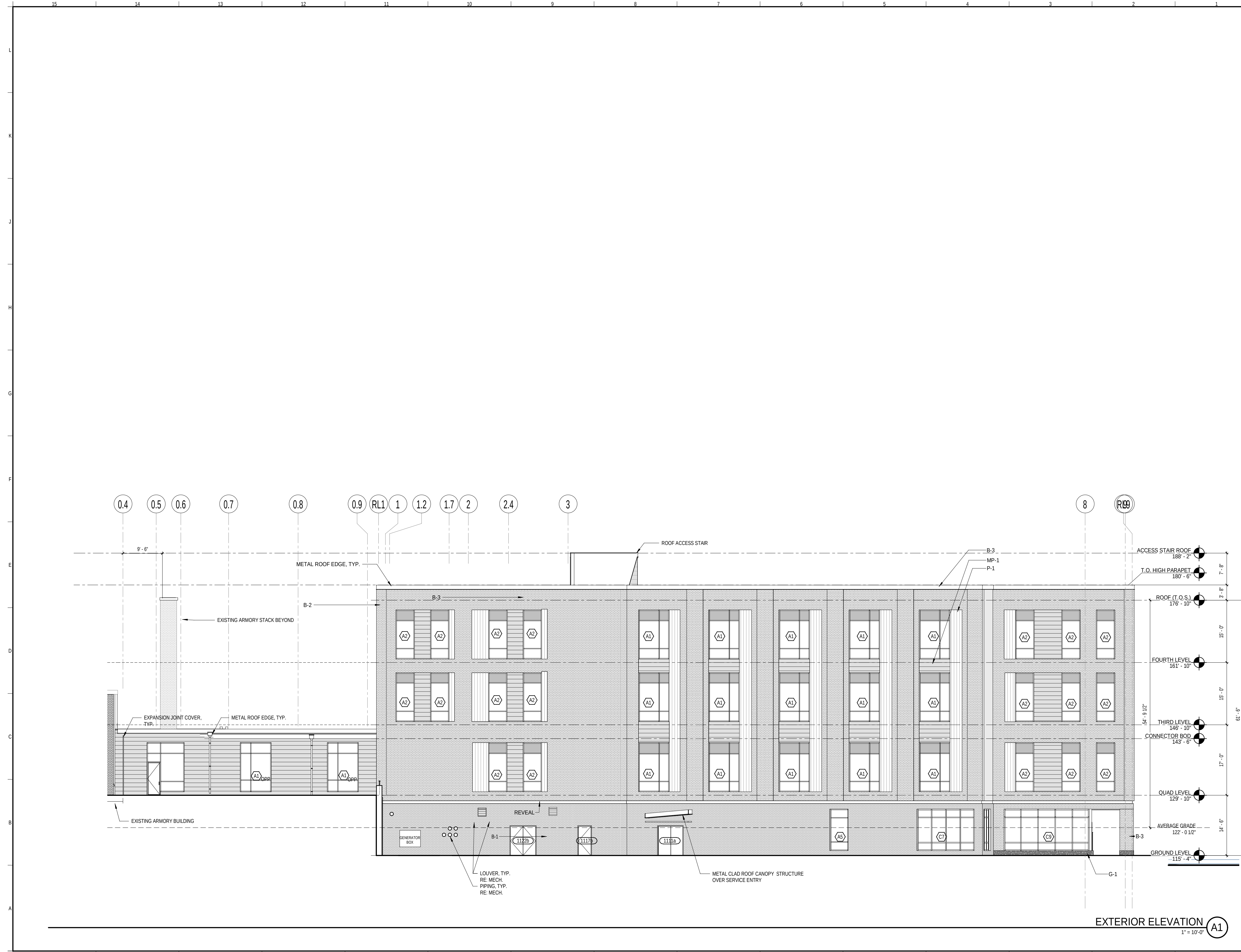
A/E OF RECORD: MTR

JOB CAPTAIN: ECC

DRAWN BY: ECC

SMRT FILE: A-104-21004 SHEET No. A-104



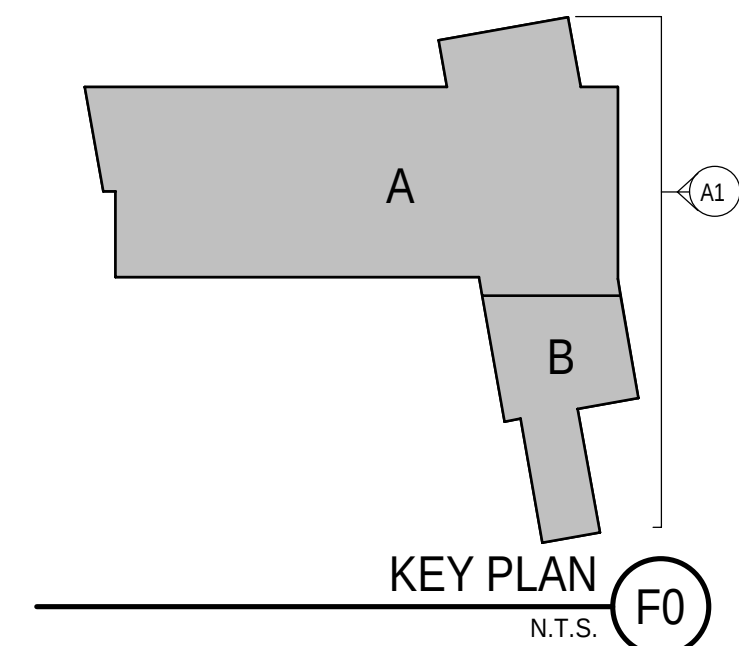


EXTERIOR ELEVATION NOTES:

1. REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.
2. PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

EXTERIOR FINISH LEGEND:

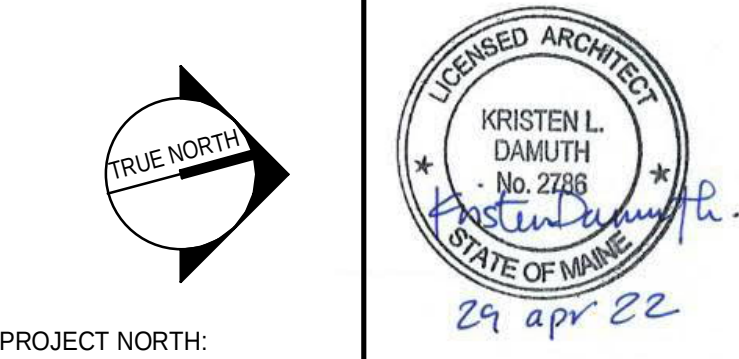
|  |                                  |
|--|----------------------------------|
|  | BR-1 - BRICK TYPE 1 - RED BRICK  |
|  | BR-2 - BRICK TYPE 2 - DARK BRICK |
|  | CP-1 - PHENOLIC PANEL            |
|  | GR-1 - GRANITE WATER COURSE      |
|  | MP-1 - METAL PANEL TYPE 1        |



| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
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MAJOR SITE PLAN AND  
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CURRENT ISSUE STATUS:



