

PLANNING BOARD

Tuesday, January 23, 2024 at 4:30 PM
Hybrid Meeting, Room 24 (Basement Level of
City Hall) and Zoom



MEMBERS

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

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

REMOTE PARTICIPATION

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AGENDA:

WORKSHOP - 4:30 PM

- i. Major Site Plan; 331 Veranda Street; Martin's Point Health Care, Applicant. At the request of the applicant, this item is being removed from the Agenda. Staff recommends that the Planning Board table this item to March 12, 2024.

PUBLIC HEARING - 5:30 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATION AND REPORTS

LD 2003 Communication

2023 Accomplishments

1901 Forest Avenue (Approval Letter)

19 West Street (Approval Letter)

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON JANUARY 9, 2024

Workshop

716 Stevens Avenue: Chann, Murphy, Smith and Stanley present. Barker and Silk absent. Mazer recused.

Public Hearing

1901 Forest Avenue: Chann, Murphy, Smith and Stanley present. Barker, Mazer and Silk absent.

19 West Street: Chann, Mazer, Murphy, and Stanley present. Barker absent. Smith and Silk recused.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON JANUARY 9, 2024

- i. Conditional Use; 1901 Forest Avenue; M&G Auto, Applicant. Chann motioned, and Murphy seconded a motion to approve the conditional use application. Vote 4-0, Barker, Mazer and Silk absent.
- ii. Major Site Plan and Conditional Use; 19 West Street; Carleton West, LLC, Applicant. Chann motioned, and Murphy seconded a motion to waive Technical Manual Standard 1.10.3 related to minimum two-way driveway width, to reduce the minimum standard from 24 feet to 20 feet. Vote 4-0, Barker absent, Silk and Smith recused. Chann motioned, and Murphy seconded a motion to waive Technical Manual Standard 1.5.1.B related to the minimum two-way driveway aisle width, to reduce the minimum standard from 20 feet to 18 feet. Vote 4-0, Barker absent, Silk and Smith recused. Chann motioned, and Murphy seconded a motion to approve the conditional use application. Vote 4-0, Barker absent, Silk and Smith recused. Chann motioned, and Murphy seconded a motion to approve the major site plan application. Barker absent, Silk and Smith recused.

5. NEW BUSINESS

- i. Major Site Plan and Conditional Use; 509 Forest Avenue; DC 509 Forest, LLC, Applicant. The Planning Board will hold a hybrid public hearing to consider a proposal to redevelop a three-story, 73,750 square foot building located at 509 Forest Avenue. The redevelopment would involve the renovation of the ground floor commercial spaces into new retail suites, and the conversion of office spaces on floors two and three into 38 residential units, which triggers the City's inclusionary zoning requirements. The subject property totals 21,841 square feet, and is zoned B-2b Community Business. A project and plan summary are available for viewing on the city's CSS Portal (<https://css.portlandmaine.gov/>) by referencing Plan Number PL-002662-2023.
- ii. Major Site Plan and Site Location of Development; 716 Stevens Avenue; University of New England, Applicant. The Planning Board will hold a hybrid public hearing to consider a proposal by the University of New England to improve and expand an existing carriage road which connects the University's Portland Campus to its intermodal transportation facility located at 172 Bishop Street. Expansion of the carriage road will permit the Campus Shuttle, as well as students, staff, and faculty to drive, cycle or walk between the University's primary parking facility and campus without using public street facilities, and will reduce university related traffic through Morrill's corner. The subject property totals 28.1 acres, and is located in the R-3 and R-5 Residential Zones. A project and plan summary are available for viewing on the city's CSS Portal (<https://css.portlandmaine.gov/>) by referencing Plan Number PL-002666-2023.

Planning and Urban Development
Kevin Kraft, AICP
Deputy Director



From: Kevin Kraft, AICP – Deputy Director of Planning & Urban Development
To: Chair Mazer and the Portland Planning Board
Date: 1/18/2024
Subject: 331 Veranda St. – Major Site Plan - Tabling

The applicant, Martin's Point Healthcare, has requested that the Major Site Plan for 331 Veranda Street be removed from the January 23rd, 2024 Planning Board workshop agenda. Staff recommend that the Planning Board table this item to March 12th, 2024.

Planning and Urban Development

Kevin Kraft, AICP

Deputy Director



To: Chair Mazer & Members of the Planning Board
From: Kevin Kraft
Date: January 19, 2024
Re: LD 2003 City Council Adopted Amendments
Meeting Date: January 24, 2024

On December 18, 2023, the City Council modified the Planning Board's recommended text amendments and voted (8-1) to adopt amendments to the Land Use Code in response to LD 2003 (Order 85-23/24), an Act aimed at creating new opportunities for housing creation state-wide.

The City Council's adopted amendments allow four units on all mainland lots where residential is allowed, and three units on all lots on the islands, regardless of whether or not lots are currently vacant. In addition, they allow 'bonus' housing units on the mainland of up to 2.5x for any project where over 50% of the units are affordable. Furthermore, the City already allows up to two Accessory Dwelling Units (ADUs) on all lots in residential use. Therefore, the City Council's adopted changes result in a minimum of six housing units permitted per lot in mainland Portland, 12 housing units permitted per lot on mainland where 50% or more of the housing units are affordable and up to five housing units permitted per lot on all City of Portland islands, regardless of whether or not lots are served by public water and sewer (unless otherwise exceeded by more permissive zoning districts).

The City Council's amendments also created a maximum lot coverage not to exceed 60% for residential lots city wide, including on islands, unless exceeded elsewhere in the zoning ordinance. For reference, prior to the Council's adopted amendments, the previous lot coverage for many residential zones (R-1, R-2, R-3, R-4, R-5, R-5a) and island zones (IR-1, IR-2, IR-3) ranged from 20% to 40%. The changes also exempt the first four units in any residential use from off-street parking requirements.

Text of the complete changes and supporting materials can be viewed here:

<https://portlandme.portal.civicclerk.com/event/6495/files/3026>. The bulk of the approved changes are contained in the attachments titled Rodriguez Amendments (1-4).

The amendments went into effect immediately following the Council vote and are now reflected in the current Land Use Code.

To: Chair Mazer and Members of the Planning Board
From: Matthew Grooms, Development Review Services Manager
Date: January 23, 2024
Re: Planning Board 2023 Accomplishments

The following is a summary of the Planning Board's accomplishments over the course of 22 meetings held during the calendar year 2023. Beginning on June 27, 2023, the Board transitioned from a fully remote meeting format to a hybrid meeting format, with the Board meeting in-person for the first time since early 2020, and offering opportunities for the public to engage both in person and via zoom. Highlights of the Board's accomplishments are listed below.

1. Planning Board Major Site Plan Approvals:

A total of 22 Major Site Plan applications were approved in 2023, including 14 residential projects, and five non-residential projects resulting in:

- Total Housing Units Approved: 1,193
- Total Affordable Housing Units: 422
- Total Jill C. Duson Housing Trust Fund Contributions: \$2,889,124
- Total Hotel Rooms: 443
- Total EV Charging Infrastructure: 101
- Bicycle Spaces: 566
- New On-Site Street Trees: 210
- Tree Fund Contributions: \$289,000

Major Site Plan applications approved in 2023 advanced **1,193 new homes**, including **422 affordable units**, collected **\$2,889,124 in Jill C. Duson Housing Trust Fund** contributions and furthered the city's sustainability goals by approving the planting of **210 new street trees**, installation of **101 EV charging stations**, and **566 bicycle racks**. Moreover, the Planning Board approved several non-residential projects, including a new 40,000 square foot performing arts center at the University of Southern Maine, a new intermodal transportation facility for the University of New England (UNE), a new 72,857 square foot commercial office building with retail and restaurant space at 70 Thames Street, three new hotel projects totaling 443 rooms, and a 60,630 square foot new warehouse. Residential projects consisted of development on former city property and a mix of infill development, and conversions.

Residential approvals by zone:

Zone	Total Projects	Total Residential Units
R-3	1	162
R-5/R-5A	2	40
R-6	2	8
B-3	7	578
B-5	1	9
B-6	1	396
Total	14	1,193

A. Notable residential approvals included:

Disposition of City Owned Property:

165 Lambert Street and 622 Auburn Street

On February 28, 2023, the Planning Board unanimously approved a Major Site Plan and Inclusionary Zoning Conditional Use application for the Lambert Woods Planned Residential Unit Development (PRUD), which would involve the construction of 162 new residential units across two development sites, located on either side of Washington Avenue Extension in the North Deering Neighborhood. This action followed a multi-year process led by the City to dispose of certain properties for the purpose of creating new mixed-income, and age-inclusive housing on underutilized City owned property. The City solicited development proposals through an RFP process, and selected Maine Cooperative Development Partners (MCDP) for the properties at 165 Lambert Street, and 622 Auburn Street; a 17.95-acre forested site with significant wetland area. In

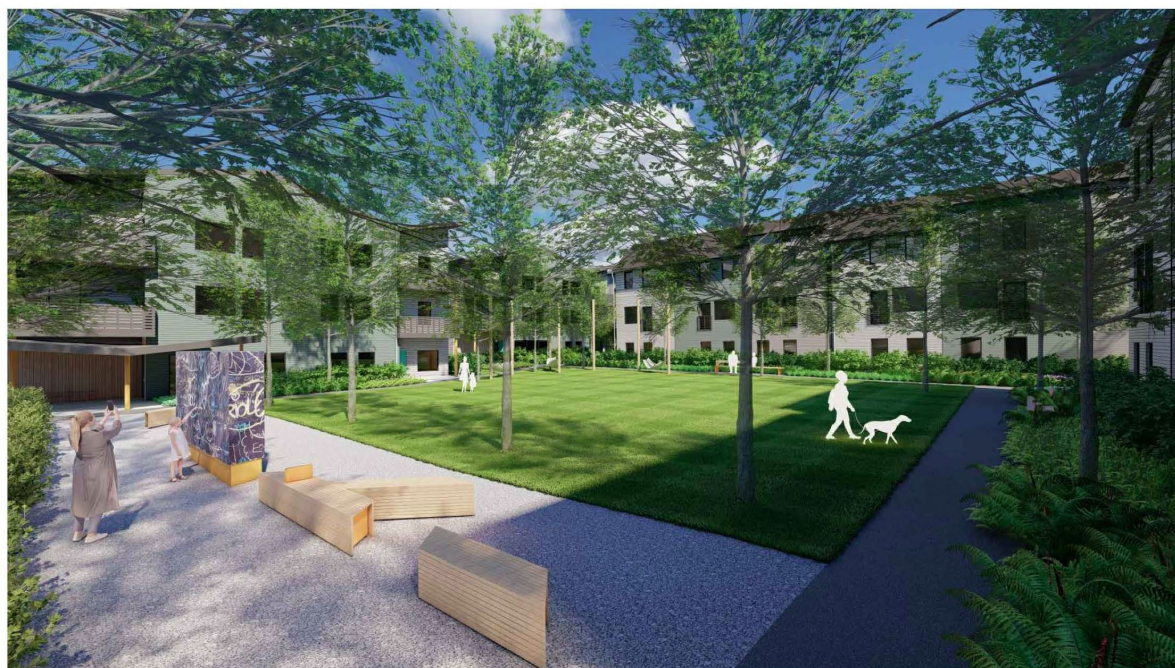


Figure 1: Rendering of the Lambert Woods Project

order to maximize housing density while minimizing the environmental impact, MCDP requested a zoning text and map amendment to rezone the property from R-2 to R-3 Residential in order to permit the Planned Residential Unit Development (PRUD) housing type, and amend the R-3 PRUD provisions to allow for vertically attached units so as to reduce the footprint of the project. These zoning amendments were unanimously recommended by the Planning Board to the City Council on June 8, 2021, and were adopted by the Council June 19, 2021.

Infill Development:

48 Brown Street (25 Casco Street)

On July 25, 2023, the Planning Board unanimously approved a Major Site Plan application to construct a new five-story mixed-use development with a ground-level retail space and pocket park, and 54 low income housing units at a mid-block location on Casco Street between Congress Street and Cumberland Avenue. The property is zoned B-3 Downtown Business, and is currently in use as a surface parking lot with a drive-through ATM kiosk, and as such, this redevelopment would see the property converted from automobile-oriented uses to commercial and residential uses that would both add to the vitality of downtown and benefit from the sites proximity to services and amenities found downtown.



Figure 2: Rendering of the 48 Brown Street development

Residential Conversions:

465 Congress Street

On May 23, 2023, the Planning Board unanimously approved a Major Site Plan application and Conditional Use Application for Inclusionary Zoning for the conversion of 76,980 square feet of vacant office space within the historic ten-story Fidelity Trust Company building, into 63 new residential units. The property is located at 465 Congress Street within the B-3 Downtown Business Zone and the Congress Street Historic District. In order to satisfy the City's Inclusionary Zoning requirement, the project will be contributing \$2,716,638 into the City's Jill C. Duson Housing Trust Fund.



Figure 3: 465 Congress Street (Fidelity Trust Company Building)



Figure 4: 511 Congress Street

511 Congress Street

On June 13, 2023, the Planning Board approved a Major Site Plan application and Conditional Use Application for Inclusionary Zoning for the conversion of 139,837 square feet of currently vacant office space within the office building at 511 Congress Street, into 107 new residential units, which would include 27 on-site workforce housing units. The project is located within the B-3 Downtown Business Zone and the Congress Street Historic District.

477 Congress Street (Time and Temperature Building)

On December 12, 2023, the Planning Board approved a Major Site Plan application and Conditional Use Application for Inclusionary Zoning for the conversion of 202,000 square feet of floor area, currently in commercial office use, to hotel and residential use with ground-level retail. The project would create 140 new micro unit apartments, and a 136-room hotel, and proposes 40 on-site workforce housing units to satisfy the project's inclusionary zoning requirements. The Planning Board previously approved (January 25, 2022) a different major site plan application for this property, that would have involved the conversion of the building into a 186-room hotel with restaurant and rooftop bar.



Figure 5: Rendering of Time and Temperature Renovation

Realization of a Master Development Plan

385 Congress Street

On February 14, 2023, the Planning Board approved a Major Site Plan Application to facilitate the development of Phase One of the 385 Congress Street Master Development Plan (MDP); a three-phase proposal involving the construction of three separate buildings including 297 residential units, a 156-room hotel, a 337-space parking structure, seven separate retail spaces totaling 11,560 square feet, a 5,100 square foot restaurant, and a 19,040 square foot amenity deck. As approved, the major site plan application consisted of an eleven-story building with 179 hotel rooms, nine residential units, a 75-space parking structure, a 4,630 square foot restaurant, and 755 square foot retail space. The property is located within the B-3 Downtown Business Zone.



Figure 6: Rendering of the development at 385 Congress Street

Portland Foreside (58 Fore Street)

On September 12, 2023, the Planning Board approved a Major Site Plan Application and Conditional Use Application for Inclusionary Zoning for Phase 2 of the Portland Foreside MDP. The MDP, which was approved by the Planning Board in December of 2016, envisioned a complete redevelopment of the former Portland Company Industrial site on the City's Eastern Waterfront, as a significant new mixed-use neighborhood with housing, hotel uses, a variety of commercial retail and restaurant spaces, a premier marina, and generous public open spaces both within the site and along the waterfront. The first phase of the project, which involved the construction of the Sun Life Office Building on Block One, was approved by the Planning Board in January of 2020. The Phase Two plan involved the development of Blocks four, five

and six and features 396 new residential units, 42 of which would be workforce housing units, 81,558 square feet of new retail, restaurant and service space, a 644-space parking garage, and a 128-room hotel. The project site is located within the B-6 Eastern Waterfront Mixed-Use zone.



Figure 7: Rendering of Portland Foreside Phase Two

89 Elm Street

On October 24, 2023, the Planning approved a Major Site Plan Application for a new mixed-use development with three ground-level retail units and 201 low-income housing units at 89 Elm Street, in the B-3 Downtown Business and R-6 Residential zones. This project is the first phase of the Bayside Master Development Plan, which was approved on July 25, 2023. The MDP, as detailed below, would be constructed over eight separate phases across multiple City blocks in the Bayside neighborhood, and would lead to the construction of 804 new residential units, 28,200 square feet of new commercial space, and several noteworthy changes within the public right of way, including the two-way conversion of Oxford Street, and the creation of a woonerf along Lancaster Street between Preble and Elm Street.



Figure 8: Rendering of 89 Elm Street

B. Notable non-residential approvals included:

Institutional Development:

111 Bedford Street (USM Center for the Arts)

On March 28, 2023, the Planning Board approved a Major Site Plan application to facilitate the construction of the USM Center for the Arts; an approximately 40,075 square foot building located in the R-5 Residential zone in the Oakdale neighborhood.



Figure 9: USM Center for the Arts

Commercial Development:

70 Thames Street

On September 26, 2023, the Planning Board approved a Major Site Plan Application to facilitate the construction of a three-story, 72,857 square foot office building with ground-level retail and third-floor restaurant, at 70 Thames Street in the B-6 Eastern Waterfront Mixed-Use Zone. Upon completion, the building would be occupied by WEX, who occupies other buildings within the same block and who relocated to Portland from South Portland following the Planning Board's approval of the building at corner of Hancock and Thames Street on October 4, 2017.



Figure 10: New Office Building at 70 Thames Street

2. Planning Board Master Development Plan (MDP) Approvals:

One MDP was approved by the Planning Board for an eight-phase development in the Bayside Neighborhood which would extend across six city blocks and encompass approximately seven acres, spanning between Kennebec Street in the north, Cumberland Avenue in the south, Preble Street in the west, and Chestnut Street in the east. Upon completion, the development would involve the construction of seven new mixed-use buildings with 804 residential units (201 of which would be low-income units), 28,200 square feet of new commercial space, two new public open spaces including a small park at the intersection of Cedar Street and Lancaster Street, and a linear park and woonerf along Lancaster Street between Preble and Elm Street. Phase 1 of the MDP, which contemplated a 201-unit affordable housing project at 89 Elm Street with three ground-level retail spaces, was approved by the Planning Board on October 24, 2023.



Figure 11: Rendering and Phasing Plan of Bayside MDP

3. Planning Board Conditional Use Approvals:

A total of three Conditional Use applications were approved in 2022, resulting in:

- Hotel inclusionary zoning review for the conversion of the upper floors of the property at 178 Middle Street from office to hotel use
- 480 square feet of low-impact industrial space for a wholesale bakery at 75 Oak Street in the B-3 Zone
- Expansion of the Portland Squash Center at 76 Noyes Street, a place of assembly conditional use within the R-5 Residential zone.

4. Planning Board Zoning Map and Text Amendment Recommendations:

A total of five Zoning Map Amendment and two Zoning Text Amendment applications were reviewed and recommended to the City Council including:

A. Zoning Map Amendments:

50 Industrial Way

On January 24, 2023, The Planning Board voted to recommend to the City Council, the rezoning of nine intensively developed industrial properties along Industrial Way, including the property of the applicant, Allagash Brewing Company, from I-M to I-Mb Moderate Impact Industrial. The rezoning was sought to allow for a less restrictive impervious surface ratio and was recommended based upon the nature of the properties included as part of the request, and the proposals consistency with the City's comprehensive plan.



Figure 12: 50 Industrial Way Zoning Amendment

211 Cumberland Avenue

The Planning Board voted to recommend a Zoning Map Amendment to the City Council to rezone the property at 211 Cumberland Avenue, site of the Franklin Towers, from R-6 Residential to B-3 Downtown Business, and amend the Bayside Height Overlay to permit heights of up to 150 feet on the property. The zoning amendment would help facilitate the interior renovation and partial redevelopment of the Franklin Towers property in the future by eliminating the density limits of the R-6, and by bringing the existing building into compliance with zoning dimensional standards.

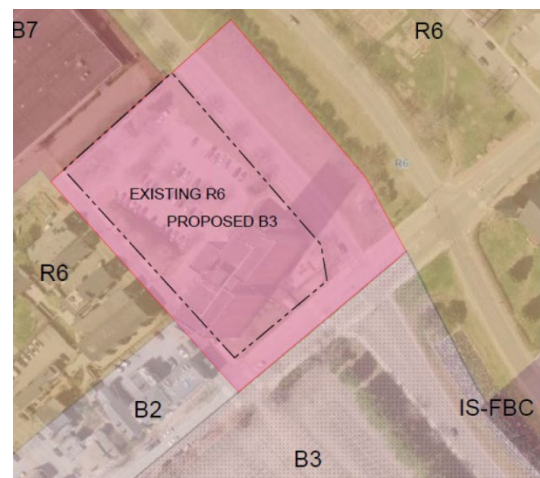


Figure 13: 211 Cumberland Ave Zoning Amendment

900 Ocean Avenue

On May 9, 2023, the Planning Board voted to recommend to the City Council a Zoning Map Amendment to rezone a 16-acre site located at 900 Ocean Avenue from R-3 Residential to R-5a Residential, to permit greater residential density within a contemplated PRUD at this location while permitting a reduced development footprint on this property which is heavily vegetated with wetlands and areas of significant ledge. Based upon the density limitations of the R-5a zone, the property could support up to 435 residential units. While the Planning Board recommended the inclusion of additional property to the south of the 900 Ocean Avenue property, the City Council ultimately voted to only include the applicant's property at 900 Ocean Avenue.

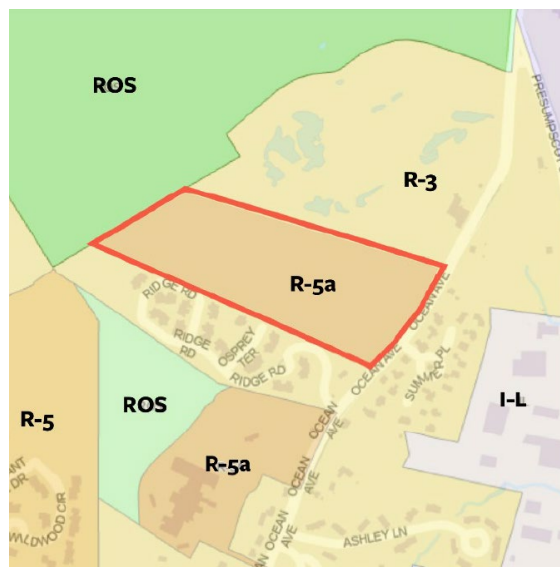


Figure 14: 900 Ocean Avenue Zoning Amendment as adopted by the City Council

17 & 25 Bates Street

On September 12, 2023, the Planning Board voted to recommend to the City Council a Zoning Map Amendment to 27 parcels in the vicinity of the Veranda Street, Bates Street and Washington Avenue intersection from R-P Residence Professional, R-5 Residential, and B-2 Community Business, to B-2b Community Business. The zoning amendment was initially sought to facilitate the redevelopment of two parcels located within the R-P zone into a small mixed-use development with a ground-level restaurant and residential uses on the upper floors. City staff recommended expansion of the rezoning boundary and further requested that the properties be rezoned to the B-2b zone, as opposed to the B-2 zone, based upon the B-2b zone's to include 25 additional properties, based upon the B-2b's increased lot coverage allowance, the stated purpose of the B-2b as zone as a more pedestrian oriented mixed-use zone, and slight differences between use allowances between the B-2 and B-2b zones.

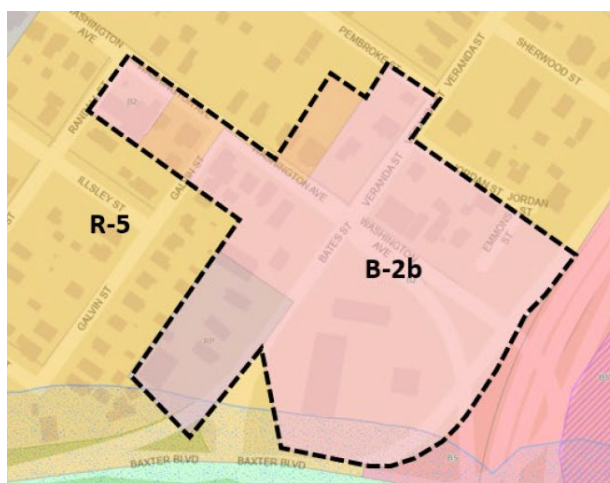


Figure 15: 17 & 25 Bates Street Zoning Amendment

426 Presumpscot Street

On October 24, 2023, the Planning Board voted to recommend to the City Council a Zoning Map Amendment for four separate parcels, totaling 3.32 acres from R-3 Residential to R-5 Residential, to facilitate the development of a multi-family development totaling approximately 50 residential units.

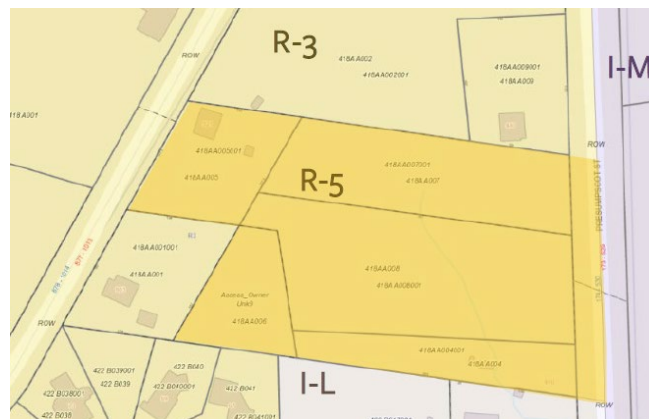


Figure 16: 426 Presumpscot Street Zoning Amendment

B. Zoning Text Amendments:

22 Park Avenue

On February 28, 2023, the Planning Board voted to recommend to the City Council a zoning text amendment submitted by Community Housing of Maine (CHOM) to eliminate the C-5 Contract Zone encompassing the property at 22 Park Avenue and return the property to the underlying B-2b Community Business zone. This amendment would enable the property owner to utilize all of the units within the existing building. These amendments would also permit up to two additional units on property zoned for residential use with an existing residential structure

Implementation of LD-2003

On October 24, 2023, the Planning Board recommended a series of zoning text amendments to Articles 3, 6, 7, 18, and 19, which were proposed by City staff to bring the City into compliance with State Law LD-2003. These amendments would permit up to four residential units on all property zoned for residential use within designated growth areas, up to two units on all property zoned for residential use outside of the City's designated growth areas, up to two additional units on property with an existing residential structure, and provisions for additional density bonuses where affordable units are being constructed or added. Following the Planning Board's recommendation, the City Council took up these amendments, and voted at their December 18, 2023 meeting to adopt these amendments with several changes to expand their scope. The land use code amendments adopted by the Council transform the City's zoning framework, particularly around housing. They allow four units (plus two ADUs) on all mainland lots where residential is allowed, and three units (plus 2 ADUs) on all lots on the islands. They allow additional 'bonus' units in any project on the mainland where over 50% of the units are affordable. The amendments create a maximum lot coverage of 60% for residential lots city-wide, including on islands, unless exceeded elsewhere in the zoning ordinance. And they exempt the first four units in any residential use from off-street parking requirements.



Figure 17: Graphic Illustrating City's Proposal as recommended by the Planning Board

5. Subdivisions:

- 385 Congress Street: Subdivision to facilitate multi-phase development in accordance with the approved 385 Congress Street MDP.
- 1190 Brighton Avenue: Subdivision Amendment for Rock Row Development.
- 432 Fore Street: Four lot commercial subdivision within Old Port.
- 533 Summit Street: Seven lot subdivision to facilitate the creation of four new buildable lots within the R-2 Residential zone.
- 66 Eighth Street: Three lot subdivision to establish two new buildable lots within the R-3 Residential Zone.

6. Communications:

- Bayside Canopy Planting Proposal: January 10, 2023
- Planning Board Accomplishments (2022): January 10, 2023

PLANNING BOARD

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

January 23, 2024

Majid Majeed
M&G Auto Repair
1901 Forest Avenue
Portland, Maine 04103

Project Name:	Conditional Use Application	Project ID:	CU-002683-2023
Address:	1901 Forest Avenue	CBL:	327A A003001
Applicant:	Majid Majeed		
Planner:	Sean King, Urban Designer		

Dear Majid Majeed:

On January 9, 2024, the Planning Board approved a conditional use application to allow for an auto dealership in the B-2 Community Business zone. The Planning Board reviewed the proposal for conformance with the general conditional use standards, Section 6.5.2 and the supplemental use specific standards under Section 6.5.6.A. Based on the information provided to the Board in the application, documents, and reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 09, 2024, which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted 4-0 (Mazor, Barker, Silk absent) to approve the conditional use application.

Conditional Use – Automobile Dealership

On the basis of the application, report and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on January 09, 2024 for application CU-002683-2023 relevant to the Land Use Code Section 6.5.2 and Section 6.5.6(A) and the testimony presented at the Planning Board hearing, the Planning Board voted 4-0 (Mazor, Barker, Silk absent) to find that the plan is in conformance with the conditional use standards of the Land Use Code

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

If there are any questions, please contact Sean King at (207)874-8901 or via email at sking@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

1. Planning Board Report

Planning Board Report

Planning & Urban Development Department



1901 Forest Avenue
Conditional Use Application (CU-002683-2023)
M&G Auto Repair, Applicant

Submitted to:	Portland Planning Board	Prepared By:	Sean King, Urban Designer
Public Hearing Date:	January 09, 2024	Date:	January 05, 2024

I. INTRODUCTION

M&G Auto Repair has submitted a conditional use application to operate a used automobile dealership adjacent to the Applicants existing automobile repair shop at 1901 Forest Avenue in the Riverside neighborhood. This application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Conditional Use Standards, Section 6.5.1.A.

The Planning and Urban Development Department mailed 70 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the December 28 and 29, 2023 editions of the *Portland Press Herald*.

Applicant: Majid Majeed, M&G Auto Repair
Applicant Ghassan Abdullah, M&G Auto Repair
Representatives:



Figure 1: Aerial of property site, view towards the north

II. REQUIRED REVIEWS

<i>Review</i>	<i>Applicable Standards</i>
General conditional use	Section 6.5.2
Supplemental use-specific conditional use	Section 6.5.6.A (Automobile dealership)

III. PROJECT DATA

Existing Zoning	B-2 Community Business
Property Size	.75 acres

Existing Use	Automobile repair shop
Proposed Use	Automobile dealership

IV. EXISTING CONDITIONS AND SURROUNDING AREA

The subject property is located at 1901 Forest Avenue (CBL 327A A003001) and is currently occupied by a 9,040-square-foot commercial building. The surrounding land uses are primarily commercial, including retail and auto service stations, and residential, including apartment-style multi-family buildings consisting of Portland Housing Authority's Riverton Park and Terrace Pond Apartments, and single-family homes. A 7-Eleven gas station and convenience store is adjacent to the subject property to the west. Hannaford grocery store is located immediately north of the subject property.

The property is currently being used as both an auto repair shop and an inspection station.



Figure 2: Photograph of property frontage along Forest Avenue, view towards the west

V. PROPOSED USE

The proposed conditional use would transform the current auto repair shop into an auto dealership to specialize in rebuilding salvage vehicles for sale.

VI. RIGHT, TITLE, & INTEREST

The owner of the property is M4 LLC by deed recorded May 04, 2023 in the Cumberland County Registry of Deeds in book 40108 page 140. The property is being rented by the Applicant.

VII. ZONING ANALYSIS

The subject property is located in the B-2 Community Business zone

B-2 dimensional standards under Table 7-E below:

<i>B-2 Community Business</i>	<i>Required</i>	<i>Existing</i>
Lot Area (min.)	N/A	N/A
Lot area per dwelling unit (min.)	1,000 sq. feet	N/A
Street Frontage (min.)	20 feet	140 feet
Front Setback (max.)	10 feet	30 feet

Rear Setback (min.)	10 feet	35 feet
Side Setback (min.)	None	14 feet
Stepbacks (above 35 feet when property line abuts a residential zone)	N/A	N/A
Length of building wall at maximum setback (min.)	N/A	N/A
Length of undifferentiated blank wall along publicly accessible way (max.)	N/A	N/A
Floor area (max.)	N/A	N/A
Structure Height	65 feet	<20 feet
Lot coverage (max.)	N/A	N/A
Impervious surface ratio (max.)	Residential: None Other uses: 80%	<80%

Auto, boat, and related dealerships are permitted in the B-2 zone as a conditional use according to Table 6-C of the Land Use Code. Applications for conditional use are required to be reviewed against the general conditional use standards specified in Section 6.5.2 and supplemental conditional use standards for automobile dealerships specified in Section 6.5.6.A.

VIII. GENERAL CONDITIONAL USE – AUTOMOBILE DEALERSHIP (Section 6.5.2)

As required under Section 6.5.1.A of the City's Land Use Code, the Zoning Board of Appeals shall review all conditional use applications, with the exception that the Planning Board shall review all conditional use applications for specific uses for which the Planning Board is identified as the review authority under section 6.5.6.

The ordinance under Section 6.5.2 requires the review authority shall find the following standards satisfied:

- 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.*

The City's Consulting Traffic Engineer has reviewed the application materials and finds the change in use would not be expected to generate substantially more traffic or parking spaces than current or nearby uses.

The Applicant has indicated hours of operation from 9am to 5pm, with no expansion of pavement or increase to the existing 30 parking spaces.

- 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.*

City staff finds the proposed use will not create unsanitary or harmful conditions. The Applicant has indicated there is no water inside the unit, stating that the drain inlets and lines were sealed off from the City's sewer system.

- 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.

City staff finds the operations of the proposed use will not have a substantially greater effect/impact on the surrounding properties than those associated with surrounding uses or other allowable uses in the zone.

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

The proposed use is subject to the Supplemental Conditional Use standards for Automobile dealership, listed under Section 6.5.6.A.

IX. SUPPLEMENTAL CONDITIONAL USE – AUTOMOBILE DEALERSHIP (Section 6.5.6.A)

As required under Section 6.5.6 of the City's Land Use Code, in addition to the general conditional use standards, the following applicable standards shall apply to specific conditional use:

A. Automobile, boat, and related dealerships and auto service stations:

- 1. The Planning Board shall be the review authority.*

The Planning Board is the review authority for this application.

- 2. Signs shall not adversely affect visibility at intersections or access drives. Such signs shall be constructed, installed, and maintained so as to ensure the safety of the public. Such signs shall advertise only services or goods available on the premises.*

City staff finds the existing sign location to not adversely affect visibility at intersection or access drive. In addition, the Applicant is not proposing any new signage.

- 3. No ingress and egress driveways shall be located within 30 feet from an intersection. No entrance or exit for vehicles shall be in such proximity to a playground, school, church, other places of public assembly, or any residential zone that the nearness poses a threat or potential danger to the safety of the public.*

The applicant proposes to retain the existing driveway, which City staff finds appropriate to support ingress and egress to and from the property. The existing driveway is not located within 30 feet of an intersection and does not pose a threat or potential danger to the safety of the public.

- 4. A landscaped buffer, no less than five feet wide, shall be located along street frontages (excluding driveways). The buffer shall consist of a variety of plantings in accordance with the City of Portland Technical Manual.*

The site currently contains a grass strip with wooden guardrail along its Forest Avenue frontage.

- 5. Car washes shall be designed to avoid the tracking of residual waters into the street.*

Not applicable. The applicant is not proposing a car wash.

X. PROPOSED MOTIONS

A. CONDITIONAL USE – AUTOMOBILE DEALERSHIP

On the basis of the application, report and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on January 09, 2024 for application CU-002683-2023 relevant to the Land Use Code Section 6.5.2 and Section 6.5.6(A) and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] that the plan is in conformance with the conditional use standards of the Land Use Code.

XI. ATTACHMENTS

REPORT ATTACHMENTS

- Att. 1 City Consulting Civil Engineer comments 12-06-2023
- Att. 2 City Consulting Traffic Engineer comments 12-11-2023
- Att. 3 DPW Transportation review 12-11-2023
- Att. 4 Planning Staff correspondence 12-23-2023

APPLICANT SUBMITTAL

- A. Project description

PLANNING BOARD

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

January 23, 2023

Jack Soley and Ali Malone
100 Commercial Street
Portland, Main 04108

Michael Tadema-Wielandt
Terradyn Consultants, LLC
565 Congress Street Unit 21
Portland, ME 04101

Project Name:	Major Site Plan	Project ID:	PL-002614-2023
Address:	19 West Street		CU-002693-202
Applicant:	Ali Malone, Jack Soley	CBL:	055 B013001, 055 B013002
Planner:	Maya Balassa		

Dear Ali Malone and Jack Soley:

On January 9, the Planning Board approved a major site plan and conditional use application for a proposed nine-unit multi-family residential development and separate off-street parking use at 19 West Street in the R-6 zone and West End Historic District. The project consists of two two-unit townhouses and the conversion of an existing medical office building into five a five-unit residential building. The project also includes associated off-street parking for these residential units, along with a separate 23-space surface parking lot, that is to be set up as a condominium, with individual parking spaces sold to nearby residents. The decision is based upon the application, documents and plans as submitted. The Planning Board reviewed the proposal for conformance with the standards of the Site Plan Ordinance, Ch. 14, Article 14, Section 14.6, and the Conditional Use Standards related to an off-street parking use in the R-6 zone, Ch. 14, Article 6, Section 6.5.2 and Section 6.5.6.H. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 9, 2024, which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted 4-o (Barker absent, Silk and Smith recused) to approve the application with the following waivers and conditions as presented below.

Waivers

The Planning Board voted 4-o (Barker absent, Silk and Smith recused) to waive the following City of

Portland Technical standards:

1. The Planning Board finds, based upon the third-party traffic engineers' review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual standard 1.10.3, which requires a minimum two-way drive aisle width of 24 feet, 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 the Technical Manual standard Section 1.10.3 to allow for a drive aisle width of 20 feet in the parking lot off of West Street.
2. The Planning Board finds, based upon the third-party traffic engineers' review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual standard 1.5.1.B which requires two-way drive ways to have a minimum width of 20 feet, 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 the Technical Manual standard Section 1.5.1.B to allow a driveway width of 18 feet from West Street.

Conditional Use

The Planning Board voted 4-o (Barker absent, Silk and Smith recused) to find the proposed conditional use for off-street parking in the R-6 Residential zone does meet the standards of Land Use Code Section 6.5.2 and Section 6.5.6.H, with the following condition:

PRIOR TO ISSUANCE OF THE BUILDING PERMIT

1. The applicant shall submit draft condominium documents for the proposed off-street parking condominium located at 19 West Street. These documents shall stipulate that spaces may only be sold to residents and/or to other users of a legally permitted use that is located within the R-6 zone. These condominium documents shall be reviewed and approved by the Planning Authority and Corporation Counsel.

The approval is based on the submitted plans and findings related to site plan and conditional use review as contained in the Planning Board report dated January 9, 2024 for application PL-002614-2023 and CU-002693-2023 which is attached.

Site Plan Review

The Planning Board voted 4-o (Barker absent, Silk and Smith recused) to find that the plan is in conformance with the site plan standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall submit ability to serve confirmation to the Planning Authority from CMP and Portland Water District.

PRIOR TO THE ISSUANCE OF A BUILDING PERMIT

2. The applicant shall submit an amendment or release of easement 2 that confirms parking is permitted within the easement area to the satisfaction of corporation counsel and record the same in the Cumberland County Registry of Deeds or submit another mechanism demonstrating compliance with the easement to the satisfaction of corporation counsel.
3. The applicant shall submit the third-party testing information for the stormwater cartridge proposed for review and approval of the Planning Authority.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

4. The applicant shall pay \$1,600 into the Street Tree Fund for the four additional street trees required, or pay \$1,200 and replace the fallen Linden with an approved alternative.

The approval is based on the submitted plans and findings related to site plan and conditional use review as contained in the Planning Board report dated January 9, 2024 for application PL-002614-2023 and CU-002693-2023 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.
2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.
3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.
4. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

5. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.
6. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)
7. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.
8. Stormwater Management The owner/operator of an approved stormwater management system, and all assigns shall comply with the conditions of Chapter 32, Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements.

A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

9. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the

date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.
12. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.
13. Impact Fees New development or changes of use that result in net new residential dwelling units, non- residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit <https://www.portlandmaine.gov/2409/Impact-Fees>

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at (207)874-8901 or via email at DRC@portlandmaine.gov. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Maya Balassa at (207) 207-874-8718 or via mbalassa@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

1. Planning Board Report
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet

PLANNING BOARD

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

January 23, 2024

Josh Trombley
Developers Collaborative
631 Stevens Avenue, Suite 203
Portland, ME 04103

Steve Bushey
Gorrill Palmer
300 Southborough Drive, Suite 200
South Portland, ME 04106

Project Name: Major Site Plan + Inclusionary Zoning Conditional Use
Project ID: PL-002673-2023 + CU-002791-2024
Address: 509 Forest Avenue
CBL: 127 A002001
Applicant: DC 509 Forest LLC
Planner: Natasha Kypfer

Dear Josh Trombley and Steve Bushey:

On January 23, 2024, the Planning Board approved a major site plan and conditional use application for inclusionary zoning to facilitate the conversion of a commercial office space located at 509 Forest Avenue, to a commercial/retail and residential use, with 38 residential unit apartments. The property is located in the B-2b Community Business zone. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 23, 2024 which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted [to be added] to approve the application with the following conditions as presented below.

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 January 23, 2024 for application PL-002662-2023 at 509 Forest Avenue 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:

- Waiver 1: Minimum Driveway Spacing Reduction
The Planning Board [finds/does not find] based upon the third-party traffic engineer's Review and updated materials from the applicant, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Standard 1.5.1.C which requires 100 feet of spacing between driveways, along arterial and collector streets with posted speeds of 35 mph or less, and therefore, 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] the Technical Manual standard Section 1.5.1.C to allow for the current separation of 75 feet.
- Waiver 2: Drive Aisle Width Reduction

The Planning Board [**finds/does not find**] based upon the third-party traffic engineer's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Standard 1.10.3 which requires a minimum two-way drive aisle width of 24 feet for standard, right-angle parking, the 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**] the Technical Manual standard Section 1.10.3 to allow for the reduction of the drive aisle from 24' to 23'.

B. SITE PLAN REVIEW

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section IX of the Planning Board Report for the public hearing on January 23, 2024, which is attached hereto and incorporated herein by reference. The Planning Board voted [**to be added**] to find that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following conditions of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The applicant shall submit updates to the Planning Authority relative to the configuration of the esplanade(s) along the Forest Avenue frontage, as requested by Staff.
2. The applicant shall provide ability to serve conformation letters to the Planning Authority from CMP, the Portland Water District, and a Wastewater Capacity Authorization.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

3. The applicant shall contribute to the tree fund in the amount of \$400 per tree for 35 trees, for a total of \$14,000.

C. INCLUSIONARY ZONING CONDITIONAL USE

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section VIII. B. of the Planning Board Report for the public hearing on January 23, 2024, which is attached hereto and incorporated herein by reference. The Planning Board voted [**to be added**] to find that the plan is in conformance with the conditional use standards of the Land Use Code, subject to the following conditions of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The Applicant and the City shall enter into an Affordable Housing Agreement (AHA) for all on-site workforce housing units, or the project may pay a fee-in-lieu for some or all of the required units prior to issuance of certificate of occupancy.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

2. The Affordable Housing Agreement (AHA) be filed as covenant to the 509 Forest Avenue property's deed with the Cumberland County Registry of Deeds.
3. Or the applicant may choose to provide a fee in-lieu of the required units, which is calculated at \$172,485 per residential unit in 2023.

D. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on January 23, 2024 related to application PL-002662-2023 and application CU-002791-2024 for 509 Forest Avenue, which is attached to the draft approval letter and incorporated therein, the Planning Board adopts the approval letter as drafted as the Planning Board's decision for application PL-002662-2023 and application CU-002791-2024, and authorizes the Planning Board Chair to sign the approval letter as drafted.

The approval is based on the submitted plans and findings related to site plan review as contained in the Planning Board report dated January 23, 2024 for application PL-002662-2023 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.
2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.
3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.
4. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.
5. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.
6. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)
7. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.
8. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and

environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

9. The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.
10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.
12. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.
13. Impact Fees New development or changes of use that result in net new residential dwelling units, non-residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit <https://www.portlandmaine.gov/2409/Impact-Fees>

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at drc@portlandmaine.gov or (207) 874-8901. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Natasha Kypfer at (207) 874-8725 or via email at nkypfer@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

1. Planning Board Report
2. Performance Guarantee Packet

509 Forest Avenue
Major Site Plan + Inclusionary Zoning Conditional Use
PL-002662-2023 + CU-002791-2024
DC 509 Forest LLC

Submitted to:	Portland Planning Board	Prepared By:	Natasha Kypfer
Public Hearing Date:	January 23, 2024	Date:	January 23, 2024

I. INTRODUCTION

DC 509 Forest, LLC, seeks approval of a Major Site Plan for a building renovation at 509 Forest Avenue. The project involves a change of use for the upper two floors of the three-story, 73,750 square foot building from commercial office space to 38 residential units, which will include a mixture of market-rate units (28) and workforce units (10). The ground level of the building will remain in commercial use, and will feature multiple commercial tenant spaces. The basement of the building is proposed to remain as off-street parking, and can accommodate approximately 68 vehicles, plus bicycle parking. Other improvements include utility upgrades for the building, installation of a canopy along the building's Forest Avenue frontage, and updates to the building's façade.

The Planning and Urban Development Department mailed 164 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the January 13, 2024 and the January 16, 2024 editions of the *Portland Press Herald*.

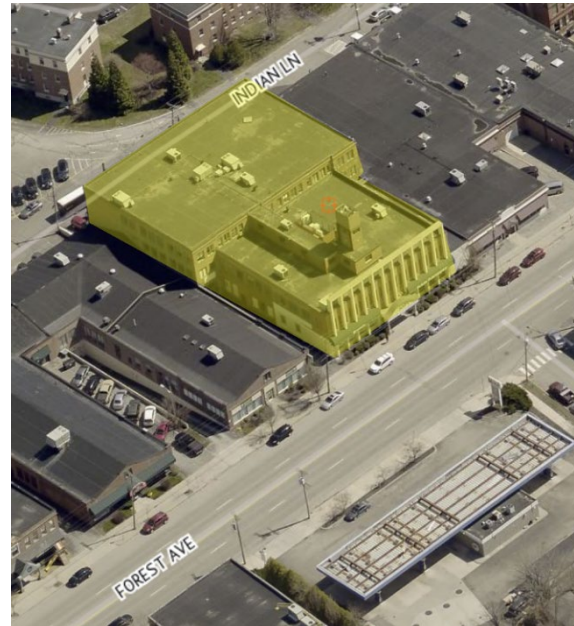


Figure 1: 509 Forest Avenue parcel.

Applicant: DC 509 Forest LLC, represented by: Gorrill Palmer
Owners: DC 509 Forest LLC
Consultants: Steve Bushey, P.E. of Gorrill Palmer Consulting Engineers
Virginie Stanley, Invivid Architecture
Josh Trombley, Developers Collaborative

II. REQUIRED REVIEWS

<i>Review</i>	<i>Applicable Standards</i>
Site Plan	Section 14.6
Inclusionary Zoning	Section 18.2.3

<i>Waiver Requests</i>	<i>Applicable Standards</i>
------------------------	-----------------------------

1. The applicant is requesting a waiver of the minimum driveway spacing of 100 feet, where the current separation is 75 feet.	Technical Manual, Standard 1.5.1.C – requires 100 feet along arterial and collector streets with posted speeds of 35 mph or less.
2. The applicant is requesting a waiver to allow for a 23 feet wide drive aisle in an existing parking lot, where the requirement is 24 feet.	Technical Manual, Standard 1.10.3 – requires a minimum two-way drive aisle width of 24 feet for standard, right-angle parking.

III. PROJECT DATA

Existing Zoning	B-2b Community Business zone
Property Size	26,699 sq. ft. (0.61 ac.)
Existing Use	Commercial
Proposed Use	Residential & Commercial/Retail

	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Building Footprint	70,425 sq. ft.	70,425 sq. ft.	0
Building Floor Area	73,750 sq. ft.	73,750 sq. ft.	0
Impervious Surface Area	95<100%	95<100%	0
Parking Spaces	84	77	-7
Bicycle Parking Spaces	0	36	36

IV. EXISTING CONDITIONS AND SURROUNDING AREA

The current building, a three-story structure, is located along Forest Avenue, proximate to many businesses, including retail, restaurants, and coffee shops. The site is surrounded by multiple adjacent parcels, which are fully developed and include tenants such as Portland Ballet at 517 Forest Avenue, Gateway Community Services Maine at 501 Forest Avenue, and to the rear the Ricker Park Condominiums development and the Back Cove waterfront area and trails.

The building is located in the B-2b Community Business zone. Per the City's Land Use Code, the B-2b zone seeks to provide neighborhood and community retail, business, and service establishments that are oriented to and built close to the street. Further, the zone is intended to accommodate moderate to high-density housing in urban neighborhoods along arterials.



Figure 2: Existing Façade, photo provided by applicant.



Figure 3: Proposed Façade, rendering provided by applicant.

V. PROPOSED DEVELOPMENT

The proposed development site (Plan 15) comprises 70,425 sq. ft. The lot has frontage along Forest Avenue, but proposes vehicular site access along Indian Lane, a private roadway shared by both DC 509 Forest, LLC and the Ricker Park Condominium Association. The proposed development will include interior renovations, exterior façade work, and a change of use for the property, from existing commercial to a combined residential and commercial/retail use. The new use will include 38 residential apartment units, which breakdown to a mixture of market-rate units (28 total) and workforce units (10 total), and include a combination of studios (11), one-bedrooms (3), and two-bedrooms (24). Furthermore, the proposed project includes five commercial units, totaling approximately 15,092 sq. ft. of commercial/retail space on the first floor. The gross square footage, including the basement, floors 1-3, and the shared roof deck on the third floor is approximately 73,750 sq. ft.

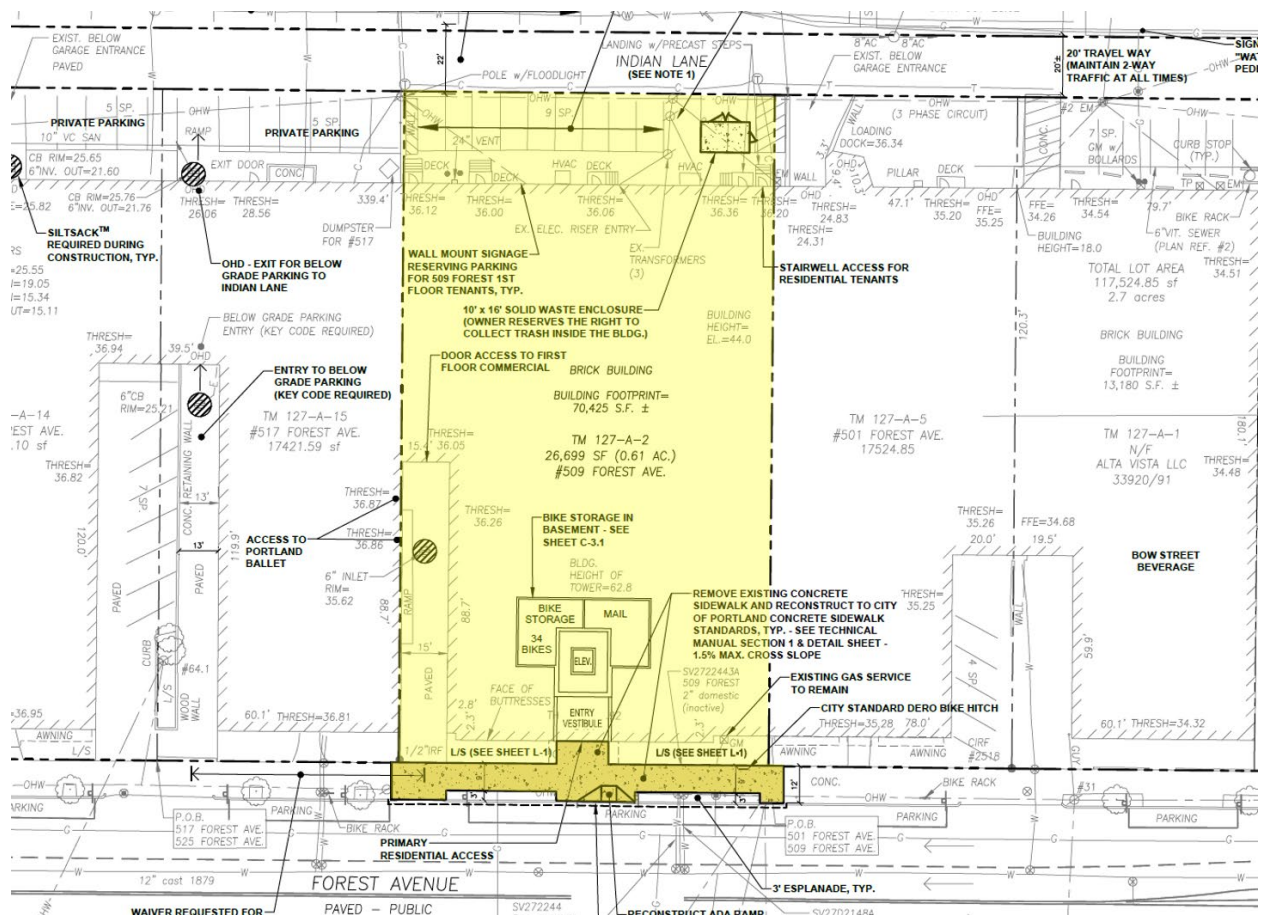


Figure 4: A section from the Site & Utility Plan (Plan 15) at 509 Forest Avenue, created by Gorrill-Palmer.

VI. RIGHT, TITLE, & INTEREST

The owners of the property, DC 509 Forest, LLC, have provided a quitclaim deed with covenant recorded at the Cumberland County Registry of Deeds (Book 45269 Page 7) as evidence of right, title and interest in the property (Attachment 2).

VII. FINANCIAL & TECHNICAL CAPACITY

The applicant has submitted a letter from Maine Community Bank, dated September 9 2023, as demonstration of their financial capacity to complete the proposed development (Attachment 4). Accompanying this, the applicant included the technical capacity documentation which includes: Stephen Bushey, P.E. of Gorrill-Palmer Consulting Engineers; Virginie Stanley of Invivid Architecture; Surveyor Randy Loubier of Owen Haskell Inc; Owners representative Josh Trombley of Developers Collaborative; and, Construction Manager Patrick Ducas of Ducas Construction (Attachment 5).

VIII. ZONING ANALYSIS

A. DIMENSIONAL AND USE REQUIREMENTS

A zoning review has been conducted on this application and this project meets the requirements of the B-2b Community Business zone, see below.

	Required	Proposed
Lot Area	None	26,699 sq. ft. (0.61 ac.) - Existing
Lot Area Per Dwelling Unit	435 sq. ft.	814 sq. ft.
Street Frontage (Min.)	20'	121.29' - Existing
Front Setback (Max.)	10'	2.85' - Existing
Structure Height (Max.)	50'	40' - Existing
Lot Coverage (Max.)	Up to 100%	95>100% - Existing
Off-Street Parking	0* *Exempt through Table 19-B	77

The proposed uses of residential and commercial/retail are permitted uses within the B-2b Community Business zone per Table 6-C of the Land Use Code.