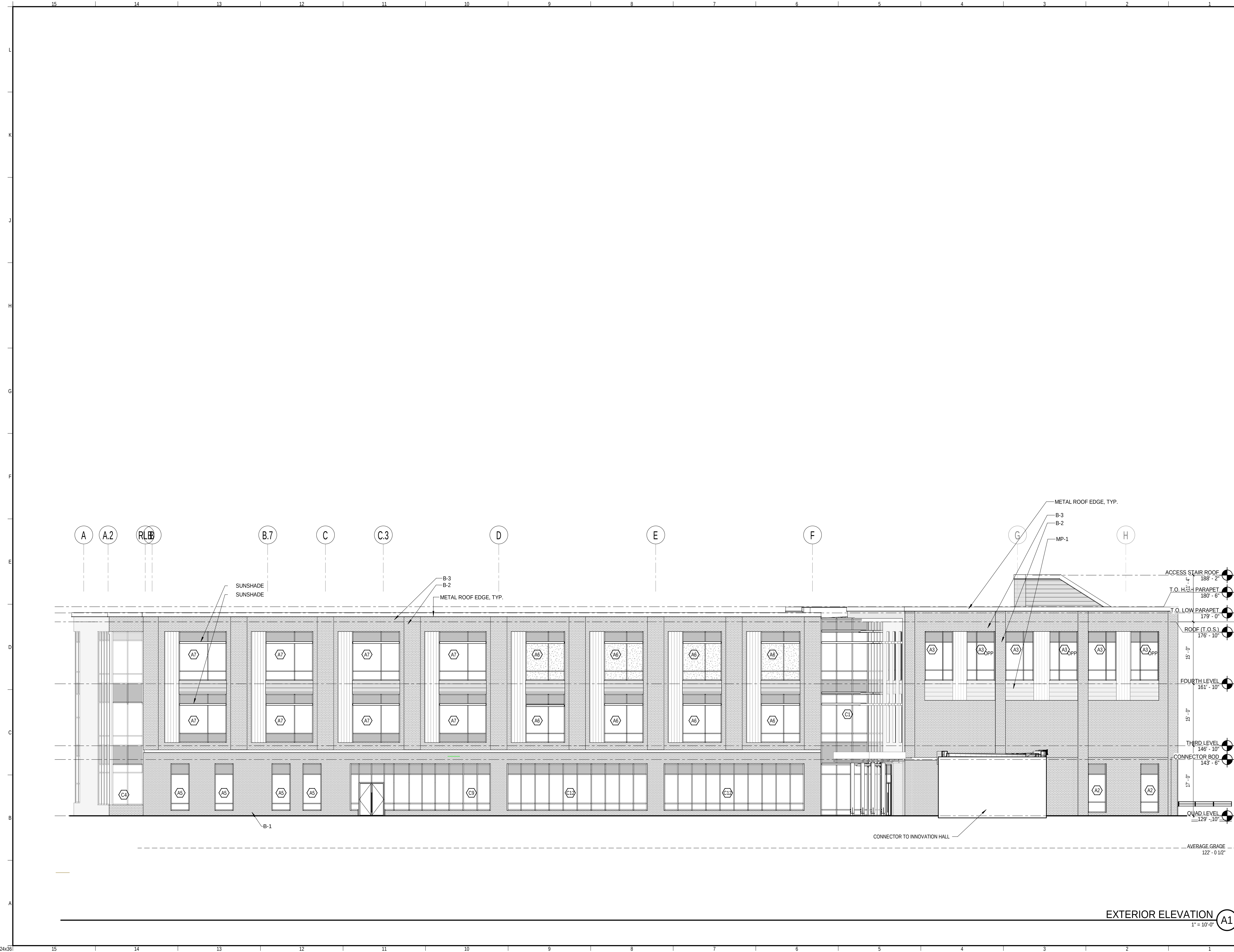
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EXTERIOR ELEVATIONS - NORTH

|                        |  |                        |  |
|------------------------|--|------------------------|--|
| SHEET TITLE:           |  | TAX PARCEL #145 B018   |  |
| 0" 1/4" 1/2" 1" 2" 3"  |  |                        |  |
| SCALE: AS NOTED        |  |                        |  |
| PROJECT MANAGER: KD    |  | PROJECT NO: 21004      |  |
| A/E OF RECORD: MTR     |  |                        |  |
| JOB CAPTAIN: ECC       |  |                        |  |
| DRAWN BY: ECC          |  |                        |  |
| SMRT FILE: A-201-21004 |  | SHEET No. <b>A-201</b> |  |