B. CONDITIONAL USE – INCLUSIONARY ZONING

The proposed development has been reviewed by Staff for conformance with the relevant review standards of Article 18 related to the City's Inclusionary Zoning requirements for residential projects:

At least 25% of the units in the project shall meet the definition of workforce housing for sale or for rent as defined in Article 3 to qualify. Of the 38 total units, 10 are proposed as workforce housing, which the applicants are proposing to provide on-site, and which therefore meets this standard. Per the Inclusionary Zoning guidelines, all non-studio units must have a closet within each bedroom.

As required by the City's Inclusionary Zoning for Ensuring Workforce Housing (18.2.3.C.2) Standards:

At least 25% of the units in the project shall meet the definition of workforce housing unit for sale or for rent as defined in Article 3. The project shall have the option of paying a partial fee-in-lieu as per (6) below or providing an additional unit onsite for any fractional value.

Fee-in-lieu alternative:

As an alternative to providing workforce housing units, projects may pay a fee-in-lieu of some or all of the units. In-lieu fees shall be paid into the Housing Trust Fund. The fee for affordable units not provided shall be \$172,485 per unit, adjusted annually in the same way as the fee under Subsection 18.1.8.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met. The applicant is meeting the 25% requirement and intends to provide the 10 workforce units on site.

IX. SITE PLAN STANDARDS (Section 14.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's Site Plan Ordinance, Section 14.6. Staff comments are below.

1. Transportation Standards (Section 14.6.1)

A. Impact on Surrounding Street Systems

The applicant's proposal involves the renovation of a 73,750 square foot building located at 509 Forest Avenue and, a change of use, for floors two and three from commercial office space into 38 residential units. The ground floor will remain in commercial use, though there may be new tenants for this space.

The project proposes 77 parking spaces within the basement space under the building and a strip of surface spaces proximate to Indian Lane at the rear of the project site. An additional 40 parking spaces are under common ownership at 41 Ashmont Street, located approximately 1,000 square feet from the property. The property at 41 Ashmont Street is being considered for redevelopment, and given this, is not being considered as part of the overall parking supply for this development. Visitors to the site are expected to park on-street in the vicinity of the project site.

The applicant details that the parking at the rear of the building will be reserved for first floor commercial tenants and signage will be used to designate parking by each tenant. Further, it is anticipated that residents seeking to walk to Back Cove, or other destinations, may exit the building via a resident only stairwell at the rear of the building and walk down Indian Lane to Dartmouth Street where the sidewalk continues either to Forest Avenue or down to Back Cove. The applicant states that signage will be posted in the building advising residents to avoid unauthorized access thru the Ricker Park development.

According to the applicant, redevelopment of this property is not expected to generate new traffic above the former use, and trip generation calculations are anticipated to yield a net decrease of trips of -46 and -38 in the AM and PM peak hour respectively.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

B. Access and Circulation

The property is located on Forest Avenue, which is a major arterial within the City. Outer Forest Avenue in this location features a variety of commercial uses, and is considered one of Portland's more 'complete neighborhoods' off-peninsula, featuring numerous services and amenities all conveniently accessible to pedestrians, bicyclists, and transit users. Visitors to the site will likely arrive at the property via Forest Avenue, where there is ample on-street parking, and nearby fixed transit stops. Forest Avenue features an 11-foot concrete sidewalk along the property's frontage, from which visitors and residents alike will be able to access the proposed commercial spaces and residences.

WAIVER REQUESTS

Two waivers are proposed for this project. Both waivers are in relation to access and circulation relative to existing conditions on site.

- i. The first waiver requests a 25-foot reduction from the 100-foot driveway spacing requirement to allow 75-foot driving spacing. The request to allow an entering-only driveway into 509 Forest Avenue to remain as it has existed; the driveway opening is separated from another driveway to the north by approximately 75 feet and a driveway to the south located approximately 190 feet distance away. The City's Department of Public Works (DPW) does not support this request because of the width of the curb cut and the requirement for vehicles to have to back-out on to Forest Avenue to exit. Planning & Urban Development staff similarly did not support this waiver request because vehicular access to the site can be accommodated to the rear via Indian Lane and there is an opportunity to restore a continuous sidewalk condition resulting in a better pedestrian experience and minimizing potential vehicular conflicts with pedestrians. However, additional materials provided by the applicant (Attachment 15), provided additional insights into the use of the #509 alley for tenants The Lux Box Co., Casco Bay Movers Dance Studios, and Portland Ballet to utilize it as a primary entrance. On this basis, Planning staff reconsiders the waiver request and does support the maintenance of the existing curb cut and alley for vehicular unloading/loading purposes.
- ii. The second waiver request seeks to allow for the existing 23' wide drive aisle to remain within the existing basement parking scheme. While the Technical Manual requires a minimum two-way drive aisle width of 24 feet for standard right-angle parking, the current width of 23' is an existing condition, which for the purposes of this redevelopment project, is why staff supports the waiver request.

Staff Finding: The proposed development has been reviewed by Staff for conformance with these standards, and consider this standard to be unmet, however, the applicants are seeking two Waivers. In summary, concerning the first (i) and second waiver (ii), staff does support both of the waiver requests. Should the applicant close the existing curb cur along Forest Avenue staff recommend that this standard be considered met.

C. Public Transit Access

As the project involves the creation of more than 20 residential units, this development is subject to the City's Public Transit Access standard.

The project site is located on Forest Avenue, which provides direct public transit access to the METRO Route 2 line. The nearest transit stop is approximately 300 feet from the project site, however, the nearest transit shelter is located at the University of Southern Maine, or further up Forest Avenue past the Woodford's Corner intersection. Both of these locations are well beyond a quarter mile from the project site, and therefore the applicant is required to provide a new transit shelter. However, Planning staff connected with Mike Tremblay, METRO's Director of Transit Development, and his guidance resulted in Planning staff determining that for this particular project a transit shelter will not be required (Attachment E).

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

D. Parking

Per Article 19, Table 19-A, multi-family development is required to provide one off-street parking space per unit. Meanwhile, retail uses are required to provide one space per 200 square feet of floor area in excess of 2,000 square feet, and one space per 700 square feet of floor area for upper floors.

The property includes 77 off-street parking spaces, 68 located within the basement of the existing building and nine located along a strip of surface spaces proximate to Indian Lane at the rear of the project site. According to the applicant's materials, of which a Transportation Demand Management (TDM) Plan has been submitted (Attachment 12), which has been prepared to qualify for the transit-proximate categorical exemption specified in Article 19, Table 19-B. Per the code, development within a quarter mile of fixed public transit is exempt from providing off-street parking, though development exceeding 10,000 square feet of floor area is required to provide a TDM Plan in order to be eligible to take advantage of this exemption.

The project is also required to provide bicycle parking, at a rate of two spaces per every five residential units, and two spaces for every 10 vehicle parking spaces for non-residential uses. Based upon the 38 residential units being proposed, the applicant would be required to provide 16 bicycle parking spaces. The applicants have accounted for ample bicycle parking by providing a bike storage room within the basement that provides wall-mounted bike storage for 34 bicycles in total. Further, the applicant notes an additional City standard bike rack, with a capacity for two bicycles, will be provided at the front of the building.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

E. Transportation Demand Management (TDM)

New commercial or mixed-use development with more than 50,000 square feet of floor area are required to provide a TDM plan in accordance with Section 17 of the Technical Manual. The applicant has provided a TDM Plan prepared by Gorrill Palmer (Attachment 12), which includes the following measures as detailed in their Plan: future trip generation is expected to be less than the historical trip generation associated with the previous commercial land use on the second and third floors; the ground level is expected to be a low turnover / low volume commercial tenant(s); and, it is expected that this infill development will blend with the surrounding Forest Avenue land uses, benefiting from the general proximity of transit, parking, and multi-modal transportation options available.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

2. Environmental Quality Standards (Section 14.6.2)

A. Preservation of Significant Natural Features

The site is fully developed and includes no significant natural features. This standard is considered not applicable.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

B. Landscape Preservation

The site is minimally vegetated at present, and all shrubs along the project's frontage are proposed to be removed during construction. The landscape preservation standards do not require that these shrubs be preserved. This standard is considered not applicable.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

C. Site Landscaping and Buffers

The proposed development has been reviewed by Staff for conformance with the relevant review standards of Portland's Land Use Code, recommending one Condition of Approval. As part of the landscaping, the applicant proposes planting three street trees in raised planters on Congress Street. This project triggers a street tree requirement, as detailed under Sec. 14.6.2.C., equating to one tree per residential unit, or 38 trees in total. Staff is recommending that the applicant pay a fee-in-lieu at a rate of \$400 per tree. As the project is providing three trees, this will total 35 trees, and so a total contribution of \$14,000. Please note this is included as a condition of approval, to be provided prior to issuance of the Certificate of Occupancy.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, with a single Condition of Approval regarding the fee-in-lieu payment for the remaining requirement of street trees that cannot be accommodated on site.

D. Water Quality, Stormwater Management, and Erosion Control

As the site is almost entirely built-out, and limited exterior improvements are anticipated, the project is not required to meet the Maine DEP Chapter 500 General or Flooding standard. The applicant is proposing to employ typical erosion control measures, including sediment sacks at nearby catch basins.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

3. Public Infrastructure and Community Safety Standards (Section 14.6.3)

A. Consistency with City Master Plans

This redevelopment will introduce 38 residential units at 509 Forest Avenue, a location that conveniently located near a variety of services and amenities, and which is considered walkable, bikeable, and transit-accessible. This project will help to contribute to Woodford's Corner and the Forest Avenue corridor's identity as a complete neighborhood, one of the goals of Portland's Plan 2030.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

B. Public Safety and Fire Prevention

The City's Life Safety Reviewer has reviewed the project and has found the project to comply with the City's Public Safety and Fire Prevention standard.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

C. Availability and Capacity of Public Utilities

The development will generally be making use of existing utility connections and is still in the process of confirming the adequacy of this infrastructure. The applicant is proposing to video examine the existing sewer and is working with CMP to confirm that they have capacity to service the new development. The applicant is also proposing to install a backflow preventer to comply with Portland Water District requirements.

1. Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, with a single Condition of Approval regarding the providing of ability to serve letters from CMP, the Portland Water District, and a Wastewater Capacity Authorization.

4. Site Design Standards (Section 14.6.4)

A. Massing, Ventilation, and Wind Impact

The applicant is not proposing to vertically or horizontally expand the existing building, and aside from changes to the building's façade, virtually all improvements will be interior to the building. Therefore, this standard is considered not applicable.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

B. Shadows

The applicant is not proposing to vertically or horizontally expand the existing building, and aside from changes to the building's façade, virtually all improvements will be interior to the building. Therefore, this standard is considered not applicable.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

C. Snow and Ice Loading

The existing building features a flat roof, which is not anticipated to result in snow or ice falling onto adjacent properties.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

D. View Corridors

The project site is not located within an established view corridor, and therefore, this standard is not applicable.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

E. Historic Resources

The project site is not located within, or within 100 feet of an established Historic District, and therefore, the project is not required to undergo Historic Preservation review, or Historic Preservation advisory review.

Staff Finding: This standard is not applicable.

F. Exterior Lighting

The submission materials note that there is existing lighting on Forest Avenue, and some pedestrian scale wall packs on the rear of the building. Building mounted security lights are proposed at the residential entries at the rear of the building, and there is currently ceiling lighting in the basement parking area. The four existing wall mount LED lights proximate to Indian Lane, are presently mounted approximately 10 feet above grade; per the applicant, these lights will be replaced with new lights. Further, per the provided photometric plan and details, the proposed exterior lighting is in compliance with the Site Lighting Standards found in the *Technical Manual*, Section 12.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

G. Noise and Vibration

The building currently includes both roof-mounted mechanical equipment, which is screened, as well as ground-mounted HVAC equipment at the rear of the building. The applicant does not anticipate providing additional equipment which may result in either noise or vibration. This standard is considered met.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

H. Signage and Wayfinding

All tenant signage will be permitted separately through Permitting & Inspections.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

I. Zoning-related Design Standards

The project site, being located in the B-2b Community Business zone, is subject to the B-2 Community Business Zone design standards and multi-family design standards. City staff, including the Planning and Urban Development Department's Urban Designer, have provided an initial memo dated October 23, 2023 (Attachment B) and an updated memo dated January 11, 2024 (Attachment C) detailing the project's adherence to the zoning-related design standards.

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met.

X. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant held a neighborhood meeting on November 6, 2023, as required as part of this project, wherein 16 members of the public attended (Attachment 14), as well as the applicant, Josh Trombley, and the representative from Gorrill Palmer, Steve Bushey, PE. Questions and concerns raised at the meeting were pertaining to: expected start date for construction and when it is hoped to be completed; whether Indian Lane is proposed to be blocked temporarily during the construction phase of redevelopment; and, anticipated processes for abutters at Ricker Park Condominium to coexist during the construction phases and when new residents begin residing at 509 Forest Avenue.

The Planning and Urban Development Department has received four public comments regarding this application at the time of publication of this memo.

XI. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff determines that the application PL-002662-2023, a Major Site Plan to redevelop the building located at 509 Forest Avenue into a combined residential and commercial retail use meets the applicable standards of Portland's Land Use Code.

XII. 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 January 23, 2024 for application PL-002662-2023 at 509 Forest Avenue 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. Waiver 1: Minimum Driveway Spacing Reduction
The Planning Board [**finds/does not find**] based upon the third-party traffic engineer's Review and updated materials from the applicant, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Standard 1.5.1.C which requires 100 feet of spacing between driveways, along arterial and collector streets with posted speeds of 35 mph or less, and therefore, 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**] the Technical Manual standard Section 1.5.1.C to allow for the current separation of 75 feet.
2. Waiver 2: Drive Aisle Width Reduction
The Planning Board [**finds/does not find**] based upon the third-party traffic engineer's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Standard 1.10.3 which requires a minimum two-way drive aisle width of 24 feet for standard, right-angle parking, the 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**] the Technical Manual standard Section 1.10.3 to allow for the reduction of the drive aisle from 24' to 23'.

B. 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 January 23, 2024 for application PL-002662-2023 at 509 Forest Avenue 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 submit updates to the Planning Authority relative to the configuration of the esplanade(s) along the Forest Avenue frontage, as requested by Staff.
2. The applicant shall provide ability to serve conformation letters to the Planning Authority from CMP, the Portland Water District, and a Wastewater Capacity Authorization.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

3. The applicant shall contribute to the tree fund in the amount of \$400 per tree for 35 trees, for a total of \$14,000.

C. INCLUSIONARY ZONING CONDITIONAL USE

On the basis of the application, plans, reports, and other information submitted by the applicant, findings, and recommendations contained in the Planning Board Report for the public hearing on January 23, 2024 for application CU-002791-2024 at 509 Forest Avenue relevant to Portland's Inclusionary Zoning 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 for workforce housing and low-income housing minimum for hotel projects meets the standards of Section 18.2.3 with the following condition(s):

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The Applicant and the City shall enter into an Affordable Housing Agreement (AHA) for all on-site workforce housing units, or the project may pay a fee-in-lieu for some or all of the required units prior to issuance of certificate of occupancy.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

2. The Affordable Housing Agreement (AHA) be filed as covenant to the 509 Forest Avenue property's deed with the Cumberland County Registry of Deeds.
3. Or the applicant may choose to provide a fee in-lieu of the required units, which is calculated at \$172,485 per residential unit in 2023.

D. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on January 23, 2024 related to application PL-002662-2023 and application CU-002791-2024 for 509 Forest Avenue, which is attached to the draft approval letter and incorporated therein, the Planning Board [**adopts/does not adopt**] the approval letter as drafted as the Planning Board's decision for application PL-002662-2023 and application CU-002791-2024, and authorizes the Planning Board Chair to sign the approval letter as drafted.

XIII. ATTACHMENTS

Report Attachments

- A. Project Review Comments, First Submission, 11/14/2023
- B. Design Review Memo First Submission, Date of Review 10/23/2023
- C. Design Review Memo Final, Date of Review 01/11/2024
- D. Draft Approval Letter - PL-002662-2023 & CU-002791-2024
- E. Email with METRO re. Transit Shelter, 01/16/2024

Applicant Submittal

1. Cover Letter, 09/21/2023
2. Deed Information: Book 39688 Page 007
3. Major Site Plan Checklist
4. Financial Capacity Letter
5. Technical Capability Letter
6. Consistency with Environmental Standards
7. Consistency with Public Infrastructure & Community Safety Standards
8. Consistency with Site Design Standards
9. Consistency with Transportation Standards
10. Zoning Analysis Table
11. Letter of Response #1, 12/18/2023
12. 509 Forest Ave. TDM Plan
13. Waiver Table
14. Neighborhood Meeting Certification & Note Memo, 01/17/2024
15. Letter of Response #2: Re. Waiver Request Driveway Separation, 01/22/2024

Plans

1. A1.03 – Basement & First Floor Plan
2. A1.06 – Second & Third Floor Plan
3. A2.01 – Existing 509 Elevations
4. A2.02 – Existing 509 Elevations
5. A2.03 – New 509 Elevations
6. A2.04 – New 509 Elevations
7. A3.36 – Enlarged Public Space Plan – Bike Room
8. A4.04 – New Building Elevations
9. A4.05 – New Building Elevations
10. A4.06 – New Building Elevations
11. C-1.0 Cover
12. C-1.1 General Notes
13. C-1.2 Boundary Survey
14. C-2.0 Ex & Removals Plan
15. C-3.0 Site & Utility Plan
16. C-3.1 Basement Parking
17. C-4.0 Site Details
18. Eo.01 Photometric Lighting Plan
19. L-1 Planting Plan

Public Comments

1. James Cabot – 10-15-2023
2. Kevin King – 10-17-2023
3. Peter Fessenden – 01-23-2024
4. Wendy Morrisette – 01-23-2024

Dear Josh Trombley and Steve Bushey,

We have completed our review of your application (PL-002662-2023) to redevelop the building at 509 Forest Avenue. The project involves a change of use for the upper two floors of the three-story, 73,750 square foot building from commercial office space to 38 residential units, which will include a mixture of market-rate units and workforce units. The ground level of the building will remain in commercial use, and will feature multiple commercial tenant spaces. The basement of the building is proposed to remain as off-street parking, and can accommodate approximately 84 vehicles. Other improvements include utility upgrades for the building, installation of a canopy along the building's Forest Avenue frontage, and updates to the building's façade.

This development triggers major site plan review and conditional use review for inclusionary zoning, and is subject to the following regulations:

- *Site Plan – Article 14.6*
- *Conditional Use – Article 6.5*
- *Zoning – Table 6C, and Table 7E*
- *Inclusionary Zoning – Article 18.2*

An overview of the City's review can be viewed in the attached project review worksheets and peer review comments.

Next Steps

Please review all feedback and reach out to the project review manager, Natasha Kypfer, if you have any questions or would like to discuss this feedback in more detail. In order to proceed, the applicant shall prepare a written response to all feedback, and shall update plans, documents and other materials as necessary to address the above listed comments. The applicant shall notify the project review manager by email when a resubmission is uploaded to ProjectDox. Once received, the project review manager will notify the applicant of their scheduled review timeline for this resubmission.

Based upon the City's findings related to your application, the City would request that the applicant resubmit updated plans prior to scheduling a Planning Board meeting. Given the scope of work, and the fact that other changes of use of a similar nature have gone straight to a public hearing, staff would recommend that this application not hold a Planning Board workshop.

Sincerely,

Matthew R. Grooms, AICP
Development Review Services Manager

Attachments

1. Site Plan Worksheet
2. Zoning Worksheet
3. Conditional Use Worksheet
4. Design Review Memo

Site Plan Review Standards (Sec. 14.6)		
Transportation Standards (Sec. 14.6.1)		
Standard	Discussion	Finding
Impact on Surrounding Street Systems	Overview: The applicant's proposal involves the renovation of a 73,750 square foot building located at 509 Forest Avenue, and change of use for floors two and three from commercial office space into 38 residential units. The ground floor will remain in commercial use, though there may be new tenants for this space. Currently, the property includes 84 parking spaces within the basement space under the building, and an additional 40 parking spaces under common ownership at 41 Ashmont Street, approximately 1,000 square feet from the property. The property at 41 Ashmont Street is being considered for redevelopment, and given this, is not being considered as part of the overall parking supply for this development. Visitors to the site are expected to park on-street in the vicinity of the project site. According to the applicant, redevelopment of this property is not expected to generate new traffic above the former use, and trip generation calculations are anticipated to yield a net decrease of trips of -46 and -38 in the AM and PM peak hour respectively. Updates Requested • **INFORMATIONAL - The applicant has conducted a trip generation analysis and the project will decrease AM and PM peak hour trip generation. Accordingly, the project will not have an impact on traffic mobility and safety in the vicinity of the project. • The applicant should note how parking along the rear of the building along Indian Lane will be regulated/managed. I would also note that given the conversion to a residential land use, and a likely walking route towards Back Cove, the provision/accommodation for pedestrian activity on Indian lane to Dartmouth Street should be considered.	Additional information required
Access and Circulation	Overview: The property at 509 Forest Avenue is located on Forest Avenue, which is a major arterial within the City. Outer Forest Avenue in this location features a variety of commercial uses, and is considered one of Portland's more 'complete neighborhoods', featuring numerous services and amenities all conveniently accessible to pedestrians, bicyclists and transit users. Visitors to the site will likely arrive at the property via Forest Avenue, where there is ample on-street parking, and nearby fixed transit stops. Forest Avenue features an 11-foot concrete sidewalk along the property's frontage, from which visitors and residents alike will be able to access the proposed commercial spaces and residences.	Additional information and plan revisions required

	Property tenants driving to the site will have access to 84 off-street parking spaces within the basement of the building, which is accessible off of Indian Lane, which is located to the rear of the building. Updates Requested - The entry only driveway on Forest Avenue into the site does not meet city standards for driveway separation and a formal waiver shall be provided. Additionally, the width of the driveway shall be noted. - The basement parking layout plan shall include dimensions and the applicant shall document if city standards are met. - The applicant shall remove and reconstruct the existing sidewalk and close the driveway opening along the frontage of the property. The sidewalk and driveway removal shall be reconstructed in accordance with the City's Sidewalk and Driveway Apron Material Policy and per the City's Technical Manual Section 1. The applicant shall update the plans and provide spot grades and slopes for the proposed sidewalk.	
Public Transit Access	Overview: As the project involves the creation of more than 20 residential units, this development is subject to the City's Public Transit Access standard. The project site is located on Forest Avenue, which provides direct public transit access to the METRO Route 2 line. The nearest transit stop is approximately 300 feet from the project site, however, the nearest transit shelter is located at the University of Southern Maine, or further up Forest Avenue past the Woodford's Corner intersection. Both of these locations are well beyond a quarter mile from the project site, and therefore the applicant is required to provide a new transit shelter. Updates Requested City staff will coordinate with the applicant and GP METRO to determine a suitable location for the required transit shelter.	Not met Plan updates are required.
Parking	Overview: Per Article 19, Table 19-A, multi-family development is required to provide one off-street parking space per unit. Meanwhile, retail uses are required to provide one space per 200 square feet of floor area in excess of 2,000 square feet, and one space per 700 square feet of floor area for upper floors. The property includes 84 off-street parking spaces, located within the basement of the existing building. According to the applicant's materials, a minimum of nineteen spaces are being allocated for this development, though it is unclear if this is specific to the proposed residential units, or if this includes both residential and commercial spaces. The applicant should clarify with a more detailed narrative and breakdown for off-street parking use and demand. There are multiple means by which the City may consider an alternative off-street parking count, beyond what is required by zoning per Table 19-A. Table 19-B includes a number of exemptions, which may be utilized. For example, the Planning Board may set an off-street parking count based upon a parking study. Multi-family housing requirements may be relaxed in conjunction with a Transportation Demand Management (TDM) plan. Development within a quarter mile of fixed public transit is exempt from providing off-street parking,	Not met Additional information required.

	though development exceeding 10,000 square feet of floor area is required to provide a TDM plan in order to be eligible to take advantage of this exemption. The project is also required to provide bicycle parking, at a rate of two spaces per every five residential units, and two spaces for every 10 vehicle parking spaces for non-residential uses. Based upon the 38 residential units being proposed, the applicant would be required to provide 16 bicycle parking spaces. It is unclear how many vehicle parking spaces are being allocated for non-residential uses, and therefore this requirement cannot be calculated at this time. Updates Requested: - The applicant shall indicate whether they intend to meet the base zoning requirements for off-street parking, or make use of an available exemption. The use of an exemption, as described above, may require that a parking study or TDM plan be submitted to support such exemption. - The submitted narrative around off-street parking will need to be updated to provide a more detailed breakdown of how both on-site and off-site off-street parking is being allocated for residents/tenants/other users of the site. - The applicant shall detail the number of bicycle parking spaces being provided, and shall further outline the number of vehicle spaces being allocated for commercial uses on the property, to determine the number of required spaces. The applicant is encouraged to provide a mixture of bicycle parking spaces, for example within the building, as well as along the building's frontage for use by visitors.	
Transportation Demand Management	Overview: All mixed-use development with 50,000 square feet or more of floor area is required to provide a TDM plan. Furthermore, all development with floor area exceeding 10,000 square feet, seeking to take advantage of the transit-proximate parking exemption, is required to provide a TDM plan. Updates Requested The applicant shall provide a TDM plan developed in accordance with Section 17 of the City's Technical Manual.	Not met Plan updates are required.
Environmental Quality Standards (Sec. 14.6.2)		
Standard	Discussion	Finding
Preservation of Significant Natural Features	Overview: The site is fully developed and includes no significant natural features. This standard is considered not applicable. Updates Requested No action is required	Met
Landscape Preservation	Overview: The site is minimally vegetated at present, and all shrubs along the project's frontage are proposed to be removed during construction. The landscape preservation standards do not require that these shrubs be preserved. This standard is considered not applicable. Updates Requested No action is required.	Met
Site Landscaping and Buffers	Overview: The applicant has not provided a landscape plan, though they note that the existing landscape beds along the property's frontage will be replanted with new plant material in accordance with City standards. Further, the	Not met

	applicant does not propose to plant any street trees. Street trees are required at a rate of one street tree for every residential unit, for a total of 38 street trees. Updates Requested - Provide a landscape plan that shows the proposed species to be placed in the landscaped strip so we can determine if street tree credit requirements are met - Please do not include any trees in the Acer genus (Maples) - The property's frontage could likely support two to three street trees, to count towards the project's overall street tree requirement. The provision of street trees along the property's frontage should be evaluated and ruled out before street tree alternatives are considered.	Additional information and plan revisions are required.
Water Quality, Stormwater Management and Erosion Control	Overview: As the site is almost entirely built-out, and limited exterior improvements are anticipated, the project is not required to meet the Maine DEP Ch. 500 General or Flooding standard. The applicant is proposing to employ typical erosion control measures, including sediment sacks at nearby catch basins. Updates Requested Confirm	
Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	Discussion	Finding
Consistency with City Master Plans	Overview: This redevelopment will introduce 38 residential units at 509 Forest Avenue, a location that conveniently located near a variety of services and amenities, and which is considered walkable, bikeable, and transit accessible. This project will help to contribute to Woodford's Corner and the Forest Avenue corridor's identity as a complete neighborhood, one of the goals of Portland's Plan 2030. Updates Requested No action is required.	Met
Public Safety and Fire Prevention	Overview: The City's Life Safety Reviewer has reviewed the project and has found the project to comply with the City's Public Safety and Fire Prevention standard. Updates Requested No action is required.	Met
Public Utilities	Overview: The development will generally be making use of existing utility connections and is still in the process of confirming the adequacy of this infrastructure. The applicant is proposing to video examine the existing sewer and is working with CMP to confirm that they have capacity to service the new development. The applicant is also proposing to install a backflow preventer to comply with Portland Water District requirements. Updates Requested	More information is required.

	- The applicant should provide information on proposed sewer, storm drains and basement floor drain connections. The applicant shall verify that existing basement floor drains and domestic sanitary lines are routed to the sanitary sewer line in Indian Lane and that non-contaminated roof drains are directed to the existing Coyle's Gully storm drain line located adjacent and under 533 Forest Avenue per recent conversations with DPW. - Any existing sewer and storm drain lateral lines should be inspected. Any lines found to be defected should be repaired or replaced per City code 24-42	
Site Design Standards (Sec. 14.6.4)		
Standard	Discussion	Finding
Massing, Ventilation and Wind Impact	Overview: The applicant is not proposing to vertically or horizontally expand the existing building, and aside from changes to the building's façade, virtually all improvements will be interior to the building. Therefore, this standard is considered not applicable. Updates Requested No action is required.	Met
Shadow	Overview: The applicant is not proposing to vertically or horizontally expand the existing building, and aside from changes to the building's façade, virtually all improvements will be interior to the building. Therefore, this standard is considered not applicable. Updates Requested No action is required.	Met
Snow and Ice Loading	Overview: The existing building features a flat roof, which is not anticipated to result in snow or ice falling onto adjacent properties. Updates Requested No action is required.	Met
View Corridors	Overview: The project site is not located within an established view corridor, and therefore, this standard is not applicable. Updates Requested No action is required.	Met
Historic Resources	Overview: The project site is not located within, or within 100 feet of an established Historic District, and therefore, the project is not required to undergo Historic Preservation review, or Historic Preservation advisory review. Updates Requested No action is required.	Met
Exterior Lighting	Overview: The submission materials note that there is existing lighting on Forest Avenue, and some pedestrian scale wall packs on the rear of the building. Building mounted security lights are proposed at the residential entries at the rear of the building, and there is currently ceiling lighting in the basement parking area. Updates Requested	More information is required.

	- The applicant will need to confirm that all existing building and site lighting complies with the City's site lighting standards, which would include information on fixture type, placement, and light levels emitted by either proposed or existing site lighting. This - The applicant will need to provide a photometric plan which details light levels across the site and at the property boundary and specific lighting specifications.	
Noise and Vibration	Overview: The building currently includes both roof-mounted mechanical equipment, which is screened, as well as ground-mounted HVAC equipment at the rear of the building. The applicant does not anticipate providing additional equipment which may result in either noise or vibration. This standard is considered met. Updates Requested No action is required.	Met
Signage and Wayfinding	Overview: All tenant signage will be permitted separately through Permitting & Inspections. Updates Requested No action is required.	Met
Design Standards	Overview: The project site, being located in the B-2b Community Business zone, is subject to the B-2 Community Business Zone design standards and multi-family design standards. Updates Requested Design Review memo is attached.	Not met See Separate design review memo for more information.

Zoning Use Review (Article 6)				
Use Permissions (Table 6-A – Table 6-F)				
Proposed Use	Permitted, Conditional or Accessory Use	Zone	Use Std	
Multi-family Residential	Permitted	B-2b	None	
Retail	Permitted	B-2b	Sec. 6.4.15	
Zoning Performance Standards (Sec. 6.8)				
Standard	Discussion	Finding		
Sec. 6.8 – General Performance Standards	Overview: The project is subject to the City’s general performance standards, which establish limits of impact associated with noise, lighting, odor, vibration, waste disposal and outdoor effects, among others. The application materials discuss each of these elements, and strategies to limit or mitigate impacts associated with these requirements. In reviewing this application, staff find the project to comply with all applicable general performance standards.	Met		
	Updates Requested No action is required.			
Zoning Dimensional Review (Article 7)				
Dimensional Standards (Table 7-A – Table 7-H)				
Standard	Requirement 1	Requirement 2	Proposed	Finding
Lot Area Per Dwelling Unit	435 sf	N/A	814 sf	Met
Minimum Street Frontage	20 ft	N/A	121.29 ft	Met
Front Yard Maximum	10 ft	N/A	2.85 ft	Met
Rear Yard	10 ft	N/A	Less than 10 feet (existing condition)	Met
Stepback	5/15 ft	N/A	Greater than required stepback (existing condition)	Met
Maximum Height	50 ft	N/A	40 ft	Met

Conditional Use Review (Sec. 6.5)		
General Conditional Use Standards (Sec. 6.5.2)		
Standard	Discussion	Finding
Traffic, hours of operation, expanse of pavement, and off-street parking	Overview: The commercial and residential uses being proposed are all permitted by right within the B-2b Community Business zone, and therefore, are expected to have similar levels of impact with respect to this standard, as compared with surrounding uses. Updates Requested No action is required.	Met
Will not cause unsanitary or harmful conditions	Overview: The commercial and residential uses being proposed are all permitted by right within the B-2b Community Business zone, and therefore, are expected to have similar levels of impact with respect to this standard, as compared with surrounding uses. Updates Requested No action is required.	Met
Design and operation of the proposed use will not have substantially greater impact than other allowable uses in the zone	Overview: The commercial and residential uses being proposed are all permitted by right within the B-2b Community Business zone, and therefore, are expected to have similar levels of impact with respect to this standard, as compared with surrounding uses. Updates Requested No action is required.	Met
Use Specific Conditional Use Standards (Sec. 18.2.3)		
Standard	Discussion	Finding
Inclusionary Zoning	Overview: Per Article 18.2.3, the project as proposed is subject to the City's inclusionary zoning requirements as applicable to residential uses. Article 18.2.3.C requires that residential projects totaling 10 or more residential units, provide a minimum of 25% of those units as workforce housing units, being affordable to households earning 80% of the area median income. The applicant may also pay a fee in-lieu of providing the units themselves, at a ratio of \$172,485 per units, based upon the 2023 IZ fee. Based upon there being 38 residential units, the applicant is responsible for providing the equivalent of 9.5 workforce units. This may be accomplished by providing either 10 workforce housing units, or \$1,638,607.50, or a combination thereof. Updates Requested The applicant will need to indicate how they intend to meet the City's inclusionary zoning requirements.	More information is required.

Subject: 509 Forest Avenue
Zone: B2b
Date of Review: Monday, October 23, 2023
Reviewer(s): Sean King (Urban Designer), Zachary Powell (Senior Planner), Charles Tetleman (Planner)
Project ID: PL-002662-2023

I. INTRODUCTION

The development project at 509 Forest Ave is subject to the site design review standards, Land Use Code section 14.6.4.I Design standards.

The proposed redevelopment of the building at 509 Forest Avenue is located in the B-2 Community Business zone, and is subject to the design standards of the City of Portland *Design Manual* – **(d) B-2 Commercial Business Zone, Appendix 2** and **(i) Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters.**

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

(d) B-2b STANDARDS

- a. Urban street wall: In the B-1, B-1b and B-2b zone it shall be required that buildings shall be located to create and preserve an urban street wall

Staff comment: The proposed change of use maintains building location and preservation of the urban street wall.

- b. *Mixed Uses: In B-1b zone buildings shall be multi-stories with mixed uses.*

Staff comment: Not applicable in B-2b

- c. *Building entrances: In the B-1 and B-2b zone building entrances shall be oriented toward, located adjacent to, and directly accessible from, a sidewalk in a public right-of-way.*

Staff comment: The proposed change of use development adds a suspended canopy above the primary retail entrance that Staff finds is well integrated into the proposed façade. There is a secondary building entrance that terminates the pedestrian walkway at the north side of building with storefront windows that Staff also finds appropriate.

- d. *Windows: In the B-1, B-1b, B-2, B-2b zones windows shall be required along the street frontage of a building. Windows shall be transparent (with visible transmittance (VT) of .7 or greater) and installed at a height to allow views into the building by passerby.*

Staff comment: The proposed change of use includes windows in all building facades which are visible from the public way. These vary in size and help to articulate the building, which Staff finds appropriate. **The Applicant shall specify the transparent visible transmittance (VT) of .7 or greater for windows adjacent to the public sidewalks at the ground floor for Staff review.**

- e. *Façade character: In the B-1, B-1b, B-2, B-2b zones, active and public portions of the buildings (e.g. doors, windows, entries retail displays) shall be oriented to and, where possible, be located adjacent to the public sidewalk to create an active presence along the sidewalk.*

Staff comment: Staff finds that the proposed building renovations create an active frontage through the use of storefront windows.

- f. *Building design: B-1, B-1b, B-2 and B-2b commercial buildings shall be designed to be compatible with their residential and commercial neighbors.*

Staff comment: The proposal includes exterior renovations at the ground level (commercial uses) as well as upper levels (residential use) that expand upon the existing fenestration pattern and rhythm of exterior materials within the neighborhood, which Staff finds appropriate to convey a relationship with nearby commercial development.

- g. *Building materials: Façade materials of buildings located in the B-1, B-1b, B-2 and B-2b zones shall be compatible with those materials of surrounding residential and commercial use.*

Staff comment: The proposed development relates to the architectural style of adjacent commercial buildings within the neighborhood that are predominately brick structures with repetitive fenestration patterns and prominent storefronts. **Staff requests the Applicant provide proposed façade materials for review.**

- h. *Building scale: In the B-1 and B-1b zones building scale must relate and be compatible with surrounding residential structures.*

Staff comment: Not applicable, the proposed change of use development is located in zone B-2b.

- i. *Landscaping and buffers: In the B-1, B-1b, B-2 and B-2b zones buildings and associated parking areas must be screened to buffer abutting properties. A densely planted landscape buffer and/or fencing will be required to protect neighboring properties from the impacts associated with the development, including lighting, parking, traffic, noise, odor, smoke, or other incompatible uses. Where buildings are setback from the street, a landscaped area must be planted along the front yard street line.*

Staff comment: The proposed change of use maintains existing on-street parking for visitors and subsurface garage parking for residents. **Staff recommends that the Applicant consider the addition of trees in parking islands at the rear of the building to screen the neighboring property. In addition, the Applicant should indicate the location of proposed street trees along Forest Avenue for the proposed change of use. Along the building's front façade and within proposed courtyard areas, Staff would request a detailed landscape plan that could include low, drought-tolerant plantings, and further detail how the streetscape will be activated. This for example could include seating, shade trees, and other pedestrian amenities.**

(d) B-2b GUIDELINES

Please refer to Appendix 2 of this manual, The B-1, B-1b, B-2, B-2b Design Guidelines, for applicable design guidelines for the B-1 and B-2 zones. In addition, the following design guidelines shall also apply:

- 1) Buildings located in the B-2 zone are specifically encouraged to adhere to the design guidelines contained in *the B-1, B-1b, B-2, B-2b Design Guidelines (Appendix 2)* of this section concerning the creation and preservation of an urban street wall.
- 2) In the B-1b and B-2 zones, buildings are specifically encouraged to adhere to the guidelines contained in *the B-1, B-1b, B-2, B-2b Design Guidelines (Appendix 2)* of this section concerning building entrances.

B-2b STANDARDS (Appendix 2 of the Design Manual)**1. Building location and form**

Buildings shall be located near the street so as to create an urban street wall.

Staff comment: The proposed development maintains the existing building location to preserve the urban street wall and further maintains the existing height and scale of the building that contribute to the neighborhood's built form.

2. Building function

An urban street and business district requires a substantial intensity and variety of uses.

Staff comment: The proposed development includes ground-floor commercial, retail and lobbies for upper floor residential units that meet the intent of this design standard.

3. Orientation of buildings and their entrances to the street

Major building entries shall be designed and located to provide the primary building access oriented to the public street and sidewalk.

Staff comment: Staff finds that major building entries are oriented towards the public street and sidewalk and that these are framed by an overhead suspended canopy. **The Applicant should identify proposed or existing lighting on or along the building's façade. Staff recommend additional illumination at the building entries, canopy and pathway within the site.**

4. Windows

Windows shall be located in all building facades visible from the public way, especially on building facades along the major public street.

Staff comment: See above.

5. Building character, detail, scale and graphic qualities

Building design will include various architectural and graphic amenities to provide a strong presence along a street and relate a building to its community.

Staff comment: The proposed change of use development includes exterior renovations to the ground floor commercial uses and upper floors of residential use that expand the fenestration pattern and rhythm of exterior materials that Staff finds appropriate to convey a relationship with existing commercial buildings in the neighborhood.

6. Signage and Building Entrances

Building entrances and building signage in the B-1, B-1b and B-2b zones will be designed and constructed at the pedestrian scale.

Staff comment: The proposed change of use development adds a suspended canopy above the primary retail entrance that Staff finds is well integrated into the proposed façade. A secondary building entrance terminates the pedestrian walkway at the north side of building with storefront windows, which Staff finds appropriate.

7. Development relationship to street

Building facades and site amenities shall form a cohesive wall of enclosure along a street.

Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location and relationship to Forest Avenue.

8. Parking lots

Parking lots shall be screened from view of the public way.

Staff comment: The proposed change of use maintains existing surface parking for visitors and subsurface garage parking for residents that are not visible from the public way.

Parking lots shall be screened from neighboring properties.

Staff comment: The proposed change of use maintains existing surface parking for visitors and subsurface garage parking for residents. **Staff recommends that the Applicant consider the addition of trees in parking islands at the rear of the building to help screen neighboring this parking from neighboring property.**

Crosswalks shall be provided within parking lots and across entrance driveways, directing pedestrians to building entrances.

Staff comment: The proposed change of use maintains existing surface parking for visitors that is directly adjacent to the building without driveways to necessitate crosswalks.

Street trees shall be planted along property frontage 25 feet on center.

Staff comment: The Applicant should indicate street trees along Forest Avenue for the proposed change of use for Staff review.

9. *Transit connections*

Development proposed along established transit corridors must design uninterrupted access from the proposed development to the transit stop.

Staff comment: The proposed change of use development maintains existing access to the transit stop on Forest Avenue, however the Applicant will need to follow Article 14.6.1.C for requirements to include a transit shelter for the proposed development consisting of 20 or more dwelling units.

(i) **MULTIPLE-FAMILY STANDARDS**

Multiple-family shall meet the following standards:

a. Proposed structures and related site improvements shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

Staff comment: The proposed development relates to the architectural style of adjacent commercial buildings within the neighborhood that include large building footprints, two-to-three-story building heights, proximity to the street and consistency of exterior building materials of masonry, cementitious products and glass that provide positive visual interests.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

Staff comment: Open space shall be integrated into the development as a requirement for multiple families. The Applicant has indicated a shared roof deck that Staff would request additional information on to ensure that it functions as a comfortable, protected and accessible outdoor space for all residents. In addition, the Applicant could consider open space at the ground level with landscape enhancements adjacent to paved entries.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principle living areas and shall also provide sufficient storage areas.*

Staff comment: Staff finds the development provides ample windows and internal storage throughout and within each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets.*

Staff comment: The Applicant intends to keep existing visitor parking in place as part of this redevelopment. Staff recommends the addition of parking islands for trees to screen rear adjacent properties under the guidance of the Planning Board.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

Staff comment: Not applicable

Subject: 509 Forest Avenue
Zone: B2b
Date of Review: Monday, October 23, 2023
Reviewer(s): Sean King (Urban Designer), Zachary Powell (Senior Planner), Charles Tetleman (Planner)
Project ID: PL-002662-2023

Att. B

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

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- a. Urban street wall: In the B-1, B-1b and B-2b zone it shall be required that buildings shall be located to create and preserve an urban street wall

Staff comment: The proposed change of use maintains building location and preservation of the urban street wall.

- b. *Mixed Uses: In B-1b zone buildings shall be multi-stories with mixed uses.*

Staff comment: Not applicable in B-2b

- c. *Building entrances: In the B-1 and B-2b zone building entrances shall be oriented toward, located adjacent to, and directly accessible from, a sidewalk in a public right-of-way.*

Staff comment: The proposed change of use development adds a suspended canopy above the primary retail entrance that Staff finds is well integrated into the proposed façade. There is a secondary building entrance that terminates the pedestrian walkway at the north side of building with storefront windows that Staff also finds appropriate.

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- h. *Building scale: In the B-1 and B-1b zones building scale must relate and be compatible with surrounding residential structures.*

Staff comment: Not applicable, the proposed change of use development is located in zone B-2b.

- i. *Landscaping and buffers: In the B-1, B-1b, B-2 and B-2b zones buildings and associated parking areas must be screened to buffer abutting properties. A densely planted landscape buffer and/or fencing will be required to protect neighboring properties from the impacts associated with the development, including lighting, parking, traffic, noise, odor, smoke, or other incompatible uses. Where buildings are setback from the street, a landscaped area must be planted along the front yard street line.*

Staff comment: The proposed change of use maintains existing on-street parking for visitors and subsurface garage parking for residents. **Staff recommends that the Applicant consider the addition of trees in parking islands at the rear of the building to screen the neighboring property. In addition, the Applicant should indicate the location of proposed street trees along Forest Avenue for the proposed change of use. Along the building's front façade and within proposed courtyard areas, Staff would request a detailed landscape plan that could include low, drought-tolerant plantings, and further detail how the streetscape will be activated. This for example could include seating, shade trees, and other pedestrian amenities.**

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Major building entries shall be designed and located to provide the primary building access oriented to the public street and sidewalk.

Staff comment: Staff finds that major building entries are oriented towards the public street and sidewalk and that these are framed by an overhead suspended canopy. **The Applicant should identify proposed or existing lighting on or along the building's façade. Staff recommend additional illumination at the building entries, canopy and pathway within the site.**

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7. Development relationship to street

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Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location and relationship to Forest Avenue.

8. Parking lots

Parking lots shall be screened from view of the public way.

Staff comment: The proposed change of use maintains existing surface parking for visitors and subsurface garage parking for residents that are not visible from the public way.

Parking lots shall be screened from neighboring properties.

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Staff comment: The proposed change of use maintains existing surface parking for visitors that is directly adjacent to the building without driveways to necessitate crosswalks.

Street trees shall be planted along property frontage 25 feet on center.

Staff comment: The Applicant should indicate street trees along Forest Avenue for the proposed change of use for Staff review.

9. *Transit connections*

Development proposed along established transit corridors must design uninterrupted access from the proposed development to the transit stop.

Staff comment: The proposed change of use development maintains existing access to the transit stop on Forest Avenue, however the Applicant will need to follow Article 14.6.1.C for requirements to include a transit shelter for the proposed development consisting of 20 or more dwelling units.

(i) **MULTIPLE-FAMILY STANDARDS**

Multiple-family shall meet the following standards:

a. Proposed structures and related site improvements shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

Staff comment: The proposed development relates to the architectural style of adjacent commercial buildings within the neighborhood that include large building footprints, two-to-three-story building heights, proximity to the street and consistency of exterior building materials of masonry, cementitious products and glass that provide positive visual interests.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

Staff comment: Open space shall be integrated into the development as a requirement for multiple families. The Applicant has indicated a shared roof deck that Staff would request additional information on to ensure that it functions as a comfortable, protected and accessible outdoor space for all residents. In addition, the Applicant could consider open space at the ground level with landscape enhancements adjacent to paved entries.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principle living areas and shall also provide sufficient storage areas.*

Staff comment: Staff finds the development provides ample windows and internal storage throughout and within each residential unit.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets.*

Staff comment: The Applicant intends to keep existing visitor parking in place as part of this redevelopment. Staff recommends the addition of parking islands for trees to screen rear adjacent properties under the guidance of the Planning Board.

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in building have been vacant for at least one (1) year.*

Staff comment: Not applicable

Subject: 509 Forest Avenue
Zone: B2b
Date of Review: Monday, October 23, 2023 – First
Thursday, January 11, 2024 - Second
Reviewer(s): Sean King (Urban Designer), Zachary Powell (Senior Planner), Natasha Kypfer (Planner)
Project ID: PL-002662-2023

Att. C

I. INTRODUCTION

The development project at 509 Forest Ave is subject to the site design review standards, Land Use Code section 14.6.4.I Design standards.

The proposed redevelopment of the building at 509 Forest Avenue is located in the B-2 Community Business zone, and is subject to the design standards of the City of Portland *Design Manual – (d) B-2b Commercial Business Zone, Appendix 2* and *(i) Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters.*

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

(d) B-2b STANDARDS

- a. *Urban street wall: In the B-1, B-1b and **B-2b** zone it shall be required that buildings shall be located to create and preserve an urban street wall*

Staff comment: The proposed change of use maintains the existing building location and preservation of the urban street wall approximately three feet from the public right of way.

- b. *Mixed Uses: In B-1b zone buildings shall be multi-stories with mixed uses.*

Staff comment: Not applicable in B-2b

- c. *Building entrances: In the B-1 and **B-2b** zone building entrances shall be oriented toward, located adjacent to, and directly accessible from, a sidewalk in a public right-of-way.*

Staff comment: The proposed change of use development replaces the existing building canopy with a new metal canopy and building addressing that is suspended with metal bars above the primary retail entrance on Forest Avenue. Staff finds the new canopy complements the overall building character and relates to the new metal windows to meet this design standard. A secondary building entrance terminates the service access at the north side of the building with storefront windows, which Staff finds appropriate.

- d. *Windows: In the B-1, B-1b, B-2, **B-2b** zones windows shall be required along the street frontage of a building. Windows shall be transparent (with visible transmittance (VT) of .7 or greater) and installed at a height to allow views into the building by passerby.*

Staff comment: The proposed change of use includes windows in all building facades which are visible from the public way. These vary in size and help to articulate the building, which Staff finds appropriate. **The Applicant has indicated in their “Response to the Staff comments – LOR#1” letter dated 12/18/2023 that windows fronting the street will have a transparent visible transmittance (VT) of .7 or greater.**

- e. *Façade character: In the B-1, B-1b, B-2, **B-2b** zones, active and public portions of the buildings (e.g. doors, windows, entries retail displays) shall be oriented to and, where possible, be located adjacent to the public sidewalk to create an active presence along the sidewalk.*

Staff comment: Staff finds that the proposed building renovations create an active frontage through the use of storefront windows. **The Applicant has resubmitted architectural elevations for the proposed change of use development to include exterior renovations for the ground floor retail units to replace the existing windows fronting Forest Avenue with storefront windows with metal trim, new metal canopy at the main entrance and preservation of existing masonry. The upper floors proposed for residential units expand the window type with masonry trim detailing at the Forest Avenue frontage, replacement of metal roof edging, and preservation of existing masonry that Staff finds appropriate in keeping with the original building’s architectural elements. Staff finds the proposed renovations are appropriate to convey a relationship with existing commercial buildings in the neighborhood.**

- f. *Building design: B-1, B-1b, B-2 and **B-2b** commercial buildings shall be designed to be compatible with their residential and commercial neighbors.*

Staff comment: The proposal includes exterior renovations at the ground level (commercial uses) as well as upper levels (residential use) that expand upon the existing fenestration pattern and rhythm of exterior materials within the neighborhood, which Staff finds appropriate to convey a relationship with nearby commercial development.

- g. *Building materials: Façade materials of buildings located in the B-1, B-1b, B-2 and **B-2b** zones shall be compatible with those materials of surrounding residential and commercial use.*

Staff comment: The proposed development relates to the architectural style of adjacent commercial buildings within the neighborhood that are predominately brick structures with repetitive fenestration patterns and prominent storefronts.

- h. *Building scale: In the B-1 and B-1b zones building scape must relate and be compatible with surrounding residential structures.*

Staff comment: Not applicable, the proposed change of use development is located in the B-2b zone.

- i. *Landscaping and buffers: In the B-1, B-1b, B-2 and **B-2b** zones buildings and associated parking areas must be screened to buffer abutting properties. A densely planted landscape buffer and/or fencing will be required to protect neighboring properties from the impacts associated with the development, including lighting, parking, traffic, noise, odor, smoke, or other incompatible uses. Where buildings are setback from the street, a landscaped area must be planted along the front yard street line. - Met*

Staff comment: The proposed change of use maintains the building location that is connected to adjacent buildings at each side. Existing on-street parking for visitors and subsurface garage parking for residents is located and accessed by a driveway at the rear of the property. **The Applicant has resubmitted plans with proposed street trees along Forest Avenue within a three-foot wide esplanade and planting areas with evergreen shrubs along the building frontage that Staff finds appropriate.**

(d) B-2b GUIDELINES

Please refer to Appendix 2 of this manual, The B-1, B-1b, B-2, **B-2b** Design Guidelines, for applicable design guidelines for the B-1 and B-2 zones.

1. Building location and form - Met

Buildings shall be located near the street so as to create an urban street wall.

Staff comment: The proposed development maintains the existing building location to preserve the urban street wall and further maintains the existing height and scale of the building that contribute to the prevailing neighborhood built form that include low-rise commercial buildings within close proximity to the street.

2. Building function - Met

An urban street and business district requires a substantial intensity and variety of uses.

Staff comment: The proposed development includes ground-floor commercial, retail and lobbies, the upper second and third floor is proposed for residential units that meet this design standard.

3. Orientation of buildings and their entrances to the street - Met

Major building entries shall be designed and located to provide the primary building access oriented to the public street and sidewalk.

Staff comment: Staff finds that major building entries are oriented towards the public street and sidewalk and that these are framed by an overhead suspended canopy. **The Applicant has resubmitted plans that depict appropriate facade lighting mounted and integrated at the building's front facade that Staff finds appropriate.**

4. Windows - Met

Windows shall be located in all building facades visible from the public way, especially on building facades along the major public street.

Staff comment: Staff finds the window type and placement appropriate as visible from the street.

5. Building character, detail, scale and graphic qualities - Met

Building design will include various architectural and graphic amenities to provide a strong presence along a street and relate a building to its community.

Staff comment: The Applicant has resubmitted architectural elevations for the proposed change of use development to include exterior renovations for the ground floor retail units to replace the existing windows fronting Forest Avenue with storefront windows with metal trim, new metal canopy at the main entrance and preservation of existing masonry. The upper floors proposed for residential units expand the window type with masonry trim detailing at the Forest Avenue frontage, replacement of metal roof edging, and preservation of existing masonry that Staff finds appropriate in keeping with the original building's architectural elements. Staff finds the proposed renovations are appropriate to convey a relationship with existing commercial buildings in the neighborhood.

6. Signage and Building Entrances - Met

Building entrances and building signage in the B-1, B-1b and B-2b zones will be designed and constructed at the pedestrian scale.

Staff comment: The proposed change of use development replaces the existing building canopy with a new metal canopy and building addressing that is suspended with metal bars above the primary retail entrance on Forest Avenue. Staff finds the new canopy complements the overall building character and relates to the new metal windows to meet this design standard. A secondary building entrance terminates the service access at the north side of the building with storefront windows, which Staff finds appropriate.

7. Development relationship to street

Building facades and site amenities shall form a cohesive wall of enclosure along a street.

Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location and relationship to Forest Avenue which is within approximately three feet of the public right of way.

8. *Parking lots* - Met

Parking lots shall be screened from view of the public way.

Staff comment: The proposed change of use maintains existing surface parking for visitors and subsurface garage parking for residents that are not visible from the public way.

Parking lots shall be screened from neighboring properties.

Staff comment: The proposed change of use maintains existing surface parking for visitors and subsurface garage parking for residents.

Crosswalks shall be provided within parking lots and across entrance driveways, directing pedestrians to building entrances.

Staff comment: The proposed change of use maintains existing surface parking for visitors that is directly adjacent to the building without driveways to necessitate crosswalks.

Street trees shall be planted along property frontage 25 feet on center.

Staff comment: **The Applicant has resubmitted plans with proposed street trees along Forest Avenue within a three-foot wide esplanade to allow for access to the building entrance and existing driveway curb cuts that Staff finds to meet this design standard.**

9. *Transit connections - Met*

Development proposed along established transit corridors must design uninterrupted access from the proposed development to the transit stop.

Staff comment: **The proposed change of use development proposes streetscape improvements along Forest Avenue with a three-foot wide esplanade with street trees and planting areas at the building frontage that maintains existing access to the transit stops on Forest Avenue approximately seven hundred and fifty feet from the property.**

(i) MULTIPLE-FAMILY STANDARDS

Multiple-family shall meet the following standards:

a. Proposed structures and related site improvements shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood. Met*

Staff comment: The proposed development relates to the architectural style of adjacent commercial buildings within the neighborhood that include large building footprints, two-to-three-story building heights, proximity to the street and consistency of exterior building materials of masonry, cementitious products and articulated window and entrances that provide positive visual interests.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

Staff comment: Not applicable, the proposed development is a change of use to residential units with ground-floor retail that maintains the existing building location.

3. *Open space on the site for all multiple-family development shall be integrated into the development site. Met*

Staff comment: Open space shall be integrated into the development as a requirement for multiple families, the Applicant has indicated a shared roof deck accessed from a third-floor conditioned corridor and streetscape improvements along Forest Ave. that Staff finds to meet this design standard. **Staff continues to recommend that the Applicant consider a shared open space at the existing corridor between building address 517 and 509 Forest Ave that currently functions for service access. Opportunities for shared open space may include enhanced paved surfacing, landscaping and seating that allows for continued access for the door entries to remain.**

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principle living areas and shall also provide sufficient storage areas. Met*

Staff comment: Staff finds the proposed change of use provides ample windows and internal storage throughout and within each residential unit to meet this design standard.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets. Met*

Staff comment: The Applicant intends to keep existing visitor parking located at the rear of the property in place. **Staff finds that the existing site conditions with parking directly from the driveway at the rear and existing overhead utilities do not allow for additional screening at the rear of the property due to existing conditions at the site.**

6. *Multiple-family dwellings shall not be converted to lodging houses unless all units in the building have been vacant for at least one (1) year.*

Staff comment: Not applicable, the proposed development plan does not convert into lodging houses

CITY OF PORTLAND, MAINE

PLANNING BOARD

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

January 23, 2024

Josh Trombley
 Developers Collaborative
 631 Stevens Avenue, Suite 203
 Portland, ME 04103

Steve Bushey
 Gorrill Palmer
 300 Southborough Drive, Suite 200
 South Portland, ME 04106

Project Name: Major Site Plan + Inclusionary Zoning Conditional Use
Project ID: PL-002673-2023 + CU-002791-2024
Address: 509 Forest Avenue
CBL: 127 A002001
Applicant: DC 509 Forest LLC
Planner: Natasha Kypfer

Dear Josh Trombley and Steve Bushey:

On January 23, 2024, the Planning Board approved a major site plan and conditional use application for inclusionary zoning to facilitate the conversion of a commercial office space located at 509 Forest Avenue, to a commercial/retail and residential use, with 38 residential unit apartments. The property is located in the B-2b Community Business zone. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 23, 2024 which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted [**to be added**] to approve the application with the following conditions as presented below.

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 January 23, 2024 for application PL-002662-2023 at 509 Forest Avenue 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. Waiver 1: Minimum Driveway Spacing Reduction
 The Planning Board [**finds/does not find**] based upon the third-party traffic engineer's review and feedback from the City's Department of Public Works (DPW), that conditions exist such that staff does not support this request because of the width of the curb cut and the requirement for vehicles to have to back-out on to Forest Avenue to exit. The Planning Board [**waives/does not waive**] the Technical Manual standard Section 1.5.1.C to allow for the existing curb cut to remain.
2. Waiver 2: Drive Aisle Width Reduction
 The Planning Board [**finds/does not find**] based upon the third-party traffic engineer's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical

Manual Standard 1.10.3 which requires a minimum two-way drive aisle width of 24 feet for standard, right-angle parking, the 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**] the Technical Manual standard Section 1.5.1.C to allow for the reduction of the drive aisle from 24' to 23'.

B. INCLUSIONARY ZONING CONDITIONAL USE

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section VIII. B. of the Planning Board Report for the public hearing on January 23, 2024, which is attached hereto and incorporated herein by reference. The Planning Board voted [**to be added**] to find that the plan is in conformance with the conditional use standards of the Land Use Code, subject to the following conditions of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The applicant shall submit updates to the Planning Authority relative to the configuration of the esplanade(s) along the Forest Avenue frontage, as requested by Staff.
2. The applicant shall provide ability to serve conformation letters to the Planning Authority from CMP, the Portland Water District, and a Wastewater Capacity Authorization.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

3. The applicant shall contribute to the tree fund in the amount of \$400 per tree for 35 trees, for a total of \$14,000.

C. SITE PLAN REVIEW

Based upon the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in Section IX of the Planning Board Report for the public hearing on January 23, 2024, which is attached hereto and incorporated herein by reference. The Planning Board voted [**to be added**] to find that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following conditions of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The applicant shall submit updates to the Planning Authority relative to the configuration of the esplanade(s) along the Forest Avenue frontage, as requested by Staff.
2. The applicant shall provide ability to serve conformation letters to the Planning Authority from CMP, the Portland Water District, and a Wastewater Capacity Authorization.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

3. The applicant shall contribute to the tree fund in the amount of \$400 per tree for 36 trees, for a total of \$14,400.

D. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on January 23, 2024 related to application PL-002662-2023 and application CU-002791-2024 for 509 Forest Avenue, which is attached to the draft approval letter and incorporated therein, the Planning Board adopts the approval letter as drafted as the Planning Board's decision for application PL-002662-2023 and application CU-002791-2024, and authorizes the Planning Board Chair to sign the approval letter as drafted.

The approval is based on the submitted plans and findings related to site plan review as contained in the Planning Board report dated January 19, 2024 for application PL-002662-2023 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.
2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.
3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.
4. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.
5. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.
6. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)
7. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.
8. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

9. The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.
10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.
12. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.
13. Impact Fees New development or changes of use that result in net new residential dwelling units, non-residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit <https://www.portlandmaine.gov/2409/Impact-Fees>

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at drc@portlandmaine.gov or (207) 874-8901. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Natasha Kypfer at (207) 874-8725 or via email at nkypfer@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

1. Planning Board Report
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet



Natasha Kypfer <nkypfer@portlandmaine.gov>

509 Forest Avenue Transit Shelter

Mike Tremblay <mtremblay@gpmetro.org>

Tue, Jan 16, 2024 at 9:57 AM

To: Kevin Kraft <kkraft@portlandmaine.gov>

Cc: Natasha Kypfer <nkypfer@portlandmaine.gov>, Matthew Grooms <mgrooms@portlandmaine.gov>

Kevin,

Yes, I was speaking to Steve Bushey about this, but this is the first I've heard of this development from City staff.

I don't recall a transit shelter here being required in consultation with Metro, so I assume this requirement was borne out of the 2011 Forest Avenue plan. Since 2011 we have done a significant amount of stop consolidation, in order to speed up bus routes -- **a bus stop used to exist at #509 Forest but it was removed circa 2015** -- and given the placement of the upstream and downstream stops, I don't think I'd want a bus stop here, especially given its mid-block location. Requiring the developer to place a shelter where there is no existing bus stop puts the impetus on Metro to provide a stop there, which goes against the goals of the stop consolidation effort undertaken by Metro ~8-9 years ago.

Other considerations:

- A stop at #509 would be too close to the next downstream stop at Forest/Belmont -- just 600 feet. We aim for stops every 1/8 mile to 1/4 mile, or ~675 to ~1350 feet or so, ideally somewhere in the middle. This is the reason it was removed as part of stop consolidation -- too many stops slows bus routes down. We typically assume pedestrians can walk 1/4 mile to a bus stop.
- A stop at #509 would typically require a crosswalk so people could access it from either side of the street. A midblock crosswalk here is probably not desirable -- could verify with DPW but I'm sure they'd concur. The closest crosswalk -- at Dartmouth Street -- is about halfway to the closest upstream northbound bus stop, further diminishing the utility of a stop at #509. Stops without crosswalks can induce some unsafe crossing behavior.
- A stop at #509 would typically have a southbound pair. We could slide the stop at Dartmouth back to Noyes, but then we have two stops that are not connected by a crosswalk. However, the sidewalk space is probably better at Noyes than at Dartmouth. A tradeoff, but ultimately, this stop pair is not ultimately necessary at all for spacing between the stops at Forest Ave Plaza and Forest/Ashmont/Belmont -- see first bullet.
- If a bus stop was to be placed here, we would want a landing area 4-5 parking spaces long designated as no parking -- something that I'm not sure has been considered here.
- An outbound shelter in this general vicinity (at #509 or otherwise) is not a priority for Metro, given the low number of boardings in the outbound direction between Forest Ave Plaza and Woodford's Corner. A shelter could induce some transit ridership, but ultimately, there are higher priorities for shelter placement. See [this map](#) for October 2023 ridership activity along our Route 2 service; note that the boardings and alightings numbers are reflective of the total weekday activity throughout the month of October 2023. To get daily ridership, divide any number by the number of weekdays in October -- 23. Shelters are typically justified if you have 25 boardings per day or greater; along this stretch of Forest Ave, we're seeing boardings of between 2-10 per day, depending on the stop. Assuming Metro takes ownership of any shelter installed here, which would be the expectation, we'd immediately need to consider moving it to a higher-demand location, which would likely ruffle some feathers.
- A shelter at #509 has implications on pedestrian flow along the sidewalk, forcing peds to walk around the shelter (assuming it's placed within the city sidewalk ROW and not behind the property line). Not a deal breaker per se, but it's a tradeoff that should play into whether a shelter is really necessary here.
- We've been in ongoing conversations about placing a shelter at Trinity Park (Forest at Lincoln), but there are some ongoing thoughts of a park rehabilitation project there, so I'm not sure where that stands. If that's not happening anytime soon, the developer could provide the concrete pad and shelter at that location -- about 1,000 feet away. The park is City land and under PRF's jurisdiction.

Let me know if you have any questions. In the future please let me know when there are any requirements being placed on developers that may or may not impact Metro service -- even if it's just temporary construction impacts. It is difficult to

discuss projects with developers when I have not heard from the City. I am happy to attend Dev Rev meetings on those projects so as to reduce the number of meetings and calls planners need to make. You could even include me on Dev Rev agendas by default so I can keep an eye out for projects along Metro routes proactively.

Thanks,
Mike

--

Mike Tremblay, P.E. *(he, him, his)*

Director of Transit Development

Greater Portland Metro

[114 Valley Street | Portland, ME 04102](#)

Office: [207.517.3023](#) | Mobile: 508.451.0208

e-mail: mtremblay@gpmetro.org | website: www.gpmetro.org

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Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.



300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

September 21, 2023

Ms. Christine Grimando -Director

City of Portland Planning & Urban Development
389 Congress Street, 4th Floor
Portland, ME 04101

Subject: 509 Forest Avenue - Major Site Plan Application
Change of Use development – Office space to Residential
Applicant – DC 509 Forest LLC

Dear Christine:

On behalf of **DC 509 Forest LLC**, Gorrill Palmer is submitting application materials for a Major Site Plan Application, for building renovations and change of use at 509 Forest Avenue. The proposal is to complete interior renovations to create up to 38 condominium apartments, a mix of market rate and affordable in compliance with City Inclusionary Zoning requirements, on the second and third floors of the existing building. These floors were historically commercial office space. The original building was constructed in 1927 and contains approximately 73,750 SF (including the basement) per City GIS records¹. The existing commercial uses on the ground floor will remain, although some spaces may have new tenants. According to the boundary survey by Owen Haskell the 509 Forest site is 21,841 SF (0.50 acres) in size. The development includes greater than three dwelling units therefore the proposal qualifies for a Major Site Plan approval from the Planning Board in accordance with Table 14-A of the ReCode. We attended a Pre application meeting with City staff on June 28, 2023.

Existing Conditions

The existing site is located at 509 Forest Avenue and contains an existing 3 story structure and shared vehicular access route off Indian Lane. The Indian Lane access includes shared access to the abutting property, which is under common ownership. The building is part of a total of six lots under common deed generally identified as #501 Forest Avenue to #537 Forest Avenue². There are eleven surface parking spaces behind the #509 Building, and access to the basement where additional parking is available. The basement parking is accessed via a single direction entry lane from Forest Avenue and an exit onto



Figure 1 - Zoning Map Excerpt

¹ The Architect has a measure of 73,246 SF total GLA for the building.

² See CCRD Book 39688 page 7. The deed also includes land containing a parking lot at 41 Ashmont Street.



Indian Lane. Indian Lane also provides access to the Ricker Park development north of the building³. Forest Avenue in front of the site contains some parallel parking capacity. The site is located in the B-2b zone as identified in Figure 1.

According to City records, underground utilities in Forest Avenue include water, gas, and sewer. The City maintains a separated storm drain line that passes under #533 and #537 (aka Coyle's Gully Drain). Overhead and underground power and communications lines are located off Indian Lane. The proposed change of use involves only one significant exterior change and that is restoration of the front building elevations to their original architecture. A comparison of the existing Forest Avenue facade versus the proposed is shown below. All other improvements consist of interior renovations and fit-up for the residential units on the second and third floors.



Fig 2 Existing Façade



Fig 3 Proposed Façade

Traffic/parking

The site has been previously developed for commercial land use with very limited outside onsite parking at the rear of the building, but an ample supply of up to 84 spaces in the basement space under #509 and #517. The overall property also includes the parking lot at 41 Ashmont Street, which is managed for parking for the building tenants. There are 40 or more spaces on the Ashmont Street site, approximately 1,000 feet distance from the site. However, the Ashmont Street lot is expected to become a development site within the next 2-3 years so the Applicant is actively reorganizing the parking demand such that it can all be met on the site or 501-537 Forest Avenue. Tenants of the building will be offered parking in the basement space. Maine Health was the primary office tenant and will be vacating the building at the end of 2023. They leased greater than 40 spaces in the basement as well as outside surface spaces at the rear of the building. Based on the current parking supply, at least one-half (0.5) space per new apartment will be made available. The ground level commercial tenants also have access to the basement spaces and Ashmont Street site. Visitors will use nearby on-street 2-hour parking as is typical for the Forest Avenue corridor. The project is not expected to generate new traffic above the former use traffic generated by the building occupants. Trip generation calculations yield a net decrease of trips of -46 and -38 in the AM and PM peak

³ Indian Lane is identified as a 20-foot wide private way per the ALTA Survey.



hours respectively⁴. The owner is coordinating the continuation of access and related use benefiting their property which extends from #501 to #533.

Utilities

The building project contains the following existing utilities:

- The building is sprinkled and contains a 4" domestic water service off Forest Avenue and a 6" Fire service off the 12" water main in Forest Avenue. The Fire Dept connection is located at the front of the building. Upgrades to the water services for backflow prevention as required by the PWD will be made part of the improvements scope.
- It is believed the building's sewer exits into an existing 8" separated sewer that extends from the property under the Ricker Park development and over to the Baxter Boulevard interceptor⁵. A video examination of the existing sewer will be performed to verify its condition for continued use. A meeting with Brad Roland of Engineering has been conducted to review City records and the development team is currently undertaking additional exploratory work to uncover the building's plumbing conditions.
- The building will be served by Natural gas coming from Forest Avenue.
- There are overhead power and communications in Indian Lane. The design team is currently coordinating with CMP and the communications providers on any required upgrades to these services.



Consistency with Master Plan

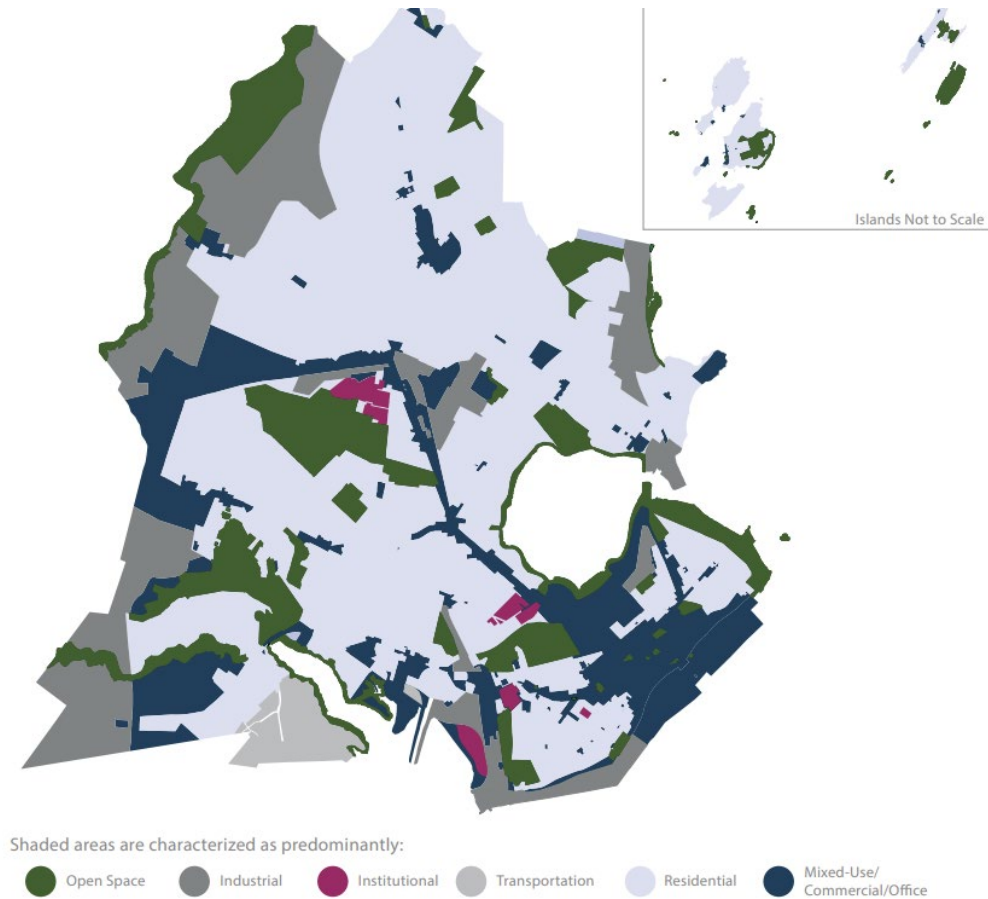
On Portland's Future Land Use Plan, 509 Forest Avenue remains located in a Mixed Use/Commercial/Office zone and is located near an enhanced Priority Corridor (Forest Avenue). Priority Corridors are "*major arterials that often see heavy vehicular traffic, but also have the capacity to improve mobility by capitalizing on their potential for increased walking, bicycling, and transit use. Priority corridors can also serve as areas of additional mixed-use, higher density growth to take advantage of the transit benefits and services that well-designed, diverse corridors can offer.*" Located on Forest Avenue the site is proximate to the Downtown area yet removed from the peninsula's higher intensity of land use. The site location allows a robust level of activity and development in the transitional zone between the peninsula and outer neighborhoods of the City. This site is an ideal location for the change of use with ground level Commercial/retail and residential above. We believe the proposed uses go hand in hand as complimentary uses to the surrounding businesses and

⁴ Comparing current LUC 710 Office Space versus proposed LUC 220 Apartments

⁵ As depicted on Sheet 45 of the Contract No. 1 Baxter Boulevard Interceptor Ricker Park Connection plan by CDM, Record drawing on file in City Archives (00501_001_045.pdf)



land use an envisioned in the Comprehensive plan and current zoning. Proximity to transit, Back Cove, retail, bike routes, etc. contribute to the site's ideal mixed-use setting.



In accordance with the Major Site plan General Document Checklist, we offer the following abbreviated information along with the relevant sections uploaded to EPlan:

General Documents

1. **Project Description** – New mixed use building construction with greater than three dwelling units, located in the B-2b zoning District. See description above.
2. **Completed Checklist** – See upload to Eplan
3. **Evidence of Right, Title, and Interest.** The site is owned by DC 509 Forest LLC per Deed recorded at the CCRD Book 45269, page 7, a copy of which is attached to this submission document.
4. **Zoning Assessment** – see attached. The site is located in the B-2b zone which provides for locations for moderate to high density housing in urban neighborhoods along arterials.
5. **Site plan Standards Assessment** – see the attached narratives and information below.



6. **Summary of Existing and/or proposed easements or covenants** – See the ALTA survey completed by Owen Haskell Inc made for DC 509 Forest, LLC.
7. **Waiver Request** – none requested.
8. **Evidence of financial and Technical Capacity** – The applicant has retained Invivid Architecture, and Gorrill Palmer Consulting Engineers to assist with the design and construction of the proposed project. A letter from Maine Community Bank indicating adequate financial capacity accompanies this application. DC 509 Forest LLC is affiliated with Developers Collaborative and DC Management, who are responsible for the building management, operations, and maintenance. They will continue in this role. DC Management currently oversees multiple properties in Portland, including, but not limited to, Stevens Square and 135 Walton Street.

Transportation

9. **Impact on Surrounding Street system** – no impact. Redevelopment of an existing building with onsite parking provided. The site use is not expected to create or aggravate any existing conditions or safety concerns on Forest Avenue or Indian Lane. The site access conditions are consistent with the neighboring sites on both sides of the street.
10. **Access and Circulation** – The site and building are accessible from at least two sides with ample access for emergency vehicles and site tenants. The elevator is adequately sized to allow for a stretcher and emergency personnel, which has been confirmed by the Portland Fire Marshall. The building entrances off the Forest Avenue sidewalk are flush to existing grade. ADA access will be provided through an elevator from the basement to the top floor.
11. **Public transit** – the location benefits from nearby proximity to the METRO Route 2 service route as well as the METRO transfer opportunities at Monument Square.
12. **Off-Street Parking** – Vehicular parking for residential tenants will be provided onsite within the basement space. Bike storage will also be provided on the site. The site is fully paved or otherwise is building.
13. **Transportation Demand Management** – Not applicable

Environmental

14. **Preservation of Significant Natural Features** – Not applicable
15. **Landscape Preservation** – there are no substantive landscape measures within the property. The existing shrubs at the front of the building will be removed and replaced as part of the Façade improvements. Section 4.6.1 of the Technical Manual requires one street tree per unit or 38 trees. A contribution of \$400.00/tree or \$15,200.00 is proposed.



Figure 4 Streetview from Forest Avenue

16. **Site landscaping and Buffers** – Not applicable
17. **Water Quality, Stormwater Management and Erosion control** – The site is nearly fully developed with building and pavement/concrete in the current condition. There is no expected change in overall site drainage. It is believed the existing roof contains one or more roof drains that tie into the City's drain or sewer lines. A discussion with City DPW staff is underway to review these conditions and any actions needed to deal with the City's CSO abatement goals. An assessment of the building's plumbing for sanitary and roof drainage will verify where the lines discharge and whether further separation/redirection of the discharges is necessary. The assessment may consist of a combination of smoke and dye testing. Typical erosion control measures including sediment sacks at nearby catch basins will be employed during the construction to minimize sediment transport into the drainage systems.

Public Infrastructure and Safety

18. **Consistency with City Master Plans** – See Above
19. **Public Safety and Fire Prevention** – The building has a full sprinkler system for fire protection. Security cameras and Coded security doors will be provided for residential safety.
20. **Availability and Adequacy of Public Utilities** – see above. We believe the building's existing utility services are adequate for the proposed change of use.

Site Design

21. **Massing, Ventilations and Wind Impact** – not applicable – See Invid rendering and floor plans for further information on the building.
22. **Shadows** – Not applicable
23. **Snow and Ice Loading** – the building is primarily a flat roof. Snow and Ice will not fall onto adjacent properties.



24. **View Corridors** – Not applicable
25. **Historic Resources** – The site will undergo HP review and approval.
26. **Exterior Lighting** – Forest Avenue currently contains overhead street lighting. Onsite, the building has limited lighting over the entrances. The basement parking area contains interior lighting. No site lighting changes are proposed other than security lighting at the exit doors.
27. **Noise and Vibration** – Not applicable- roof top equipment will be screened and dampened as necessary to satisfy City noise and vibration standards.
28. **Signage and Wayfinding** – All tenant signage to be permitted separately by the ground floor tenant(s).
29. **Zone Related Design Standards** – The development satisfies ReCode 14.6.4.I.1.c, for the B-2b where the design shall provide an established street wall with entrances and public portions of the building oriented to and directly accessible from the public sidewalk and shall be designed and scaled to be compatible with surrounding residential and commercial development. A roof deck feature is being considered for the benefit of residents, the details of which are to be further developed.



We trust the supporting application materials are acceptable and we look forward to the Planning Authority's prompt review and scheduling of a workshop with the Planning Board.

Ms. Christine Grimando
September 21, 2023
Page 8



Sincerely,

GORRILL-PALMER

Stephen Bushey, PE

Senior Associate

Phone: 207-772-2515 x286

sbushey@gorrillpalmer.com

Attachments

c: Josh Trombley, DC 509 Forest LLC
Virginie Stanley, Invivid

U:\4148_509 Forest Ave Change of Use Portland\IP Applications\Local\2023.08.29 Major site plan \2023.09.21 app_509 Forest_site plan_Cover Letter.docx

DLN: 1002240208447

QUITCLAIM DEED WITH COVENANT
Statutory Short Form

JOSEPH B. WOJCIK, JR., of the Town of Falmouth, County of Cumberland State of Maine

For Consideration Paid, GRANTS with QUITCLAIM COVENANT to:

DC 509 Forest LLC, a Maine Limited Liability Company, with a mailing address of 631 Stevens Avenue, Suite 203, Portland, ME 04103

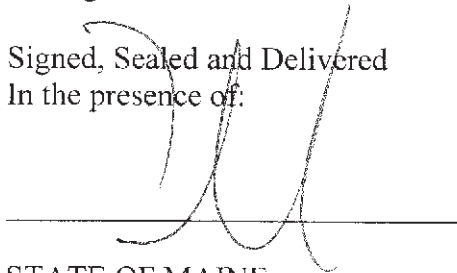
Certain lots or parcel of lands with the buildings and improvements thereon, situated in the City of Portland, County of Cumberland and State of Maine, bounded and described in Exhibit A annexed hereto and made a part hereof.

Being the same premises conveyed to Grantor herein by deed of Delta Realty, LLC, dated August 31, 2017, and recorded at the Cumberland County Registry of Deeds in Book 34280, Page 136 along with the same premises conveyed to Grantor herein by deed of Alpine Realty Corp., dated August 31, 2017, and recorded at the said Registry of Deeds in Book 34280, Page 146.

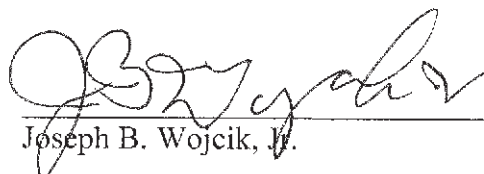
This conveyance is made SUBJECT to the current real estate taxes to the City of Portland, subject to proration at the closing, which the Grantee herein by its acceptance of this deed hereby assumes and agrees to pay.

In Witness Whereof, I, Joseph B. Wojcik, Jr., have hereunto set my hand and seal this 31st day of August, 2022.

Signed, Sealed and Delivered
 In the presence of:



STATE OF MAINE
 CUMBERLAND, SS

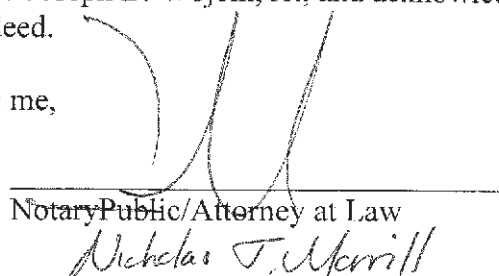


Joseph B. Wojcik, Jr.

Dated: August 31st, 2022

Personally appeared the above-named Joseph B. Wojcik, Jr., and acknowledged the foregoing instrument to be his free act and deed.

Before me,



Notary Public/Attorney at Law
 Nicholas J. Merrill

MAINE REAL ESTATE TAX-Paid

Exhibit A

Certain lots of parcels of land, together with the buildings and improvements thereon located at Forest Avenue and Ashmont Street, Portland, Cumberland County, Maine, more particularly bounded and described as follows, to wit:

PARCEL ONE: (509 Forest Avenue, Portland)

Beginning at a point on the Northeasterly sideline of said Forest Avenue, said point being distant 249.20 feet as measured on a bearing of North 34° 20' 30" West along said sideline of Forest Avenue from its intersection with the Northwesterly sideline of Dartmouth Street, said point also being on the southwesterly extension of the centerline of the 12 inch party wall between the building on the premises herein described and the building on the adjacent premises at 501 Forest Avenue formerly of Shirley M. George;

Thence North 55° 38' 30" East along said extension of, and through the center line of said 12-inch party wall and its extension Northeasterly, 220.04 feet to a point on the Southwesterly sideline of a private way known as Indian Lane;

Thence North 34° 20' 00" West along said sideline of Indian Lane 121.38 feet to a point; said point being on the extension Northeasterly of the centerline of the 12-inch party wall between the building on the premises herein described and the building on the adjacent premises at 517 Forest Avenue formerly of The Dartmouth Company, and being Parcel Two described below;

Thence 55° 37' 30" West along said extension of, and through the centerline of said 12-inch party wall and its extension Southwesterly, 220.04 feet to a point on the Northeasterly sideline of said Forest Avenue;

Thence South 34° 20' 30" East along said Northeasterly sideline of Forest Avenue 121.38 feet to the point of beginning.

ALSO conveying all of the grantor's right, title and interest in and to an undivided one-half interest in common in that adjacent portion of Indian Lane which portion is more particularly bounded and described as follows:

Beginning at a point marked by an iron pin set on the southwesterly sideline of Indian Lane which point is located 249.13 feet, more or less, from the intersection of the southwesterly sideline of Indian Lane and the northwesterly sideline of Dartmouth Street;

Thence northeasterly 20 feet, more or less, to a point on the northeasterly sideline off Indian Lane;

Thence North 34° 20' West along Indian Lane 121.38 feet, more or less, to a point;

Thence southwesterly 20 feet, more or less, to a point on the southwesterly sideline off Indian Lane;

Thence South 34° 20' East along Indian Lane 121.38 feet, more or less, to the point of beginning.

ALSO conveying all of the grantor's right, title and interest, if any, in and to those portions of Forest Avenue adjacent to the above described premises.

PARCEL TWO: (517 Forest Avenue, Portland)

Beginning at a point on the Northeasterly sideline of Forest Avenue, said point being distant 177.83 feet on a bearing of South 34° 20' 30" East from the southwesterly corner of land now or formerly of Dewey W. Couri (formerly Adam D. MacLean) and said point of beginning also being distant 313.29 feet on a bearing of South 34° 20' 30" East from the intersection of the Northeasterly sideline of Forest Avenue with the Southeasterly sideline of Belmont Street;

Thence North 55° 41" East to and along the Southerly face of a concrete curb 130.00 feet to a point on the Southwesterly face of the garage-office building on the premises conveyed herewith;

Thence North 34° 25' West along the brick face of said garage-office building 0.25 feet to a point;

Thence North 55° 35' 30" East in the center of a 12-inch brick wall 59.80 feet to a point on the Northeasterly face of the said garage-office building, said 12 inch brick wall being a party wall between the said garage-office building and the garage on the remaining land now or formerly of Couri Pontiac, Inc.;

Thence continuing North 55° 35' 30" East 30.26 feet to a point on the Southwesterly side of Indian Lane;

Thence South 34° 20' East along the Southwesterly side of Indian Lane 79.30 feet to a point;

Thence South 55° 37' West 30.00 feet to a point on the Northeasterly face of the aforesaid garage-office building;

Thence continuing South 55° 37' West in the center off a 12-inch brick wall 180.12 feet to a point on the Southwesterly face of the said garage-office building; said 12 inch brick wall being a party wall between the said garage-office building and the building on land formerly of The Dartmouth Company, and being Parcel One described above;

Thence continuing South $55^{\circ} 37'$ West 9.92 feet to the Northeasterly sideline of Forest Avenue;

Thence North $34^{\circ} 20' 30''$ West along the Northeasterly sideline of Forest Avenue 79.18 feet to the point of beginning, containing 17,420 square feet.

ALSO, all right, title and interest of grantor, if any, in and to that portion of Forest Avenue adjacent to and lying to the southwest of the above described premises.

ALSO, an undivided one-half interest in common in and to a certain lot or parcel of land adjacent to the above described premises, being a portion of Indian Lane and bounded and described as follows:

Beginning at the Southeasterly corner of the above described parcel;

Thence North $34^{\circ} 20'$ West along the northeasterly boundary of the above described premises 79.30 feet to a point;

Thence North $55^{\circ} 35' 30''$ East 20 feet to a point;

Thence South $34^{\circ} 20'$ East 79.30 feet to a point;

Thence South $55^{\circ} 37' 30''$ West 20.00 feet to the point of beginning.

Grantor hereby grants an easement to grantee, its successors and assigns, for pedestrian and vehicular ingress and egress across and along that part of Indian Lane, which is bounded and described as follows:

Beginning at a point on the Northwesterly sideline of Dartmouth Street, said point being distant 220 feet Northeasterly from the intersection of the Northwesterly sideline of Dartmouth Street With the Northeasterly sideline of Forest Avenue;

Thence North $34^{\circ} 20'$ West 370.52 feet to the Southeasterly corner of the first above described parcel;

Thence continuing North $34^{\circ} 20'$ West along the Northeasterly boundary of the above described parcel 79.30 feet to the Northeasterly corner thereof;

Thence North $55^{\circ} 35' 30''$ East 20 feet to a point;

Thence South $34^{\circ} 20'$ East 449.82 feet to a point on the Southwesterly sideline of Dartmouth Street;

Thence South $55^{\circ} 37' 30''$ West 20 feet to the point of beginning.

All bearings are magnetic in the year 1964.

PARCEL THREE: (41 Ashmont Street, Portland)

ALSO, another certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a railroad spike on the northeasterly side of Ashmont Street;

Thence South $79^{\circ} 23'$ West by said Ashmont Street a distance of One Hundred Twenty-Eight and Thirty-Six Hundredths (128.36) feet, more or less, to a point and land now or formerly of Ralph L. Allen and Helen L. Allen:

Thence North $10^{\circ} 37'$ East along Allen land a distance of One Hundred (100) feet, more or less to an iron pipe and land now or formerly of James Kelley;

Thence North $8^{\circ} 36'$ East along said Kelley land a distance of fifty-five (55) feet, more or less to a point and land now or formerly part of Clairmont Court Condominium;

Thence North $81^{\circ} 24' 00''$ East, along said Clairmont Court Condominium land, a distance of One Hundred Twenty-Two and Fifty Hundredths (122.50) feet, more or less, to a point and land now or formerly of Dwight L. Sanborn and Elaine Sanborn;

Thence South $7^{\circ} 47'$ West, along land of said Sanborn land, a distance of approximately One Hundred Fifty-Nine and Fifty-Five Hundredths (159.55) feet, more or less, (incorrectly referenced as One Hundred Eighty-One and Twenty-Hundredths (181.22) feet by scrivener's error in prior instrument), to the point of beginning.

The above-described premises are more clearly depicted on a plan entitled "Survey Plan of Clairmont Court. Condominium" in Portland, Maine for Clairmont Court, Inc., dated March 16, 1981.

Subject to and together with all easements, covenants, restrictions and takings of record, if any, insofar as they may be in force and applicable.

PARCEL FOUR: (501 Forest Avenue, Portland)

A certain lot or parcel of land with the buildings thereon situated on the Northeasterly side of Forest Avenue in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point on the Northeasterly sideline of said Forest Avenue, said point being distant two hundred forty-nine and twenty hundredths (249.20) feet as measured on a bearing of North $34^{\circ} 20' 30''$ West along said sideline of Forest Avenue from its

intersection with the Northwesterly sideline of Dartmouth Street, said point also being on the Southwesterly extension of the centerline of the twelve (12) inch party wall between the building on the premises herein described and the building on the adjacent premises at 509 Forest Avenue formerly of the Dartmouth Company;

Thence North $55^{\circ} 38' 30''$ East along said extension of, and through the centerline of said twelve (12) inch party wall and its extension Northeasterly, two hundred twenty and four hundredths (220.04) feet to a point on the Southwesterly sideline of a private way known as Indian Lane;

Thence South $34^{\circ} 20' 00''$ East along said sideline of Indian Lane Seventy-nine and sixty-one hundredths (79.61) feet to a point, said point being on the extension Northeasterly of the centerline of the twelve (12) inch party wall between the building on the premises herein described and the building on the adjacent premises at 495 Forest Avenue now or formerly of the Dartmouth Company;

Thence South $55^{\circ} 37' 30''$ West along said extension of, and through the centerline of said twelve (12) inch party wall and its extension Southwesterly, two hundred twenty and three hundredths (220.03) feet to a point on the Northeasterly sideline of said Forest Avenue;

Thence North $34^{\circ} 20' 30''$ West along said Northeasterly sideline of Forest Avenue seventy-nine and sixty-eight hundredths (79.68) feet to the point of beginning. The above described premises contain 17,524 square feet and are shown on a plan entitled, "Plan of Land in Portland, Maine for George Business Forms," by Owen Haskell, Inc. dated September 9, 1980. Bearings are magnetic as of the year 1964.

Subject, however, to existing public utility and service easements of record.

ALSO conveying all of the Grantor's right, title and interest in and to an undivided one-half (1/2) interest in common in that adjacent portion of Indian Lane, which portion is more particularly bounded and described as follows:

Beginning at a point marked by an iron pin to be set on the southwesterly sideline of Indian Lane which point is located two hundred fifty-two and five tenths (252.5) feet, more or less, from the intersection of the southwesterly sideline of Indian lane and the northwesterly sideline of Dartmouth Street;

Thence northeasterly twenty (20) feet, more or less, to a point on the northeasterly sideline of Indian Lane;

Thence South $34^{\circ} 20'$ East along Indian Lane eighty (80) feet, more or less, to a point;

Thence southwesterly twenty (20) feet, more or less, to a point marked by an iron pin to be set on the southwesterly sideline of Indian Lane;

Thence North 34° 20' West along Indian Lane eighty (80) feet, more or less, to the point of beginning.

TOGETHER WITH an easement for pedestrian and vehicular ingress and egress from the above described premises across Indian Lane to Dartmouth Street. Subject, however, to all existing easements for pedestrian and vehicular ingress and egress across Indian lane to Dartmouth Street in common with others and specifically excepting and reserving the same ingress and egress rights across Indian Lane to Dartmouth Street for the benefit of adjoining premises granted of record by the Dartmouth Company.

SUBJECT TO the restriction, which restriction shall run with the land and be binding upon the Grantee, its successors and assigns, that Indian Lane shall be kept in a reasonable state of repair and that the cost of said repairs and real estate taxes and assessments applicable to Indian Lane shall be borne by the owner or owners of all parcels of real estate abutting Indian Lane or portions of such parcels, whether or not the portion owned abuts Indian lane, in proportion to the respective total land area of each such owner of a parcel or portion thereof.

ALSO CONVEYING all of the Grantor's right, title and interest, if any, in and to those portions of Forest Avenue adjacent to the above described premises.

EXCEPTING AND RESERVING the perpetual right and easement to repair, maintain, replace and remove the existing storm sewer pipes and mains with all necessary fixtures and appurtenances. Said storm sewer runs northwesterly two hundred sixty (260) feet, more or less, from Dartmouth Street along the northeasterly side of Indian Lane to a point, and thence westerly to a point at the rear of the existing building on the above described premises near the northwesterly side of the ramp serving said building.

ALSO CONVEYING to the Grantee, its successors and assigns, the perpetual right and easement in common with others to repair, maintain, replace and remove the existing storm sewer pipes and mains with all necessary fixtures and appurtenances, the location of which is described above.

EXCEPTING AND RESERVING the perpetual right and easement, for the benefit of the adjoining premises, to repair, maintain, replace and remove the existing storm sewer connection running southeasterly from the building at 509 Forest Avenue through the party wall to said storm sewer located at the rear of a building on the above described premises.

ALSO CONVEYING to the Grantee, its successors and assigns, the perpetual right and easement, in common with others, to repair maintain, replace and remove existing sewer line, together with all necessary fixtures and appurtenances, which sewer line runs from the basement of the above described premises southeasterly to Dartmouth Street, the center line of said sewer easement being described as follows:

Beginning at a point on the northwesterly sideline of Dartmouth Street one hundred (100) feet, more or less, from the intersection of the southwesterly sideline of Indian Lane and the northwesterly sideline of Dartmouth Street; thence northwesterly and running parallel to the existing building at 49 Dartmouth Street one hundred seventy-three (173) feet, more or less, to the above described premises and a point which is located one hundred eighteen (118) feet, more or less, from the northeasterly sideline of Forest Avenue.

TOGETHER WITH AND SUBJECT TO the obligations under a Sewer Easement Maintenance Agreement between 49 Dartmouth LLC and The George Family, LLC dated June 28, 2002 and recorded in said Registry of Deeds in Book 18009, Page 278.

ALSO CONVEYING to the Grantee, its successors and assigns, the perpetual right and easement, in common with the others, to repair, maintain, replace and remove the existing water mains and pipes which service the above described premises, together with all necessary fixtures and appurtenances, the center line of said easement being described as follows:

Beginning at a point on the northeasterly sideline of Forest Avenue which point is located one hundred seventy (170) feet, more or less, from the intersection of the northeasterly sideline of Forest Avenue and the northwesterly sideline of Dartmouth Street; thence northeasterly at approximately right angles to Forest Avenue through the paved drive of premises located at 495 Forest Avenue and parallel to the concrete curb which divides the paved drive, seventy-three (73) feet, more or less, to a point at the rear of said paved drive; thence northwesterly three (3) feet, more or less, to the above described premises.

The above described premises are conveyed SUBJECT TO AND TOGETHER WITH THE BENEFIT OF the easements and rights granted in an agreement between Couri Pontiac, Inc. and Dartmouth Real Estate Company dated August 18, 1970 and recorded in said Registry of Deeds, Book 3139, Page 689, to the extent said easements and rights affect the above described premises, which shall run with the land and be binding upon and inure to the benefit of Grantee, its successors and assigns, and Grantee, its successors and assigns, by acceptance of this deed, hereby agrees to be bound by said terms and conditions of said agreement.

SUBJECT TO the matters referred to in the Affidavit of Scott Scully dated January 14, 1987 and recorded in Book 7596, Page 245 (as affected by Affidavit of Scott Scully dated January 14, 1987 and recorded in Book 10175, Page 113), regarding the forgoing Agreement recorded in said Registry of Deeds, Book 3139, Page 689.

EXCEPTING AND RESERVING the easements over the within conveyed premises to maintain and repair existing utility lines and appurtenances on said premises which serve all adjacent property now or formerly of The Dartmouth Company, referenced in said agreement dated August 19, 1970 and recorded in said Registry of Deeds in Book 3139, Page 689.

The premises are also conveyed together with the benefit of the agreement of Boulevard Associates, Inc., its successors and assigns, to furnish heat and maintain utility lines and appurtenances thereto and necessary easements in connection herewith for the benefit of the above described premises on generally the same terms and conditions as set forth in said agreement recorded in said Registry of Deeds, Book 3139, Page 689, all as provided for in the deed from Dartmouth Real Estate Company to Boulevard Associates dated December 10, 1971 and recorded in said Registry of Deeds, Book 3204, Page 373.

SUBJECT TO AND TOGETHER WITH THE BENEFIT OF a twelve (12) inch party wall one hundred twenty (120) feet, more or less, in length connects 495 Forest Avenue (also being premises formerly owned by The Dartmouth Company) and the 501 Forest Avenue premises herein conveyed. Said walls shall be preserved and maintained so long as either abuttor desires to maintain a structure adjacent to the walls, or of which the walls are a part. So long as there is a structure on both sides of either wall, structural maintenance of that common party wall shall be shared equally. In the event that either abuttor elects to raze the structure adjacent to either wall, said razing shall not disturb that common party wall, but the expense of maintaining that wall shall be assumed by whichever party continues utilization of that wall.

PARCEL FIVE: (525 Forest Avenue, Portland)

A certain lot or parcel of land with the buildings thereon, situated on the northeasterly side of Forest Avenue in said Portland, bounded and described as follows:

Beginning at a point on the northeasterly sideline of Forest Avenue, said point being distant 177.83 feet on a bearing of S 34° 20' 30" E from the southwesterly corner of land now or formerly of Dewey W. Couri (formerly Adam D. MacLean) and said point of beginning also being distance 318.29 feet on a bearing of S 34° 20' 30" E from the intersection of the northeasterly sideline of Forest Avenue with the southeasterly sideline of Belmont Street and also being the northwesterly corner of premises

conveyed by Couri Pontiac, Inc. to Robert E. Adair et al. by deed dated July 20, 1972 and recorded in the Cumberland County Registry of Deeds in Book 3270, Page 206;

Thence N 55° 41' 30" E to and along the southerly face of a concrete curb and by said land of Adair et al. 130.00 feet to a point on the southwesterly face of the garage-office building on the premises conveyed to Adair et al. as aforesaid;

Thence N 34° 25' W along the brick face of said garage-office building 0.25 feet to a point;

Thence N 55° 35' 30" E in the center of a 12-inch brick wall 59.80 feet to a point on the northeasterly face of the side garage-office building, said 12-inch brick wall being a party wall between the said garage-office building and the garage on the within conveyed premises;

Thence continuing N 55° 35' 30" E 30.26 feet to a point on the southwesterly side of Indian Lane;

Thence N 34° 20' W along the southwesterly side of Indian Lane 78.75 feet, more or less, to a point which is an extension N 55° 35' 30" E 30.26, more or less, feet from the center of a 12-inch brick wall, being a party wall between the garage on the within conveyed premises and the adjacent building on other land formerly of Couri Pontiac, Inc.;

Thence S 55° 35' 30" W 30.26 feet, more or less, to the center of said brick wall;

Thence continuing in the center of said brick wall S 55° 35' 30" W 59.00 feet, more or less, to the end of said brick wall;

Thence S 55° 41' 30" W 130.00 feet, more or less, to the northeasterly sideline of Forest Avenue;

Thence S 34° 20' 30" E along the northeasterly sideline of Forest Avenue 79.00 feet, more or less, to the point of beginning, containing approximately 17,400 square feet.

ALSO, all the right, title and interest of grantor, if any, in and to that portion of Forest Avenue adjacent to and lying to the southwest of the above described premises.

ALSO, an undivided one-half interest in common in and to a certain lot or parcel of land adjacent to the above described premises, being a portion of Indian Lane and bounded and described as follows:

Beginning at the southeasterly corner of the above described parcel;

Thence N 34° 20' W along the northeasterly boundary of the above described premises 78.75 feet to a point;

Thence N 55° 35' 30" E 20.00 feet to a point;

Thence S 34° 20' E 78.75 feet to a point;

Thence S 55° 35' 30" W 20.00 feet to the point of beginning, subject to an easement for vehicular and pedestrian passage of The Dartmouth Company, and such other abutters on Indian Lane as may have similar rights of record, and their respective successors and assigns and the duty to keep Indian Lane in a reasonable state of repair as more specifically provided herein.

This conveyance is subject to public utility and service easements of record, including but not limited to an easement from Couri Pontiac, Inc. to Portland Water District dated August 16, 1977 and recorded in said Registry of Deeds in Book 4079, Page 139.

This conveyance is made subject to and with the benefit of the terms and conditions of an agreement between Couri Pontiac, Inc. and Dartmouth Real Estate Company dated August 18, 1970 and recorded in the Cumberland County Registry of Deeds in Book 3139, Page 689, to the extent said terms and conditions affect or pertain to the within described premises. The duties of Dartmouth Real Estate Company under said agreement were transferred to Boulevard Associates, Inc. by Dartmouth Real Estate Company by deed dated December 10, 1971, and recorded in said registry of Deeds in Book 3204, Page 373. Grantor and Grantee, their successors and assigns, covenant and warrant that if notice is received by either of them from Boulevard Associates, Inc., its successors and assigns, under Paragraph 8 of said agreement, they will immediately give a copy of any such notice to the other party, their successors and assigns.

PARCELS SIX AND SEVEN: (533 and 537 Forest Avenue, Portland)

A certain lot or parcel of land, with the buildings and improvements thereon, situated on the easterly side of Forest Avenue in said Portland and bounded and described as follows:

Beginning at a stake on the easterly side of Forest Avenue distant southerly ninety and thirty six hundredths (90.36) feet from a drill hole marking the intersection of said easterly side of Forest Avenue with the southerly side of Belmont Street;

Thence easterly making an excluded angle with Forest Avenue of $96^{\circ} 22'$ and by an existing chain link fence seventy nine and seventy four hundredths (79.74) feet to an angle in said fence;

Thence southerly and making an included angle with the last described course of $88^{\circ} 32' 30''$ and by said fence fifty-seven (57) feet, more or less, to land now or formerly of the Dartmouth Real Estate Co.;

Thence westerly by said Dartmouth Real Estate Co. land seventy-five (75) feet, more or less, to Forest Avenue;

Thence northerly by said Forest Avenue, fifty (50) feet, more or less, to the point of beginning. Subject to any and all existing rights of the City of Portland in and to said premises for sewer and other purposes.

ALSO, another lot or parcel of land, with the buildings thereon, situated on the northeasterly side of Forest Avenue, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point on the northwesterly side line of Forest Avenue, said point being the southwesterly corner of land now or formerly of Dewey W. Couri (formerly Adam D. MacLean) and said point being distant 140.46 feet on a bearing of $S 34^{\circ} 20' 30'' E$ from the intersection of the northeasterly side line of Forest Avenue with the southeasterly side line of Belmont Street;

Thence $N 65^{\circ} 49' 30'' E$ along said land now or formerly of Dewey W. Couri 72.76 feet to a point;

Thence $S 23^{\circ} 09' 30'' E$ along land now or formerly of George David Corey, et al., 4.67 feet to a point;

Thence $N 55^{\circ} 37'' E$ along said land now or formerly of George David Corey, et al., and along other land now or formerly of Dartmouth Real Estate Company and along land now or formerly of Sidney Ginsberg, et al., 167.21 feet to a point (this line runs along or near the outside face of the garage-office building on the premises conveyed herewith);

Thence $S 23^{\circ} 09' 30'' E$ along land now or formerly of Eugene Glickstein, et al., 37.59 feet to a point;

Thence $S 51^{\circ} 28' 30'' W$, 10.60 feet to a point;

Thence $S 34^{\circ} 20' E$ along the southwesterly side of Indian Lane, 43.85 feet, more or less, to a point which is the extension $N 55^{\circ} 35' 30'' E$, 30.26 feet, more or less, from the

center of a 12-inch brick wall, being a party wall between the building on the within conveyed premises and the garage building on adjacent premises now or formerly of The Dartmouth Company;

Thence S 55° 35' 30" W, 30.26 feet, more or less, to the center of said brick wall;

Thence continuing in the center of said brick wall S 55° 35' 30" E, 59 feet, more or less, to the end of said brick wall;

Thence S 59° 41' 30" W, 130 feet, more or less, to the northerly side line of Forest Avenue;

Thence N 34° 20' 30" W along the northwesterly side of Forest Avenue, 98.83 feet, more or less, to the point of beginning.

ALSO, all right, title and interest in common in and to a certain lot or parcel of land adjacent to the above parcel being a portion of Indian Lane and bounded and described as follows:

Beginning at the southeasterly corner of the above described parcel;

Thence N 34° 20' W, along the northeasterly boundary of the above described premises, 43.85 feet, more or less, to a point;

Thence N 51° 28' 30" E, 20.05 feet to a point;

Thence S 34° 20' E, 45.31 feet, more or less, to a point;

Thence S 55° 30' 30" W, 20.00 feet to the point of beginning.

ALSO, including the easement across Indian Lane for pedestrian and vehicular ingress and egress in common with others conveyed to Ethel J. Young by deed dated December 18, 1984 and recorded in the Cumberland County Registry of Deeds in Book 6643, Page 322, and subject to the conditions in said deed.

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		
☒	NA	Project Description Cover letter with detailed project description
☒	NA	Completed Checklist (this document)
☒	NA	Evidence of Right, Title, and Interest Deeds, leases, or purchase and sales agreements
Yes	☒	Evidence of State or Federal Approvals Permits or letters of non-jurisdiction, if applicable
☒	NA	Zoning Assessment (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
☒	NA	Site Plan Standards Assessment (see Section 14.6 of the land use code) Summary of project compliance with site plan standards of the land use code
☒	NA	Summary of Existing and/or Proposed Easements or Covenants, applicable. Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
Yes	☒	Waiver Requests (see Waiver Table) Written request for waiver describing request and compliance with applicable waiver standards
☒	NA	Financial Capability Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
☒	NA	Technical Capability Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

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

TRANSPORTATION

Yes NA	Impact on Surrounding Street Systems (14-14.6.1(A)) Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes NA	Access and Circulation (14-14.6.1(B)) Identify and describe the following: - Site access and internal circulation, including ADA access - Drive-up features, if applicable - Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes NA	Public Transit (14-14.6.1(C)), if applicable Identify and describe the following: Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes NA	Off-Street Parking (14-14.6.1(D)), if applicable Identify and describe the following: - Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code - Curb cut separation and parking layout (Technical Manual, Section 1) - Construction details for bicycle racks - Management plan for snow storage and removal
Yes NA	Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL		
Yes	NA	Preservation of Significant Natural Features (14-14.6.2(A)), if applicable Identify and describe the following: • High and moderate value waterfowl and wading habitat • Aquifers (for Casco Bay Islands) • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes	NA	Landscape Preservation (14-14.6.2(B)) Identify and describe the following: • Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) • Measures to protect existing vegetation during construction
Yes	NA	Site Landscaping and Buffers (14-14.6.2(C)) Identify and describe the following: • Overall landscaping approach and consistency with standards • The use of screening and buffering of service areas and between non-residential and residential uses • Existing Heritage or Feature Trees on site and measures to preserve • Compliance with street tree requirements
Yes	NA	Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D)) Identify and describe the following: • Erosion and sedimentation control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable • Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY		
Yes	NA	Consistency with City Master Plans (14-14.6.3(A)) Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes	NA	Public Safety and Fire Prevention (14-14.6.3(B)) Identify and describe the following: - Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) - Emergency vehicle access - Consistency with public safety standards (Technical Manual, Section 3)
Yes	NA	Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9) Identify and describe the following: - Electrical services, including providing underground services - Existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections
SITE DESIGN		
Yes	NA	Massing, Ventilations and Wind Impact (14-14.6.4(A)) Identify and describe the following: - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable - Bulk, location, or height impacts on adjoining structures
Yes	NA	Shadows (14-14.6.4(B)), if applicable Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes	NA	Snow and Ice Loading (14-14.6.4(C)) Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes	NA	View Corridors (14-14.6.4(D)), if applicable Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes	NA	Historic Resources (14-14.6.4(E)), if applicable Identify and describe the following: - The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district - Compliance with standards for preservation and documentation of archaeological resources

Yes NA	Exterior Lighting (14-14.6.4(F)) Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes NA	Noise and Vibration (14-14.6.4(G)) Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes NA	Signage and Wayfinding (14-14.6.4(H)), if applicable - Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs - Provide drawings of all commercial and directional signage on site
Yes NA	Zone-Related Design Standards (14-14.6.4(I)) Address any applicable design review standards by zone, including compliance with Design Manual

MAJOR SITE PLAN DRAWINGS CHECKLIST

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

All drawings must be submitted in a 24 x 36 sheet size.