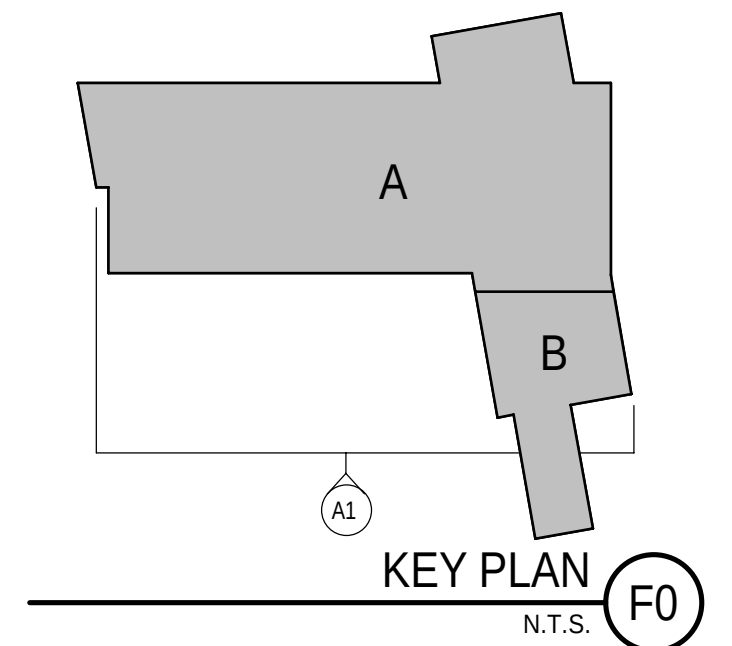


EXTERIOR ELEVATION NOTES:

1. REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.
2. PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

EXTERIOR FINISH LEGEND:

|  |                                  |
|--|----------------------------------|
|  | BR-1 - BRICK TYPE 1 - RED BRICK  |
|  | BR-2 - BRICK TYPE 2 - DARK BRICK |
|  | CP-1 - PHENOLIC PANEL            |
|  | GR-1 - GRANITE WATER COURSE      |
|  | MP-1 - METAL PANEL TYPE 1        |



| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
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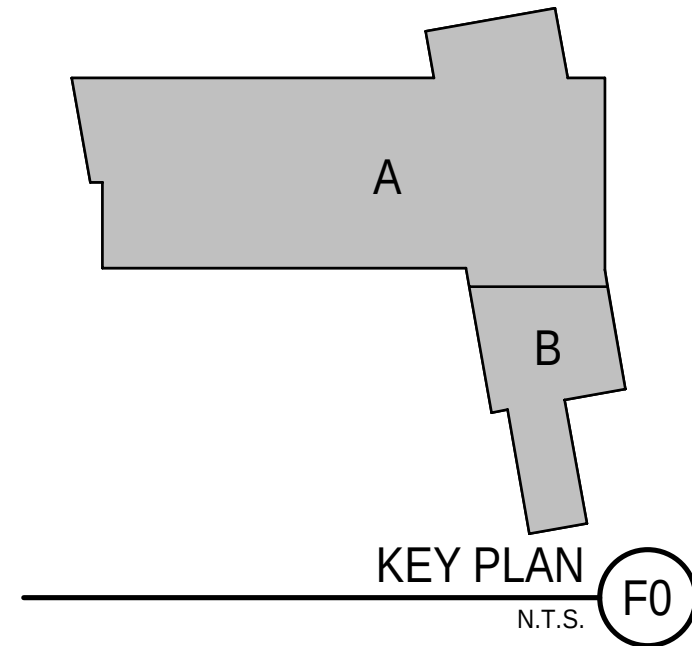
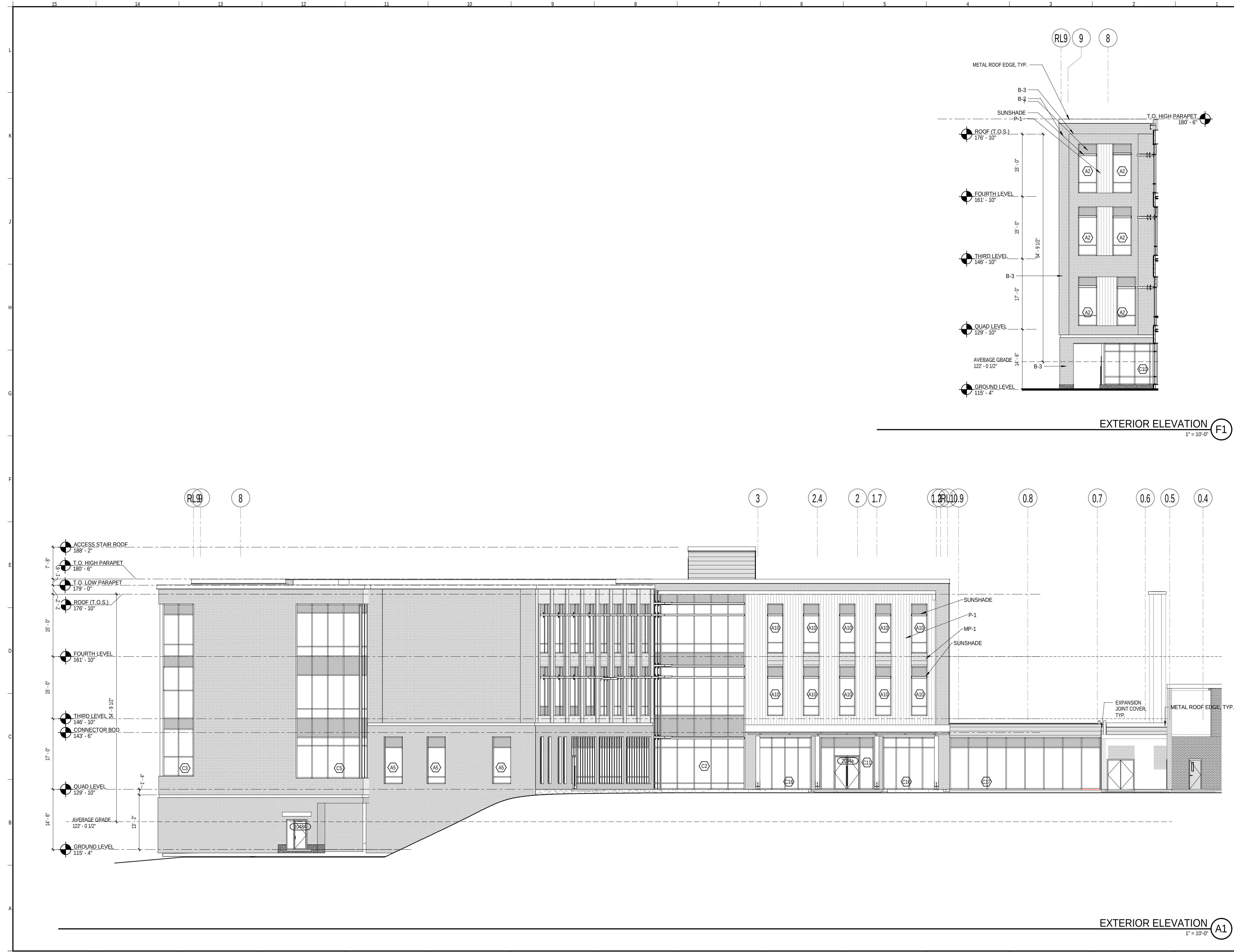
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EXTERIOR ELEVATIONS - EAST

|                        |                       |
|------------------------|-----------------------|
| SHEET TITLE:           | TAX PARCEL #145 B018  |
| SCALE: AS NOTED        | 0" 1/4" 1/2" 1" 2" 3" |
| PROJECT MANAGER: KD    | PROJECT NO: 21004     |
| A/E OF RECORD: MTR     |                       |
| JOB CAPTAIN: ECC       |                       |
| DRAWN BY: ECC          |                       |
| SMRT FILE: A-202-21004 | SHEET No. A-202       |