BOUNDARY SURVEY (stamped by a Maine Licensed Surveyor and drawn as per Technical Manual Sec. 13)

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

All sheets – Include a title block with project title and the following information:

- Project street address
- Name and address of property owner & applicant
- Licensed design professional, incl firm that produced plans
- North arrow
- Date of preparation and revision history block
- Tax parcel (chart, block, and lot) number

Existing Conditions Plan with the following:

- Existing structures, with distance from primary building façade(s) to the property line
- Approximate location of structures on abutting properties
- All streets and intersections adjacent to the site
- Existing driveways, pedestrian ways, and bicycle infrastructure, including dimensions and materials
- Existing public transit infrastructure
- Existing vehicle & bicycle parking areas
- Existing utilities on site and within adjacent rights-of-way
- Existing grades (two-foot contours preferred)
- Location of water courses, wetlands, and vegetation, or other significant natural features
- Existing soil conditions and location of test pits and borings
- Zoning boundary lines, including overlays
- Location of all existing easements and rights-of-way

Proposed Site Plan with the following:

- Proposed structures, including distance from primary building façade(s) to property lines
- Ground floor area, and finished floor elevations for all buildings
- Any proposed geometric modifications to streets and intersections adjacent to site
- Location, dimensions and materials of all proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas, including turning templates
- Proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications
- Location of all snow storage areas
- Exterior lighting (please see Technical Manual Sec. 12 for photometrics requirements)

• Location of fire hydrants • Location of solid waste management receptacles • Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable • Location of proposed easements and rights-of-way, including dimensions • Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed
UTILITY PLAN including:
• Proposed electrical infrastructure • Location, sizing and directional flows of all proposed sewer and stormwater infrastructure • Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site • Electric utility infrastructure
GRADING AND DRAINAGE PLAN including:
• Proposed grades • Proposed stormwater management measures meeting Technical Manual (Section 5) standards • Any proposed alteration of a watercourse or wetlands • Any groundwater protection measures • Proposed buffers and preservation measures for wetlands or significant natural features
LANDSCAPE PLAN including:
• Existing vegetation to be preserved and preservation measures • Proposed landscaping, screening, and street trees, including caliper widths for trees • Planting schedule, including street trees
ARCHITECTURAL PLANS AND RENDERINGS including:
• Exterior building elevations, color renderings, illustrations of all sides • Axonometric and street-level views for structures greater than three stories in height • Provide context drawings, if applicable (Design Manual, page 1) • Floor plans
CONSTRUCTION MANAGEMENT PLAN including:
• Specifics on traffic control, sidewalk sheds, and pedestrian rerouting • Include a drawing and written narrative
OTHER
• Details and cross-sections, as necessary



September 9, 2023

City of Portland
389 Congress Street
Portland, ME 04101

RE: 509 Forest Avenue, Portland Maine

To Whom It May Concern:

We have been working with Developers Collaborate / DC 509 Forest LLC on their proposal to reposition the property located at 509 Forest Avenue in Portland, Maine. Developers Collaborative is an established customer of Maine Community Bank and has the financial capacity to complete this project. We are excited about their plans for 509 Forest Avenue, Portland, Maine, and look forward to working with them in further support of the project.

Please feel free to contact me with any questions.

Sincerely,



Justin Laverriere
Vice President

TECHNICAL CAPABILITY

The applicant has retained a highly qualified team of professionals to undertake planning, permitting and design tasks on this project. Services will be provided by the following companies and their respective team leaders:

<i>Civil Engineer</i>	Stephen Bushey, P.E. Gorrill-Palmer Consulting Engineers 300 Southborough Drive, Suite 200 South Portland, Maine 04106 (207) 772-2515 sbushey@gorrillpalmer.com
<i>Architect</i>	Virginie Stanley Invivid Architecture 631 Stevens Avenue Suite 200 Portland, ME 04103 Virginie Stanley <virginie@invividarchitecture.com>
<i>Surveyor</i>	Owen Haskell Inc Randy Loubier 390 US Route One Suite 10 Falmouth, ME 04105 rloubier@owenhaskell.com
<i>Owners representative</i>	Josh Trombley Developers Collaborative 631 Stevens Avenue, Suite 203 Portland Maine 04103 Josh Trombley <josh@dcmaine.com>
<i>Construction Manager</i>	Patrick Ducas Ducas Construction 40 Center Street Suite 1 Scarborough, ME 04074 207-303-0634 Patrick Ducas <patrickd@ducasconstruction.com>

The team of consultants retained by the developer have expertise and experience in the design of similar commercial projects. Resumes of key personnel for development team can be provided upon request.

ENVIRONMENTAL

14.6.2 (A) Preservation of Significant Natural Features – Not applicable

14.6.2 (B) Landscape Preservation – there are some shrub plantings along the Forest Avenue façade that will be removed during the renovation of the building front. The landscape beds will remain and be replanted with new plant material. The plant material will be consistent with City standards and subject to the input of applicant's landscape consultant.

14.6.2 (C) Site landscaping and Buffers – Not applicable

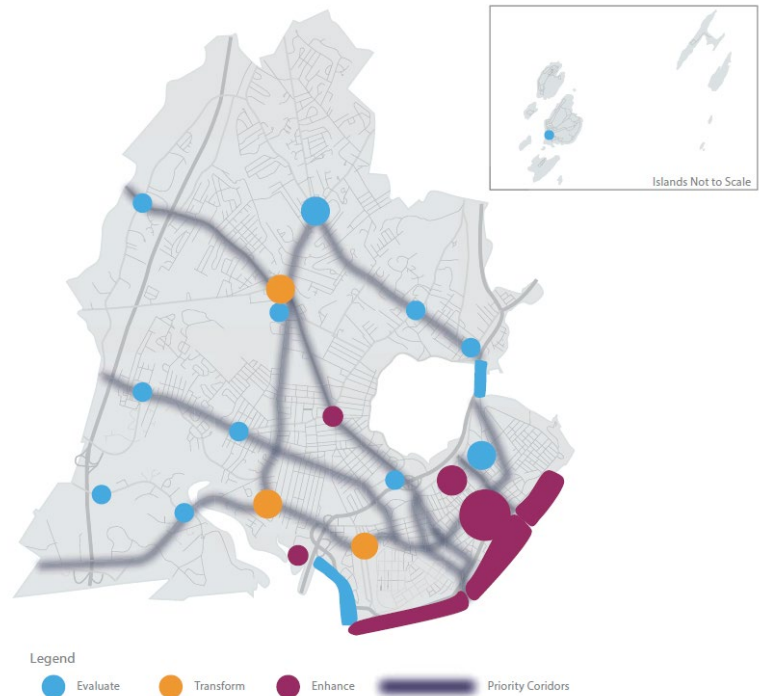
14.6.2 (D) Water Quality, Stormwater Management and Erosion control – The site is nearly fully developed with building and pavement/concrete in the current condition. There is no expected change in overall site drainage. It is believed the existing roof contains one or more roof drains that tie into the City's drain or cross-country sewer line. The applicant's representatives are meeting with Brad Roland and Justin Pellerin to review site conditions and the existing connections to the City mains. Typical erosion control measures including sediment sacks at nearby catch basins will be employed during the construction to minimize sediment transport into the drainage systems either on Forest Avenue or at the rear of the building.

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY

14.6.3.A Consistency with City

Master Plans – On Portland's Future Land Use Plan, 509 Forest Avenue is located in the Mixed Use/Commercial/Office zone and is located near an enhanced Priority Corridor (Forest Avenue). Priority Corridors are “*major arterials that often see heavy vehicular traffic, but also have the capacity to improve mobility by capitalizing on their potential for increased walking, bicycling, and transit use. Priority corridors can also serve as areas of additional mixed-use, higher density growth to take advantage of the transit benefits and services that well-designed, diverse corridors can offer.*” Located on Forest Avenue the site is within a major travel corridor benefiting from transit availability as well as proximity to Back Cove, nearby services, and a short distance to the Peninsula. The Forest Avenue corridor is maintaining a robust level of activity and development. This site is an ideal location for the change of use with ground level commercial/retail and residential above. We believe the proposed uses go hand in hand as complimentary uses to the surrounding businesses and land use an envisioned in the Comprehensive plan and current zoning.

Priority Nodes & Corridors



14.6.3 (B) Public Safety and Fire Prevention – The building has a full sprinkler system and Fire Department Connection. Access to the building is readily available from the front and rear. Street and security lighting is in place around the building, thus providing public safety. We are not aware of any policing issues in the vicinity of the building.

14.6.3 (C) Availability and Adequacy of Public Utilities – The building project contains the following existing utilities:

- The building is sprinkled and contains a 4" domestic water service and a 6" Fire service off the 12" water main in Forest Avenue. The Fire Dept connection is located at #501 Forest. A fire hydrant is located just south of the site on Forest Avenue. Upgrades to the water services for backflow prevention to comply with current PWD standards will be made part of the work.
- It is believed the building's sewer exits into 30" cross country sewer that passes under #535 Forest Ave. A video examination of the existing sewer will be performed to verify its condition for continued use.
- The building will be served by Natural gas coming from Forest Avenue as evidenced by the gas meter visible from the Street.
- There are overhead power and communications in Indian Lane serving the site. Several pole mounted transformers are located at the rear of the building. The Electrical designer is in the process of confirming the adequacy of the existing power service with CMP.



SITE DESIGN

14.6.4 (A) Massing, Ventilations and Wind Impact – not applicable – See Invivid rendering for further information on the building.

14.6.4 (B) Shadows – Not applicable

14.6.4 (C) Snow and Ice Loading – the building is primarily a flat roof. Snow and Ice will not fall onto adjacent properties.

14.6.4 (D) View Corridors – Not applicable

14.6.4 (E) Historic Resources – The site does not need to undergo HP review and approval as it is not located in an Historic District according to the project architect.

14.6.4 (F) Exterior Lighting – There is existing street lighting on Forest Avenue and some pedestrian scale wall pack lights on the rear of the building. Building mounted security light(s) will be provided at the residential doors at the rear of the building. There is ceiling lighting in the basement parking area.

14.6.4 (G) Noise and Vibration – Not applicable- any existing roof top equipment is screened and dampened as necessary to satisfy City noise and vibration standards. There are several existing ground mounted HVAC units at the rear of the building. We are not aware of any issues with these units which are expected to remain.

14.6.4 (H) Signage and Wayfinding – All tenant signage to be permitted separately by the tenants.

14.6.4 (I) Zone Related Design Standards – The development satisfies ReCode 14.6.4.I.1.c, for the B-2b where the development shall provide an established street wall with entrances and public portions of the building oriented to and directly accessible from the public sidewalk and shall be designed and scaled to be compatible with surrounding residential and commercial development. The #509 Forest Ave façade has a main entry that accesses the elevator and stairwell as well as a lobby to the street level commercial space.

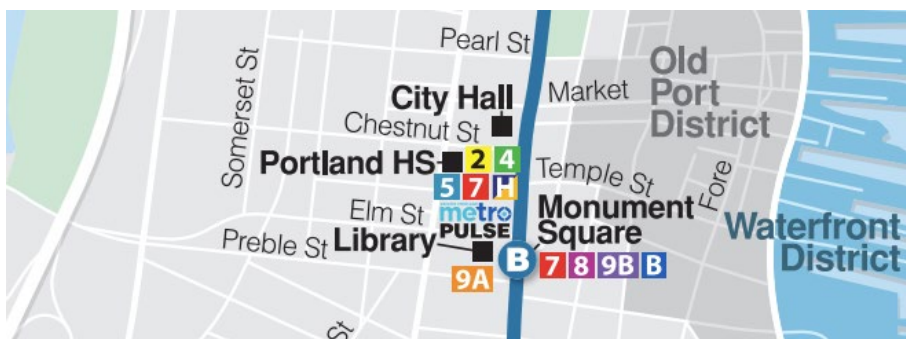
TRANSPORTATION

14.6.1(A) Impact on Surrounding Street system – no impact. Redevelopment of an existing building with no new onsite parking provided. The site use is not expected to create or aggravate any existing conditions or result in safety concerns on Forest Avenue or Indian Lane. The below grade parking is accessed via an entrance only lane from Forest Avenue and an exit movement onto Indian Lane at the rear of the property. Indian Lane connects to Dartmouth Street which connects to a signalized intersection on Forest Avenue and an unsignalized intersection onto Baxter Boulevard. Overall traffic volumes will be lower with the residential land use compared to the original commercial office use. Comparing the Institute for Transportation Engineers Land Use Code 710 (Office) versus LUC 220 (Apartments) yields a net change of -46 trips and -38 trips in the AM and PM peak hours respectively. The site access conditions are consistent with the neighboring sites on both sides of the street.

14.6.1(B) Access and Circulation – The building is accessible from entrances on two sides (front and rear) with ample access for emergency vehicles and site tenants. The elevator is sized to allow for a stretcher and emergency personnel and has been reviewed by the Portland Fire Marshall. The building entrance off the Forest Avenue sidewalk is flush to existing grade. It is expected that ambulance access would be from Forest Avenue. The existing rear entrance requires stairs that will remain in place. The primary residential entrance will be from the stair/elevator originating in the basement and connecting to all floors. The elevator is also accessible from the ground level entry off Forest Avenue.

14.6.1(C) Public transit – the location benefits from nearby proximity to the METRO Route 2 Forest Avenue service route as well as the METRO transfer opportunities at Monument Square.

14.6.1(D) Off-Street Parking – At least 19 spaces will be provided onsite in the basement parking area. Commercial parking is provided in the basement and offsite. At least 10 or more wall mounted bike racks will be provided in the basement for residents. The site is fully paved or otherwise is building.



Route 2 METRO Route - Congress

14.6.1 (E) Traffic Demand Management - Not applicable

Portland, Maine



Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) B-2b

All Projects:

	Required	Proposed
Lot Size	-	21,841 SF
Area Per Dwelling Unit	435 SF	814
Minimum Street Frontage	20 ft	121.29 ft
Front Yard Minimum		
Front Yard Maximum	10 ft	2.85ft.
Rear Yard	10 ft	>10 ft
Yard Right	0	
Yard Left	0	
Side Street Setback		
Step Back	5/15 ft	>5/15 ft
Maximum Lot Coverage	100%	95%<100%
Minimum Lot Coverage		
Maximum Height	50 ft	40 ft
Open Space		
Maximum Impervious Area	100%	100%
Pavement Setback		
Floor Area Ratio		
Off Street Parking Spaces	0	93
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 Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			



300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

December 18, 2023

Ms. Natasha Kypfer, Planner

Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

**Subject: Change of use
509 Forest Avenue
Response to Staff Comments – LOR#1
Applicant: DC Forest 509 LLC**

Dear Natasha:

On behalf of **DC 509 Forest LLC (Applicant)**, we offer the following supporting information in response to staff comments Round 1 dated 11.14.2023 as contained in an email transmission of 11.14.2023. The following *italicized* comments fell under the Additional information status and require a response. Our responses are in **Bold**.

14.6.1 Transportation Standards

- *The applicant should note how parking along the rear of the building along Indian Lane will be regulated/managed. I would also note that given the conversion to a residential land use, and a likely walking route towards back cove, the provision/accommodation for pedestrian activity on Indian Lane to Dartmouth Street should be considered.*

Response: The parking at the rear of the building will be reserved for first floor commercial tenants and signage will be used to designate parking by each tenant. In the past, this parking was designated for Maine Health (tenant) use. It's expected that residents seeking to walk to Back Cove or other destinations may exit the building via a resident only stairwell at the rear of the building. At the rear of the building residents may walk down Indian Lane to Dartmouth Street where the sidewalk continues either to Forest Ave or down to Back Cove. Signage will be posted in the building advising residents to avoid unauthorized access thru the Ricker Park development. Further, the Applicant owns Indian Lane in common with Ricker Park and thus does not have authority to add pedestrian access unilaterally.



- *The entry only driveway on Forest Avenue into the site does not meet city standards for driveway separation and a formal waiver shall be provided. Additionally, the width of the driveway shall be noted.*

Response: The applicant requests a waiver of the minimum driveway spacing of 100 feet per Section 1.5.1 of the Technical Manual to allow an entering only driveway into 509 Forest Ave to remain as it has existed for greater than 25 years. The driveway opening is separated from another driveway to the north by approximately 75 ft. A driveway to the south is located approximately 190 ft distance. Each of these driveways has also been in existence for greater than 25 years. Further, the project is seeking historic tax credits from the National Park Service and historic entrances and egresses must generally be maintained. Given that the historical use of this block of buildings was auto dealerships, auto access is actually a key component of their architectural integrity and thus eligibility for historic tax credits.

- *The basement parking layout plan shall include dimensions and the applicant shall document if city standards are met.*

Response: The basement parking Drawing Sheet C-3.1 has been updated to include various dimensions including the basic 9' x 18' parking stall dimension which is typical to the spaces and a 23' or 24' vehicular drive aisle. The applicant requests a waiver to allow for the 23' wide drive aisle which is less than the City standard 24' width. There are building columns within the drive aisles the allow for a minimum 20' spacing between support columns.

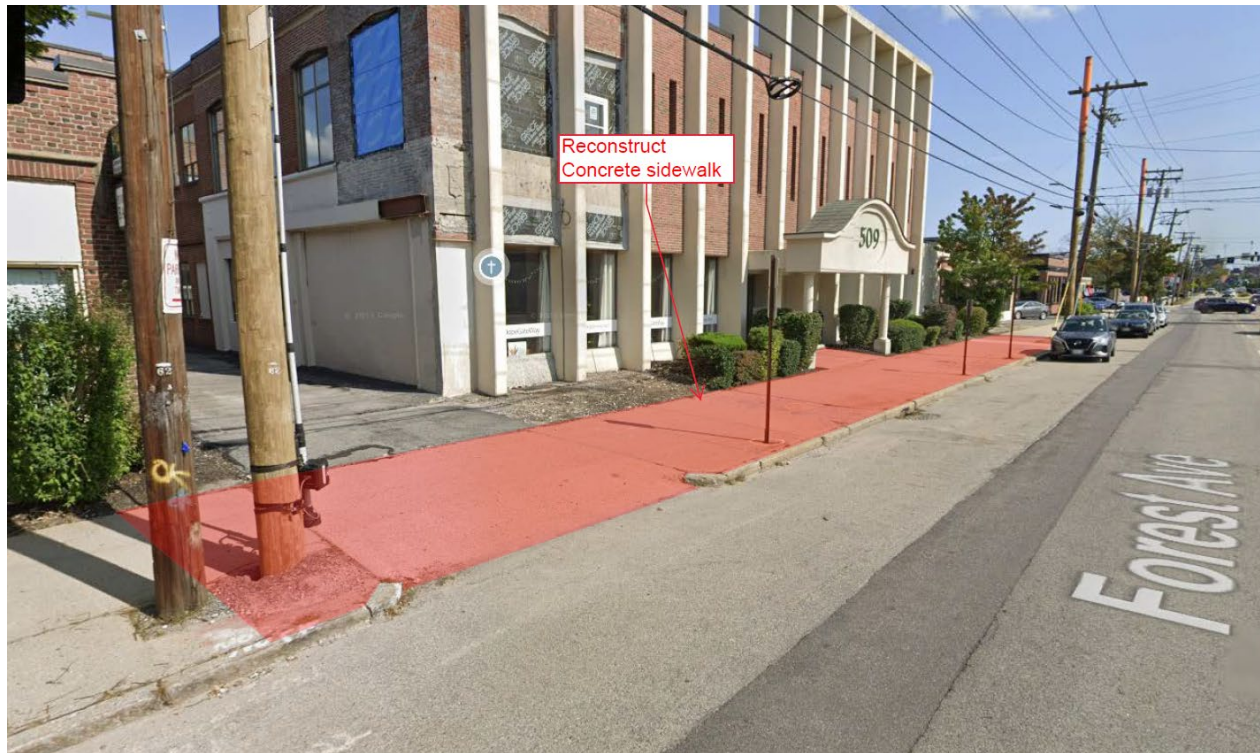
- *The applicant shall remove and reconstruct the existing sidewalk and close the driveway opening along the frontage of the property. The sidewalk and driveway removal shall be reconstructed in accordance with the City's Technical Manual Section 1. The applicant shall update the plans and provide spot grades and slopes for the proposed sidewalk.*

Response: The plans have been updated to include removal and replacement of the existing concrete sidewalk in front of the building. The applicant is requesting the existing curb opening to the alleyway between #509 and #517 remain to allow for the occasional vehicle use by the existing tenants, and to maintain the historic integrity of the buildings. The driveway will be reconstructed to City standards. There is also an existing sidewalk ramp in front of the building entrance that allows for ADA access from the parallel parking on Forest Avenue. The sidewalk ADA ramp will also be reconstructed unless otherwise directed by the City.

- *A detail for concrete sidewalk is included in the plan set, but locations of sidewalk construction are not shown on the plans.*



Response: The plans have been updated to include the reconstruction of the concrete sidewalk in front of the building as generally depicted in the image below.



- *Cty staff will coordinate with the applicant and GP METRO to determine a suitable location for the required transit shelter:*

Response: We have corresponded with Mike Tremblay of METRO and he has indicated that a shelter is not needed at #509 Forest, as the outbound boarding activity is light volume. He has suggested the following:

"Reconstruct the sidewalk as planned, and specify an area where the bus shelter could be placed in the future. Note that our shelter foundation requirements are more robust than the Cty sidewalk standards (6" concrete depth vs. 4" for sidewalks), so the pad area would need to be constructed as such. A bench (by the developer) could be placed there in the meantime. I'm guessing a 7-foot sidewalk area will be fine – that's a Cty call, but it's more than enough for ADA and for a relatively short distance. The best place for the shelter will be up against the ROW line, so the sidewalk can double as the ADA area for folks accessing the shelter."

The City should review the landscape plan and whether any future plans for a bus shelter are warranted, if an esplanade is installed, since a shelter may require too much space. Finally, METRO is also planning on reconstructing the outbound stop at #555 Forest and the Inbound stop at #550 in 2024 according to Mr. Tremblay.

- *The applicant shall indicate whether they intend to meet the base zoning requirements for off-*



street parking or make use of an available exemption. The use of an exemption, as described above, may require that a parking study or TDM plan be submitted to support such an exemption.

Response: There are 68 parking spaces in the basement for use by tenants. There will be an additional 9 spaces at the rear of the building for the 1st floor tenants. The plan is to provide parking for residential tenants at a ratio of 0.5 spaces per unit (19 spaces) to reflect the site's proximity to the peninsula and METRO Transit service, plus the developer's expectations on actual tenant demand. The following is a summary of the required and provided parking for #509 Forest uses by floor:

Use by Floor	Required parking	Provided Parking
1 st floor – 15,803 SF commercial	1 sp/400 SF = 39 spaces	39 – combination of basement and outside
2 nd floor – 24 apartments	1 sp/unit = 24	12 expandable to 24 – Basement
3 rd floor – 14 apartments	1 sp/unit = 14	7 expandable to 14 Basement
Total	77	77

- *The submitted narrative around off-street parking will need to be updated to provide a more detailed breakdown of how both on-site and off-site off-street parking is being allocated for residents/tenants/other users of the site.*

Response: See response above.

- *The applicant shall detail the number of bicycle parking spaces being provided and shall further outline the number of vehicle spaces being allocated for commercial uses on the property, to determine the number of required spaces. The applicant is encouraged to provide a mixture of bicycle parking spaces, for example within the building, as well as along the building's frontage for use by visitors.*

Response: The applicant proposes to provide a bike storage room in the basement that will contain wall mounted bike storage racks for 34 bicycles. An additional City standard bike rack will be provided at the front of the building for a total of 36 bike spaces. The code requires 2 bike spaces per 5 apartment units or 8 bike spaces and 2 spaces per 10 vehicle spaces for other uses, or 8 bike spaces. The total bike spaces required is 16 spaces, which will be exceeded, as proposed.



- *The applicant shall provide a TDM plan developed in accordance with Section 17 of the City's Technical Manual.*

Response: See the accompanying TDM plan.

14.6.2 Environmental Quality Standards

- *Provide a landscape plan that shows the proposed species to be placed in the landscaped strip so we can determine if street tree credit requirements are met.*
 - *Please do not include any trees in the Acer genus (Maples)*

Response: Peter Burke Landscape Architect has provided the accompanying landscape plan for replanting along the building front façade. The plan includes two street trees within a 3' esplanade which is representative of similar conditions to the south on Forest Avenue.

- *The property's frontage could likely support two to three street trees, to count towards the project's overall street tree requirement. The provision of street trees along the property's frontage should be evaluated and ruled out before street tree alternatives are considered.*

Response: See the accompanying landscape plan.

- *The applicant includes a note that the entrance is going to be reconstructed per the architectural plans and notes in their narrative that the site landscaping will be replaced- I don't see either of these items detailed on the plans.*

Response: The updated plans include additional information on these improvement activities. The landscaping at the front of the building has been reviewed by the project Historic Consultant who has indicated the plantings will be consistent with the Historic nature of the building.

- *The project narrative notes that typical erosion control measures including sediment sacks at nearby catch basins would be used- locations of erosion control measures, details, and typical erosion control/good housekeeping measures should be provided on the plans.*

Response: Erosion control details have been added to the plan set.



14.6.3 Public Infrastructure and Community Safety Standards

- *The applicant should provide information on proposed sewer, storm drains and basement floor drain connections. The applicant shall verify that existing basement floor drains, and domestic sanitary lines are routed to the sanitary sewer line in Indian Lane and that non-contaminated roof drains are directed to the existing Coyle's Gully storm drain line located adjacent and under 533 Forest Avenue per recent conversations with DPW.*

Response: The development team has engaged Vortex Services to perform smoke and dye testing of the existing interior plumbing lines to better understand the existing site conditions and to verify whether improvements to achieve the City's stated needs for sanitary and roof drain connections are necessary. This work is scheduled for the week of December 18th. The team has been coordinating this work with John Emerson of DPW.

- *Any existing sewer and storm drain lateral lines should be inspected. Any lines found to be defected should be repaired or replaced per City code 24-42*

Response: This work is scheduled to be performed by Vortex Services the week of December 18th.

- *The applicant notes that they are reviewing utilities for the potential for changes and upgrades. The plans don't currently show any proposed utility work. Confirmation of utility ability to serve should be provided, and if any upgrades are needed to water, sewer, gas, electric, or stormwater, the plans need to show that work. (i.e. trenching, utility piping installation).*

Response: There are no improvements to the water supply services for fire and domestic water currently entering the building, so the Portland Water District does not normally provide any form of updated Determination Letter. They are aware of the proposed change of use and have indicated the existing domestic meter is acceptable. However, they have also requested that new testable double check valve assemblies be installed on both service lines to be compliant with current PWD standards. These details and requirements will be made part of the Mechanical design plans. We've requested a wastewater capacity authorization and will continue to coordinate with Brad Roland of Engineering, as results of the internal plumbing inspections by Vortex Services are completed. The building is presently served from a platform bank of transformers at the rear off CMP's Ricker Park Line. The transformers provide 120/208v with a capacity of 500kva. The 38 apartments have a load of 170kva, thus ample power is available. An



electrical account is already established for the building. Natural gas extends into the site from Forest Avenue and this service will remain in place and unchanged.

14.6.4 Site Design Standards

- *The applicant will need to confirm that all existing building and site lighting complies with the City's site lighting standards, which would include information on fixture type, placement, and light levels emitted by either proposed or existing site lighting.*

Response: Light level readings were gathered on December 7, 2023 at 6:30 pm, using a handheld Extech HD 450 light meter at the rear of the building. The readings at the property line with Indian Lane were recorded as between 0.25 to 0.45 footcandles. There are 4 existing wall mount LED lights; two over the doors and two between doors. The lights are mounted approximately 10 feet above grade. These lights will be replaced with new lights as shown on the accompanying lighting plans.

- *The applicant will need to provide a photometric plan which details light levels across the site and at the property boundary and specific lighting specifications.*

Response: The accompanying lighting plans and photometrics have been prepared by Bennett Engineering.

18.2.3 Use Specific Conditional Use Standards

- *The applicant will need to indicate how they intend to meet the City's inclusionary zoning requirements.*

Response: The applicant proposes 38 apartment units, which per ReCode Section 18.2.3.C requires 25% or 10 units to be workforce housing. The applicant intends to provide this number of workforce units. The following two tables illustrate the rents of the workforce units, which are distributed throughout the building among different unit types in proportion throughout the building. The first calculates the net allowable IZ rent by deducting tenant-paid utilities. The second table identifies the IZ units and rents within the building.



First Table				Second Table			
UA - all electr	Number of Bedrooms			Unit #	sf	BR	IZ rent
	0	1	2				
heat pump	\$ 70.00	\$ 81.00	\$ 95.00	205	655	2	\$1,867.00
cooking	\$ 10.00	\$ 13.00	\$ 17.00	206	656	2	\$1,867.00
other	\$ 29.00	\$ 37.00	\$ 49.00	207	683	2	\$1,867.00
water heati	\$ 35.00	\$ 48.00	\$ 63.00	208	676	2	\$1,867.00
water	\$ 11.00	\$ 13.00	\$ 17.00	209	684	2	\$1,867.00
sewer	\$ 13.00	\$ 15.00	\$ 20.00	210	678	2	\$1,867.00
totals	\$ 168.00	\$ 207.00	\$ 261.00	221	414	0	\$1,400.00
max gross rent	\$1,656.00	\$1,774.00	\$2,128.00	224	415	0	\$1,400.00
net max IZ rent	\$1,488.00	\$1,567.00	\$1,867.00	311	414	0	\$1,400.00
				313	422	0	\$1,425.00

(d) B-2b STANDARDS

- The applicant shall specify the transparent visible transmittance (VT) of .7 or greater for windows adjacent to the public sidewalks at the ground floor for Staff review.*

Response: INVIVID Architecture has indicated that the glazing will have a 0.7 or greater transmittance.

- Staff requests the applicant provide proposed façade materials for review.*

Response: See the accompanying architectural plans for information on façade materials.

- Staff recommends that the applicant consider the addition of trees in parking islands at the rear of the building to screen the neighboring property. In addition, the applicant should indicate the locations of proposed street trees along Forest Avenue for the proposed change of use. Along the building's front façade and within proposed courtyard areas, staff would request a detailed landscape plan that could include low, drought-tolerant plantings, and further detail how the streetscape will be activated. This for example could include seating, shade trees, and other pedestrian amenities.*

Response: The rear of the building is occupied by parking spaces and utilities, both overhead and underground. This is no area at the rear of #509 that can be converted for use of plantings, without loss of parking or conflict with the utilities in our opinion. The property boundary aligns with the rear of the existing parking spaces and there is no opportunity for planting within Indian Lane due the existing use and need for adequate vehicular access. There are currently six (6) existing street trees in front of #517 to #533, generally spaced at 28' to 32' o.c. These existing trees allow for the existing utility poles, driveway openings, building entrances and signage.



B-2b STANDARDS (Appendix 2 of the Design Manual)

- *The applicant should identify proposed or existing lighting on or along the building's façade. Staff recommend additional illumination at the building entries, canopy and pathway within the site.*

Response: The applicant is reviewing the existing lighting at the front and rear of #509. New lighting at the Forest Avenue entrance will be provided as part of the façade upgrade. New overhead lights at the entry/exit doors at the rear of the building are depicted on the accompanying lighting and photometric plan. Five new Strata Wall Lanterns will be installed at the rear of the building.



- *Staff recommends that the applicant consider the addition of trees in parking islands at the rear of the building to help screen neighboring this parking from neighboring property.*

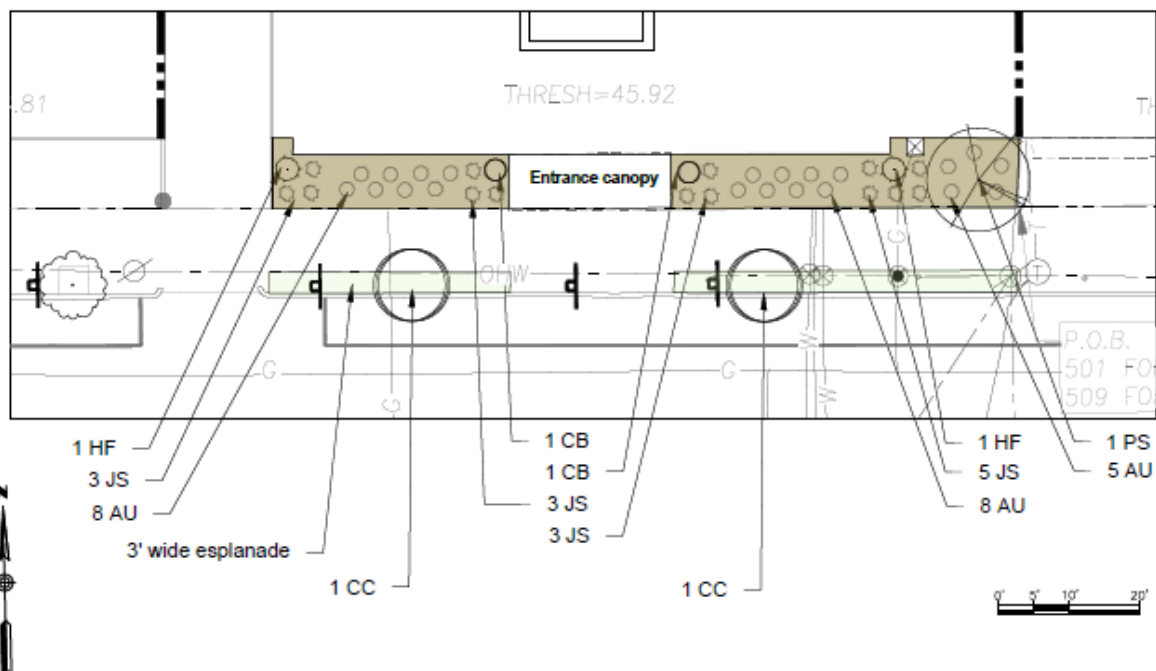
Response: There is no acceptable space for planting of trees at the rear of the building. The neighboring Ricker Park development has multiple mature deciduous trees between Indian Lane and their buildings that aid with buffering from the buildings on the south side of Indian Lane as evidenced in the imagery below.



Ricker Park/Indian Lane

- *The applicant should indicate street trees along Forest Avenue for the proposed change of use for staff review.*

Response: See the accompanying Landscape plan.





- *The applicant will need to follow Article 14.6.1 C for requirements to include a transit shelter for the proposed development consisting of 20 or more dwelling units.*

Response: We have contacted Mike Tremblay of METRO and he has indicated that METRO does not currently see the need for a transit shelter in front of #509. He has requested a thickened slab in front of the building that can be installed when the sidewalk is replaced and this slab will be available for future use if/when a shelter might be installed. We note that the landscape plan includes a 3' esplanade, that is consist with the sidewalk configuration on Forest Avenue just south of the site. This esplanade, if installed, may preclude the functionality of a shelter at this location, in our opinion.

- *Open space shall be integrated into the development as a requirement for multiple families. The applicant has indicated a shared roof deck that staff would request additional information on to ensure that it functions as a comfortable, protected and accessible outdoor space for all residents. In addition, the applicant could consider open space at the ground level with landscape enhancements adjacent to paved entries.*

Response: The applicant is proposing a rooftop composite wood deck¹ that will have space for seating and other resident amenities. Because of the limited size of the site, there is no additional open space for the residents however the site does benefit from the following proximate open spaces:

- The 3.2-mile Baxter Boulevard multi-use pathway around the 500 acre back cove located about 600 feet from the site,
- Payson Park located about 1.1 mile from the site,
- Deering Oaks Park located about 4,200 LF from the site,
- Longfellow Park located 582 feet from the site,
- The Kiwanis Community Pool and Dougherty Field complex located about 3500 LF from the site,
- The Sullivan Recreation and Fitness complex at USM located about 2,000 LF from the site.
- The Pedro Little League field located about 2,300 LF from the site.
- Barrows Park located about 1,700 LF from the site.
- Heseltine Park located about 2,950 LF from the site
- Baxter Woods located 4,064 LF from the site.

We look forward to the staff finalizing their review and an appearance before the Planning Board for a public hearing. If you have any questions regarding the materials being submitted, please contact this office.

¹ The applicant reserves the right to eliminate the roof top deck, as it is contingent on available funding.

Ms. Natasha Kypfer
December 18, 2023
Page 12



Sincerely,

GORRILL-PALMER

A handwritten signature in black ink, appearing to read 'Stephen Bushey', is written over a light gray rectangular background.

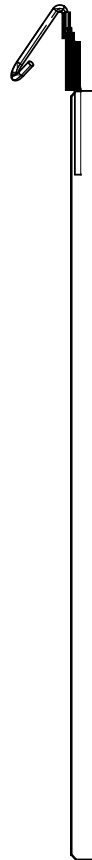
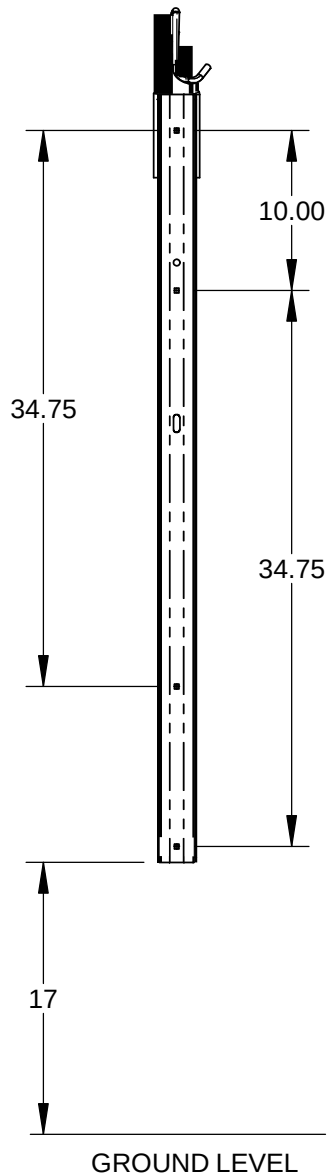
Stephen Bushey, PE

Senior Associate
sbushey@gorrillpalmer.com

Attachments

c: Kevin Bunker, DC 509 Forest, LLC
Josh Trombley, DC 509 Forest LLC

Specifications for Item 116-1039



NOTE:

1. DO NOT SCALE DRAWING.
2. INTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



3350 NW Boca Raton Blvd., Suite B2 Boca Raton, FL, 33431
Phone: 561.620.7878 Fax: 561.620.8668

Bike Trac Parking System

Item 116-1039 Mounting Instructions

Mounting Bike Trac

Bike Trac can be mounted to any wall, corner, pillar, or post strong enough to hold the bikes. Each unit comes with two pan head screws which work for mounting the Bike Trac to wooden studs. If mounting to any other surface consult your local hardware store for applicable hardware. Use mounting holes as shown in illustration. **Note:** To protect wheel, slide rubber sleeve onto wheel hook of Bike Trac.

Bike Trac Placement

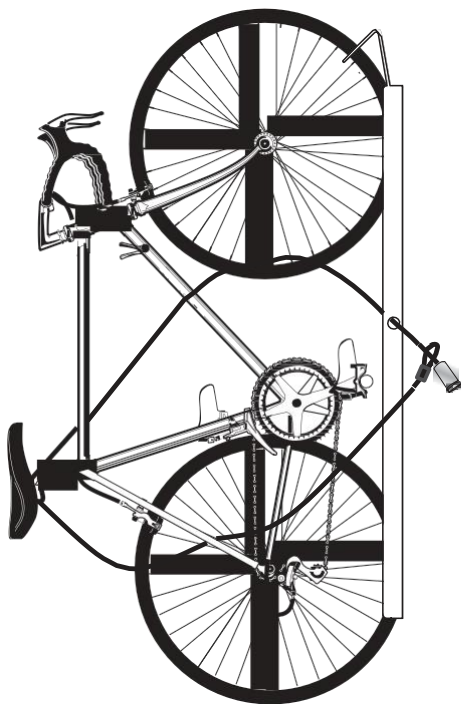
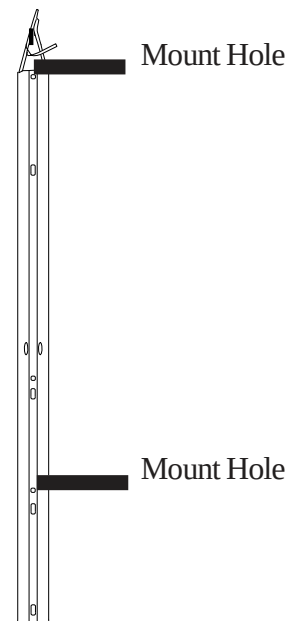
Option 1: Stagger tops of the Bike Tracs (High, Low, High).

Approx. space between each 12-15”.

Option 2: Level tops of Bike Tracs, hanging every other bike by rear tire. Approx. space between each 15-18”.

Option 3: Level tops of Bike Tracs, hanging all bikes by front tire. Approx. space between each 18-21”.

Note: Be sure to leave enough room between each Bike Trac so that the bike's handlebars do not interfere with each other. Optimum distance between Tracs will depend on make and model of bike.



Locking Bike To Bike Trac (Item 116-1039)

In most cases the locking cable is long enough to thread through your seat, frame, front and rear wheel. Thread cable through desired parts of the bicycle and then pass the metal end of the cable through the hole punched into the Bike Trac. **Note:** Locking cable is only intended to be a theft deterrent. Loss of bicycle is not covered under warranty.

Parts List

Qty	Description
1	Bike Trac Assembly
2	5/16" Washer
2	1" Slotted Pan Head Screw
1	Wheel Hook Rubber Sleeve

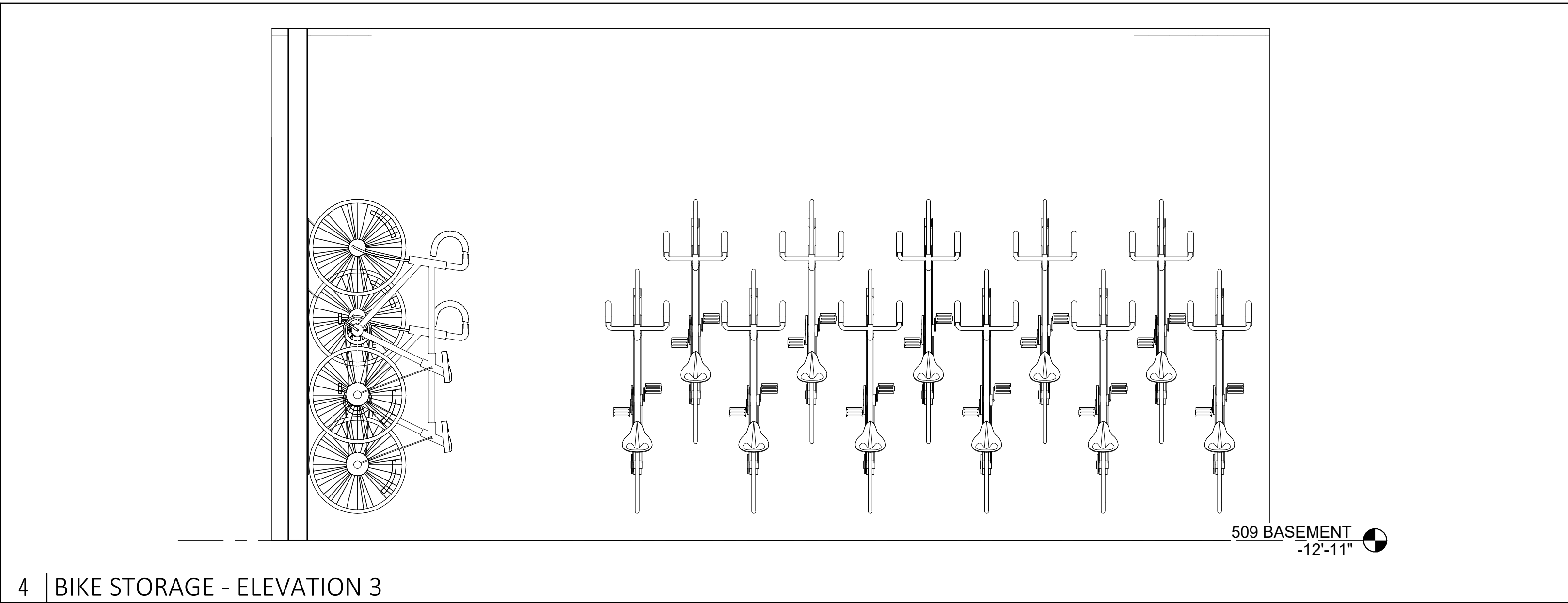
Locking Model Only (116-1035)

Qty	Description
1	Locking Cable

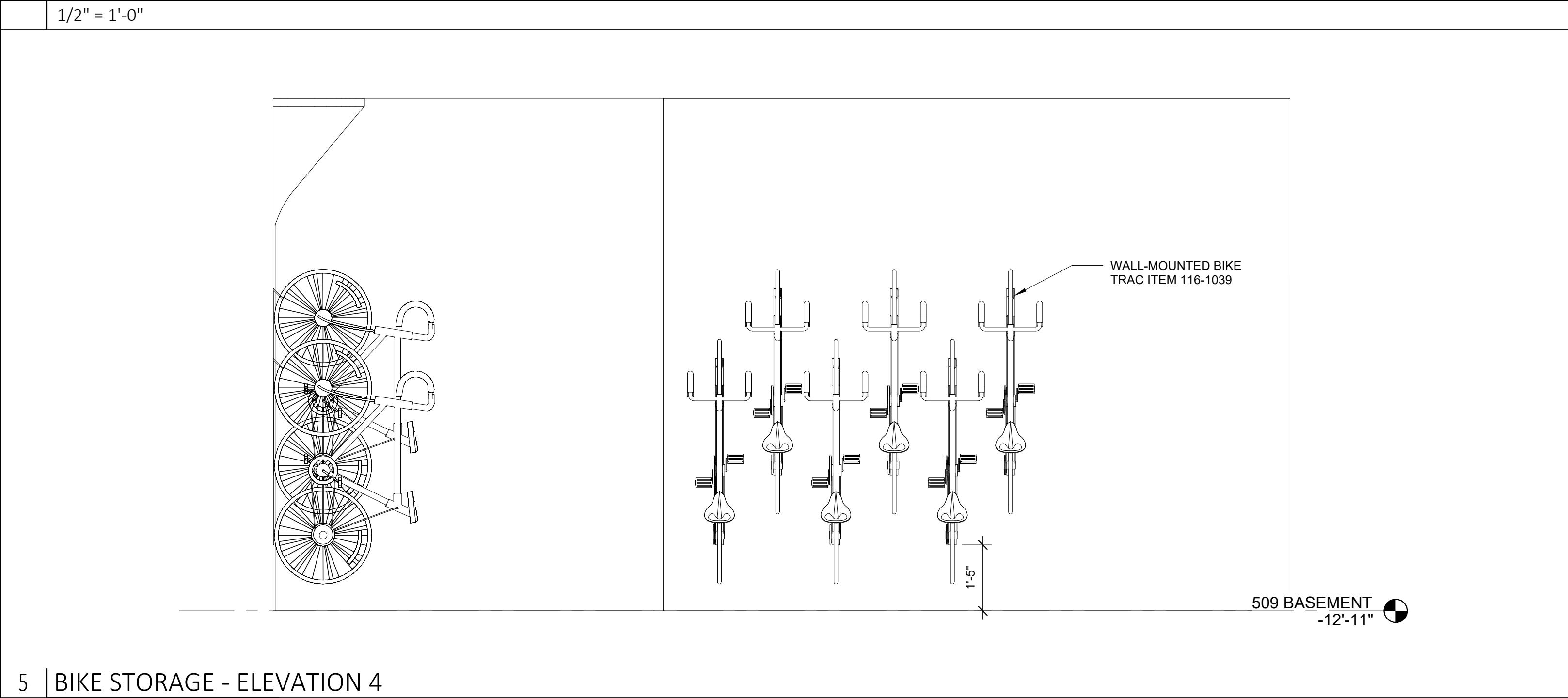


3350 NW Boca Raton Blvd., Suite B2 Boca Raton, FL, 33431

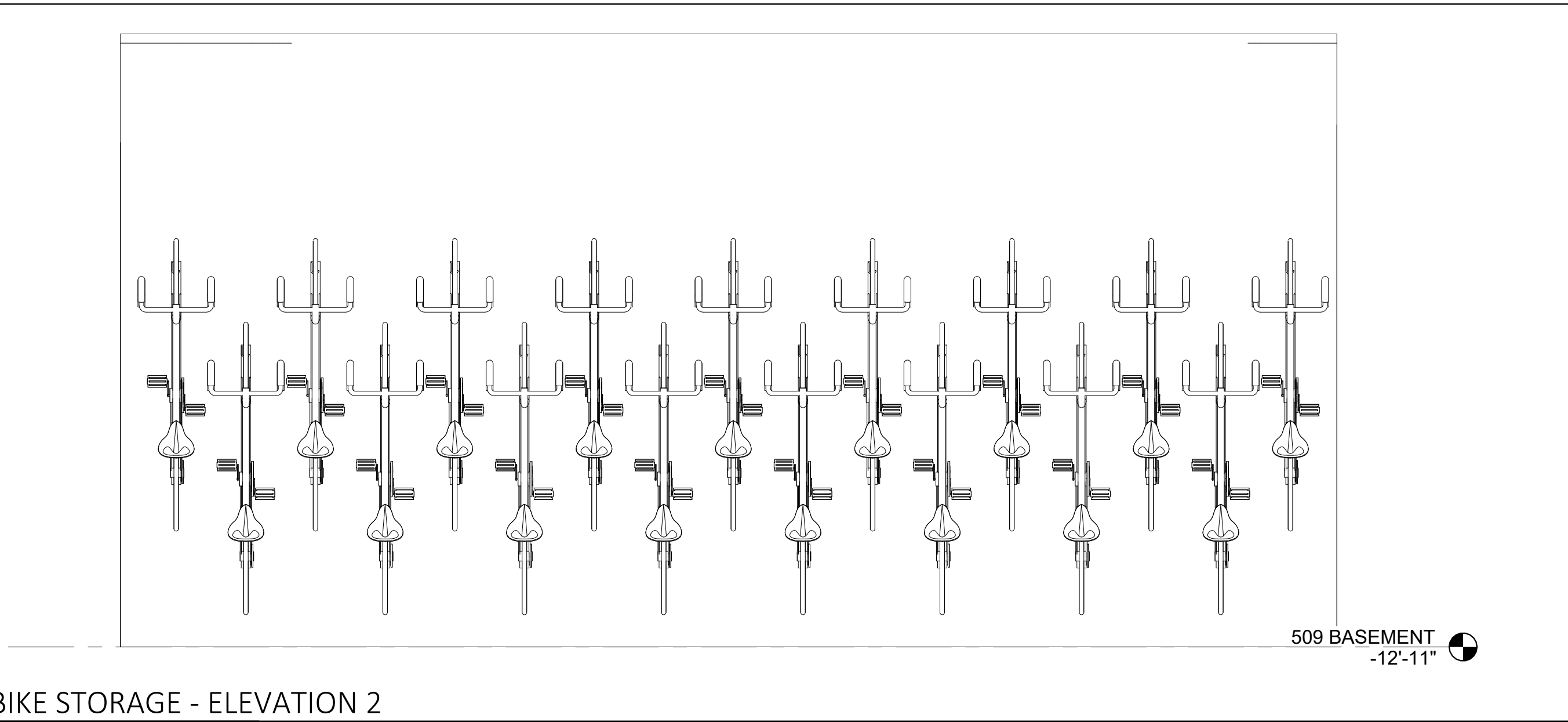
Phone: 561.620.7878 Fax: 561.620.8668



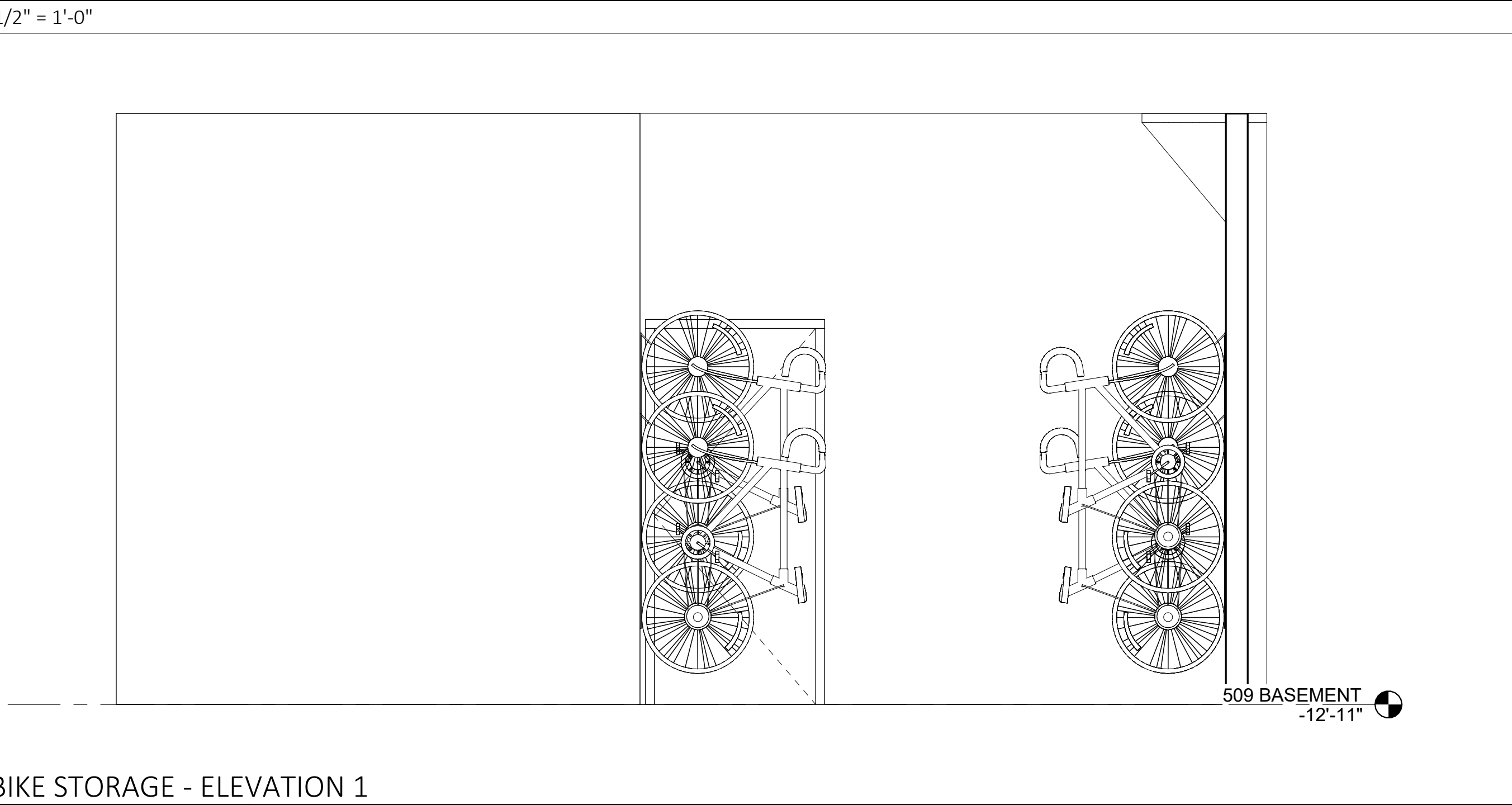
4 | BIKE STORAGE - ELEVATION 3



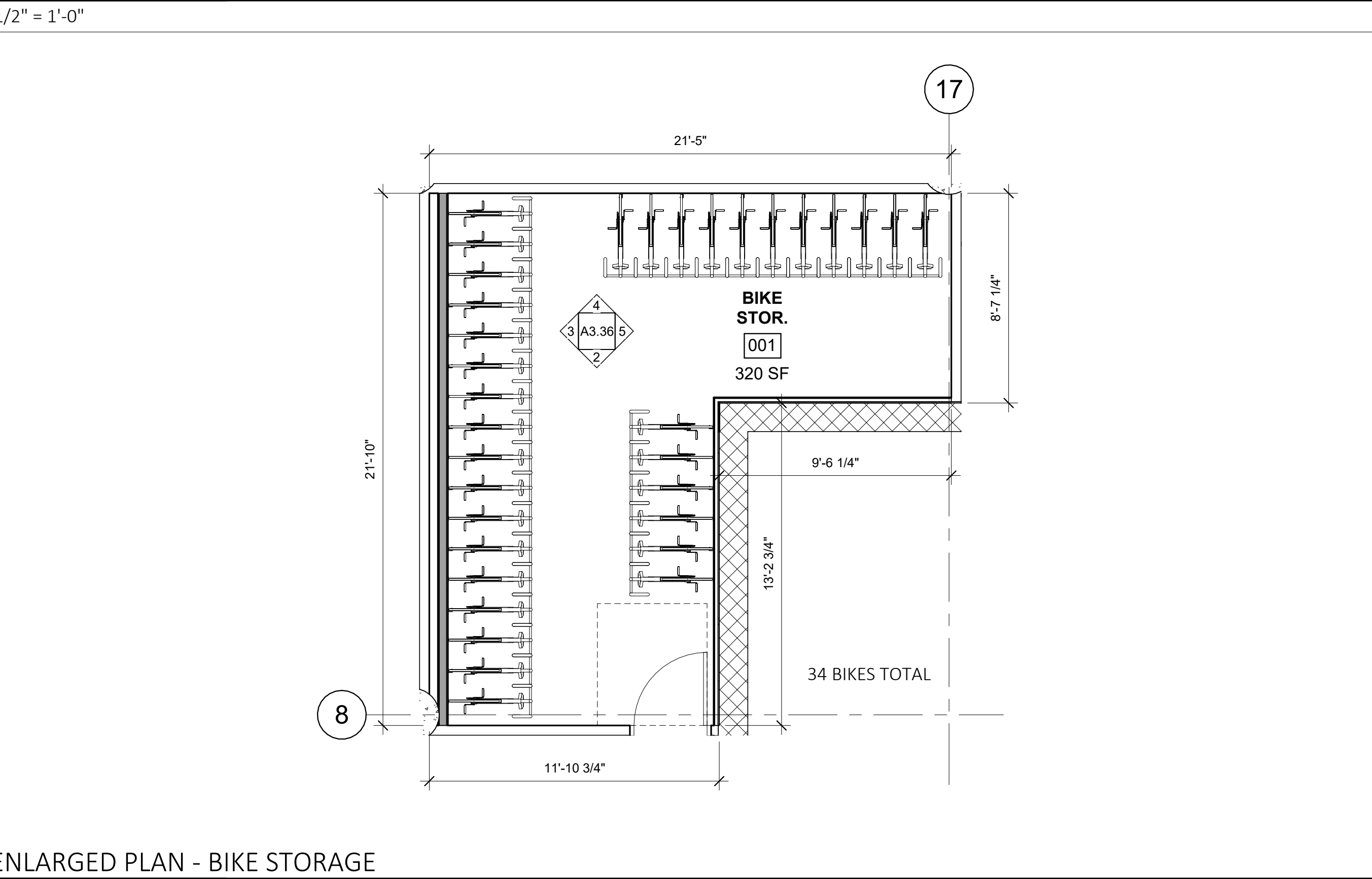
5 | BIKE STORAGE - ELEVATION 4



3 | BIKE STORAGE - ELEVATION 2



2 | BIKE STORAGE - ELEVATION 1



1 | ENLARGED PLAN - BIKE STORAGE

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

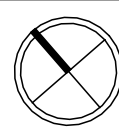
Revisions:

Key Plan:

ENLARGED PUBLIC SPACE
PLANS

Scale:

As indicated



NOVEMBER 9, 2023

A3.36

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

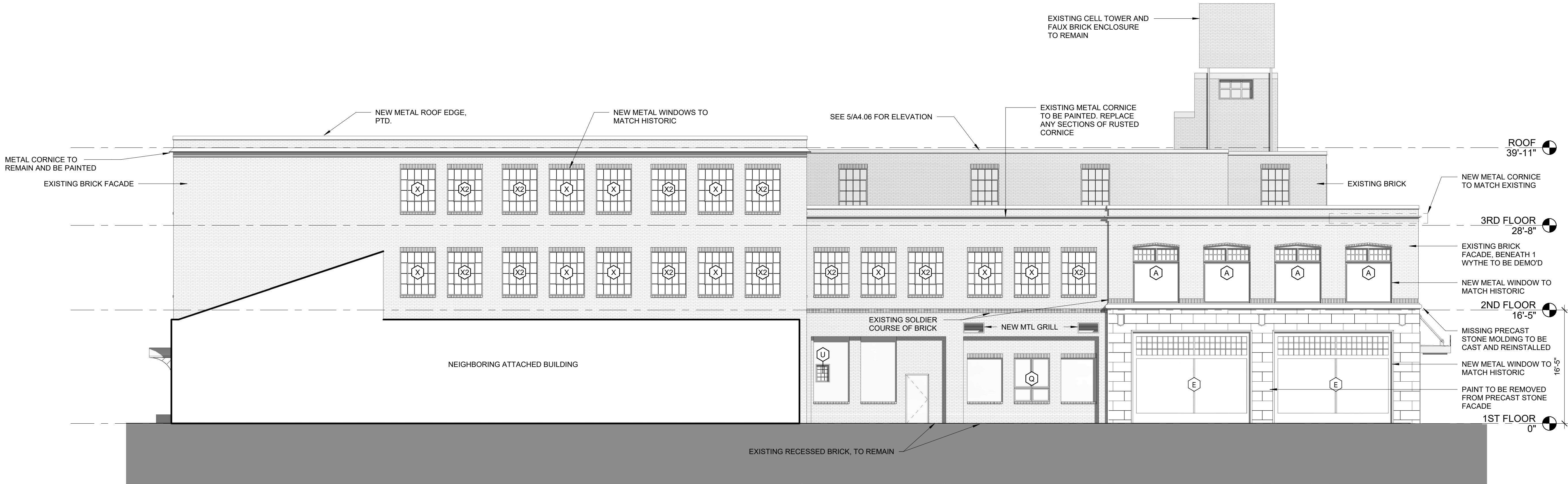
NEW BUILDING
ELEVATIONS

Scale:
1/8" = 1'-0"



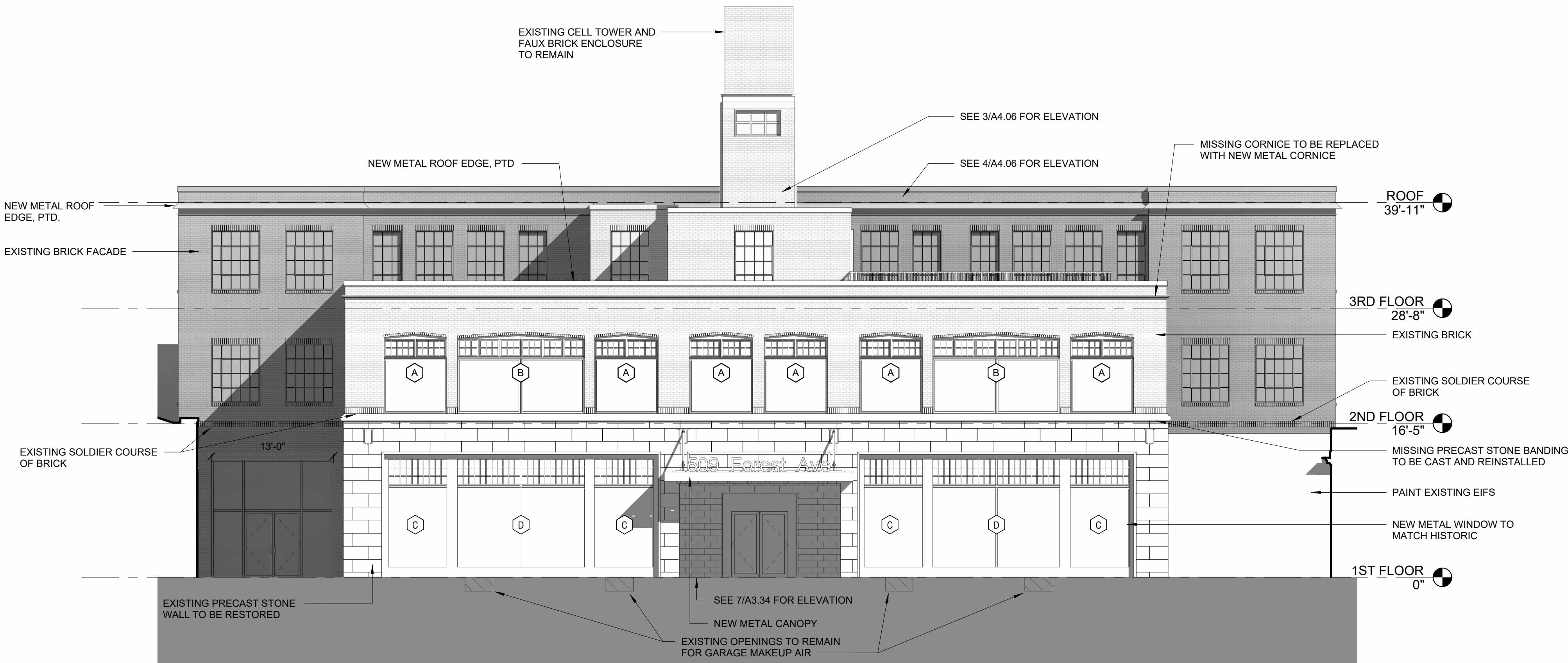
DECEMBER 5, 2023

A4.04



2 | NEW - 509 - WEST ELEVATION

1/8" = 1'-0"



1 | NEW - 509 - SOUTH ELEVATION

1/8" = 1'-0"

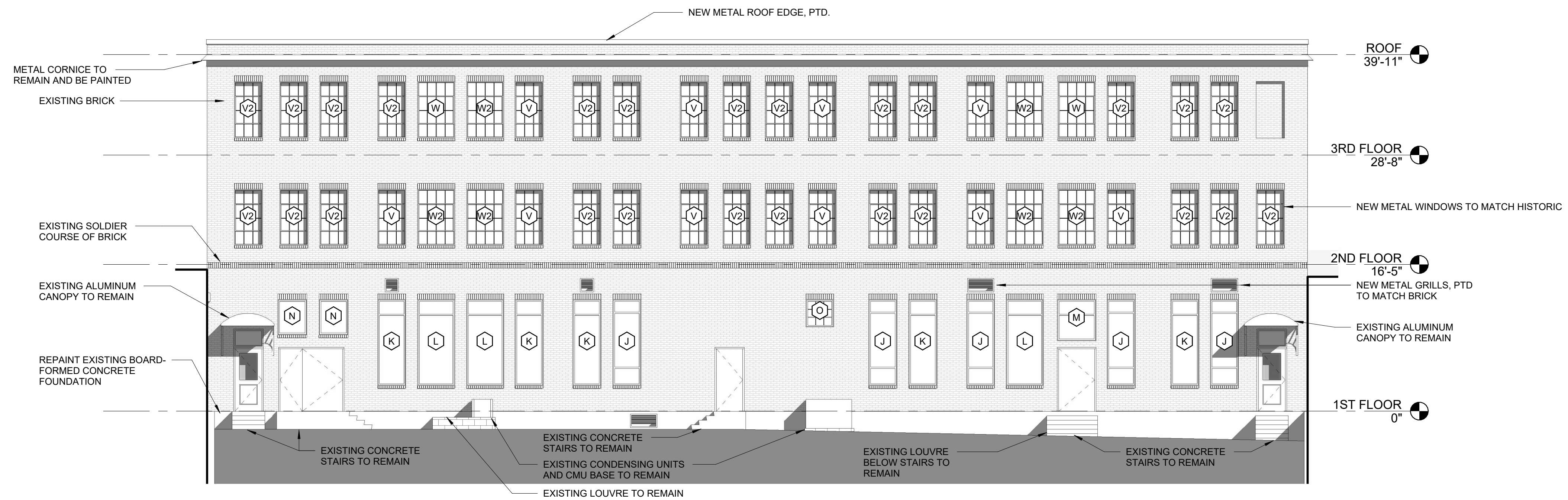
509 FOREST AVE

Consultant:

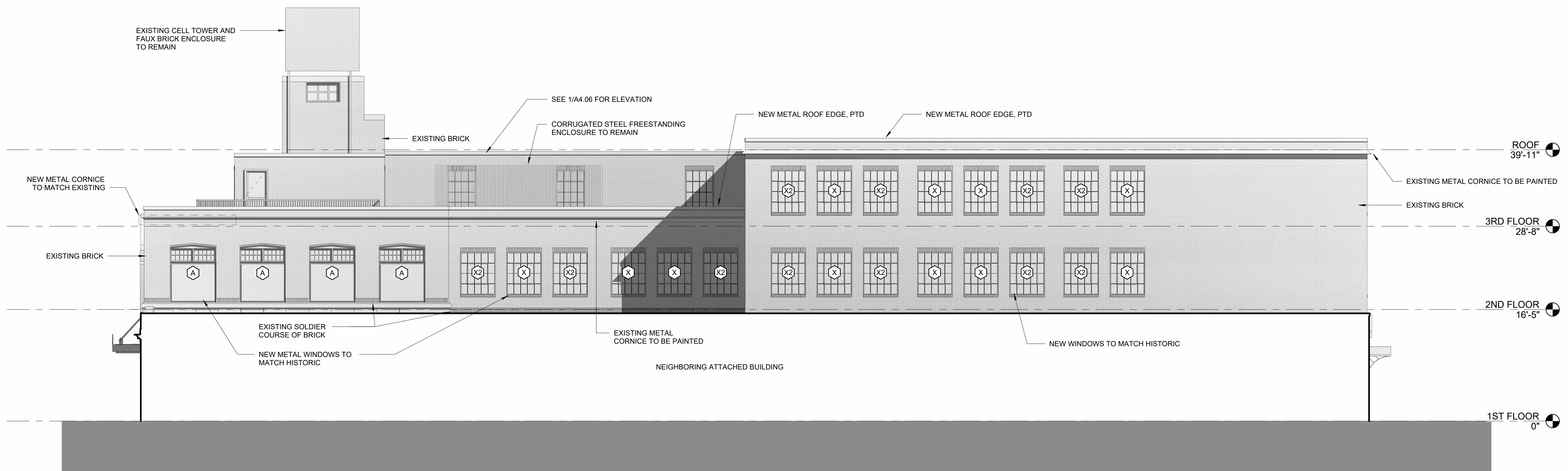
Key Plan:

DECEMBER 5, 2023

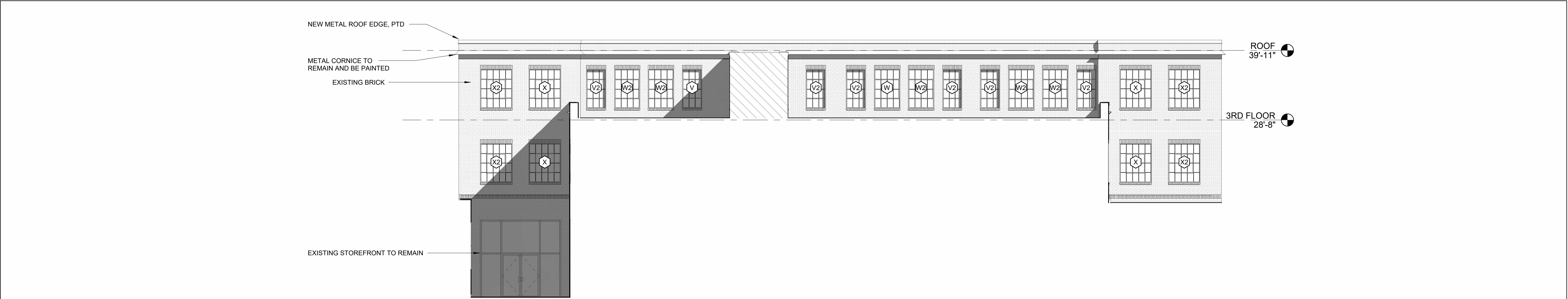
A4.05



$1/8'' = 1'-0''$

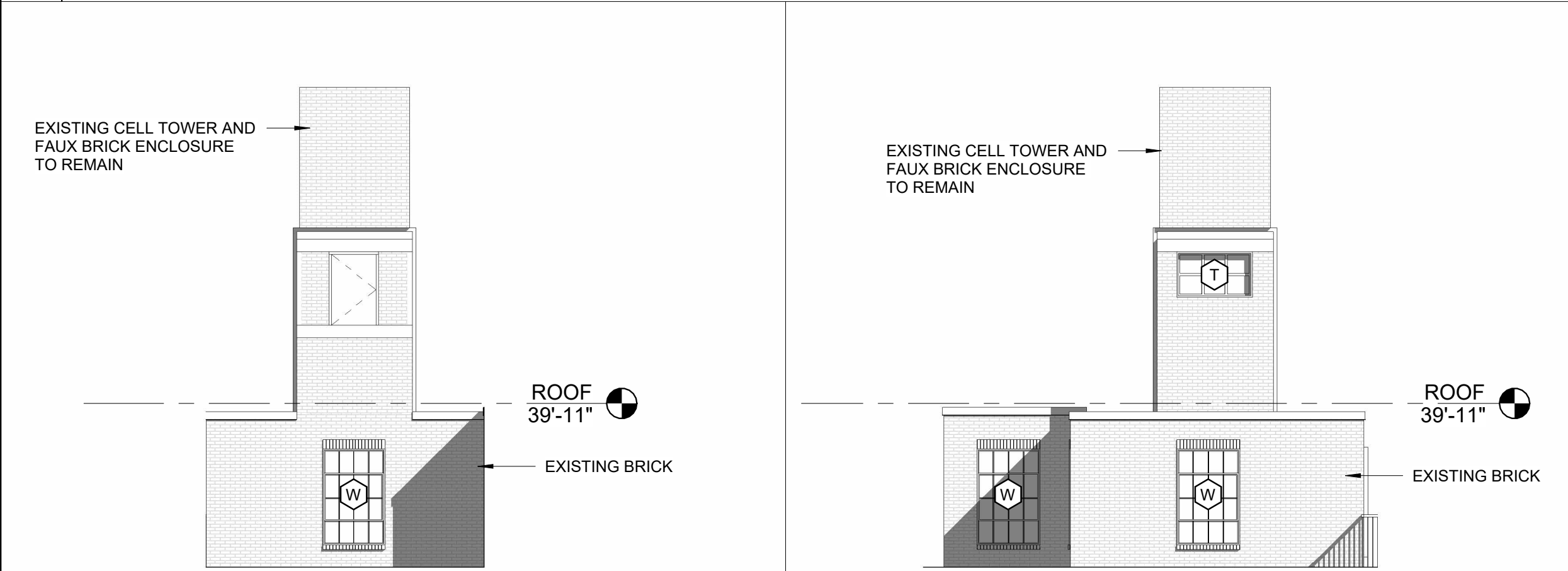


$1/8'' = 1'-0''$



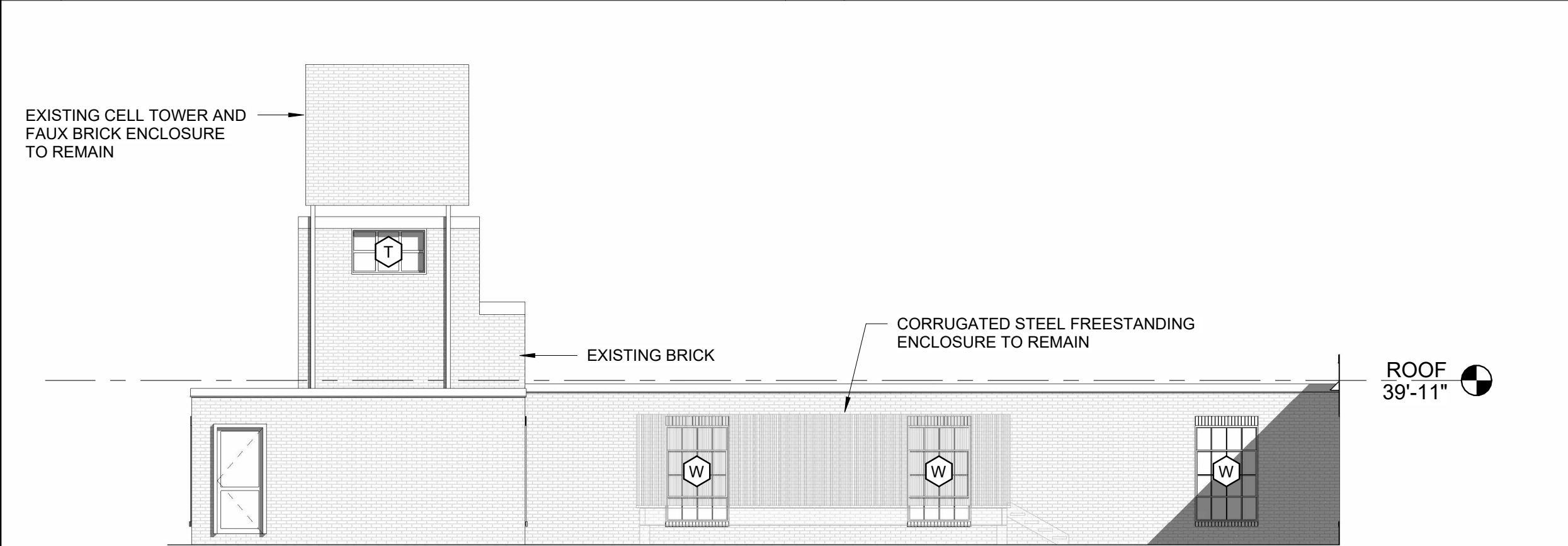
4 | NEW - 509 - SOUTH ELEVATION - THIRD FLOOR

1/8" = 1'-0"



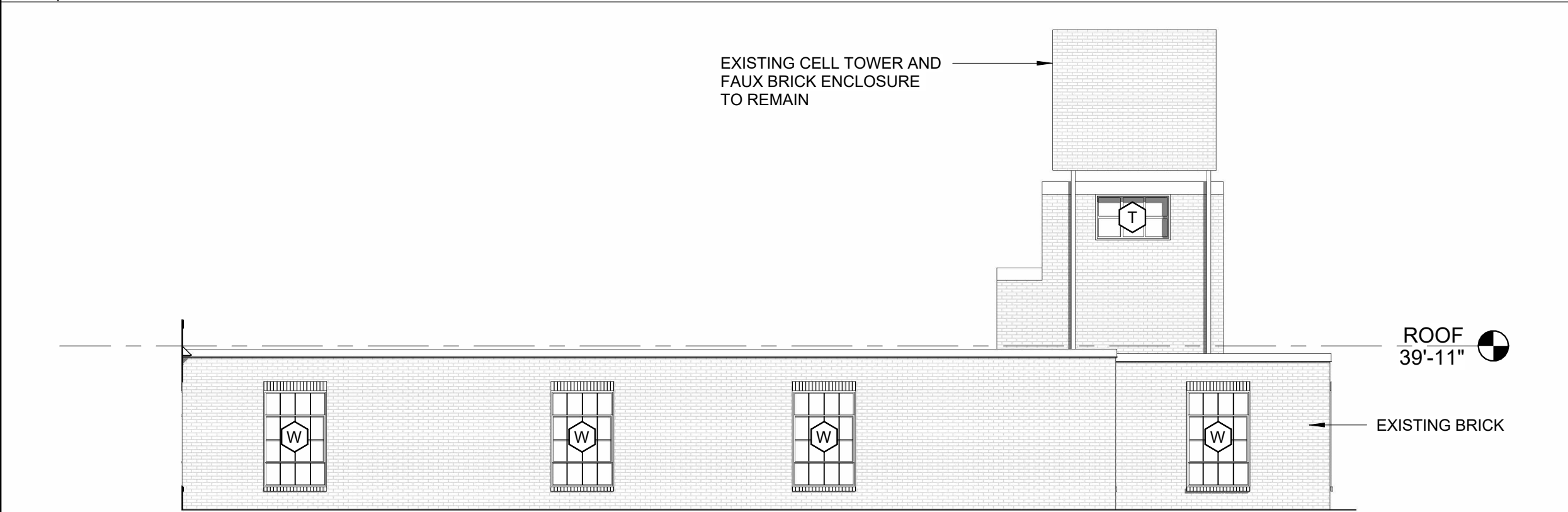
2 | NEW - 509 - NORTH ELEVATION - 3RD FLOOR

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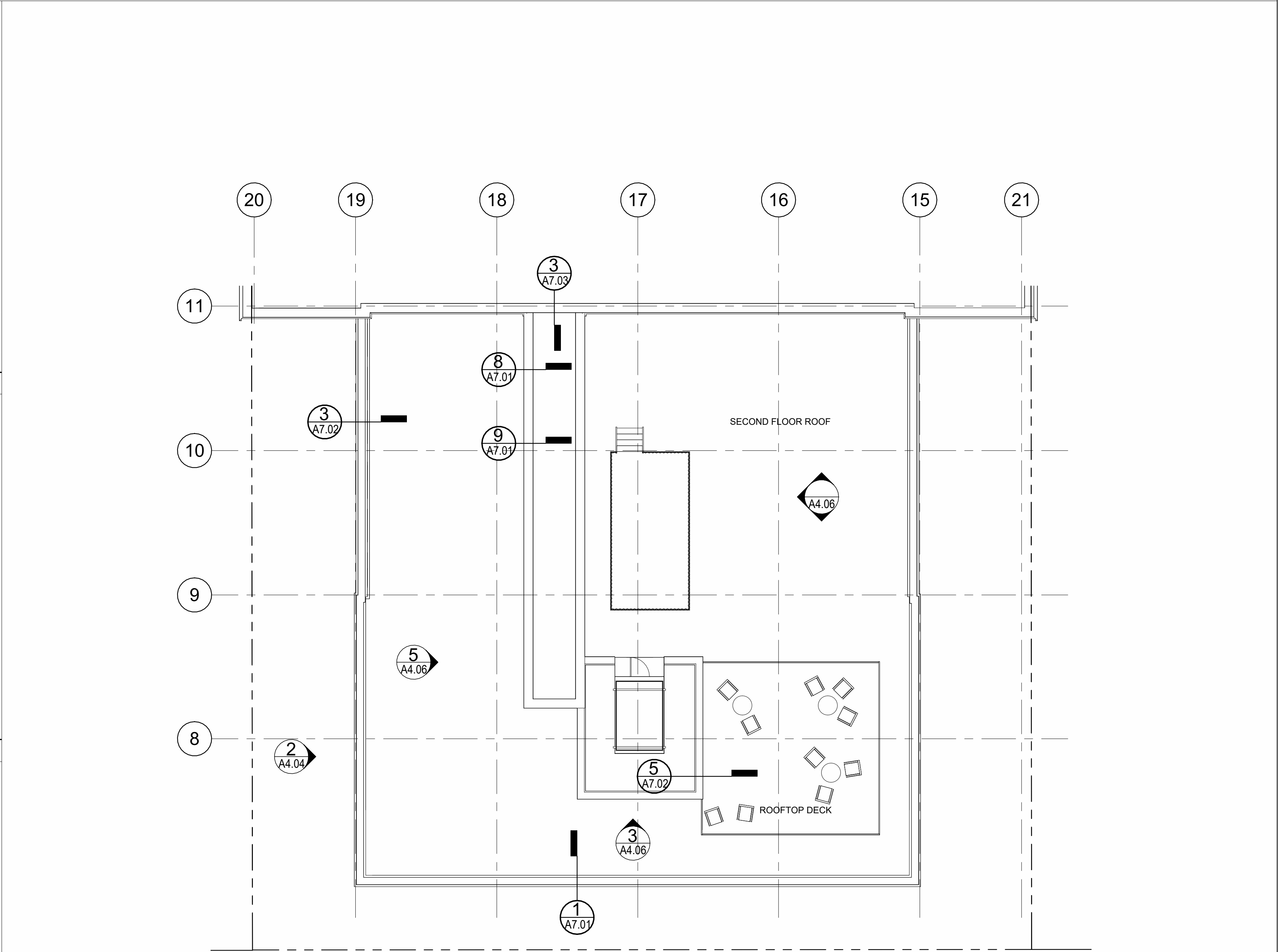
1 | NEW - 509 - EAST ELEVATION - THIRD FLOOR

1/8" = 1'-0"



5 | NEW - 509 - WEST ELEVATION - THIRD FLOOR

1/8" = 1'-0"



6 | 509 - ENLARGED 2ND FLOOR ROOF

3/32" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

NEW BUILDING
ELEVATIONS

Scale:
As indicated



DECEMBER 5, 2023

A4.06



Street tree in
esplanade

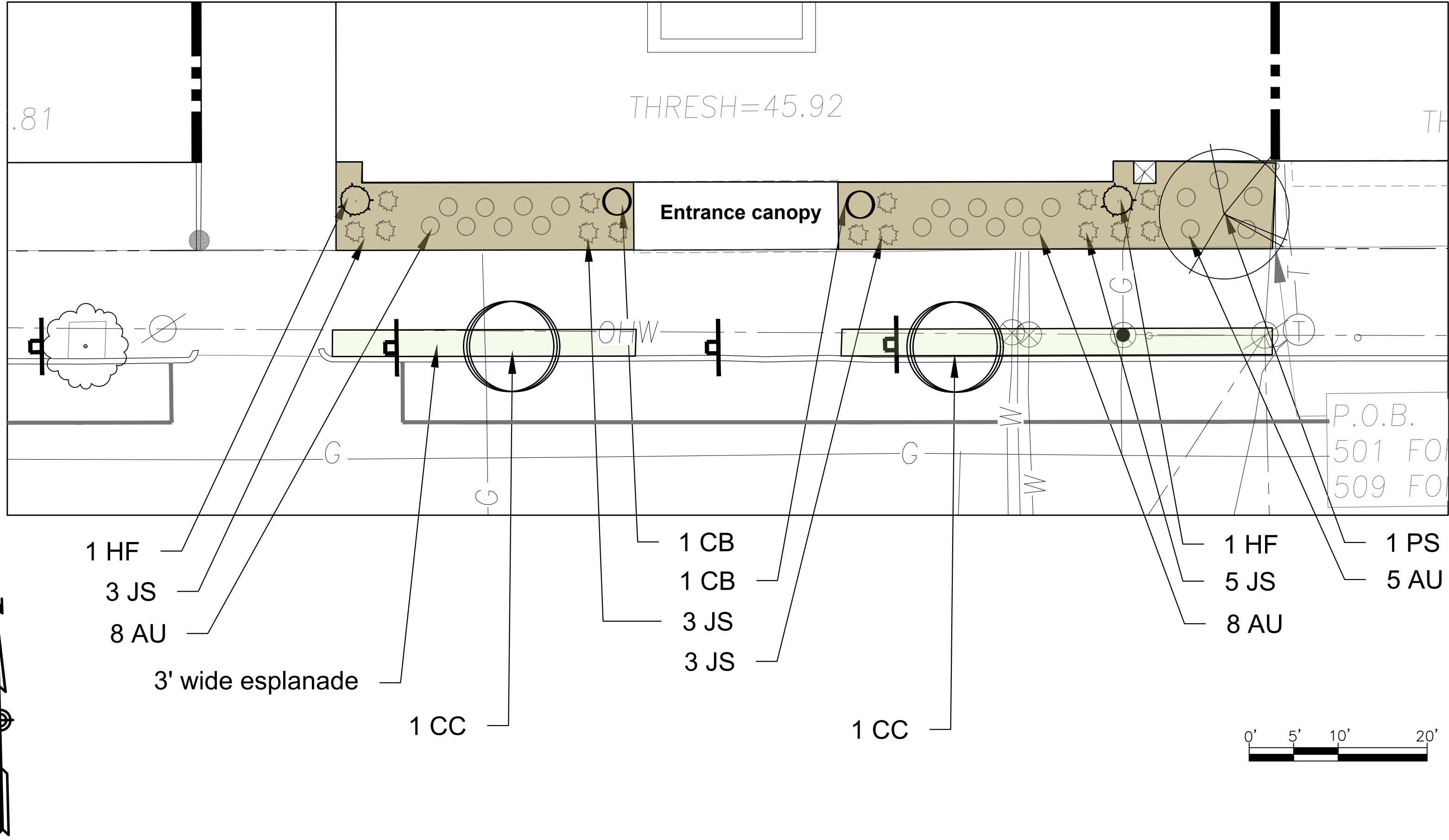
Tube railing?

Low growing
shrubs

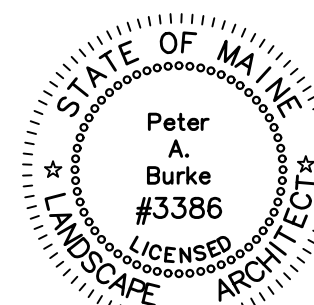
Columnar dwarf tree

Groundcover

Key	Plant List	Mature Size		#
AU	Bearberry/Arcotstaphylos uva-ursi (Evergreen,groundcover)	6'h x 6'w	#1	21
JS	Blue Star Juniper/Juniperus squamata (Evergreen ground hugging shrub)	18"h x 4'w	#5	14
HF	Compact Hinoki Falsecypress/Chamaecyparis obtusa 'Compacta' (evergreen)	10'h x 4'w	5-6'	2
CB	Dwarf Columnar Hornbeam/Carpinus betulus 'Columnaris Nana' (deciduous)	8'h x 3'w	2"	2
CC	Rising Fire American Hornbeam/Carpinus caroliniana 'Uxbridge' (deciduous) (approved by City of Portland in 3' planting strips with high voltage power lines)	30'h x 15'w	2"	2
PS	Flowering Cherry 'Pink Flair'/Prunus sargentii (deciduous tree)	25'h x 20'w	2"	1



Peter Burke
Landscape Architecture
peter@peterburkedesign.com



CLIENT
DC 509 FOREST, LLC

PROJECT
509 FOREST AVE

DRAWING
Planting Plan

REVISIONS					

DRAWING #
L-1

SCALE:
DATE: December 12, 2023

Project:

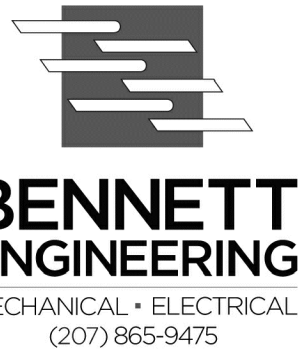
509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:



Revisions:

Key Plan:

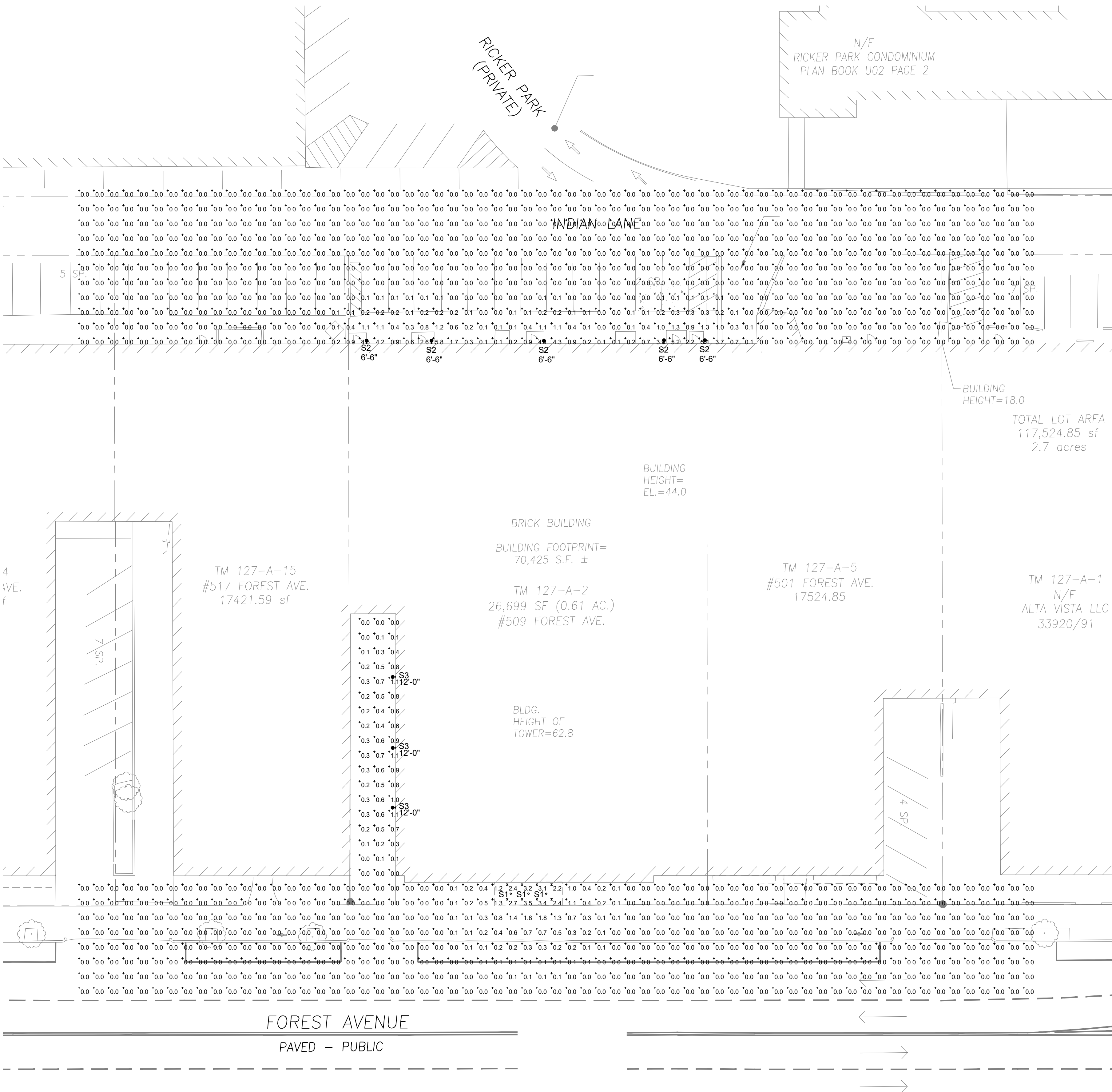
PHOTOMETRIC
LIGHTING PLAN

Scale:
AS NOTED



DECEMBER 15, 2023

E0.01



- DRAWING NOTES:
1. CALCULATIONS REPRESENT MAINTAINED FOOTCANDLE LEVELS AT GRADE.
 2. LIGHT LOSS FACTOR USED IN CALCULATIONS.
 3. EXTERIOR LIGHTING TO BE CONTROLLED BY BUILDING MOUNTED PHOTOCELL ON A DUSK, OFF AT DAWN.
 4. CANOPY LIGHTING STATISTICS:
MIN 2.2 MAX 3.5 AVE 2.9 X/M 1.6:1 A/M 1.3:1
 5. LIGHTING FIXTURES
TYPE S1 PROGRESS #P807-001-028-30
8.3 W / 3000K / 575 LUMENS
TYPE S2 PROGRESS #P580090-031-30K
11.9W / 3000K / 760 LUMENS
TYPE S3 PROGRESS #P5822-2030K9
9W / 3000K / 623

1
E0.01
PHOTOMETRIC LIGHTING PLAN
SCALE: 1" = 20'-0"

5IN LED Edgelit Recessed Downlight

Wet location listed **PROGRESS LED**



Description:

Slim, low profile recessed downlight combines innovative technology, aesthetics, functionality and affordability. No housing or J-Box required for installation and wet location listed provides the ultimate flexibility. The low profile downlight is ideal for many residential, multi-family, commercial and hospitality applications. Featuring a detachable driver box, which can be mounted remotely for shallow ceiling installations. Energy efficient design provides up to a 75% energy savings and up to 54,000 hours of LED life. Flicker free dimming down to 10% with many Forward Phase (Triac) and Electronic Low Voltage (ELV) dimmers.

Specifications:

- White (-028) (Painted)
- Die-cast aluminum construction
- White Polycarbonate lens
- Slim, low profile recessed downlight combines innovative technology, aesthetics, and functionality
- No housing or J-Box required for installation
- Featuring a detachable driver box, which can be mounted remotely for shallow ceiling installations
- IC rated and Air-Tight
- Flicker free dimming down to 10% with many Forward Phase (Triac) and Electronic Low Voltage (ELV) dimmers
- Energy efficient design provides up to a 75% energy savings and up to 54,000 hours of LED life
- Dimmable to 10% brightness (See Dimming Notes)
- ENERGY STAR® qualified
- Meets California Title 24 JA8-2016

Performance:

Number of Modules	1
Input Power	8.3w
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW	575/69.2 (LM-79)
CCT	3000 K
CRI	90 CRI
Life (hours)	54,000 (L70/TM-21)
EMI/RFI	FCC Title 47, Part 15 Class B
Min. Start Temp	-30 °C
Warranty	5 year warranty
Labels	cCSAus Wet location listed
	ENERGY STAR® qualified
	Meets California Title 24 JA8-2016

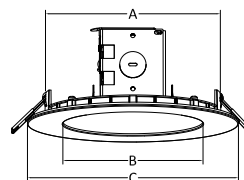
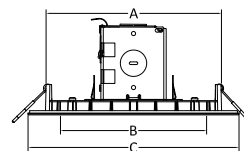
P800004-028-30

Images:



Dimensions:

(A) Inside Diameter: 4"
 (D) Light Emitting Surface (LES): 2.75"
 (C) Outside Diameter: 5"
 Height: 3"



A: INSIDE DIAMETER
 B: LIGHT EMITTING SURFACE (LES) DIAMETER
 C: OUTSIDE DIAMETER

5IN LED Edgelit Recessed Downlight

Wet location listed **PROGRESS LED**



Photometrics:

P800004-028-30

ELECTRICAL DATA **P800004-028-30**

Input Voltage	120 V
Input Frequency	60 Hz
Input Current	0.07 A
Input Power	8.3
Power Factor	0.99
THD	<20%
FCC	FCC Title 47, Part 15 Class B
Operating Temperature	-30 °C to 30°C
Dimming	Yes*

*See Dimming Notes for more information

P800004-028-30

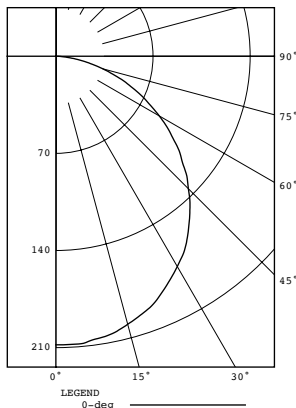
LED Light Engine: 3000 K 90 CRI
System Wattage: 8.3
Fixture delivered lumens: 575
Fixture Efficacy: 69.2
Spacing Criteria: 1.25

CANDELA DISTRIBUTION

DEG	CANDELA	LUMENS
0	208	
5	208	20
15	200	56
25	185	85
35	164	102
45	135	104
55	103	92
65	69	68
75	35	37
85	7	9
90	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0-30	162	28.1
0-40	264	45.9
0-60	460	80.1
0-90	575	100.0
90-180	0	0.0
0-180	575	100.0



P800004-028-30

Dimming Notes:

P800004 is designed to be compatible with many ELV and Triac/Forward Phase controls.

The following is a partial list of known compatible dimmer controls.

Dimming Controls

Lutron - NTEVL-300

Lutron - DVELV-300P

Lutron - MAELV-601

Lutron - DVCL-253P

Lutron - Caseta Wireless

Lutron - AYCL-153P

Leviton - 6672

Leviton - 6674

Leviton - AWSMT-EAW

Dimming capabilities will vary depending on the dimmer control, load, and circuit installation. Always refer to dimmer manufacturer instructions or a controls specialist for specific requirements.

Dimmer control brand names where identified above are trade names or registered trademarks of each respective company.

Strata Wall Lantern

Wall mounted • Wet location listed



Description:

A combination of modern decorative styling with state-of-the-art LED technology, the Strata Collection fixture represent the latest in energy efficient technology for residential illumination. Using only 12-Watts and with a rated lamp life of over 50,000 hours, this fixture offer a look at the future of lighting. Compare illumination level to a 60-Watt incandescent fixture. Low-profile modern housing projects light downwards to create glare-free dark sky friendly illumination.

Specifications:

- Black (-031) (painted)
- Die cast aluminum Construction
- Frosted Glass lens
- Modern low profile design.
- Can be used indoor or outdoor.
- Die cast aluminum construction.
- Delivers 760 lumens (delivered)
- 3000K color temperature with 90 CRI
- Dimmable to 10% brightness (See Dimming Notes)
- Back plate covers a standard 4" octagonal recessed outlet box
- Mounting strap for outlet box included
- 6" of wire supplied
- ENERGY STAR® qualified
- Meets California Title 24 JA8-2016

Performance:

Number of Modules	1
Input Power	11.9w
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW (Delivered)	760/63 (LM-79)
CCT	3000 K
CRI	90 CRI
Life (hours)	50,000 (L70/TM-21)
FCC	FCC Title 47, Part 15, Class B
Min. Start Temp	-30 °C
Max. Operating Temp	30°C
Warranty	5 year warranty
Labels	cCSAus Wet location listed ENERGY STAR® qualified Meets California Title 24 JA8-2016

P560090-031-30K

Images:



Dimensions:

Width: 6-9/16"
Length: 8.0625"
Height: 5-1/2"
H/CTR: 2-3/4"

Strata Wall Lantern

Wall mounted • Wet location listed **PROGRESS LED**



Photometrics:

P560090-031-30K

ELECTRICAL DATA		P560090-031-30K
Input Voltage		120 V
Input Frequency		60 Hz
Input Current		0.1 A
Input Power		11.9
Power Factor		0.99
THD		<20%
FCC		FCC Title 47, Part 15, Class B
Operating Temperature		-30 °C to 30°C
Dimming		Yes*

*See Dimming Notes for more information

P560090-031-30K

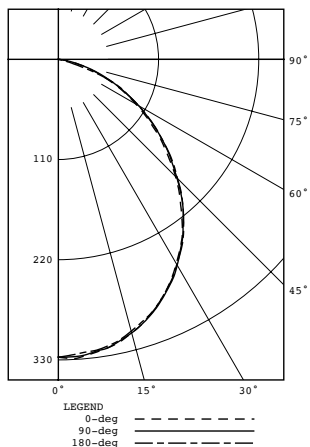
LED Light Engine: 3000 K 90 CRI

System Wattage: 11.9

Fixture delivered lumens: 760

Fixture Efficacy: 63

Spacing Criteria: 1.190



CANDELA DISTRIBUTION

CANDELA	DISTRIBUTION			FLUX		
	0.0	45.0	90.0	135.0	180.0	
0	327	327	327	327	327	
5	327	327	326	324	323	31
15	311	312	311	310	309	88
25	280	281	281	281	280	129
35	237	237	238	238	239	148
45	182	184	184	185	185	142
55	125	127	129	130	130	115
65	73	74	75	76	77	74
75	28	29	29	30	12	30
85	1	1	2	2	0	3
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0-30	247	32.6
0-40	396	52.1
0-60	652	85.8
0-90	760	100.0
90-180	0	0.0
0-180	760	100.0

Test 17.02971 Test Date 11/22/17

P560090-031-30K**Dimming Notes:**

P560090 is designed to be compatible with many Triac/Forward Phase or ELV/Reverse Phase controls.

The following is a partial list of known compatible dimmer controls.

Dimming Controls

Lutron DVELV-300P

Lutron Caseta Wireless

Lutron AYCL-153P

Lutron TGCL-153-PH

Leviton 6672

Dimming capabilities will vary depending on the dimmer control, load, and circuit installation.
Always refer to dimmer manufacturer instructions or a controls specialist for specific requirements.

Dimmer control brand names where identified above are trade names or registered trademarks of each respective company.

District LED

Wall Mounted • Wet Location Listed PROGRESS LED



Description:

District Collection LED Medium Wall Lantern

Specifications:

- Antique Bronze, Painted White Inside Aluminum Shade
- White Acrylic Diffuser
- Dimmable to 10% brightness (See Dimming Notes)
- Back plate covers a standard 4" recessed outlet box: 5.125 in W, 1.625 in ht., 5.125 in depth
- Mounting strap for outlet box included
- 6 in of wire supplied
- Dark Sky compliant

Performance:

Number of Modules	1
Input Power	9 W
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW (Source)	623/69.2 (LM-82)
Lumens/LPW (Delivered)	420/53.6 (LM-79)
CCT	3000 K
CRI	90 CRI
Life (hours)	60000 (L70/TM-21)
EMI/RFI	Meets FCC Title 47, Part 15 Class B
Max. Operating Temp	30 °C
Warranty	5-year Limited Warranty
Labels	cCSAus Wet Location Listed
	ENERGY STAR® qualified

P5622-2030K9



Dimensions:

Width: 8 in
 Depth: 10-1/4 in
 Height: 8-1/4 in
 H/CTR: 4-1/8 in

Antique Bronze, Painted White Inside Aluminum Shade
 Width: 8-1/16 in
 Height: 5-7/8 in

White Acrylic Diffuser
 Width: 2-7/8 in
 Height: 0-13/16 in

Dimming Notes:

P5622-2030K9 is designed to be compatible with many ELV/Reverse Phase controls.

The following is a partial list of known compatible dimmer controls.

Dimming Controls:

Lutron_Nova T NTELV-300

Lutron_Vierti VTELV-600

Lutron_Maestro MAELV-600

Lutron_spacer/system SPSELV-600

Dimming capabilities will vary depending on the dimmer control, load, and circuit installation.

Always refer to dimmer manufacturer instructions or a controls specialist for specific requirements.

Dimmer control brand names where identified above are trade names or registered trademarks of each respective company.

P5622-2030K9

509 Forest Avenue

Transportation Demand Management Plan

In accordance with Section 17.3 of the Technical Manual the following information is provided,

Project Description: The development at 509 Forest Avenue involves a three-story mixed-use development. The ground floor will contain retail use and floors 2-3 will each contain residential units in the amount of 24 units and 14 units respectively. The property contains private parking in the basement and 9 surface parking spaces at the rear of the building, off Indian Lane, which is also private. The site is within the B-2b zoning district. The existing basement parking will be used by residents or commercial tenants. The surface parking will be used by the commercial tenants. This TDM has been prepared to qualify for the transit-proximate categorical exemption specified in Table 19-8 of the Land Use Code.

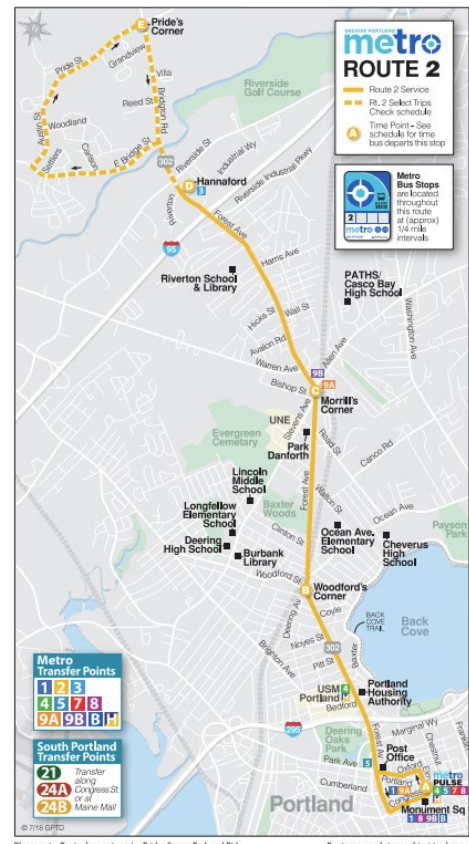
Part 17.3.1 Transportation Narrative

The proposed development benefits from proximity to nearby transit services including the Portland METRO Route 2 Forest Avenue run that provides service between downtown Portland and Prides Corner, Westbrook via Forest Avenue, running past the site. The site development includes 38 residential units, and each unit occupant will need to secure parking as needed in the building. Commercial tenants and visitors will have use of on-street parking on Forest Avenue and surrounding streets.

Residents will have access to various pedestrian and bicycle routes in the project vicinity within Forest Avenue that connect to Back Cove and points beyond. METRO Transit service also links to the METRO Breez service at Congress Street and that offers service to Yarmouth, Freeport, and Brunswick. There are inbound and outbound METRO stops within 500 feet of the site.

The development will include signage in the entrances and residential corridors identifying nearby public transit locations as well as mapping for pedestrian/bicycle routes on Forest Avenue and the peninsula. It is assumed that residents will quickly familiarize themselves with nearby facilities and access routes for their use and enjoyment.

The development is ideally situated to take advantage of proximity to the peninsula, Back Cove, and the Forest Avenue Commercial Corridor. Nearby land use includes grocery stores, restaurants and other commercial/retail that allow residents the opportunity to walk/bike to these destinations and to minimize the need for vehicular access.