EXTERIOR ELEVATION  
1" = 10'-0" A1





| REV | DESCRIPTION                                | DATE       |
|-----|--------------------------------------------|------------|
| 0   | MAJOR SITE PLAN AND CONDITIONAL USE REVIEW | 04-29-2022 |

MAJOR SITE PLAN AND  
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EXTERIOR ELEVATIONS - SOUTH

SHEET TITLE: TAX PARCEL #145 B018

SCALE: AS NOTED

PROJECT MANAGER: KD PROJECT NO: 21004

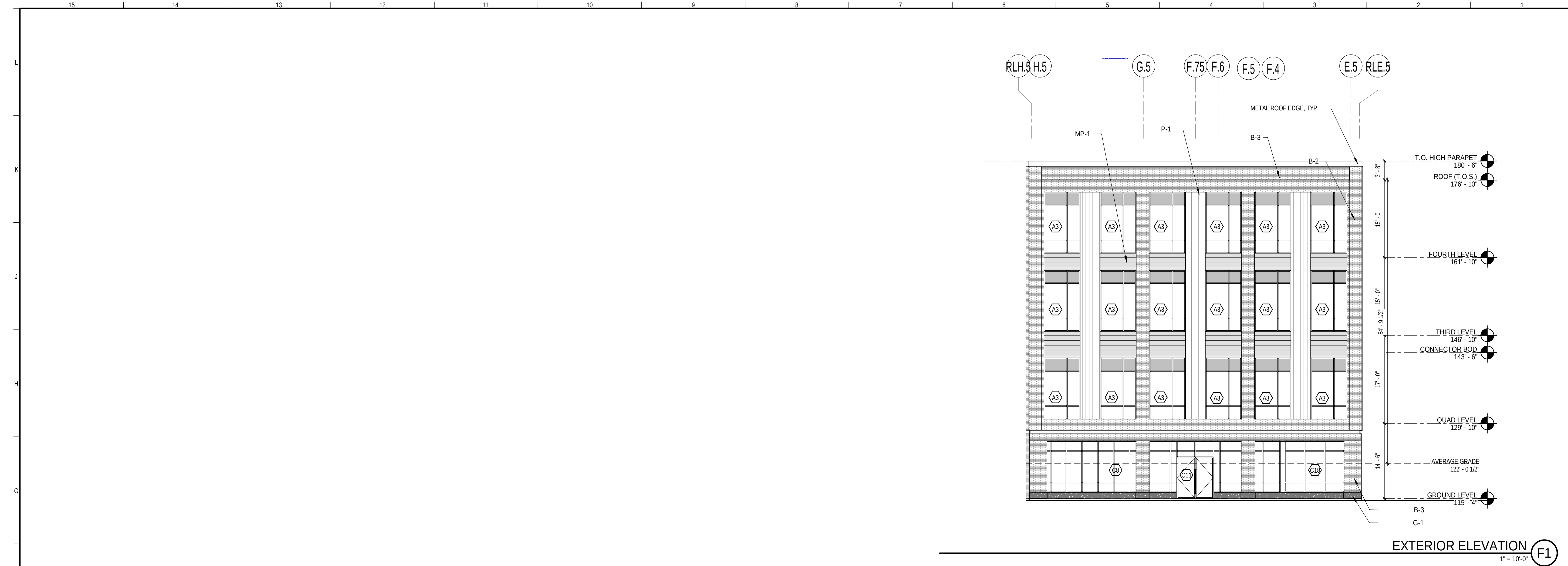
A/E OF RECORD: MTR

JOB CAPTAIN: ECC

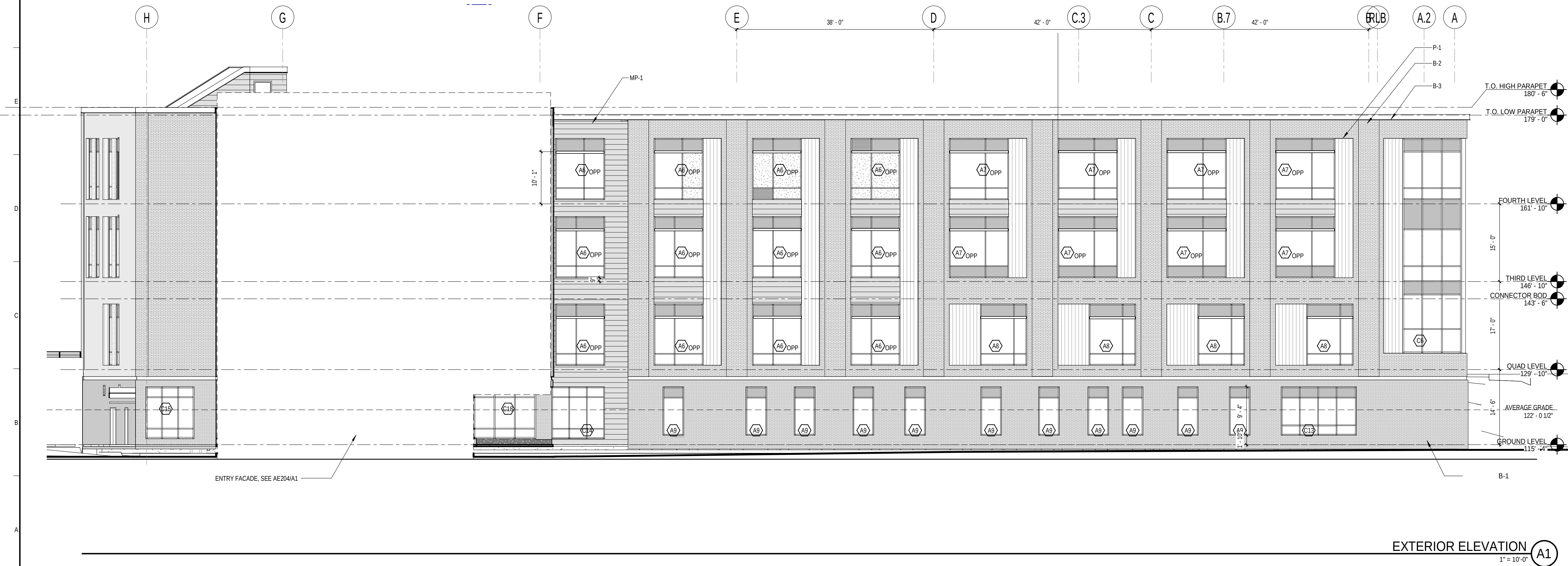
DRAWN BY: ECC

SMRT FILE: A-203-21004 SHEET No. A-203





EXTERIOR ELEVATION (F1)  
1" = 10'-0"



EXTERIOR ELEVATION (A1)  
1" = 10'-0"