METRO Route 2

17.3.2 Identify a TDM Coordinator

Given the small size of the development a designated TDM coordinator is not proposed. The applicant and their property management team will be responsible for building maintenance as well as ensuring that site features including bike racks are maintained and available. The applicant owns multiple properties in the greater Portland market and is therefore very familiar with the requirements for maintenance, working with City officials and related issues.

Parts 17.3.3 thru 17.3.6

The project's future trip generation is expected to be less than the historical trip generation associated with the previous commercial land use on the second and third floors. These floors were previously occupied as office space with an estimated staff number of greater than 40 persons (pre-covid). The ground level space is not expected to be occupied by a restaurant or similar tenant, but is expected to be a low turnover, low volume commercial tenant(s). The commercial tenant will be much like other retailers/commercial tenants along the Foerst Avenue corridor that rely on existing vehicular access, parking, foot traffic and visitors including tourists and residents alike. Due to the small impact of traffic associated with the development, targets for TDM traffic reductions and related TDM objectives are quite minor. It's simply expected that this infill development will blend harmoniously within the surrounding Forest Avenue activities and land use and may benefit from the general proximity of transit, parking, and multi-modal transportation options available on the greater Forest Avenue corridor and Portland Peninsula.

509 Forest Avenue

Transportation Demand Management Plan

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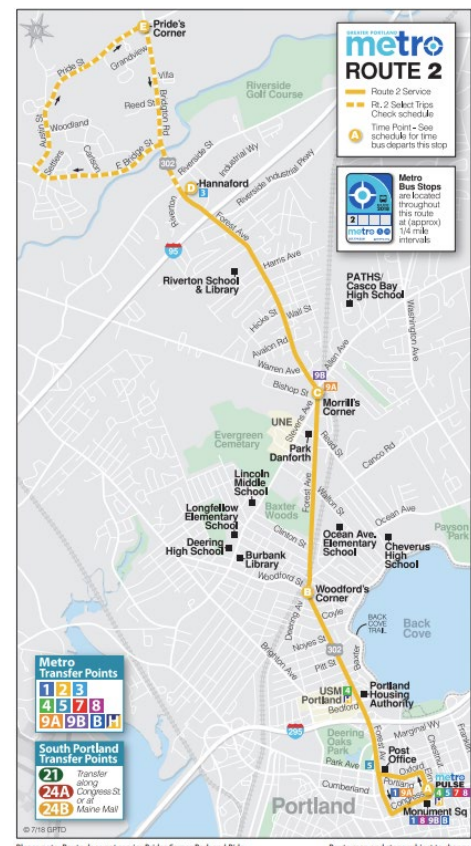
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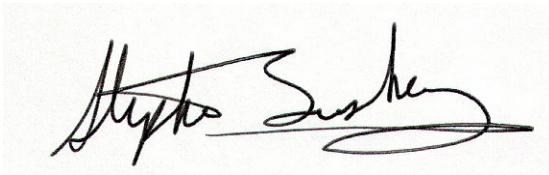
Standard to be Waived: Cite Ordinance or Technical Manual Standard	Cite Standard Language: Cite specific language of applicable Ordinance or Technical Manual Standard	Waiver Being Sought: Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Sec 1.5.1 of Technical manual	Driveway spacing of 100 feet	Request existing driveways remain in place as they have been in place for >25 years. current separation is 75 ft.	The project is seeking historic tax credits from NPS and historic entry/egress must be maintained. The historical use of the block of bldgs was auto dealers and auto access is a key component of their architectural integrity and eligibility for historic tax credits
Sec 1.10.3 of Technical Manual	minimum drive aisle width in parking lot	request 23' wide drive aisle in the basement parking area	The basement parking area has existed for >25 years. There are existing building columns that limit the drive aisle geometry.

I, Stephen Bushey, of Gorrill Palmer, hereby certify that a Neighborhood Meeting was held on Monday November 6, 2023 at 5:30 P.M. at 603 Stevens Square for the proposed 38 unit residential change of use development at 509 Forest Ave in Portland, ME.

I also certify that on October 26, 2023 (which is at least ten (10) days prior to the Neighborhood Meeting) invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1,000 feet of a proposed industrial subdivision or industrial zone change.
2. Residents on the "interested parties" list.

Signed,



Stephen Bushey, Sr. Associate

January 17, 2024

Date

Attached to this certification are:

1. Copy of the Invitation Sent
2. Meeting Minutes

October 27, 2023

Dear Neighbor:

Please join us for a Neighborhood Meeting to discuss the proposed Major Site Plan application for a change of use and building renovations to the existing building located at **509 Forest Avenue** in Portland, ME. The project will create 38 condominium apartments, a mix of market rate and affordable units, on the second and third floor of the existing building and maintain the existing ground floor commercial space.

Meeting Location: **Stevens Square Community Center; Room #105**
 631 Stevens Avenue
 Portland, ME 04103

Meeting Date: **November 6th, 2023**

Meeting Time: **5:30 PM – 6:00 PM**

The City Code requires that property owners within 500 feet (except notices must be sent to property owners within 1,000 feet for industrial zoning map amendments and industrial subdivisions) of the proposed development and residents on an “interested parties list”, be invited to participate in a neighborhood meeting. We will take attendance and submit a sign-in sheet to the Planning Board. The meeting will last no more than 30 – 45 minutes. If you have any questions, please feel free to contact Stephen Bushey 207.772.2515 x286.

Sincerely,

GORRILL PALMER

Stephen Bushey, PE
Senior Associate
sbushey@gorrillpalmer.com

Note: Under Section 14-32(C) and 14-525 of the City Code of Ordinances, an applicant for a Major Site plan development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within three weeks of submitting a preliminary application or two weeks of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street, Portland, ME 04101.

u:\4148_509 forest ave change of use portland\lg a butters\neighborhood meeting notice 2023.10.26.docx

NEIGHBORHOOD MEETING MINUTES

Project: 509 Forest Avenue Change of Use
DC 509 Forest, LLC

Date: November 6, 2023 – 5:30 PM to 6:30 PM

Location: Stevens Square Community Center Room #105

Attendees: Steve Bushey - Gorrill Palmer
Josh Trombley – DC 509 Forest LLC (Applicant)
Members of Public (see list below)

In accordance with the City of Portland Planning Board Requirements, a Neighborhood Meeting was held to discuss the proposed development at 509 Forest Avenue in Portland, ME. The meeting was held on Monday November 6, 2023, at 5:30 PM. Steve Bushey, PE, representative from Gorrill Palmer and Josh Trombley, Applicant conducted the meeting.

Steve Bushey started the meeting and gave a brief overview to discuss the Major Site Plan development/change of use to 38 apartments and where the project is headed.

Steve proceeded to describe the regulatory aspects of the permitting procedures and how it works with the City Planning Department. The project is a change of use to convert the 2nd and 3rd floor of 509 Forest Avenue to 38 residential apartment units. The project involves historic tax credits reflecting architectural façade improvements to restore the building to its original condition. Steve presented the site plan and building elevations to the attendees and the discussion proceeded to address the attached comments provided by the Ricker Park Condo association.

Attendees: List Above

U:\4148_509 Forest Ave Change of Use Portland\Meeting Notes\2023.11.6 neighborhood meeting attendance\min_meeting_509 Forest 2023.11.06.docx

November 6 Neighborhood Meeting Regarding 509 Forest Avenue Project

- 1/ All neighbors hope for courtesy and respect from each other. Are there specific accommodations that the residents and management of the 509 Condo Association may seek from Ricker Park's owners, tenants and management to establish and maintain good relationships between and among each other? Are there specific suggestions to meet those needs? What are Gorrell Palmer's and Developers Collaborative's experiences at other projects with problems and friction that may arise during the first several years following occupancy of this project and how were they resolved?
- 2/ Ricker Park Condo Association has 54 units, about 65% of which are owner-occupied; about 50% of all residents are retirees. Despite the historical name and the large lawn, it is not a public park. What steps will the 509 Condo Association owners and management take to engender courtesy and respect from the business and residential occupants of 509 Forest Avenue for Ricker Park owners/tenants and their property?
- 3/ Based on Developers Collaborative's experience, what is the expected proportion of owner-occupied condo units to rental units? How many units does the developer expect to retain? Who will manage the building once construction is completed? What is the expected total residential population for the 38 units under development?
- 4/ With whom should residents and management of Ricker Park communicate to resolve any (hopefully minor) issues that may arise during the construction phase of the project? Names and telephone numbers would be most helpful.
- 5/ What is the expected start date for construction and when is it expected/hoped to be completed?
- 6/ Construction activity commonly begins by 7:30 AM (with workers arriving with cigarettes and coffee by 7:00). Indian Lane is a private residential road. Please, please, please limit construction noise along Indian Lane to after 8:00 AM.
- 7/ Construction often involves demolition and oversized dumpsters for debris. If they are to be brought in, where will any oversized dumpsters be located?
- 8/ What noise level can neighbors expect during construction? What is the expected maximum number of construction vehicles at the site during the work phase?
- 9/ Indian Lane is the *only* access road to the Ricker Park garage and to building four which has 18 units; it is the primary access to the other three buildings, each of which contains 12 units. Will Indian Lane be blocked – even temporarily – during the construction phase of redevelopment? What guarantees can residents of Ricker Park have for access and egress via Indian Lane at all times?
- 10/ How many dumpsters will be needed to service the businesses and residential occupants of the building upon full occupancy? Where will they be located?

11/ Please, please, please arrange have the 509 trash contractor empty all Indian Lane dumpsters, both during and after completion of construction, after 8:00 AM and before 9:00 PM to minimize the crash/bang and beep-beep-beep from collection vehicles.

12/ Is increased outdoor lighting is expected on Indian Lane? If so, please, please, please hood the lights to provide prevent glare into neighboring apartments while providing proper safety illumination for pedestrians and vehicles on Indian Lane.

13/ Please describe 509 Condo Association's plans for snowplowing and snow removal on Indian Lane, both during the construction phase and subsequent occupancy.

14/ 509 Forest Avenue has no yard. Ricker Park has a long-standing "no dogs on the grounds" policy (based on sad experience). Does the 509 Condo Association intend to permit dogs? And if so, on whose property will the 509 Condo Association recommend that they poop?

15/ The 509 Condo drawings show outdoor "visitor parking spaces" on the west side of Indian Lane. Will there be enough spaces once the building becomes mixed use since anecdotal observation is that all spaces between the south end of the 509 building and the parking garage exit door are now frequently fully occupied during business hours?

16/ Does Gorrill Palmer or Developers Collaborative anticipate seeking City acceptance of Indian Lane as a public street?

17/ There are likely to be modifications of the redevelopment project as a result of consultations with the City planning office. How and when will neighbors be informed of those modifications?

18/ The announced duration of the Neighborhood Meeting is "no more than 30 - 45 minutes." If neighbors have unaddressed concerns and unanswered questions after 45 minutes, are Gorrill Palmer's and Developers Collaborative's willing (or obliged?) to provide meaningful information and responses after that time? If so, how will information and responses be provided? If not, why not?

These questions and concerns are mine alone and do not represent the positions or opinions of the Ricker Park Condo Association or any other individual.

Peter C. Fessenden

290 Baxter Boulevard - E1

Portland Maine 04101

207.650.1609 / pfessenden13@gmail.com

509 Forest Avenue

Neighborhood Meeting November 6, 2023 – Stevens Square Community room

Attendance List

Name	Property Location	Contact information
Thomas Woff	Ricker Park	tom.woff@me.com
Jane Woff	" "	
Lynn Niederlitz	" "	LynnNiederlitz@gmail.com
CITRUS TOPHAT SESSUMS	" "	csessums@gmail.com
Stuart Collins	Forest Ave #12A	stusox33@aol.com
Patricia LaClair	Ricker Park	placlair163@gmail.com
Wendy Morrisette	Ricker Park	wendy@morrisette.me
Bruce Dalbeck	Ricker Park	bdalbeck@meinc.n.com
Karl Gehsmann	Ricker Park	gehsmannk@gmail.com
PETER FESSENDEN	R.P.	pfessenden13@gmail.com
Susan Waller	RICKER PARK	wallersu@gmail.com
Grheault	Bay side	grorge-maule@gmail.com
Wmald Kant	Ricker Park	
Pamela Cleghorn	Ricker Park	pkpcleghorn@gmail.com
Debra Keith	R.P.	dKeith2015@gmail
Kari Suva	26 Belmont St	ksuva@roadrunner.com

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

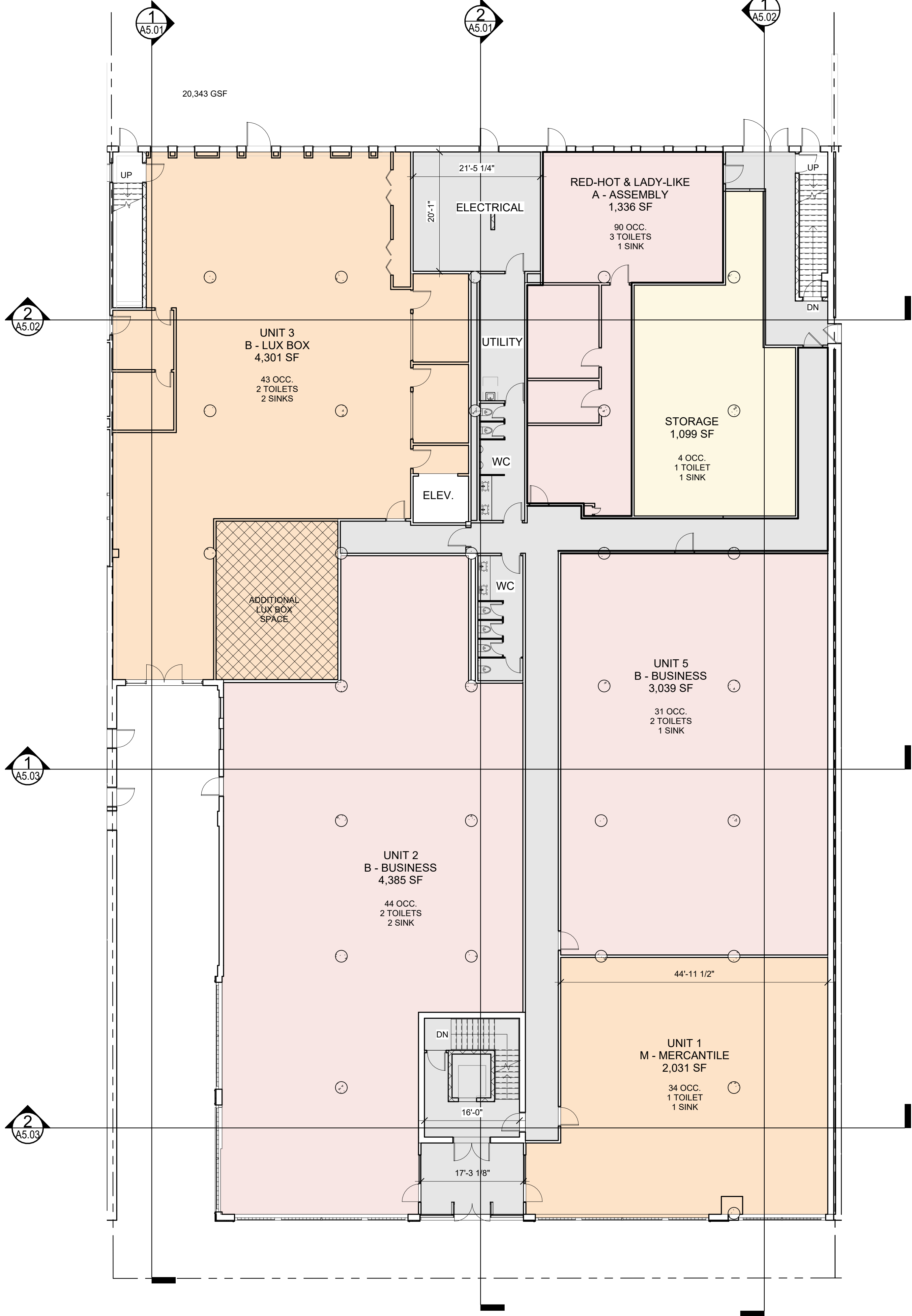
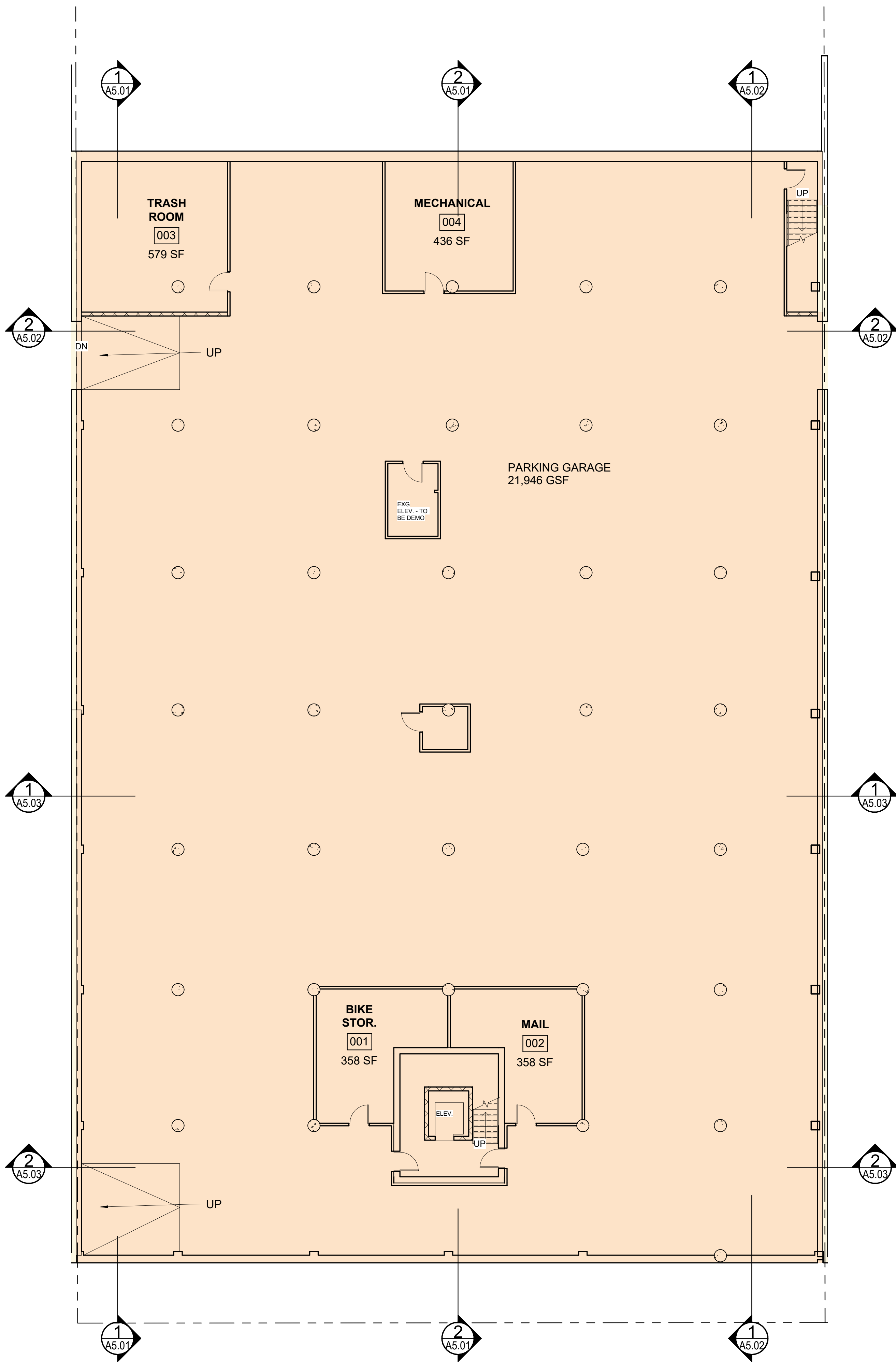
BASEMENT & FIRST FLOOR
PLAN

Scale:
3/32" = 1'-0"



SEPTEMBER 22, 2023

A1.03



1 | 509 - BASEMENT

3/32" = 1'-0"

2 | 509 - FIRST FLOOR

3/32" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

SECOND AND THIRD
FLOOR PLAN - 509

Scale:
3/32" = 1'-0"

SEPTEMBER 18, 2023

A1.06

SQUARE FOOTAGE CALCULATIONS

SECOND FLOOR: 18,863 GSF
7 STUDIO APARTMENTS
11 1-BEDROOM APARTMENTS
16 2-BEDROOM APARTMENTS

THIRD FLOOR: 12,094 GSF
4 STUDIO APARTMENTS
2 1-BEDROOM APARTMENTS
8 2-BEDROOM UNITS

TOTAL: 38 UNITS



Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

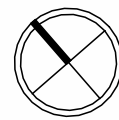
Consultant:

Revisions:

Key Plan:

EXISTING 509 ELEVATIONS

Scale:
1/8" = 1'-0"



SEPTEMBER 18, 2023

A2.01



2 | EXISTING - 509 - WEST ELEVATION

1/8" = 1'-0"



1 | EXISTING - 509 - SOUTH ELEVATION

1/8" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

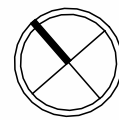
Revisions:

Key Plan:

EXISTING 509 ELEVATIONS

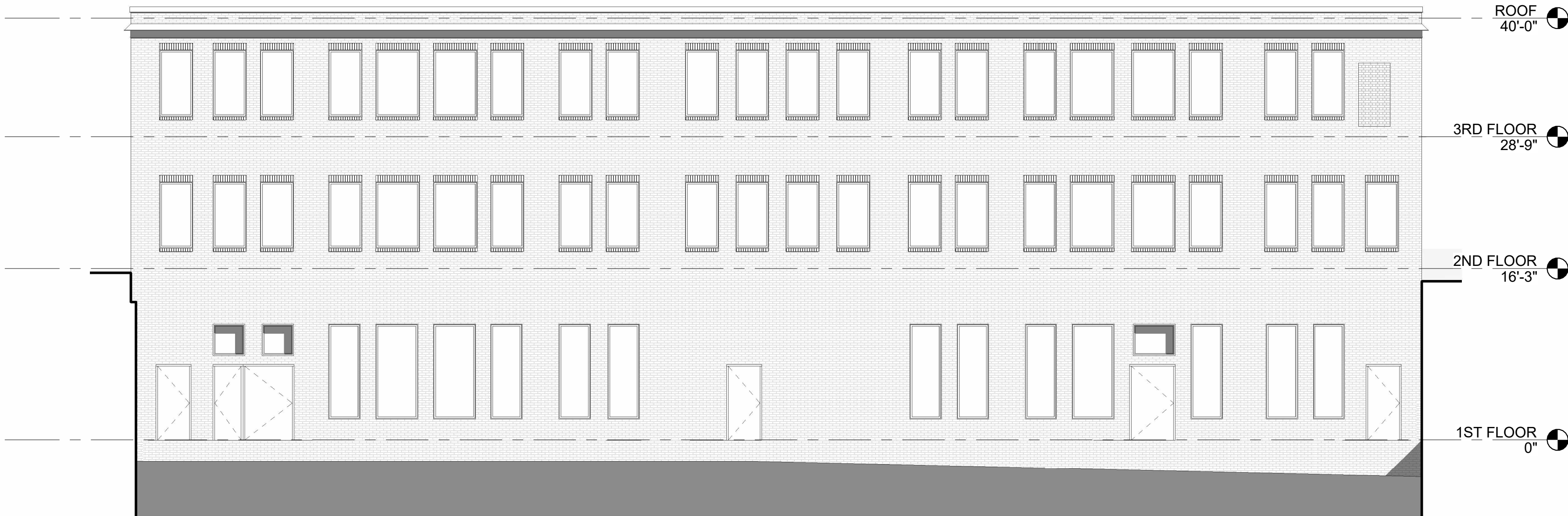
Scale:

1/8" = 1'-0"



SEPTEMBER 18, 2023

A2.02



2 | EXISTING - 509 - NORTH ELEVATION

1/8" = 1'-0"



1 | EXISTING - 509 - EAST ELEVATION

1/8" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

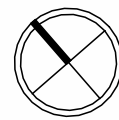
Consultant:

Revisions:

Key Plan:

NEW 509 ELEVATIONS

Scale:
1/8" = 1'-0"



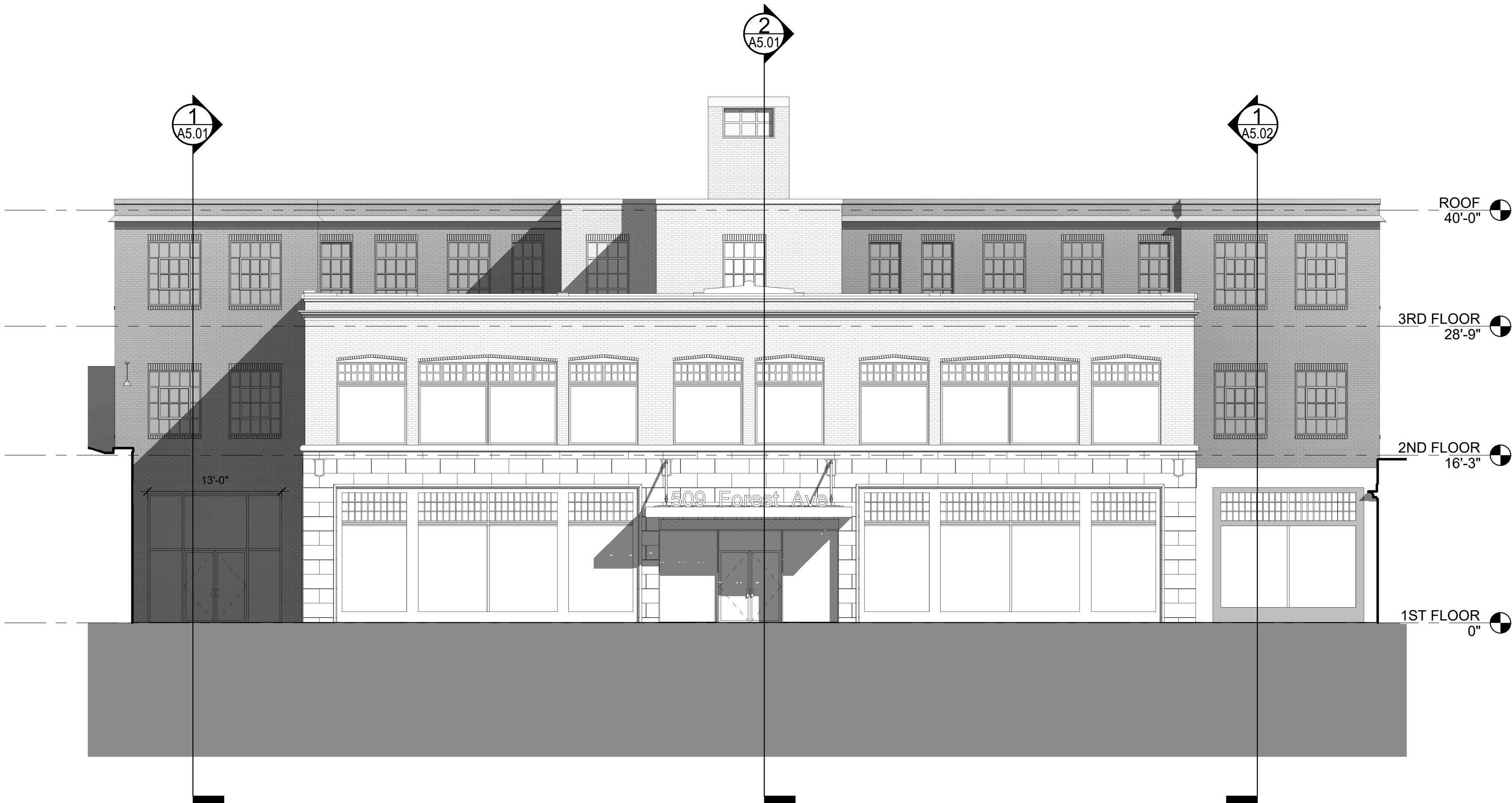
SEPTEMBER 18, 2023

A2.03



2 | NEW - 509 - WEST ELEVATION

1/8" = 1'-0"



1 | NEW - 509 - SOUTH ELEVATION

1/8" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

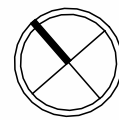
Revisions:

Key Plan:

NEW 509 ELEVATIONS

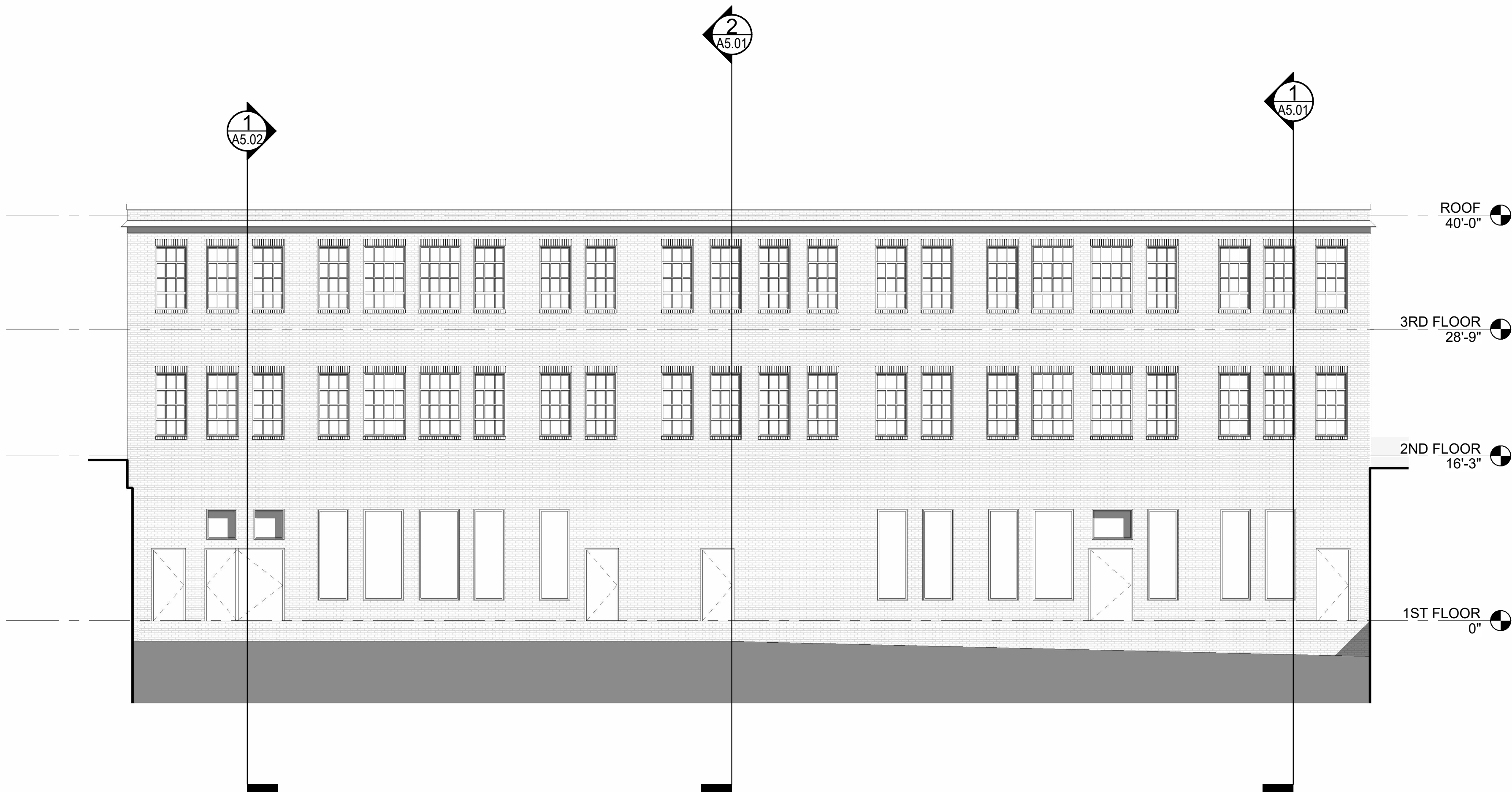
Scale:

1/8" = 1'-0"



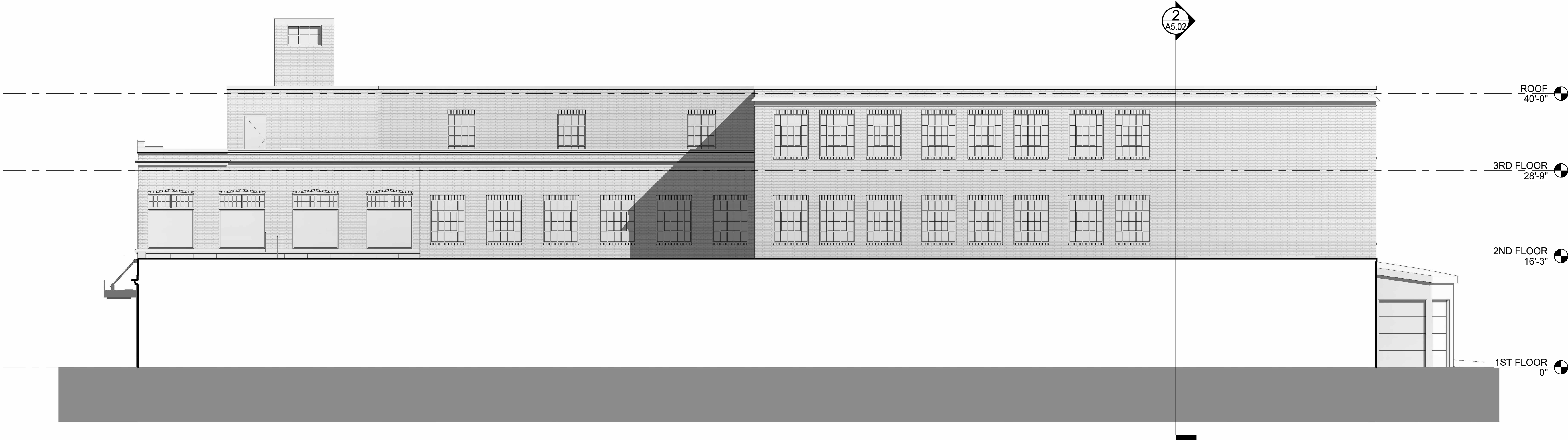
SEPTEMBER 18, 2023

A2.04



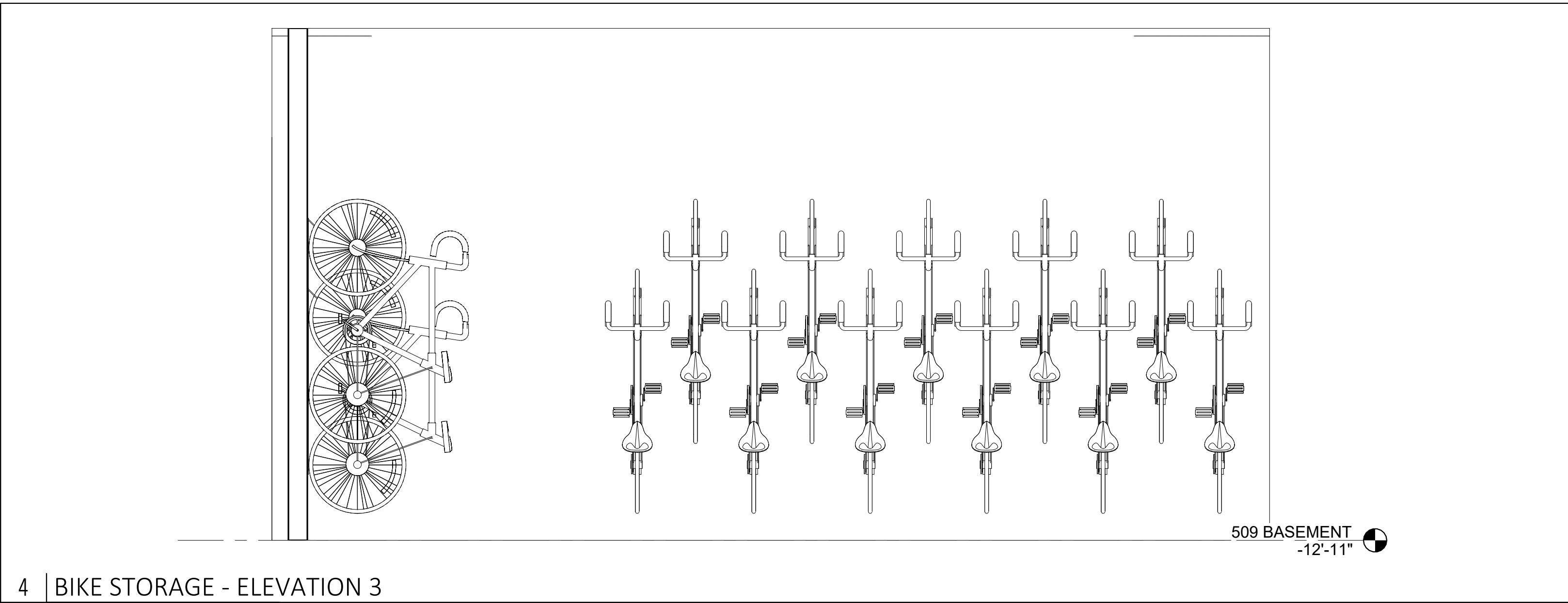
2 | NEW - 509 - NORTH ELEVATION

1/8" = 1'-0"

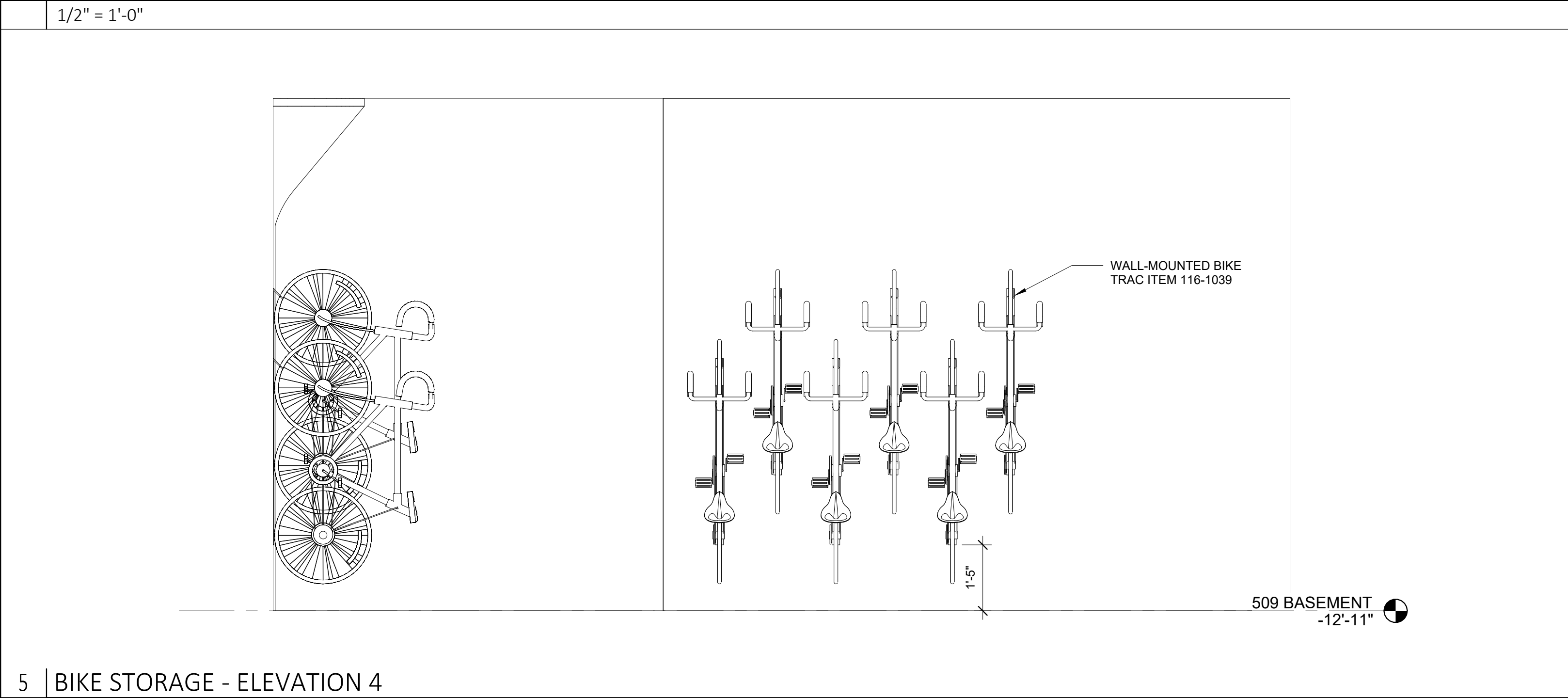


1 | NEW - 509 - EAST ELEVATION

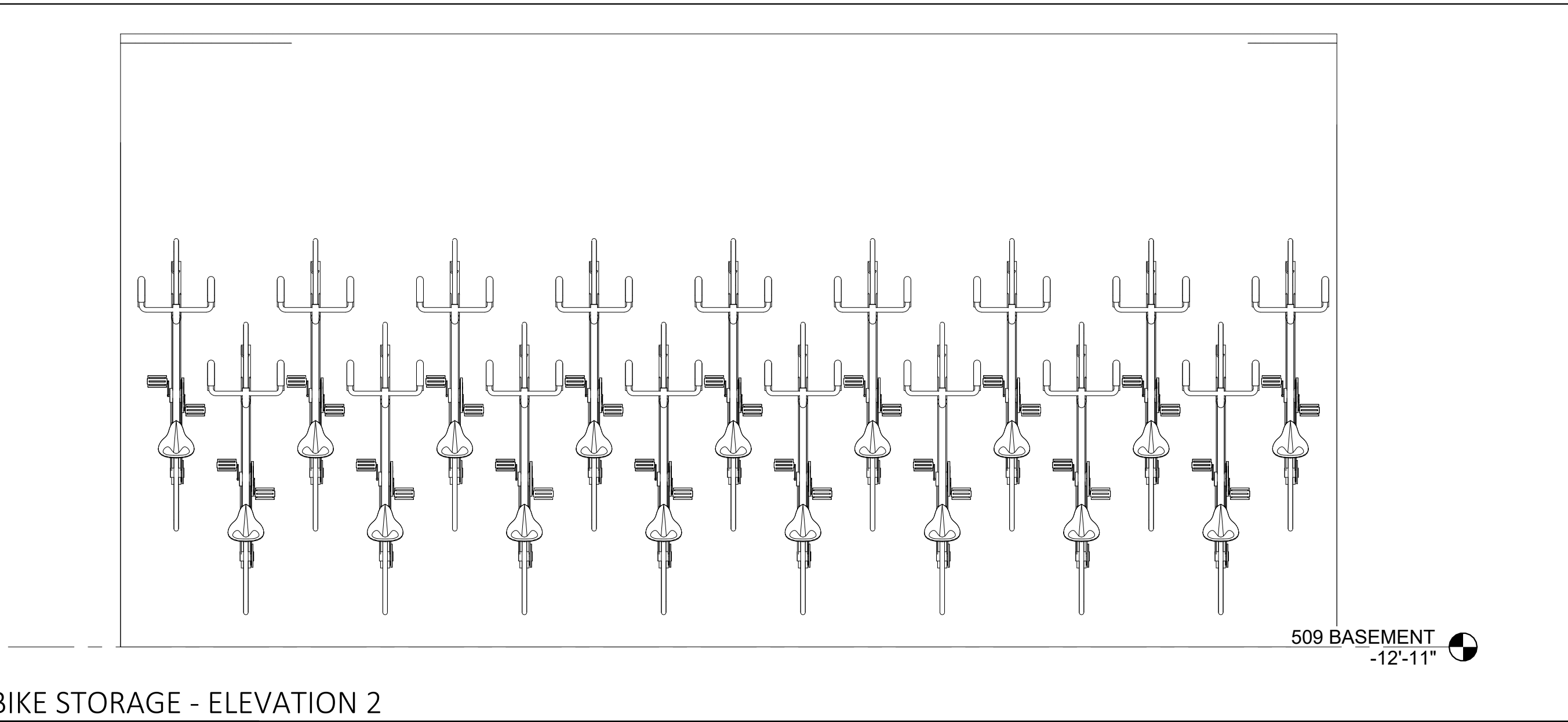
1/8" = 1'-0"



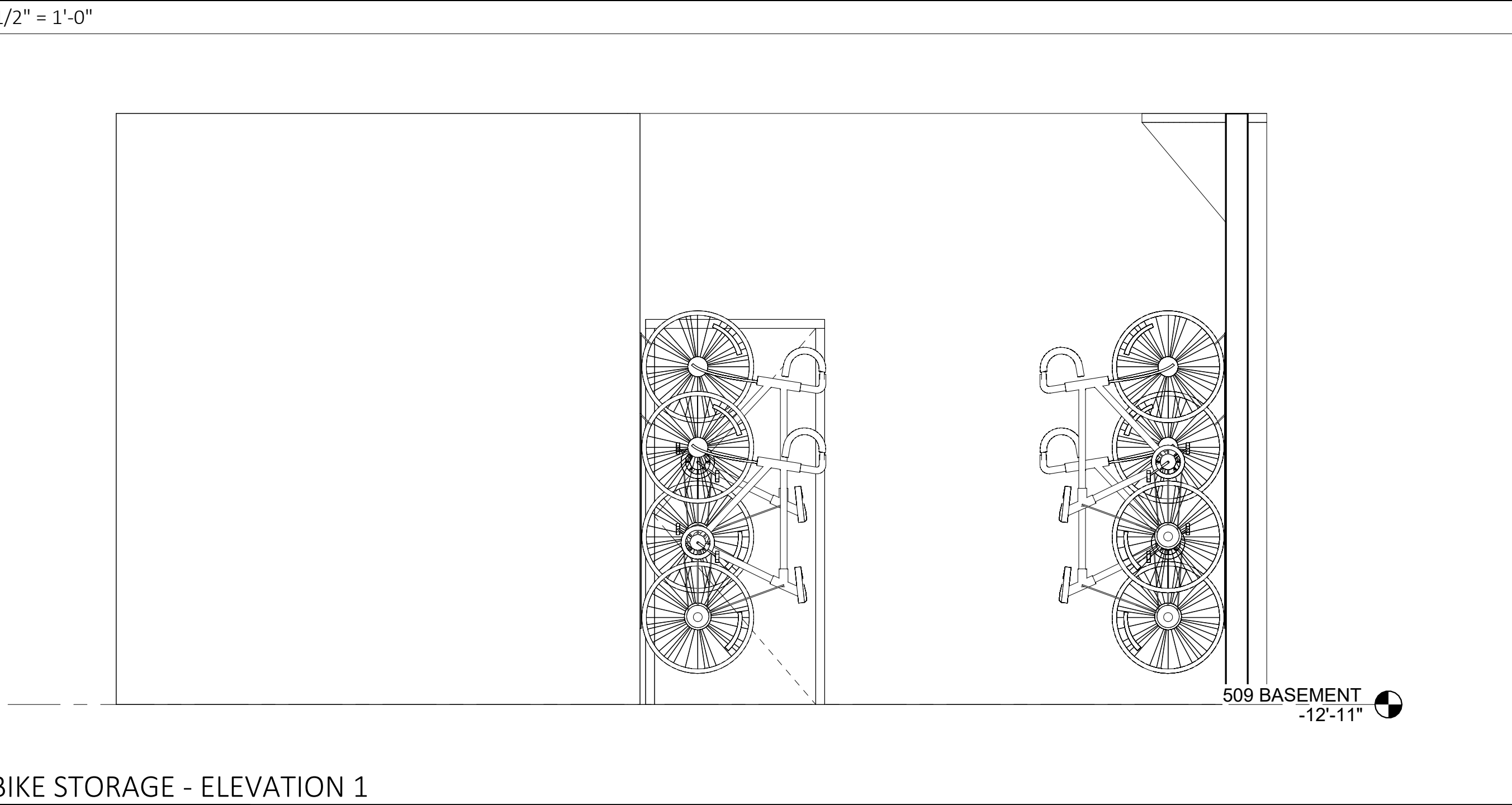
4 | BIKE STORAGE - ELEVATION 3



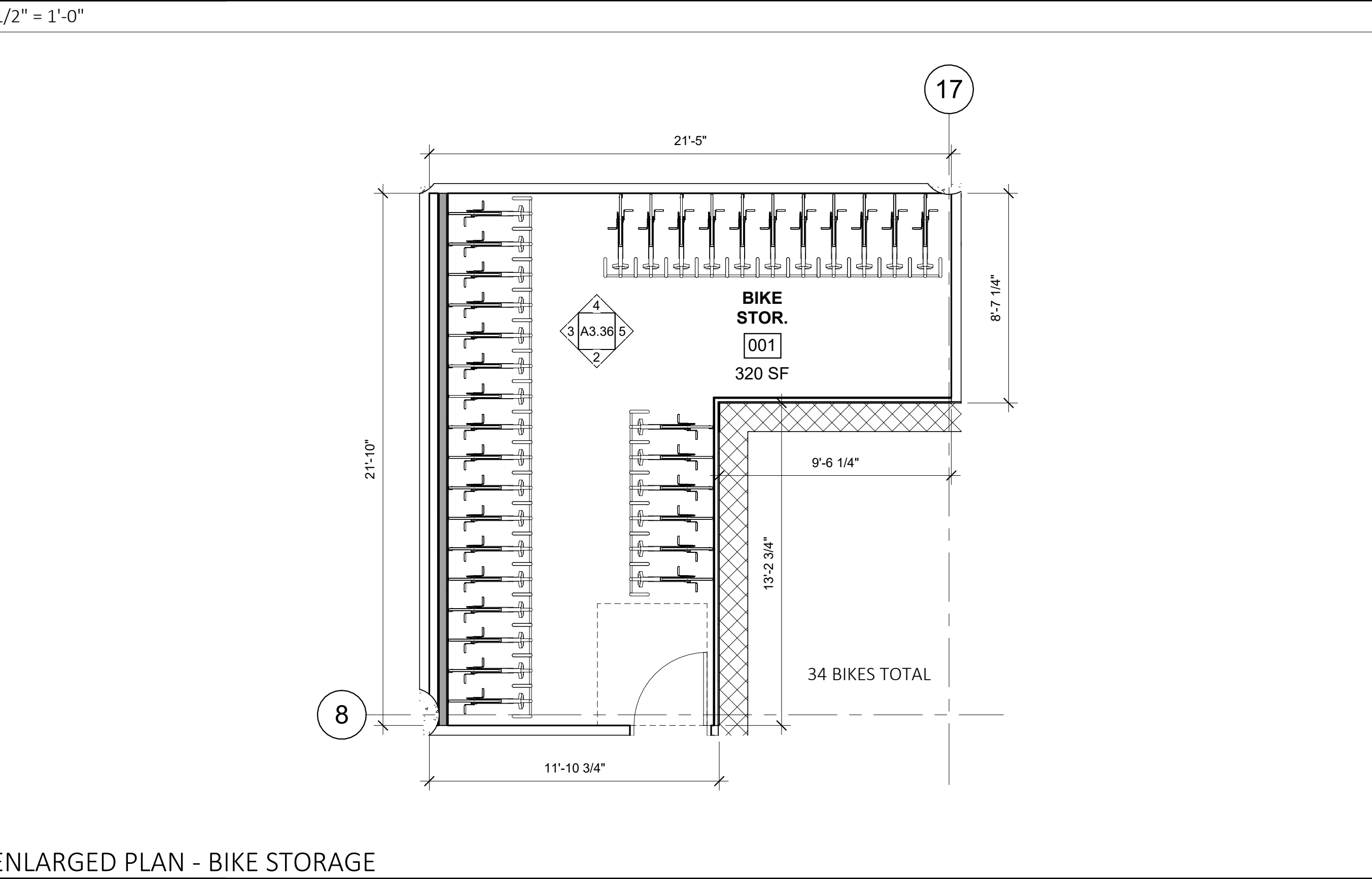
5 | BIKE STORAGE - ELEVATION 4



3 | BIKE STORAGE - ELEVATION 2



2 | BIKE STORAGE - ELEVATION 1



1 | ENLARGED PLAN - BIKE STORAGE

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

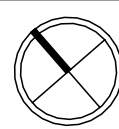
Revisions:

Key Plan:

ENLARGED PUBLIC SPACE
PLANS

Scale:

As indicated



NOVEMBER 9, 2023

A3.36

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

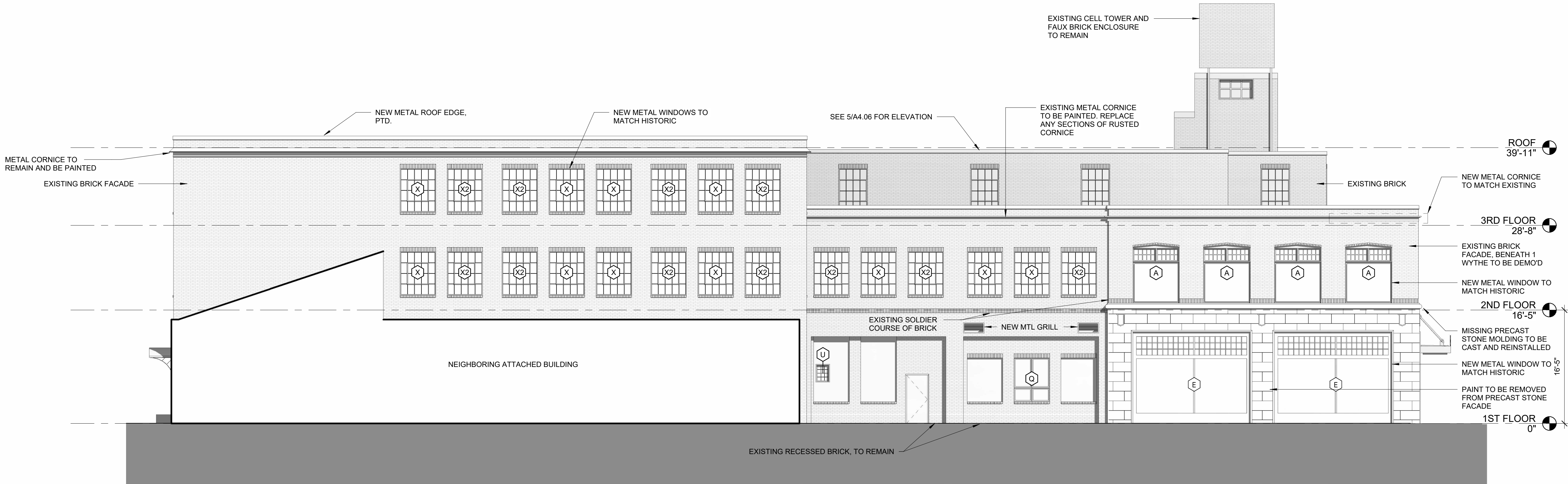
NEW BUILDING
ELEVATIONS

Scale:
1/8" = 1'-0"



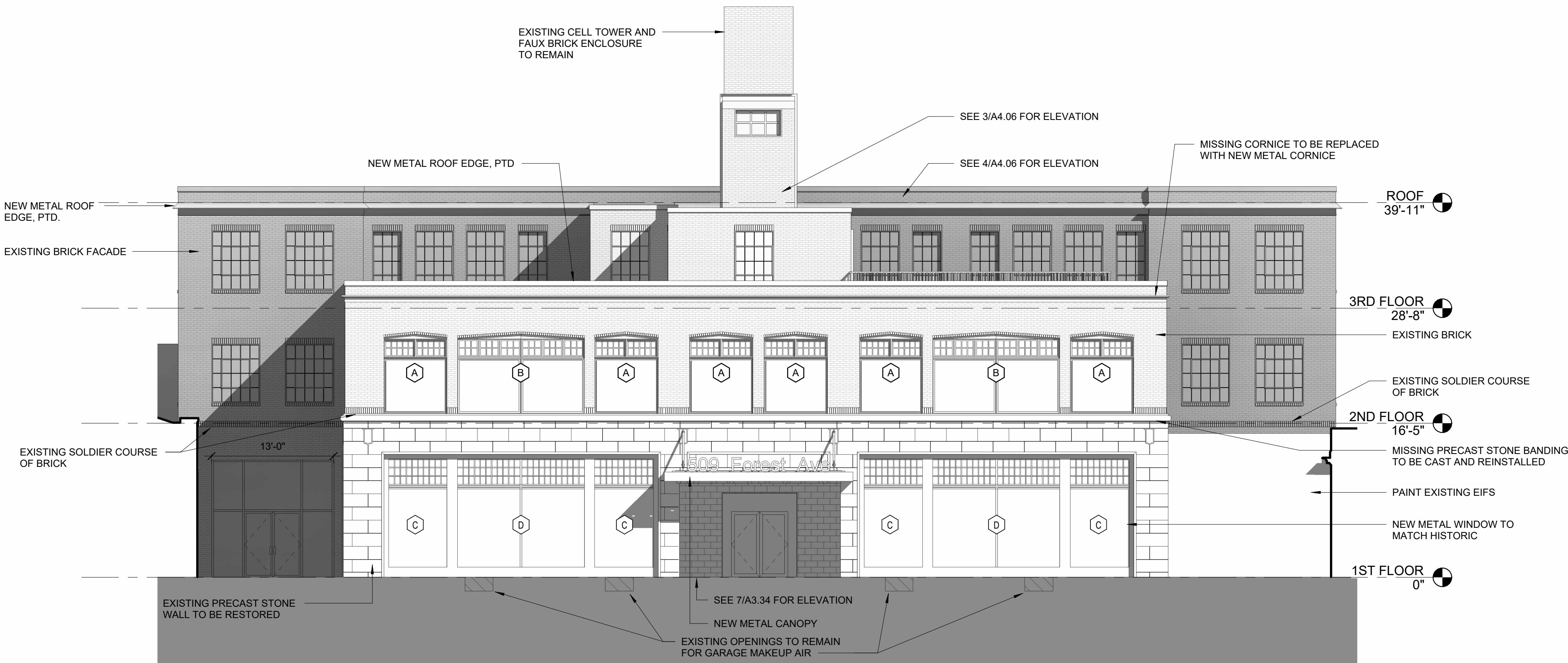
DECEMBER 5, 2023

A4.04



2 | NEW - 509 - WEST ELEVATION

1/8" = 1'-0"



1 | NEW - 509 - SOUTH ELEVATION

1/8" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

Revisions:

Key Plan:

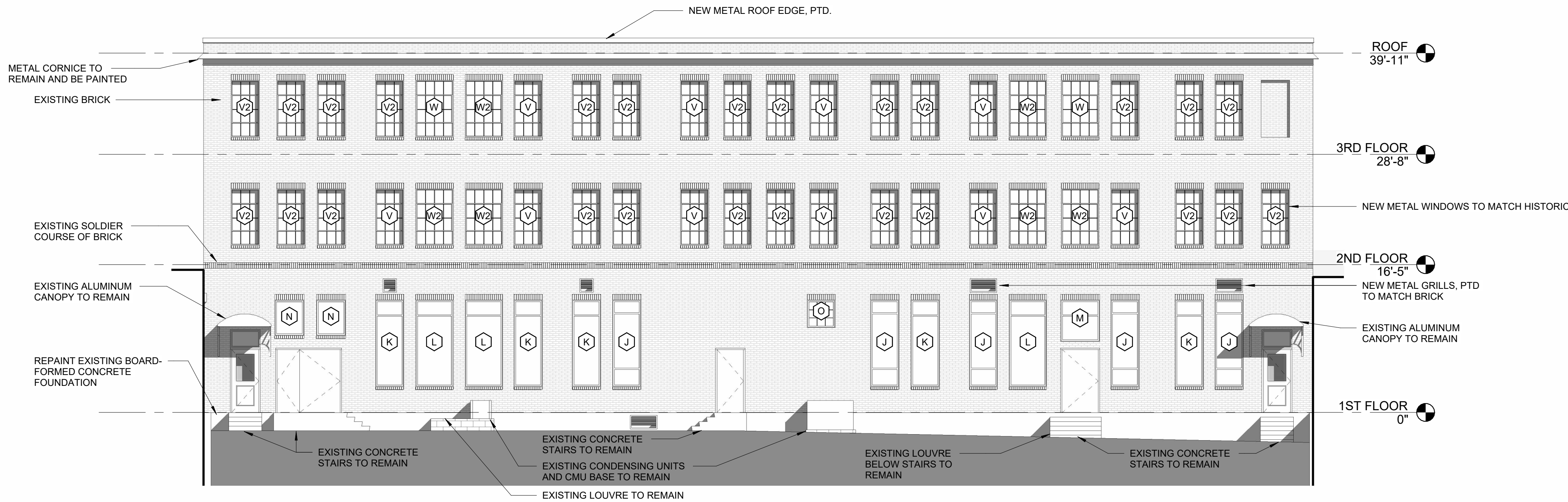
NEW BUILDING
ELEVATIONS

Scale:
1/8" = 1'-0"



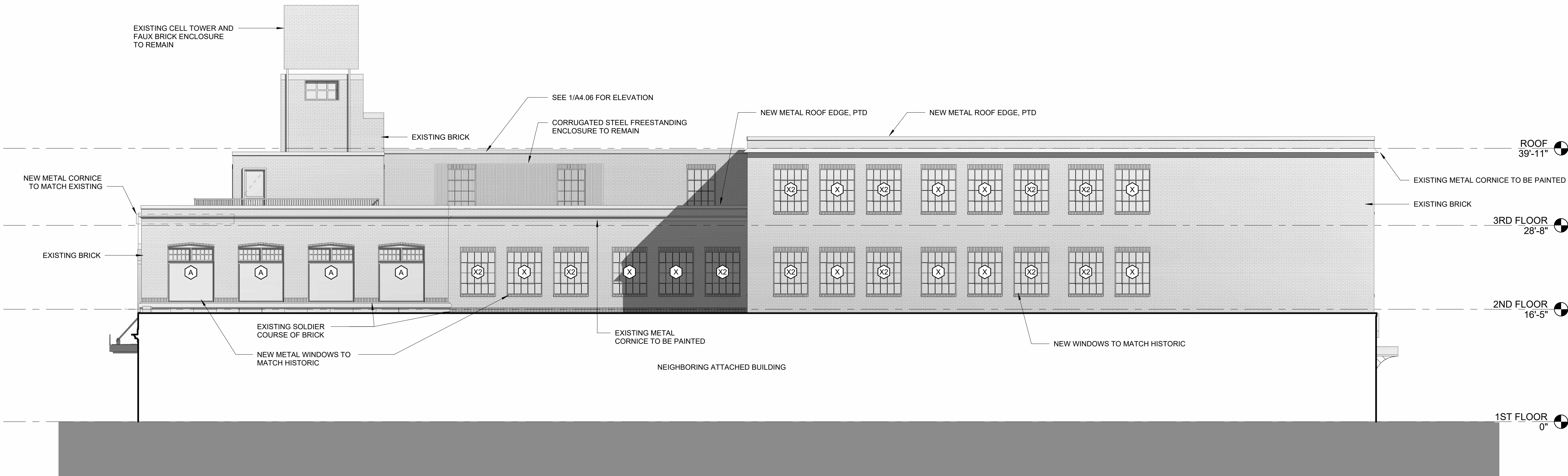
DECEMBER 5, 2023

A4.05



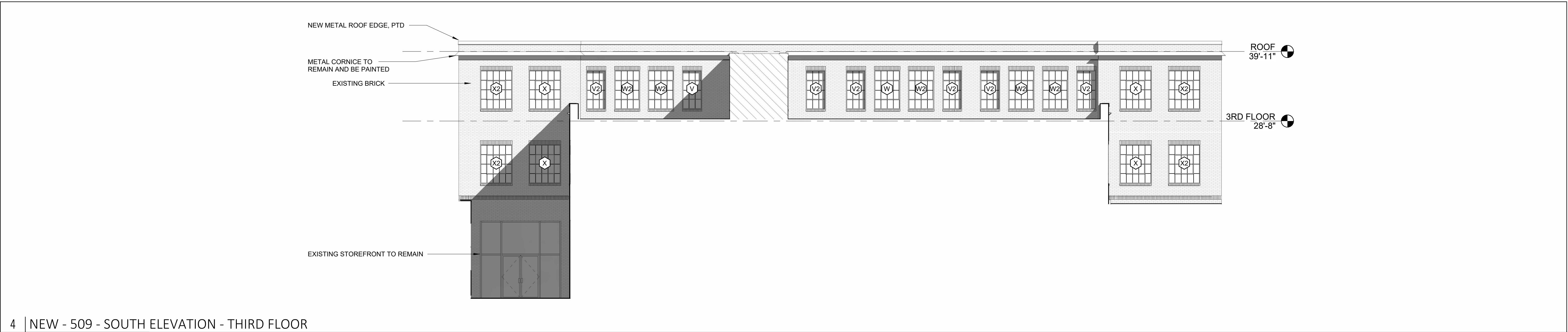
2 | NEW - 509 - NORTH ELEVATION

1/8" = 1'-0"



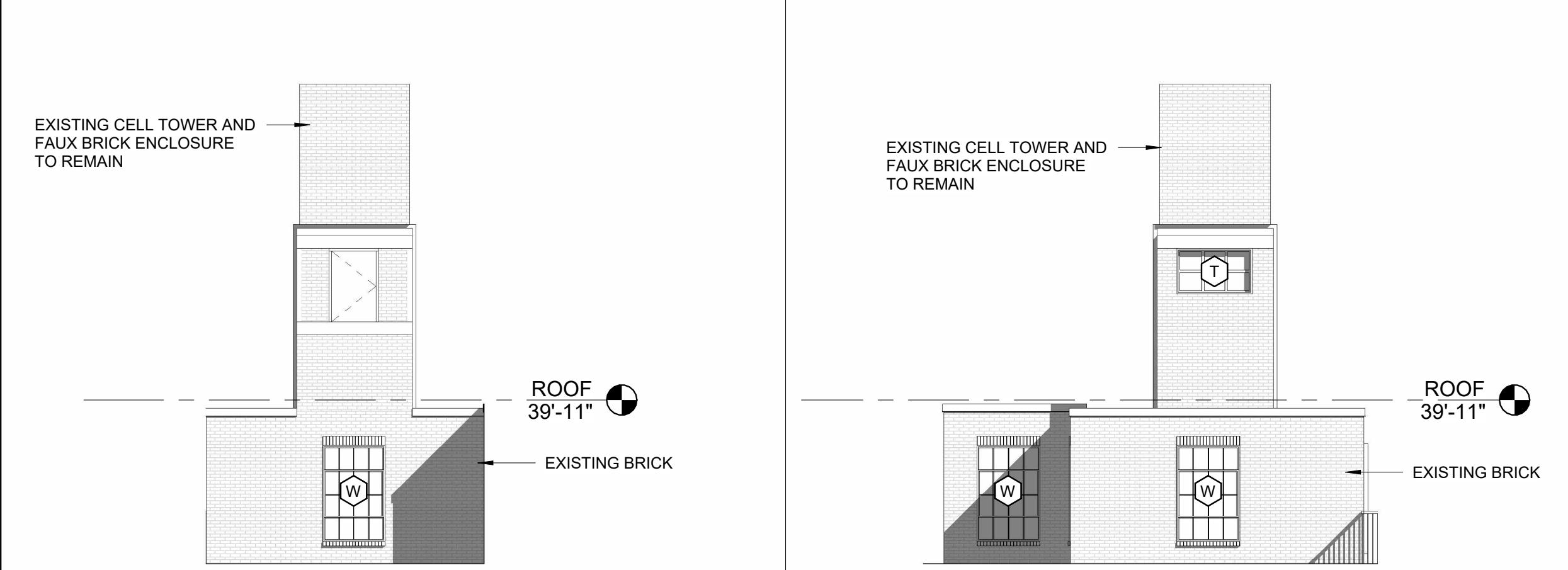
1 | NEW - 509 - EAST ELEVATION

1/8" = 1'-0"



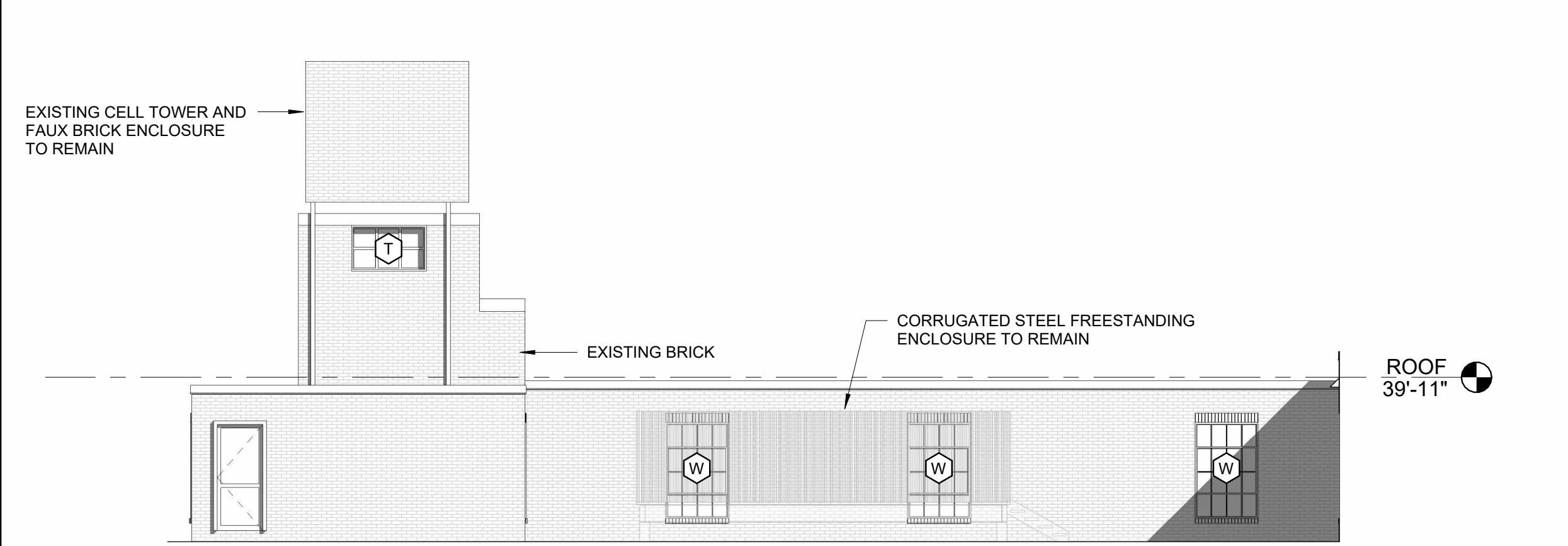
4 | NEW - 509 - SOUTH ELEVATION - THIRD FLOOR

1/8" = 1'-0"



2 | NEW - 509 - NORTH ELEVATION - 3RD FLOOR

1/8" = 1'-0"



3 | NEW - 509 - SOUTH ELEVATION - STAIR CORE

1/8" = 1'-0"

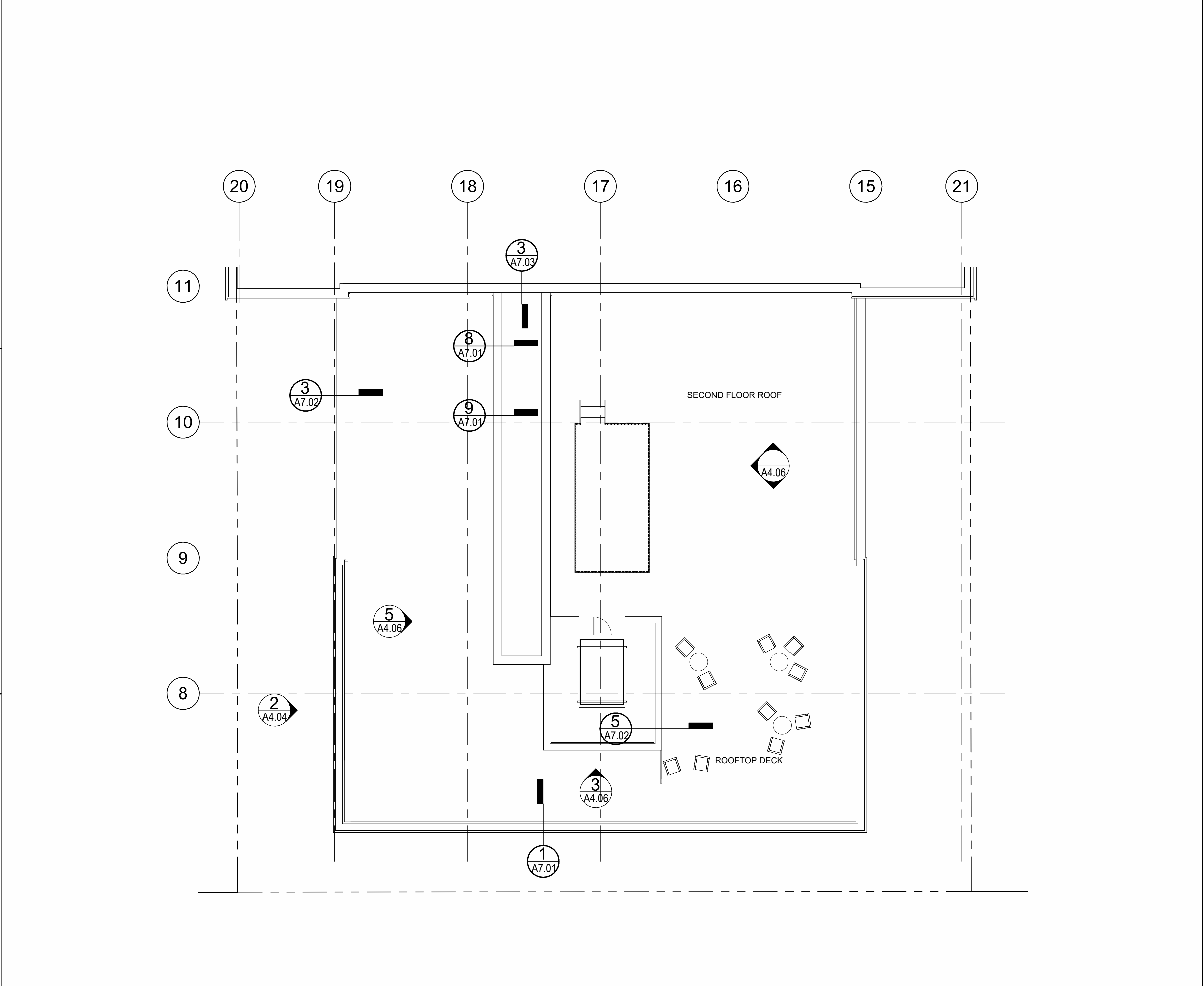
1 | NEW - 509 - EAST ELEVATION - THIRD FLOOR

1/8" = 1'-0"



5 | NEW - 509 - WEST ELEVATION - THIRD FLOOR

1/8" = 1'-0"



6 | 509 - ENLARGED 2ND FLOOR ROOF

3/32" = 1'-0"

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:

Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:

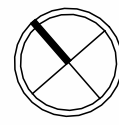
Revisions:

Key Plan:

NEW BUILDING
ELEVATIONS

Scale:

As indicated



DECEMBER 5, 2023

A4.06

U:\4148-509 Forest Ave Change of Use Portland\2 - CAD\DWG\4148-COVER.dwg 12/14/2023 3:41 PM

PROJECT PARCEL SITE		
ZONING: B-2b		
PORTLAND TAX ASSESSOR'S MAP AND LOT NUMBERS		
MAP	BLOCK	LOT
127	A	2
127	A	15

CURRENT LAND OWNER:
DC 509 FOREST, LLC (ALL LOTS)
631 STEVENS AVE, SUITE 203
PORTLAND, ME 04103

C.C.R.D. BOOK 39688, PAGE 007

DEVELOPER / APPLICANT:
DC 509 FOREST, LLC (ALL LOTS)
631 STEVENS AVE, SUITE 203
PORTLAND, ME 04103
CONTACT: KEVIN BUNKER / JOSH TROMBLEY
207.772.7673
bunker.kevin@gmail.com

INDEX

C-1.0	COVER SHEET
C-1.1	GENERAL NOTES & LEGEND
C-1.2	BOUNDARY SURVEY (BY OWEN HASKELL, INC.)
C-2.0	EXISTING CONDITIONS & REMOVALS PLAN
C-3.0	SITE LAYOUT & UTILITY PLAN
C-3.1	BASEMENT PARKING
C-4.0	SITE DETAILS
C-5.0	EXISTING LANDSCAPE PLAN

SITE DEVELOPMENT PLANS FOR #509 FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE PERMITTING PLANS DECEMBER 2023

UTILITIES

WATER:
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
P.O. BOX 3553
PORTLAND, MAINE 04104
207.761.8310
CONTACT: ROBERT BARTELS
rbartels@pwd.org

SEWER:
CITY OF PORTLAND
PUBLIC SERVICES DIVISION
212 CANCO ROAD
PORTLAND, MAINE 04103
207.874.8840
CONTACT: KEITH GRAY / BRAD ROLAND

ELECTRIC:
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.842.2367
CONTACT: JAMIE COUGH / KATHERINE DUMONT

TELEPHONE:
CONSOLIDATED COMMUNICATIONS
5 DAVIS HILL FARM ROAD
PORTLAND, MAINE 04103
207.797.1866
CONTACT: PATRICK MORRISON

NATURAL GAS:
NORTHERN UTILITIES / UNITIL
376 RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE 04103
207.541.2536
CONTACT: BRIDGET HARMON
harmon@unitil.com

CABLE TV:
TIME WARNER CABLE / SPECTRUM
115 JOHNSON ROAD
PORTLAND, MAINE 04102
207.253.2324
CONTACT: MARK PELLETIER

DIG SAFE:
CALL BEFORE YOU DIG
DIAL 811 (AT LEAST 72 HRS IN ADVANCE)

PERMITS / APPROVALS

LOCAL	GOVERNING BODY	STATUS
MAJOR SITE PLAN APPLICATION	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL, CONGRESS STREET PORTLAND, MAINE 04103 207.874.8608 CONTACT: MATT GROOMS / NATASHA KYPFER	MAJOR SITE PLAN APPLICATION:
BUILDING PERMIT:	CITY OF PORTLAND CODE ENFORCEMENT OFFICE CITY HALL, CONGRESS STREET PORTLAND, MAINE 04103 207.874.8900	BY OWNER/ARCHITECT
UTILITY OPENING PERMITS:	CITY OF PORTLAND PUBLIC SERVICES DIVISION 212 CANCO ROAD PORTLAND, MAINE 04103	BY CONTRACTOR
STREET OPENING PERMIT:	CITY OF PORTLAND PUBLIC SERVICES DIVISION 212 CANCO ROAD PORTLAND, MAINE 04103	BY CONTRACTOR

CONDITIONS OF APPROVAL

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. TBD

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The sitebuilding contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

Stormwater Management The owner/operator of an approved stormwater management system, and all assigns shall comply with the conditions of Chapter 32, Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements.

A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

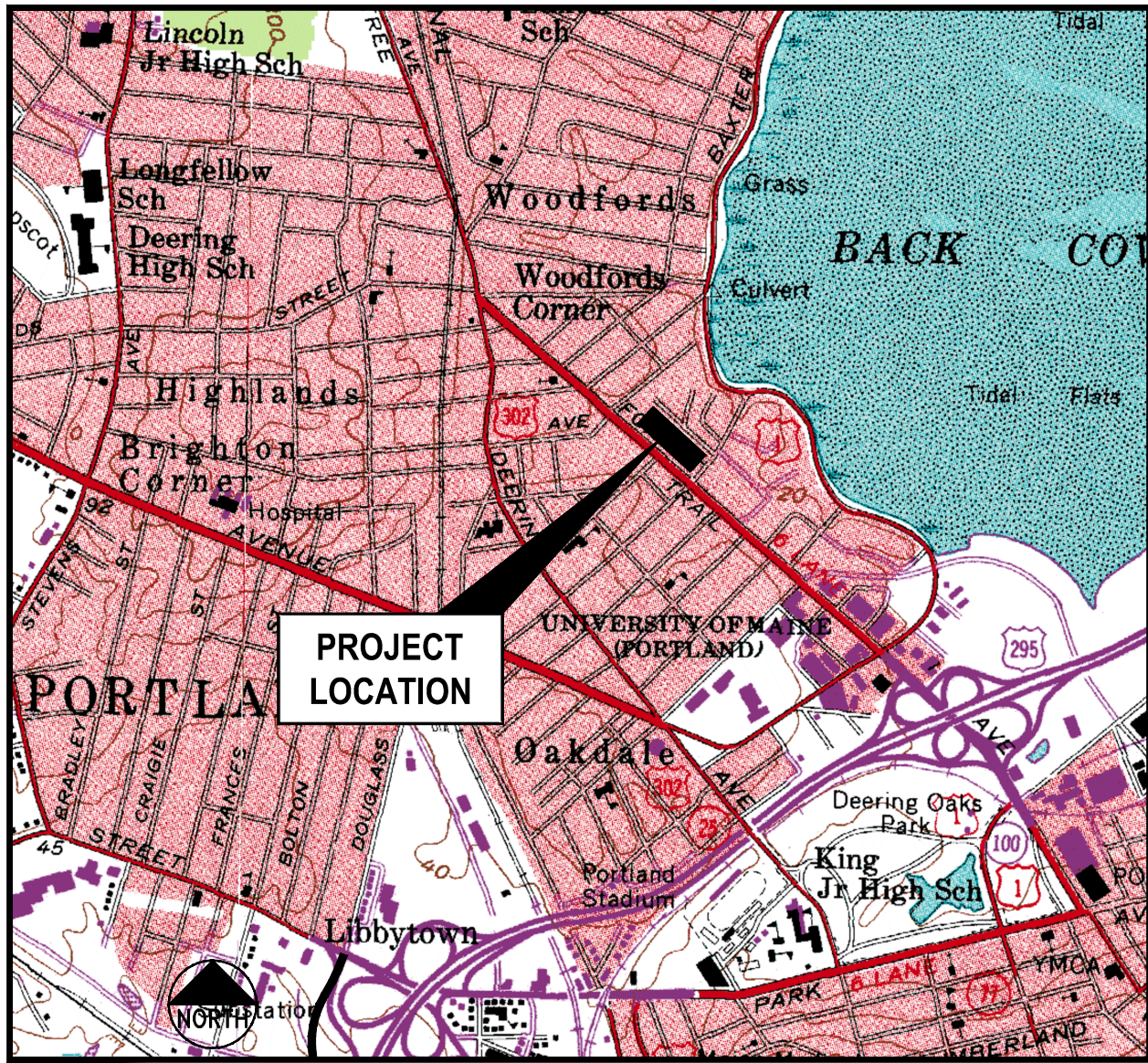
Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

Third Party Inspections for all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: Project ID, project address, the date(s) and time(s) of inspection, site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater.

Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.



LOCATION MAP
N.T.S.

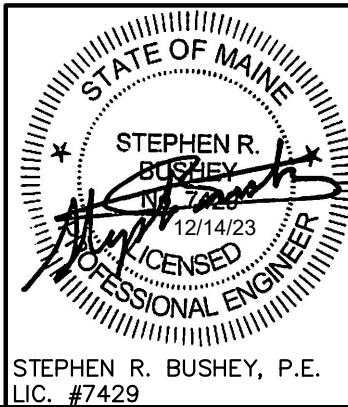
CONSULTANT LIST

CIVIL ENGINEER:
Gorrill Palmer Consulting Engineers Inc.
300 SOUTHBOROUGH DRIVE, SUITE 200
SOUTH PORTLAND, MAINE 04106
207.772.2515
ATTN: STEPHEN BUSHEY
sbushey@gorrillpalmer.com

SURVEYOR:
Owen Haskell, Inc
390 US ROUTE 1, UNIT 10
FALMOUTH, ME 04105
207.774.0424
ATTN: RANDY LOUBIER

ARCHITECT:
INVIVID ARCHITECTURE
631 STEVENS AVE, SUITE 200
PORTLAND, ME 04103
207.939.7602
ATTN: VIRGINIA STANLEY AIA
virginia@invidarchitecture.com

ALL PERMITS ARE ANTICIPATED TO HAVE CONDITIONS ATTENDANT WITH THEIR APPROVAL. THE CONTRACTOR SHALL REVIEW ALL PERMITS AND THE CONDITIONS ATTENDANT WITH APPROVALS PRIOR TO THE START OF THE WORK. UNLESS OTHERWISE STIPULATED BY THE CONTRACT DOCUMENTS, THE CONTRACTOR IS REQUIRED TO COMPLY AND FULFILL ALL CONDITIONS OF APPROVAL.



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES & SHALL NOT BE USED FOR CONSTRUCTION.

Rev.	Date	Revision

Rev.	Date	Revision
3	2023.12.14	REVISED & RESUBMITTED PER LOR #1
2	2023.10.20	ADDED EXISTING 'LANDSCAPE' INFORMATION
1	2023.08.31	MAJOR SITE PLAN APPLICATION

Design: SRB	Draft: —	Date: AUG 2023
Checked: SRB	Scale: NTS	Job No.: 4148
File Name: 4148-COVER.dwg		

This plan shall not be modified without written permission from Gorrill Palmer. Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to Gorrill Palmer.



300 Southborough Drive, Suite 200
South Portland, Me 04106
207.772.2515 / www.gorrillpalmer.com
Relationships. Responsiveness. Results.

Drawing Name:	COVER SHEET
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101

Drawing No.

C-1.0

GENERAL NOTES:

1. THE CONTRACTOR SHALL REFER TO THE PROJECT MANUAL FOR CONSTRUCTION SPECIFICATIONS AND BIDDING PROCEDURES.
2. THIS PROJECT WILL BE SUBJECT TO THE TERMS AND CONDITIONS OF ALL PERMITS ISSUED BY LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
3. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCE, PAVING, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS. ENTRANCES IN MOST LOCATIONS REQUIRE STRUCTURAL SLABS. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR INFORMATION ON THE STRUCTURAL SLAB ENTRANCES.
4. ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSIONS AND THE FINAL SERVICE CONNECTIONS.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
6. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE APPLICANT AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR THE CITY, AT NO ADDITIONAL COST TO THE OWNER.
7. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
8. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE PROJECT SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SHALL APPLY AT NO EXTRA COST TO THE OWNER.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RECORD DRAWINGS THROUGHOUT THE PROJECT AND PROVIDING THE OWNER WITH A SET OF THE FINAL RECORD DRAWINGS WHEN THE PROJECT IS COMPLETE.
10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN SAFE VEHICLE AND PEDESTRIAN ACCESS THROUGH OUT THE LIFE OF THE PROJECT.

SITE LAYOUT NOTES:

1. ALL HANDICAP PARKING SPACES ARE TO RECEIVE HANDICAP SIGNS AND PAVEMENT MARKINGS AS ILLUSTRATED ON THE DETAIL SHEETS.
2. BITUMINOUS CONCRETE CURB AND GRANITE CURB SHALL MEET THE REQUIREMENTS OF MDOT 702.01, 703.07, AND 609.04.
3. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB OR THE FACE OF THE BUILDING.
4. EXCEPT WHERE INDICATED OTHERWISE, THE PAVEMENT IS TO BE STANDARD DUTY PAVEMENT.
5. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS AND STANDARDS OF THE MAINE DEPARTMENT OF TRANSPORTATION, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITIONS AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS.
6. STRIPE PARKING AREAS, DRIVES AND ROADWAY AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, CROSSWALKS, HANDICAP SYMBOLS, PAINTED ISLANDS AND FIRE LANES (ALL MARKINGS EXCEPT MEDIAN ISLANDS AND CENTERLINES TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT.) ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE 'F'. MEDIAN ISLANDS AND CENTERLINES TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT.
7. SEE DETAILS FOR PARKING STALL DIMENSIONS, HANDICAP SYMBOLS, SIGNS AND SIGN POSTS.
8. STOP BARS SHALL BE 12" WIDE.
9. PAINTED ISLANDS SHALL BE 4" WIDE DIAGONAL LINES @ 3'-0" O.C. BORDERED BY 4" WIDE LINES.

GRADING & DRAINAGE NOTES:

1. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS.
2. PROVIDE TURF REINFORCEMENT IN AREAS INDICATED ON THE PLANS.
3. AN "AS-BUILT" CERTIFICATION OF THE STORMWATER DRAINAGE SYSTEM BY A REGISTERED ENGINEER IS REQUIRED PRIOR TO THE OWNER ACCEPTING THE BUILDING AND PROPERTY. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT ANY DEVIATION FROM THE PLANS MAY DELAY THE ACCEPTANCE OF THE PROJECT.
4. A DETAILED O&M MANUAL FOR STORMWATER MANAGEMENT SYSTEMS IS (WILL BE) FILED WITH THE CITY OF PORTLAND DURING THE PERMIT REVIEW PROCESS. A SPECIFIC MANUAL HAS BEEN PREPARED FOR O&M OF THE DRAINAGE SYSTEM.
5. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
6. SEE GRADING, DRAINAGE AND EROSION/SEDIMENT CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
7. ALL DISTURBED AREAS NOT TO BE PAVED, SODDED OR OTHERWISE TREATED SHALL RECEIVE 4" LOAM, SEED, FERTILIZER AND MULCH.
8. **COMPACTION REQUIREMENTS:**

LOCATION	MINIMUM COMPACTION
SUBBASE AND BASE GRAVEL BELOW PAVED OR CONCRETE AREAS	95%
SUBGRADE FILL BELOW PAVED AREAS	90%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%
STRUCTURAL FILL WITHIN PROPOSED BUILDING AREA	95%
SELECT FILL ADJACENT BUILDING FOUNDATIONS, EXTERIOR FOUNDATIONS, AND WITHIN 8 INCHES OF THE SLAB-ON-GRADE	95%

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557.
9. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
10. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND EXIT RAMPS ADJACENT TO THE BUILDING AND ALONG NEW CURBED AREAS. ALL ADA COMPLIANT PARKING SPACES SHALL BE PAVED WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
11. PROVIDE STABILIZATION OR SEPARATION GEOTEXTILE FABRIC OVER UNSTABLE SOILS AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND IN ACCORDANCE WITH THE FINAL GEOTECHNICAL RECOMMENDATIONS.
12. NATIVE SOILS CONSIST OF TOPSOIL / PAVEMENT OVER FILL / REWORKED NATIVE SOIL OVERLYING MARINE FAN DEPOSIT OVERLYING BEDROCK. CARE MUST BE EXERCISED TO LIMIT DISTURBANCE OF THE BEARING SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO EXTRA EXPENSE TO THE OWNER.
13. FIVE (5.0) FEET OF CLEAN GRANULAR SOIL MEETING THE SELECT FILL GRADATION SPECIFICATIONS SHALL BE PROVIDED BELOW THE ENTRANCE SLABS AND ADJACENT SIDEWALKS. GRADUAL TRANSITION (3 HORIZONTAL TO 1 VERTICAL) OF SELECT FILL THICKNESS SHALL BE PROVIDED FROM THE 5.0 FOOT DEPTH TO THE GRAVEL BASE THICKNESS AT THE SIDEWALKS AND PAVED AREAS AWAY FROM THE BUILDINGS.

UTILITY NOTES:

1. ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED AND CONSTRUCTED BY THE SITE WORK CONTRACTOR TO WITHIN 5 FEET OF THE BUILDINGS, AT A LOCATION COORDINATED WITH THE MEP CONTRACTOR AND THE BUILDING PLANS. SITE WORK WITHIN 5 FEET OF UNDERSLAB UTILITIES SHALL CONSIST OF TRENCHING AND BACKFILLING. ACTUAL UTILITY INSTALLATION SHALL BE BY THE MEP CONTRACTOR. ALL REQUIRED CONNECTION FEES SHALL BE PAID BY THE GENERAL CONTRACTOR.
2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITH CONSOLIDATED COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.
3. ALL SANITARY SEWER WORK SHALL MEET THE STANDARDS OF THE MAINE STATE PLUMBING CODE AND CITY OF PORTLAND PUBLIC WORKS DEPARTMENT.
4. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER.
5. COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY. ALL UTILITY WORK SHALL CONFORM TO THE STANDARDS OF THE UTILITY COMPANY AND PROJECT SPECIFICATIONS. IN CASE OF CONFLICT, THE MORE STRINGENT STANDARDS SHALL APPLY.
6. THE LOCATIONS OF THE NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE SERVICING UTILITY COMPANY.
7. UNDERGROUND ELECTRICAL, CONDUIT MATERIAL AND INSTALLATION SHALL CONFORM TO UTILITY COMPANY STANDARDS AND PROJECT SPECIFICATIONS, WHICH EVER IS MORE STRINGENT.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
10. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
11. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
12. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.
13. THE CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION AND PROVIDE TEMPORARY SERVICES AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOBSITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER AND AFFECTED BUSINESSES.

LANDSCAPE NOTES:

(SUBJECT TO COORDINATION WITH LANDSCAPE DRAWINGS. IN CASE OF CONFLICT, THE LANDSCAPING DRAWINGS SHALL GOVERN.)

1. ALL PLANTS SHALL BE NURSERY GROWN AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN, STANDARDS AND SHALL BE SUBJECT TO THE APPROVAL OF THE OWNERS REPRESENTATIVE BEFORE AND AFTER PLANTING.
2. PLANTS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER INSPECTION AND ACCEPTANCE, AND SHALL HAVE AT LEAST 80% HEALTHY GROWTH AT THE END OF THE GUARANTEED PERIOD.
3. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 4" LOAM, SEED, FERTILIZER, AND MULCH.
4. THREE (3) INCH BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS USED IN A CURBED ISLAND, THE BARK SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 4" LOAM, SEED, FERTILIZER AND MULCH.
5. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING AS SHOWN.
6. PARKING AREA PLANTED ISLANDS TO HAVE A MINIMUM OF 4" TOPSOIL. REMOVE ALL CONSTRUCTION DEBRIS BEFORE TOPSOILING. TOPSOIL SHALL BE PLACED TO TOP OF CURB.
7. ALL PLANT MATERIAL SHALL BE APPROVED BY THE OWNER OR THE OWNERS REPRESENTATIVE PRIOR TO ARRIVAL ON THE SITE.
8. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
9. THE CONTRACTOR SHALL LOCATE, VERIFY, AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTINGS AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
10. NO SUBSTITUTION OF PLANT MATERIALS SHALL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
12. SEE PLANTING DETAILS FOR WEED BARRIER INFORMATION.
13. ALL PLANTING LOCATED AT THE ENTRANCE TO THE PROJECT OR AT INTERSECTIONS WITHIN THE SITE WILL BE MAINTAINED AND WILL NOT EXCEED 3 FEET IN HEIGHT WITHIN A TRIANGLE FORMED 25' INTO THE DRIVEWAY AND 25' ALONG THE TRAVEL WAY.

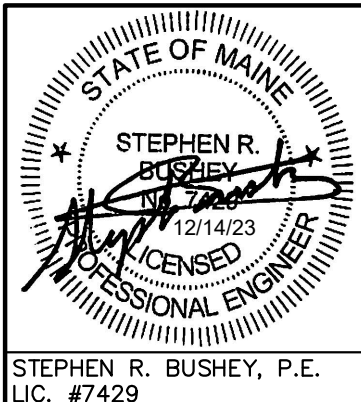
EROSION CONTROL NOTES:

1. PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITIES, CLEARING AND GRADING LIMITS SHALL BE STAKED BY THE CONTRACTOR BASED ON THE LIMITS OF GRADING SHOWN ON THE DRAWINGS AND ACCEPTED BY THE OWNER'S REPRESENTATIVE IN THE FIELD. AFTER THE CLEARING AND GRADING LIMITS HAVE BEEN ACCEPTED, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE CONSTRUCTION ENTRANCES ASSOCIATED WITH THE PROJECT.
2. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCHED AS SOON AS POSSIBLE. TEMPORARY/PERMANENT SEED MIXTURES SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL PROJECT PREPARED FOR THIS PROJECT.
3. PRIOR TO PAVING, THE CONTRACTOR SHALL FLUSH SILT FROM ALL STORM LINES.
4. ALL STORM DRAIN INLETS AND OUTLETS NOT IN PAVED AREAS ARE TO RECEIVE RIPRAP PROTECTION APRONS DURING CONSTRUCTION.
5. SILT FENCES SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES SHOWN ON THE EROSION CONTROL DETAIL SHEET.
6. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCE AS IT BECOMES SATURATED WITH MUD TO ENSURE THAT IT FUNCTIONS TO CAPTURE MUD FROM THE TIRES OF CONSTRUCTION VEHICLES DURING CONSTRUCTION. THE PURPOSE OF THE CONSTRUCTION ENTRANCE IS TO KEEP ADJACENT STREETS CLEAR OF DIRT AND MUD, SWEEPING OF THE ROADWAYS SHALL BE PERFORMED BY THE CONTRACTOR.
7. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO TOPSOIL FOR USE IN LANDSCAPING OPERATIONS.
8. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE WHICH CAUSE THE LEAST PRACTICAL UNPROTECTED DENUDED AREAS ON THE SITE DURING CONSTRUCTION.
9. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION / SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS MAY RESULT IN MONETARY PENALTIES AS ENFORCED BY THE MEDEP OR LOCAL AGENCIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.
10. A FULL EROSION/SEDIMENTATION CONTROL PLAN ACCOMPANIES THIS DRAWING SET AND IS ALSO CONTAINED IN THE SITE WORK SPECIFICATIONS.
11. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS AS SHOWN AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.
12. INSPECT EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS $\frac{1}{3}$ THE STRUCTURE HEIGHT.
13. INSTALL CURLEX EROSION CONTROL MAT OR EQUAL ON ALL SLOPES STEEPER THAN 3:1.
14. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "MAINE EROSION & SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES, CUMBERLAND COUNTY SOIL AND WATER CONVERSATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 1991"

EXISTING	LEGEND	PROPOSED
	EXISTING STRUCTURE	BUILDING
	EDGE OF TRAVEL WAY, PAVEMENT, ROADS, DRIVES	PROPERTY LINE
	CURBING	RETAINING WALL
	PROPERTY LINE	CURBING
	EASEMENT LINE	VERTICAL GRANITE *
	OVERHEAD ELECTRIC LINES / OVERHEAD WIRES	SLOPED GRANITE *
	UNDERGROUND GAS MAIN	EDGE OF PAVEMENT
	UNDERGROUND TELEPHONE LINE	GRADING CONTOUR LINE
	WATER LINE	SPOT ELEVATION
	WATER GATE VALVE	GUARD POST/BOLLARD
	STORM DRAIN LINE	POLE WITH LIGHT FIXTURE(S)
	SANITARY SEWER LINE	FREESTANDING SIGN
	ROADWAY PAVEMENT STRIPING	BARRIER FREE PARKING SYMBOL
	FENCE	PEDESTRIAN CROSSWALK
	EXISTING CONTOUR LINE	DIRECTION OF TRAFFIC FLOW
	EXISTING WETLANDS	UNDERGROUND TELEPHONE / CABLE
	UTILITY POLE	UNDERGROUND ELECTRIC/TELEPHONE
	SIGN	WATER LINE
	LIGHT POLE	SEWER LINE
	CATCH BASIN	GAS LINE
	SEWER MANHOLE	STORM DRAIN LINE
	HYDRANT	HYDRANT
	TREES, LANDSCAPING	WATER GATE VALVE
		WATER SHUT OFF VALVE
		MANHOLE
		CATCH BASIN
		EXISTING CATCH BASIN TO BE ALTERED
		RIPRAP
		SILT FENCE
		CHAIN LINK OR SAFETY FENCE
		WOOD FENCE
		GUIDE RAIL
		LIMIT OF WORK
		STONE SEDIMENT BARRIER
		TRANSFORMER PAD

* OWNER RESERVES THE RIGHT TO MODIFY ALL ONSITE CURBING TO SLIPFORM CONCRETE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES & SHALL NOT BE USED FOR CONSTRUCTION.



Rev.	Date	Revision

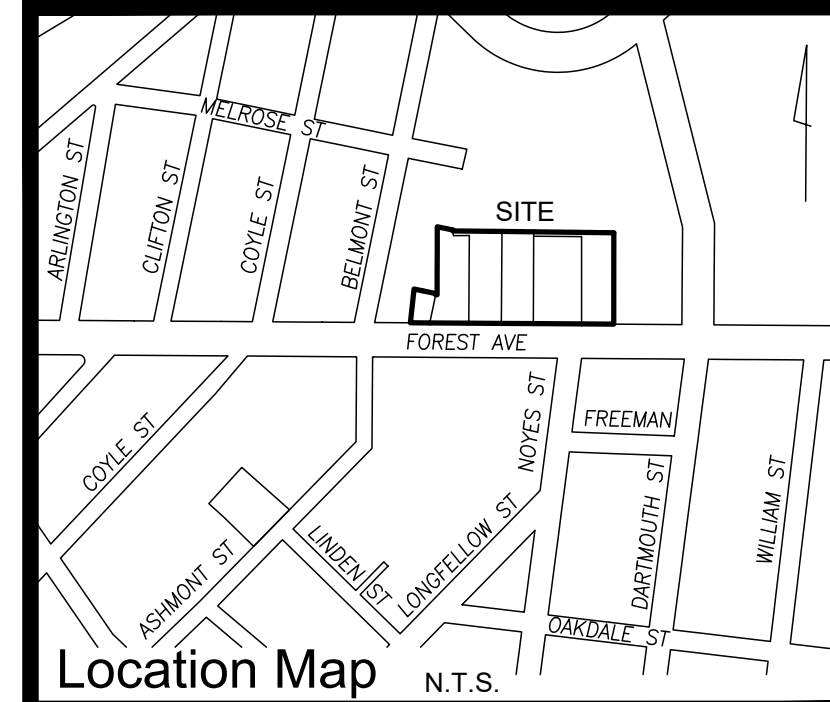
Rev.	Date	Revision
3	2023.12.14	REVISED & RESUBMITTED PER LOR #1
2	2023.10.20	ADDED EXISTING 'LANDSCAPE' INFORMATION
1	2023.08.31	MAJOR SITE PLAN APPLICATION

Design: SRB	Draft: --	Date: AUG 2023
Checked: SRB	Scale: NTS	Job No.: 4148
File Name: 4148-GEN NOTES.dwg		
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South Portland, Me 04106
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Relationships. Responsiveness. Results.

Drawing Name:	GENERAL NOTES & LEGEND
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101

Drawing No.
C-1.1



- Legend**
- IRON PIPE OR ROD FOUND
 - MONUMENT FOUND
 - UTILITY POLE
 - MANHOLE
 - ELECTRIC/GAS METER
 - SIGN
 - CATCH BASIN
 - HYDRANT
 - WATER VALVE OR SHUTOFF
 - GAS VALVE
 - LIGHT POLE
 - DECIDUOUS TREE
 - FENCE
 - OVERHEAD WIRES
 - UNDERGROUND POWER
 - WATER LINE
 - GAS LINE
 - TELEPHONE
 - COMMUNICATION
 - SD STORM DRAIN
 - SS SANITARY SEWER
 - N/F NOW OR FORMERLY
 - DEED BOOK / PAGE
 - P.O.B. POINT OF BEGINNING
 - L/S LANDSCAPED AREA
 - TP TELEPHONE PEDESTAL
 - CONC. CONCRETE
 - POSSIBLE ENCROACHMENT
 - SCHEDULE B EXCEPTION

Flood Zone Note

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE C (AREAS OF MINIMAL FLOODING) OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 230051 0013B, WHICH BEARS AN EFFECTIVE DATE OF JULY 17, 1986 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA.

Possible Encroachments

- △ METAL GUARDRAIL ENCROACHES ONTO ABUTTER 1'±

Schedule B Exceptions

FIRST AMERICAN TITLE INSURANCE COMPANY
AGENT FILE NO. 20981-00354 EFFECTIVE DATE: SEPTEMBER 8, 2022

1 - 7. NON SURVEY

AFFECT 501-537 FOREST AVENUE;

8. RIGHTS AND EASEMENTS GRANTED BY DARTMOUTH COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY IN INSTRUMENTS RECORDED IN BOOK 1889, PAGE 378, BOOK 2905, PAGE 27, BOOK 2937, PAGE 382 AND BOOK 3038, PAGE 761 (AFFECT FOREST AVENUE PROPERTY). -1989/378 AS SHOWN, 2905/27 NON LOCUS, 2937/382 NON LOCUS, 3038/761 AS SHOWN.

9. RIGHTS AND EASEMENTS RELATIVE TO SEWAGE PIPELINE GRANTED BY COURI PONTIAC, INC. TO PORTLAND WATER DISTRICT DATED AUGUST 16, 1977 AND RECORDED IN BOOK 4079, PAGE 139 (AFFECTS A PORTION OF 533 FOREST AVENUE). - AS SHOWN.

10. RIGHTS AND EASEMENTS RELATIVE TO SEWAGE PIPELINE GRANTED BY ROBERT E. ADAIR, LUTHER B. FRANCIS AND REYNOLDS E. MOULTON TO PORTLAND WATER DISTRICT DATED AUGUST 16, 1977 AND RECORDED IN BOOK 4081, PAGE 56 (AFFECTS 517 FOREST AVENUE). - AS SHOWN.

11. RIGHTS AND EASEMENTS RELATIVE TO SEWAGE PIPELINE GRANTED BY DARTMOUTH REAL ESTATE COMPANY TO PORTLAND WATER DISTRICT DATED AUGUST 16, 1977 AND RECORDED IN BOOK 4081, PAGE 59 (AFFECTS 533 FOREST AVENUE). - AS SHOWN.

12. AGREEMENT BY AND BETWEEN COURI PONTIAC, INC. AND DARTMOUTH REAL ESTATE COMPANY DATED AUGUST 16, 1977 AND RECORDED IN BOOK 3139, PAGE 689 (AFFECTS 501-533 FOREST AVENUE), AS AFFECTED BY DEED FROM DARTMOUTH REAL ESTATE COMPANY TO BOULEVARD ASSOCIATES DATED DECEMBER 10, 1971 AND RECORDED IN BOOK 3204, PAGE 373, AS FURTHER AFFECTED BY AFFIDAVIT OF SCOTT SCULLY DATED JANUARY 14, 1987 AND RECORDED IN BOOK 10175, PAGE 113, AND AS PARTIALLY AMENDED AND RESTATED IN UTILITY EASEMENT AGREEMENT BY AND BETWEEN RICKER PARK ASSOCIATION AND ALPINE REALTY CORP. DATED MAY 23, 2010 AND RECORDED IN BOOK 27805, PAGE 93 (AFFECTS 509-517 FOREST AVENUE). - AS SHOWN.

13. RIGHTS OF OTHERS IN AND TO THE USE OF INDIAN LANE AS WELL AS THE CONDITIONAL USE RESTRICTION RELATIVE TO REPAIRS THERETO AND SHARED COSTS THEREFOR, BY VIRTUE OF THE FOLLOWING:

A. ONE-HALF UNDIVIDED INTEREST IN COMMON WITH OTHERS IN THE ENTIRE LENGTH OF INDIAN LANE, VESTED IN BOULEVARD ASSOCIATES, INC. (NOW RICKER PARK ASSOCIATION) BY VIRTUE OF A DEED FROM DARTMOUTH REAL ESTATE COMPANY DATED DECEMBER 10, 1971 AND RECORDED IN BOOK 3204, PAGE 373, SUBJECT TO ACCESS RIGHTS OF OTHERS ACROSS ALL OF INDIAN LANE TO DARTMOUTH STREET. - AS SHOWN.

B. ONE-HALF UNDIVIDED INTEREST IN COMMON WITH OTHERS IN THAT ADJACENT PORTION OF INDIAN LANE DESCRIBED IN DEED FROM WILLCO, LLC TO ALTA VISTA, LLC DATED APRIL 3, 2017 AND RECORDED IN BOOK 33920, PAGE 91, SUBJECT TO ACCESS RIGHTS OF OTHERS ACROSS ALL OF INDIAN LANE TO DARTMOUTH STREET (AFFECTS APPURTENANT EASEMENT RIGHTS OVER INDIAN LANE ABUTTING 495 FOREST AVENUE). - AS SHOWN.

C. ONE-HALF UNDIVIDED INTEREST IN COMMON WITH OTHERS IN THAT ADJACENT PORTION OF INDIAN LANE DESCRIBED IN DEED FROM JOHN H. FINLEY 3RD, ET ALS TO 49 DARTMOUTH, LLC DATED JUNE 22, 1999 AND RECORDED IN BOOK 14869, PAGE 97, SUBJECT TO ACCESS RIGHTS OF OTHERS ACROSS ALL OF INDIAN LANE TO DARTMOUTH STREET (AFFECTS APPURTENANT EASEMENT RIGHTS OVER INDIAN LANE ABUTTING 49 DARTMOUTH STREET). - AS SHOWN.

14. SUBJECT TO THE CONDITIONAL USE RESTRICTION RELATIVE TO THE USE OF INDIAN LANE, ALONG WITH REPAIRS THERETO AND SHARED COSTS THEREFOR, SET FORTH IN DEEDS FROM THE DARTMOUTH COMPANY TO (A) COURI PONTIAC, INC. RECORDED IN BOOK 3139, PAGE 686 (AFFECTS 517-533 FOREST AVENUE); (B) SHIRLEY GEORGE RECORDED IN BOOK 4662, PAGE 168 (AFFECTS 501 FOREST AVENUE); AND (C) GREEN ONE DEVELOPMENT CORP. RECORDED IN BOOK 9638, PAGE 234 (AFFECTS 509 FOREST AVENUE). - AS SHOWN.