**EXTERIOR ELEVATION NOTES:**

- REFER TO FIRE PROTECTION, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL RESPECTIVE FIXTURE/DEVICE LOCATIONS, COUNTS, & ASSOCIATED RECESSED BOXES AT EXTERIOR WALLS.
- PROVIDE MASONRY CONTROL JOINTS AT ALL INSIDE MASONRY CORNERS AND WHERE SHOWN ON ELEVATIONS.

**EXTERIOR FINISH LEGEND:**

- BR-1 - BRICK TYPE 1 - RED BRICK
- BR-2 - BRICK TYPE 2 - DARK BRICK
- CP-1 - PHENOLIC PANEL
- GR-1 - GRANITE WATER COURSE
- MP-1 - METAL PANEL TYPE 1

**KEY PLAN (F0)**  
N.T.S.

**MAJOR SITE PLAN AND CONDITIONAL USE REVIEW**  
04-29-2022

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**EXTERIOR ELEVATION - WEST**

**SHEET TITLE:** TAX PARCEL #145 B018

**SCALE:** AS NOTED

**PROJECT MANAGER:** KD **PROJECT NO.:** 21004

**A/E OF RECORD:** MTR

**JOB CAPTAIN:** ECC

**DRAWN BY:** ECC

**SMRT FILE:** A-204-21004 **SHEET No.** A-204