15. SEWER EASEMENT MAINTENANCE AGREEMENT BETWEEN 49 DARTMOUTH, LLC AND THE GEORGE FAMILY, LLC DATED JUNE 28, 2002 AND RECORDED IN BOOK 18009, PAGE 278 (BENEFITS AND BURDENS 501 FOREST AVENUE). - AS SHOWN.

16. SUBJECT TO THE RIGHTS AND EASEMENTS RESERVED TO THE DARTMOUTH COMPANY AND OTHERS, ALL AS MORE PARTICULARLY DESCRIBED IN BOOK 4662, PAGE 168 (WHICH BENEFIT AND BURDEN 501 FOREST AVENUE), WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

A. TO REPAIR, MAINTAIN, REPLACE AND REMOVE THE EXISTING STORM SEWER PIPES AND MAINS AND STORM SEWER CONNECTION, WHICH RUNS NORTHWESTERLY 260 FEET FROM DARTMOUTH STREET ALONG INDIAN LANE, THENCE WESTERLY TO A POINT AT THE REAR OF THE INSURED PREMISES; - AS SHOWN.

B. PARTY WALL RIGHTS IN THE BRICK WALL SHARED WITH THE BUILDING AT 495 FOREST AVENUE; - AS SHOWN.

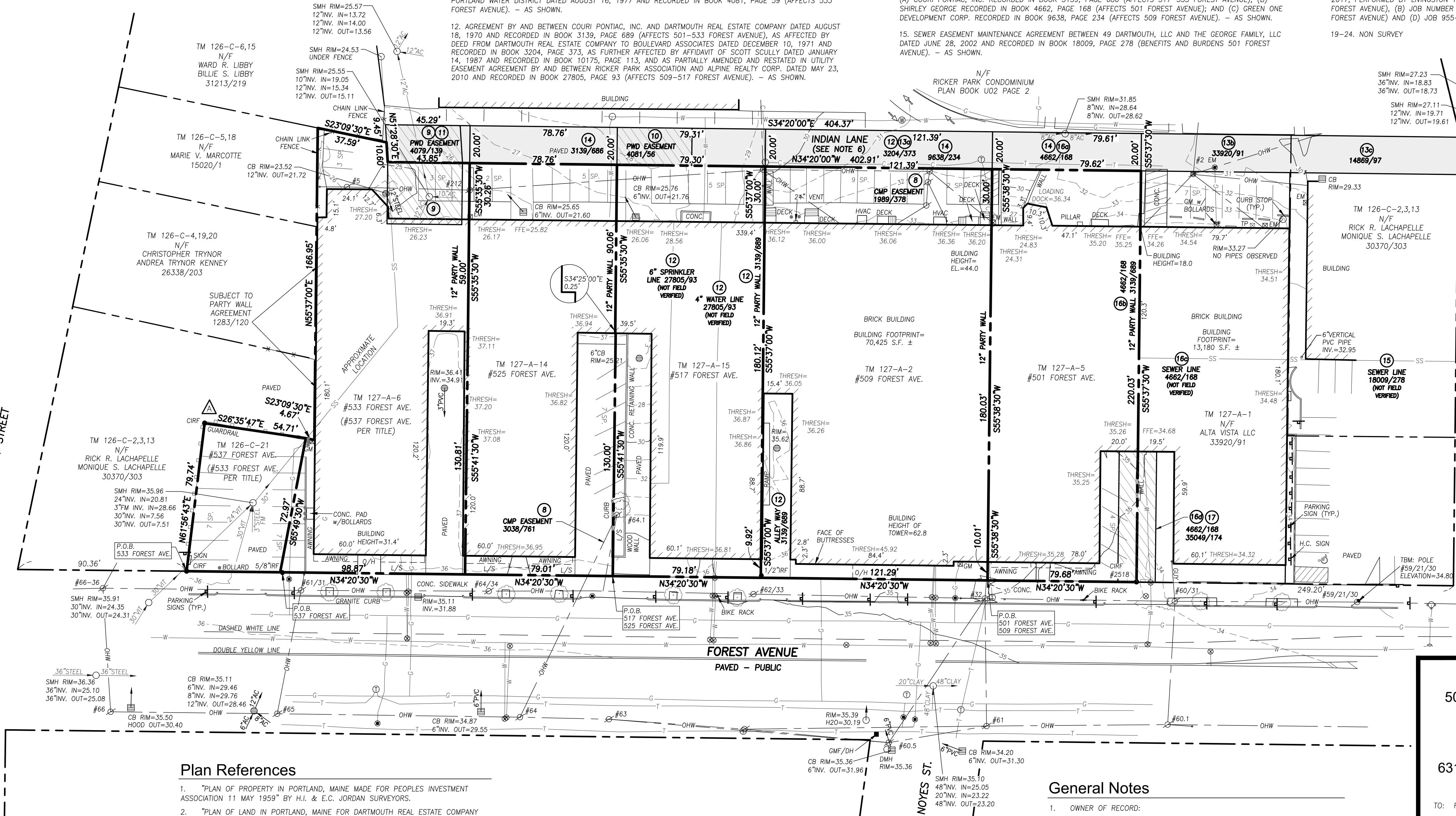
C. TO REPAIR, MAINTAIN, REPLACE AND REMOVE THE EXISTING SEWER LINE WHICH RUNS WESTERLY FROM DARTMOUTH STREET 173 FEET TO THE INSURED PREMISES; AND - AS SHOWN.

D. TO REPAIR, MAINTAIN, REPLACE AND REMOVE THE EXISTING WATER MAINS AND PIPES WHICH RUN NORTHEASTERLY FROM FOREST AVENUE THROUGH 495 FOREST AVENUE AND THENCE WESTERLY TO THE INSURED PREMISES. - AS SHOWN.

17. AGREEMENT REGARDING SHARED WATER MAIN EASEMENT BY AND BETWEEN ALTA VISTA, LLC AND JOSEPH B. WOJCIK, JR. DATED AUGUST 2, 2018 AND RECORDED IN BOOK 35049, PAGE 174 (AFFECTS 501 FOREST AVENUE). - AS SHOWN.

18. STATE OF FACTS AS DISCLOSED BY COMMERCIAL MORTGAGE LOAN INSPECTION SKETCHES DATED AUGUST 29, 2017, PERFORMED BY LIVINGSTON-HUGHES PROFESSIONAL LAND SURVEYORS: (A) JOB NUMBER 952-23 (501 FOREST AVENUE), (B) JOB NUMBER 952-22 (509 & 517 FOREST AVENUE); (C) JOB NUMBER 955-21 (525 FOREST AVENUE) AND (D) JOB 955-16 (533 & 537 FOREST AVENUE). - SKETCHES NOT PROVIDED.

19-24. NON SURVEY



Plan References

- "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR PEOPLES INVESTMENT ASSOCIATION 11 MAY 1959" BY H.I. & E.C. JORDAN SURVEYORS.
- "PLAN OF LAND IN PORTLAND, MAINE FOR DARTMOUTH REAL ESTATE COMPANY JULY 27, 1970" BY OWEN HASKELL, INC.
- "PLAN OF LAND AND BUILDINGS IN PORTLAND, MAINE OF RICKER PARK CONDOMINIUM FOR BOULEVARD ASSOCIATES, INC. DEC. 1, 1971" BY OWEN HASKELL, INC. RECORDED IN PLAN BOOK U02 FILE 2.
- "PLAN OF LAND IN PORTLAND, MAINE FOR COURI PONTIAC, INC. MAR. 27, 1972" BY OWEN HASKELL, INC.
- "PLAN OF LAND IN PORTLAND, MAINE FOR GEORGE BUSINESS FORMS SEPT. 9, 1980" BY OWEN HASKELL, INC.
- "PLAN OF LAND IN PORTLAND, MAINE, FOREST AVENUE, FOR 540 FOREST AVENUE ASSOC. AUGUST 31, 1983" BY OWEN HASKELL, INC.
- "PLAN OF LAND ON FOREST AVENUE, PORTLAND, MAINE FOR YOUNG'S FURNITURE CO. MAY 3, 1988" BY OWEN HASKELL, INC.
- "STANDARD BOUNDARY SURVEY ON FOREST AVE., PORTLAND, MAINE MADE FOR CASCO NORTHERN BANK, N.A. DEC. 11, 1991" BY OWEN HASKELL, INC.
- "STANDARD BOUNDARY SURVEY ON FOREST AVE., PORTLAND, MAINE MADE FOR PERKINS & PERKINS FEB. 18, 1999" BY OWEN HASKELL, INC.
- "LAND TITLE SURVEY AT SITE #16282, 518 FOREST AVENUE, PORTLAND, MAINE MADE FOR EXXON MOBIL OIL CORP. OCT. 25, 2004" BY OWEN HASKELL, INC.
- "GLOBAL PARTNERS LP, 518 FOREST AVENUE, PORTLAND, MAINE, FOR MKA, MKA PROJECT NO. 5930-12-2402-089 MAY 9, 2012" BY OWEN HASKELL, INC.

Zoning Information

NONE PROVIDED

Utility Note

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

General Notes

- OWNER OF RECORD:
DC 509 FOREST LLC
631 STEVENS AVENUE, SUITE 203, PORTLAND, MAINE
CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 39688 PAGE 7
TAX MAP 127 BLOCK A LOT 5 #501 FOREST AVENUE
TAX MAP 127 BLOCK A LOT 2 #509 FOREST AVENUE
TAX MAP 127 BLOCK A LOT 15 #517 FOREST AVENUE
TAX MAP 127 BLOCK A LOT 14 #525 FOREST AVENUE
TAX MAP 127 BLOCK A LOT 6 #533 FOREST AVENUE
TAX MAP 126 BLOCK C LOT 21 #537 FOREST AVENUE
- BEARINGS ARE BASED ON MAGNETIC 1964 PER RECORD DEEDS. ELEVATIONS ARE BASED ON CITY DATUM.
- THERE ARE 52 REGULAR SPACES DELINEATED ON SITE.
- NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, BUILDING ADDITIONS, OR RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS WAS OBSERVED.
- NO PROPOSED CHANGES IN STREET LINES IS KNOWN BY THIS SURVEYOR.
- INDIAN LANE IS A 20 FOOT WIDE PRIVATE WAY. THE PORTIONS OF INDIAN LANE ABUTTING THE PROPERTIES AT #501-533 ARE DESCRIBED AS FOLLOWS: "ALSO CONVEYING ALL OF THE GRANTOR'S RIGHT, TITLE AND INTEREST IN AND TO AN UNDIVIDED ONE-HALF (1/2) INTEREST IN COMMON IN THAT ADJACENT PORTION OF INDIAN LANE", SUBJECT TO RIGHT OF OTHERS WITHIN INDIAN LANE.

ALTA / NSPS Land Title Survey

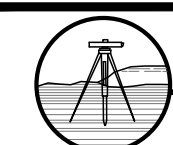
501, 509, 517, 525, 533 & 537 Forest Avenue
Portland, Cumberland County, Maine
Made For Record Owner
DC 509 Forest, LLC
631 Stevens Avenue, Suite 203, Portland, Maine
Surveyor's Certification

TO: FIRST AMERICAN TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6(A), 6(B), 7(A), 7(B)(1), 7(C), 8, 9, 10, 11(A), 11(B), 13, 14, 16, 17 AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JUNE 12, 2023.

Randy R. Loubier
RANDY R. LOUBIER
PROFESSIONAL LAND SURVEYOR NO. 2407

DATE OF PLAT OR MAP: JUNE 29, 2023
DATE OF LAST REVISION:

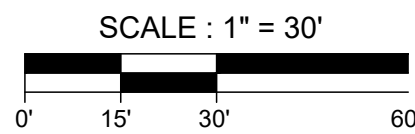


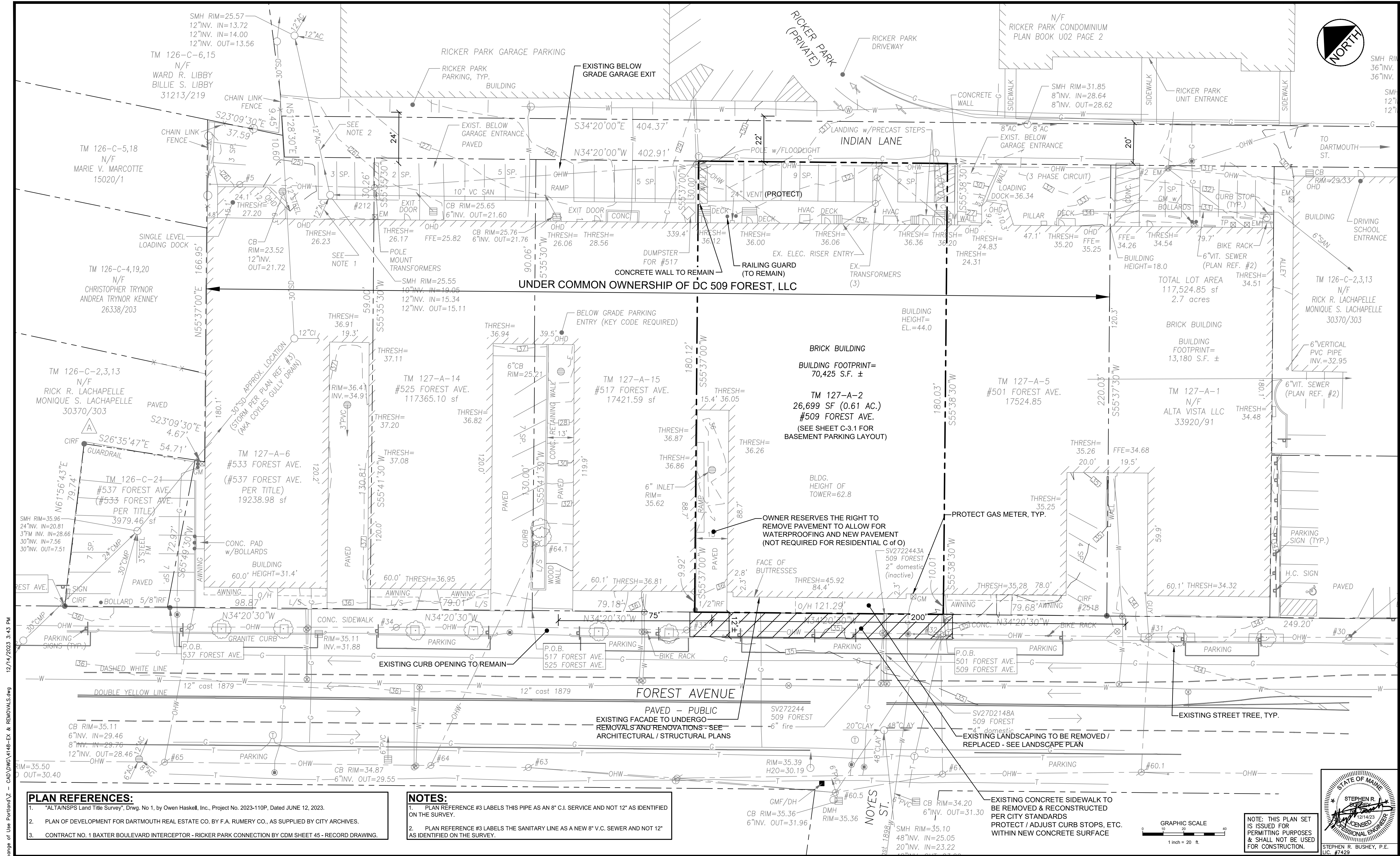
OWEN HASKELL, INC.

PROFESSIONAL LAND SURVEYORS

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

DRAWN BY: RRL/JLW FIELD BOOK: FILE JOB NO. 2023-110 P
CHECKED BY: RRL SCALE: 1" = 30' DRWG. NO. 1





U:\4148_509 Forest Ave Change of Use Portland\Z - CAD\DWG\4148-EX & REMOVALS.dwg 12/14/2023 3:43 PM

PLAN REFERENCES:

- "ALTA/NSPS Land Title Survey", Drwg. No. 1, by Owen Haskell, Inc., Project No. 2023-110P, Dated JUNE 12, 2023.
- PLAN OF DEVELOPMENT FOR DARTMOUTH REAL ESTATE CO. BY F.A. RUMERY CO., AS SUPPLIED BY CITY ARCHIVES.
- CONTRACT NO. 1 BAXTER BOULEVARD INTERCEPTOR - RICKER PARK CONNECTION BY CDM SHEET 45 - RECORD DRAWING.

NOTES:

- PLAN REFERENCE #3 LABELS THIS PIPE AS AN 8" C.I. SERVICE AND NOT 12" AS IDENTIFIED ON THE SURVEY.
- PLAN REFERENCE #3 LABELS THE SANITARY LINE AS A NEW 8" V.C. SEWER AND NOT 12" AS IDENTIFIED ON THE SURVEY.

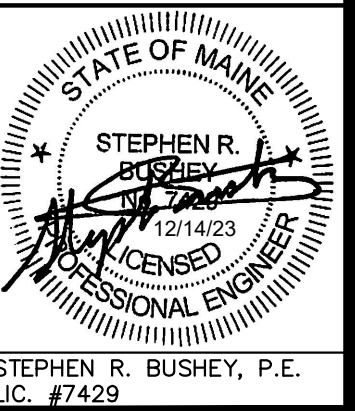
Design:	SRB	Draft:	—	Date:	AUG 2023
Checked:	SRB	Scale:	1"=20'	Job No.:	4148
File Name: 4148-EX & REMOVALS.dwg					
This plan shall not be modified without written permission from Gorrill Palmer. Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to Gorrill Palmer.					



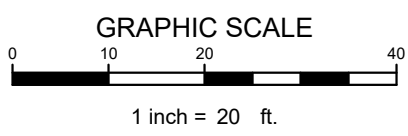
300 Southborough Drive, Suite 200
South Portland, Me 04106
207.772.2515 / www.gorrillpalmer.com
Relationships. Responsiveness. Results.

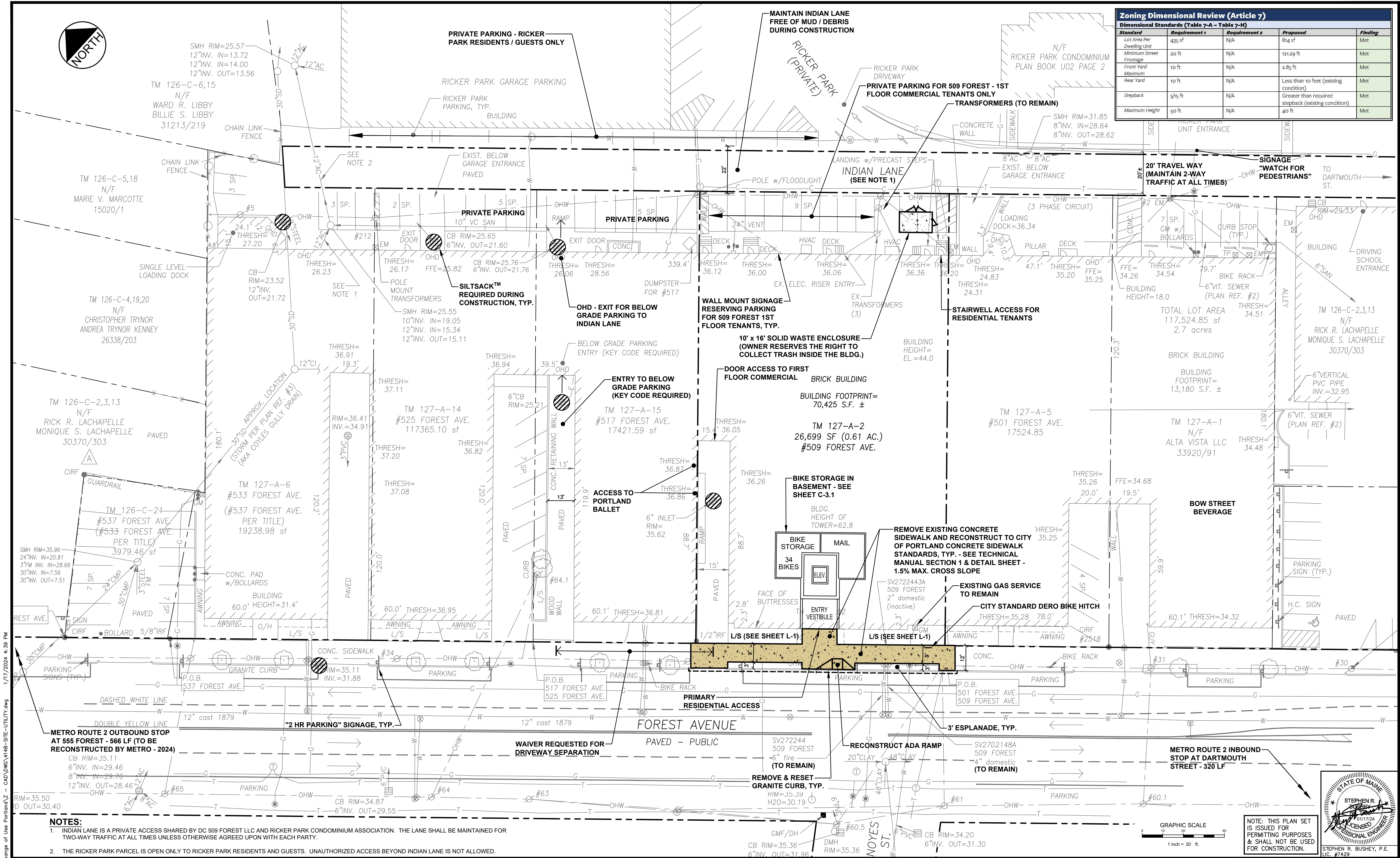
Drawing Name:	EXISTING CONDITIONS & REMOVALS PLAN
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101

Drawing No.	C-2.0
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NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES & SHALL NOT BE USED FOR CONSTRUCTION.





Zoning Dimensional Review (Article 7)				
Dimensional Standards (Table 7-A - Table 7-H)				
Standard	Requirement 1	Requirement 2	Proposed	Finding
Lot Area Per Dwelling Unit	435 sf	N/A	814 sf	Met
Minimum Street Frontage	20 ft	N/A	121.29 ft	Met
Front Yard	10 ft	N/A	2.85 ft	Met
Rear Yard	10 ft	N/A	Less than 10 feet (existing condition)	Met
Stepback	5 1/5 ft	N/A	Greater than required stepback (existing condition)	Met
Maximum Height	50 ft	N/A	40 ft	Met

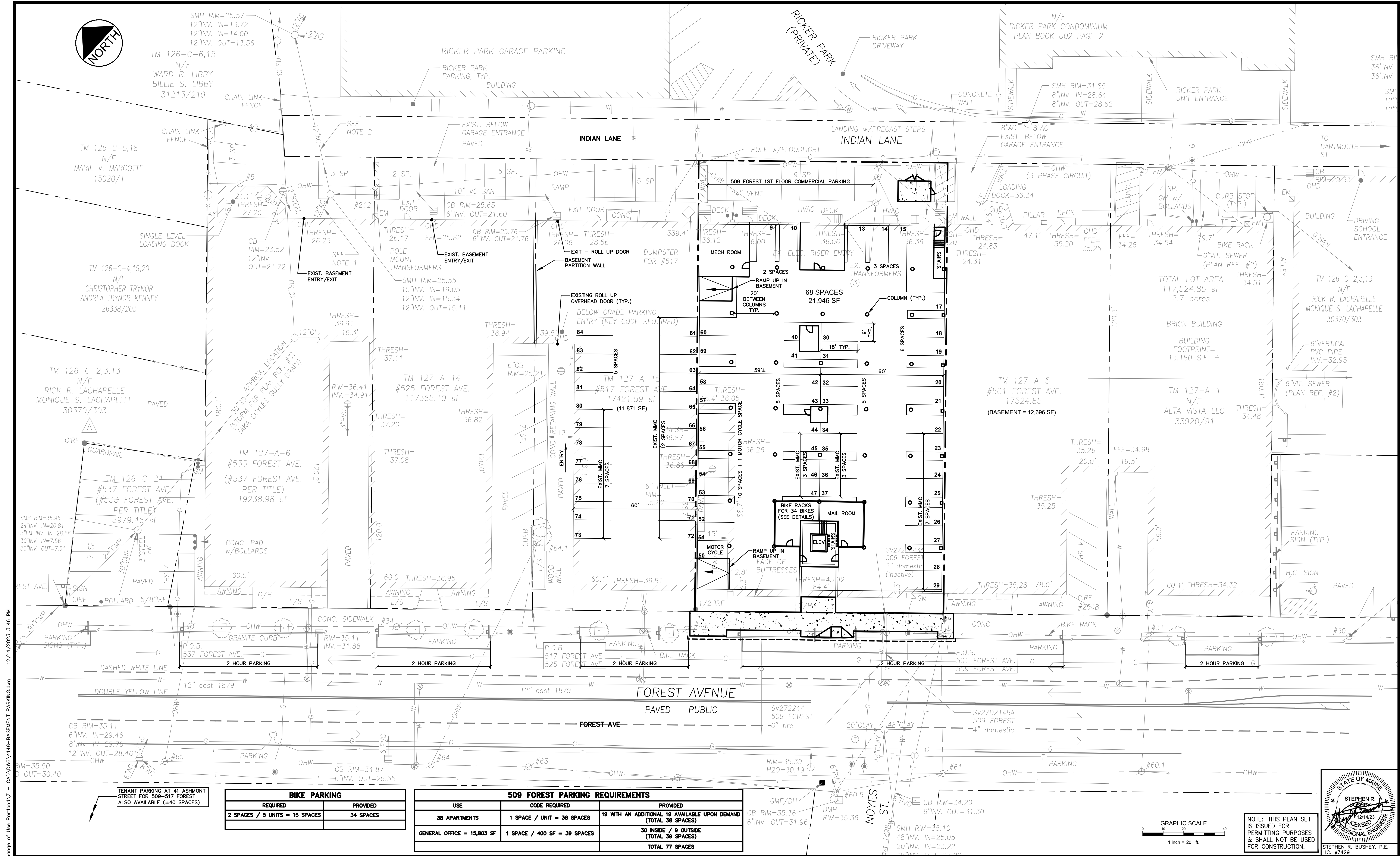
- NOTES:**
- INDIAN LANE IS A PRIVATE ACCESS SHARED BY DC 509 FOREST LLC AND RICKER PARK CONDOMINIUM ASSOCIATION. THE LANE SHALL BE MAINTAINED FOR TWO-WAY TRAFFIC AT ALL TIMES UNLESS OTHERWISE AGREED UPON WITH EACH PARTY.
 - THE RICKER PARK PARCEL IS OPEN ONLY TO RICKER PARK RESIDENTS AND GUESTS. UNAUTHORIZED ACCESS BEYOND INDIAN LANE IS NOT ALLOWED.

U:\4148_509 Forest Ave Change of Use Portland\Z - CAD\DWG\4148-SITE-UTILITY.dwg 1/17/2024 4:38 PM

Design: SRR	Draft: -	Date: AUG 2023
Checked: SRR	Scale: 1"=20'	Job No.: 4148
File Name: 4148-SITE-UTILITY.dwg		
This plan shall not be modified without written permission from Gorrell Palmer. Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to Gorrell Palmer.		
Rev.	Date	Revision
4	2024.01.17	REVISED PER CITY COMMENT - ADDED BIKE HITCH
3	2023.12.14	REVISED & RESUBMITTED PER LOR #1
2	2023.10.20	ADDED EXISTING LANDSCAPE INFORMATION
1	2023.08.31	MAJOR SITE PLAN APPLICATION

Drawing Name: SITE LAYOUT & UTILITY PLAN		Drawing No. C-3.0
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE	
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101	

300 Southborough Drive, Suite 200 South Portland, Me 04106 207.772.2515 / www.gorrellpalmer.com Relationships. Responsiveness. Results.	GORRELL PALMER
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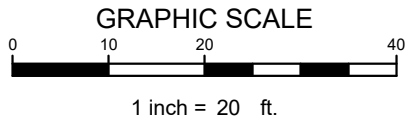


U:\4148_509 Forest Ave Change of Use Portland\Z - CAD\DWG\4148-BASEMENT PARKING.dwg 12/14/2023 3:46 PM

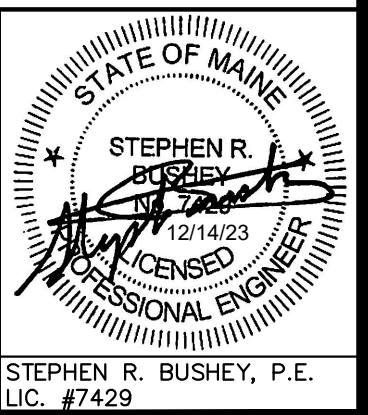
TENANT PARKING AT 41 ASHMON STREET FOR 509-517 FOREST ALSO AVAILABLE (±40 SPACES)

BIKE PARKING	
REQUIRED	PROVIDED
2 SPACES / 5 UNITS = 15 SPACES	34 SPACES

509 FOREST PARKING REQUIREMENTS		
USE	CODE REQUIRED	PROVIDED
38 APARTMENTS	1 SPACE / UNIT = 38 SPACES	19 WITH AN ADDITIONAL 19 AVAILABLE UPON DEMAND (TOTAL 38 SPACES)
GENERAL OFFICE = 15,803 SF	1 SPACE / 400 SF = 39 SPACES	30 INSIDE / 9 OUTSIDE (TOTAL 39 SPACES)
		TOTAL 77 SPACES



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES & SHALL NOT BE USED FOR CONSTRUCTION.



Design: SRR	Draft: —	Date: AUG 2023
Checked: SRR	Scale: 1"=20'	Job No.: 4148
File Name: 4148-BASEMENT PARKING.dwg		
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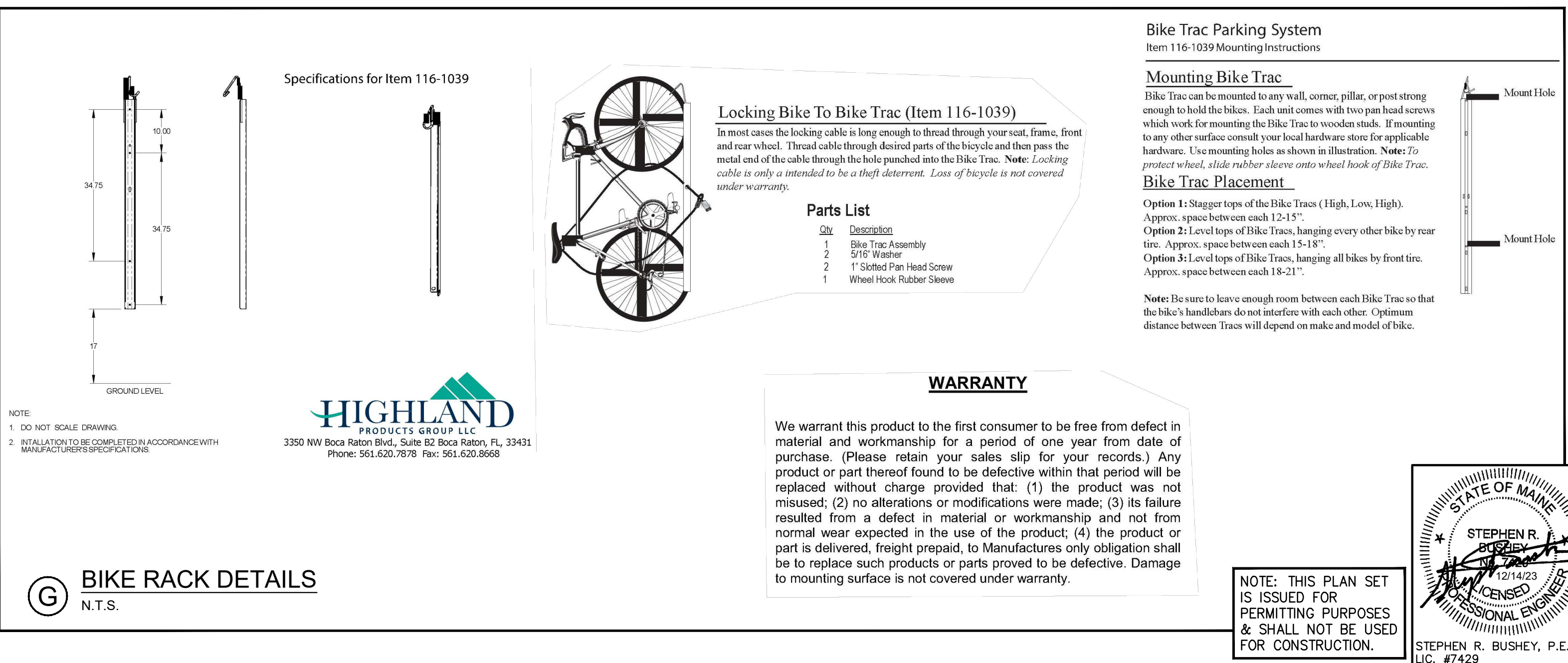
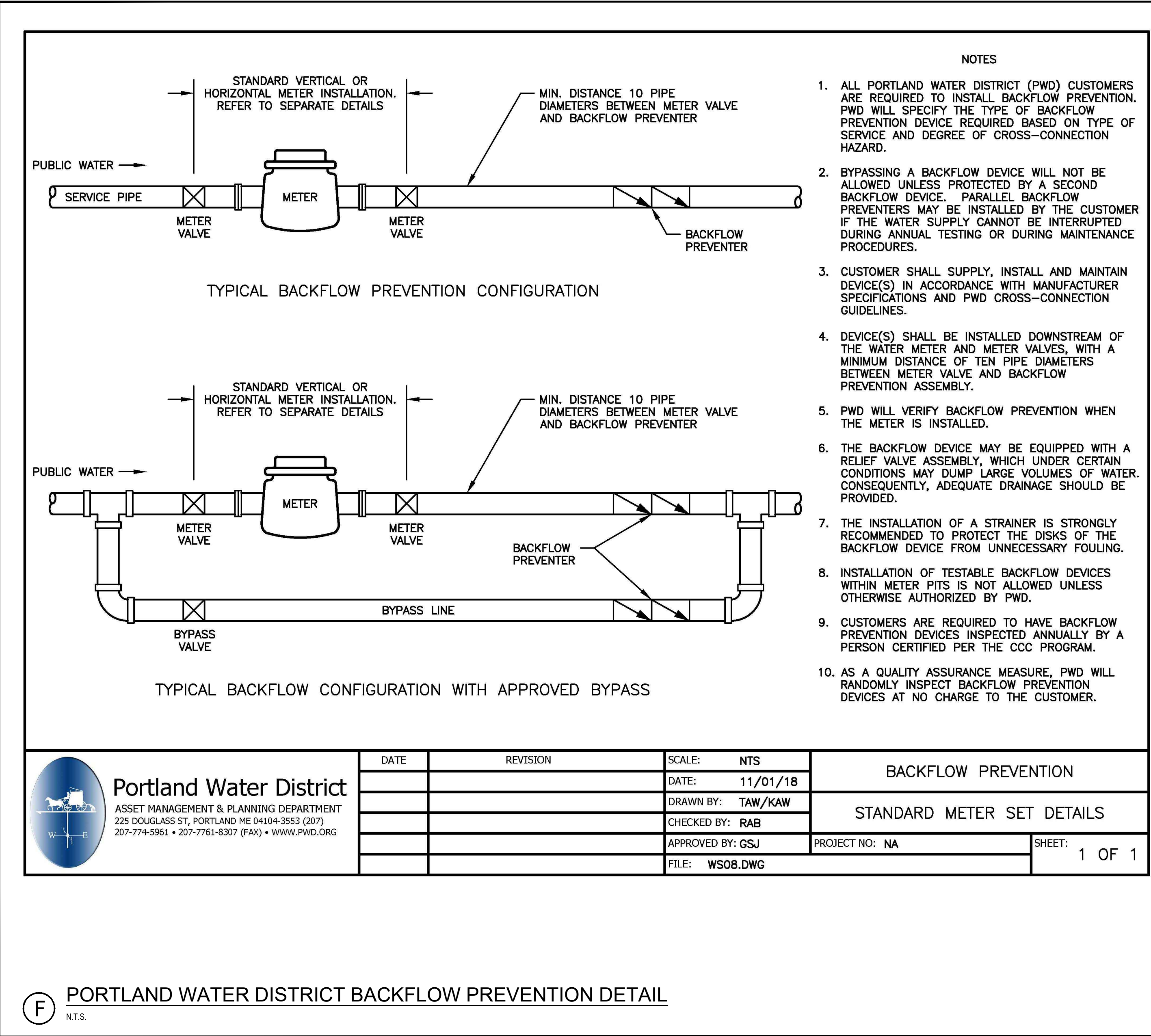
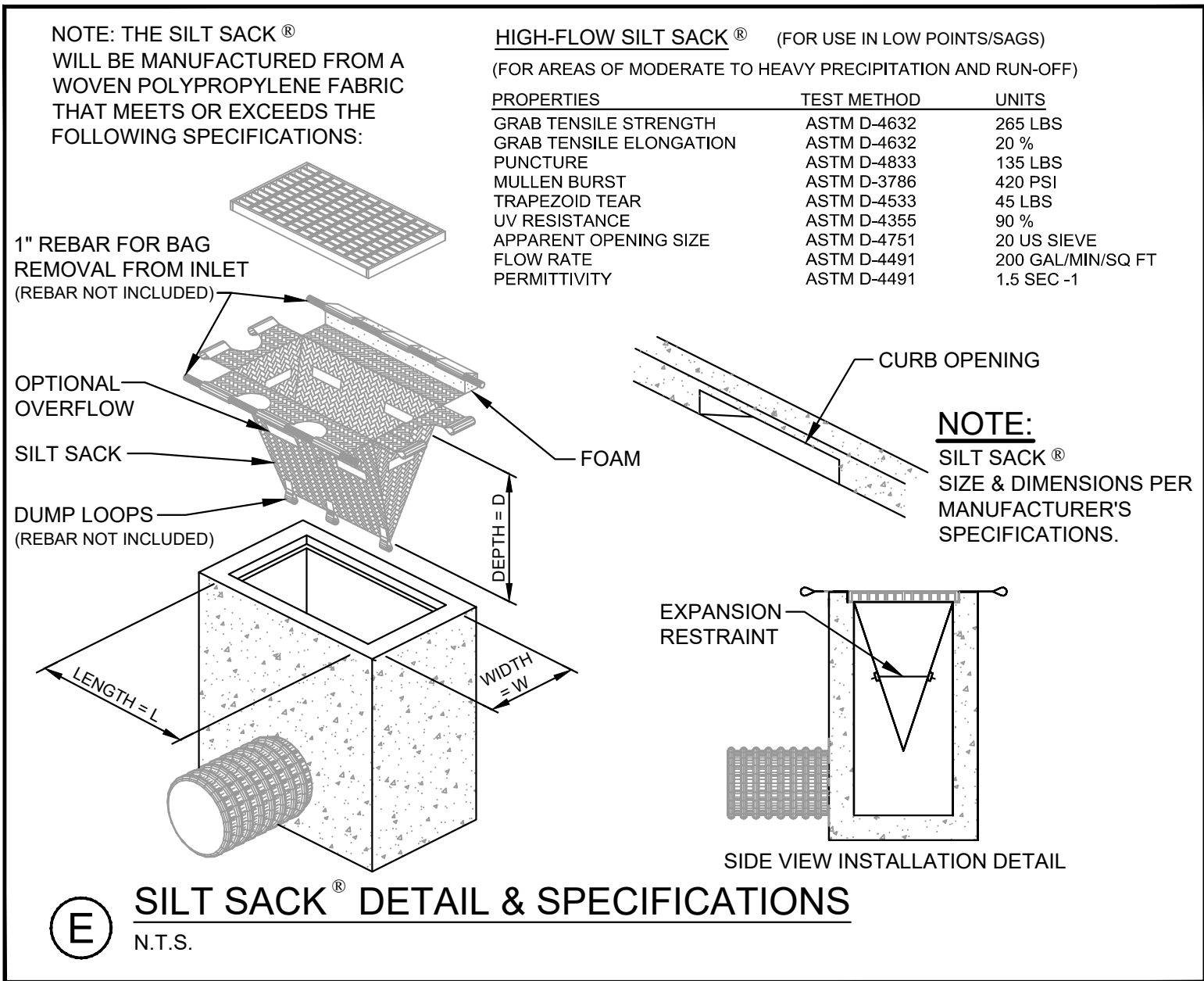
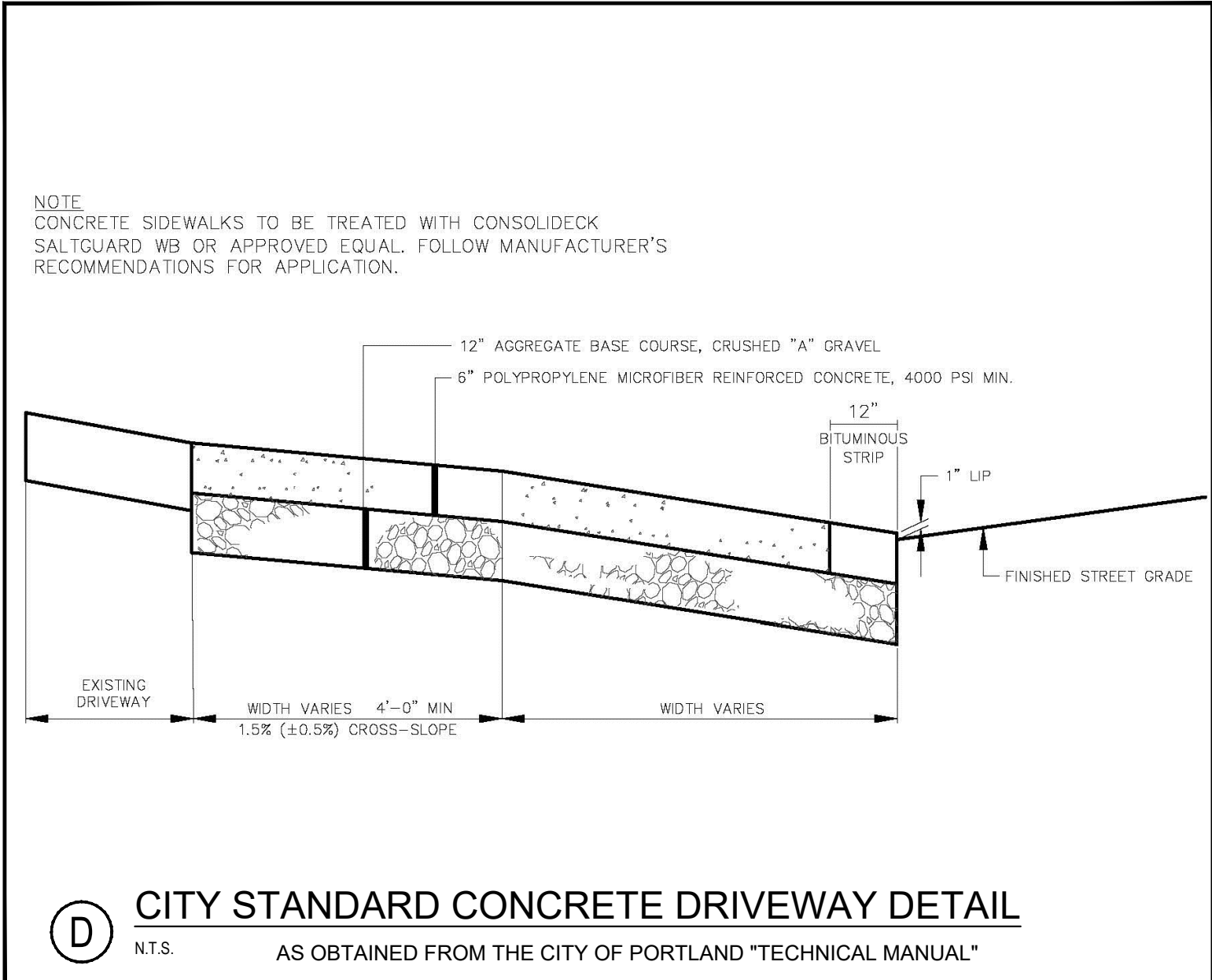
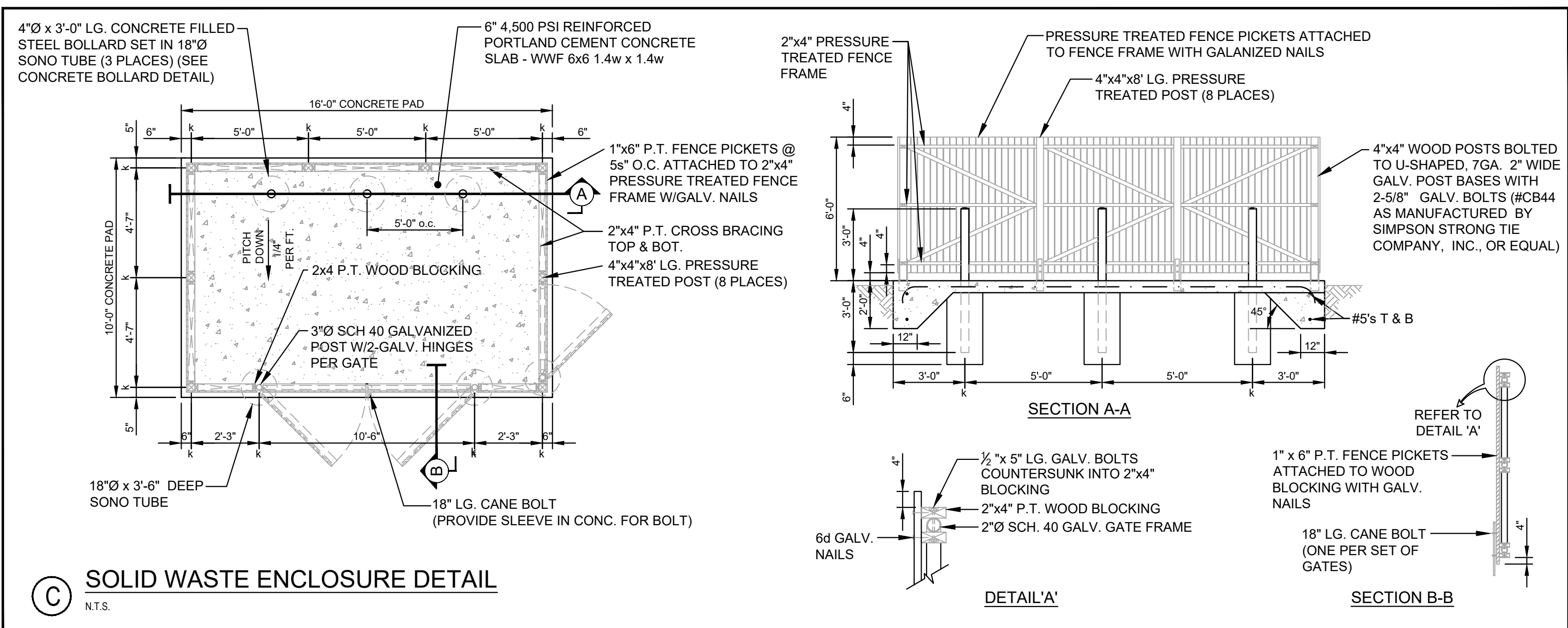
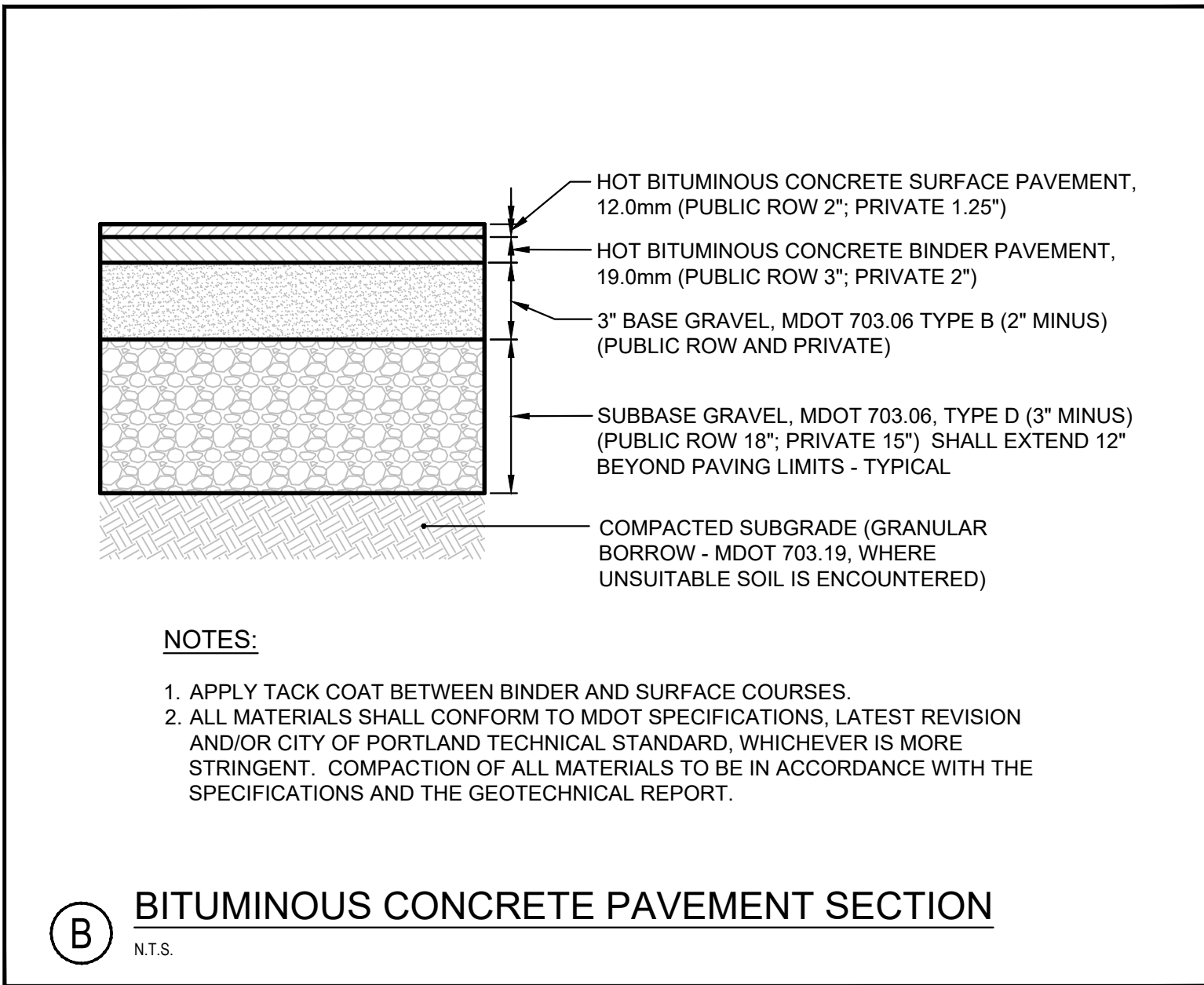
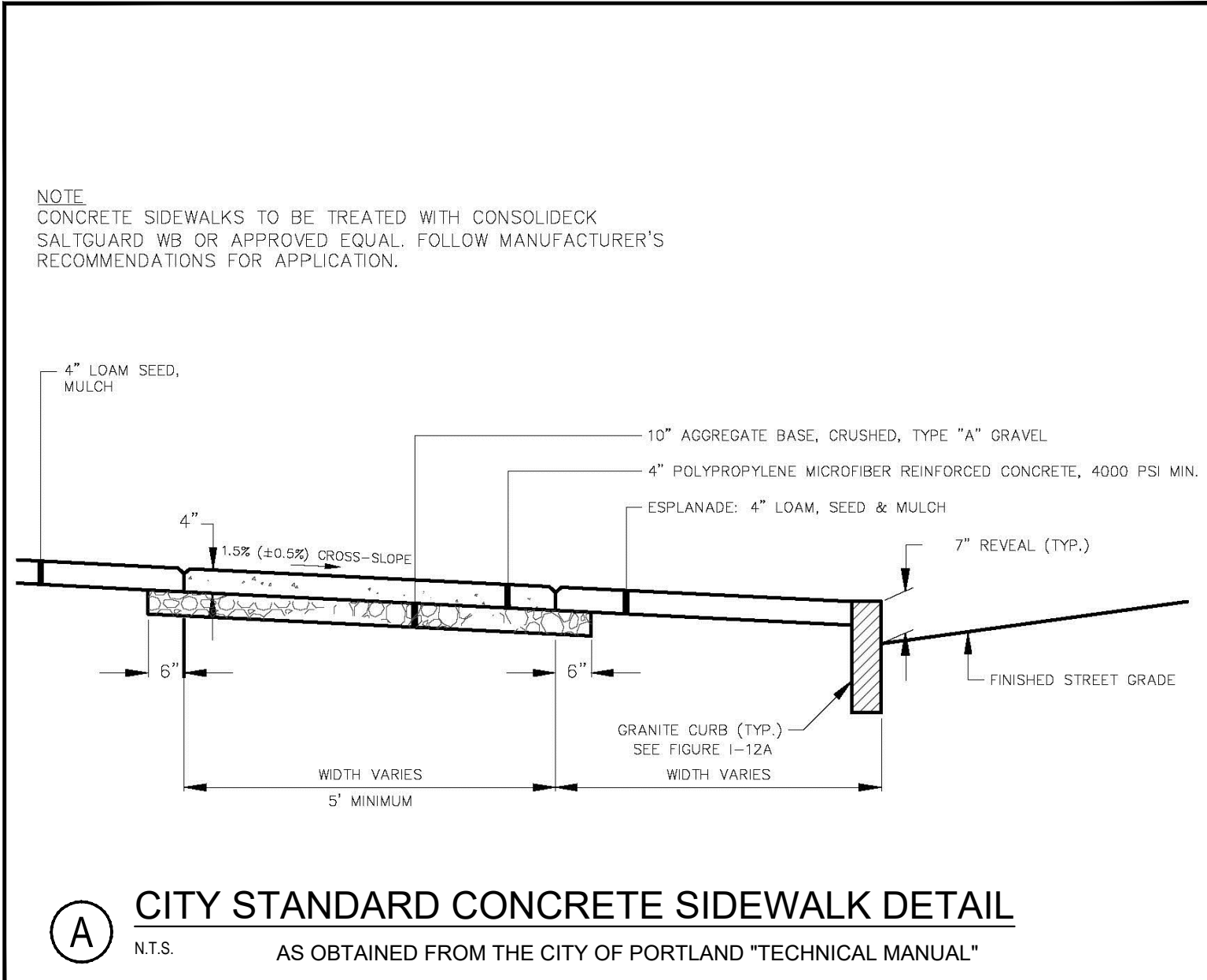
GORRILL PALMER

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Drawing Name:	BASEMENT PARKING
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101

Drawing No.
C-3.1

U:\4148_509 Forest Ave Change of Use Portland\Z - CAD\DWG\4148-DETAILS.dwg 12/14/2023 3:51 PM



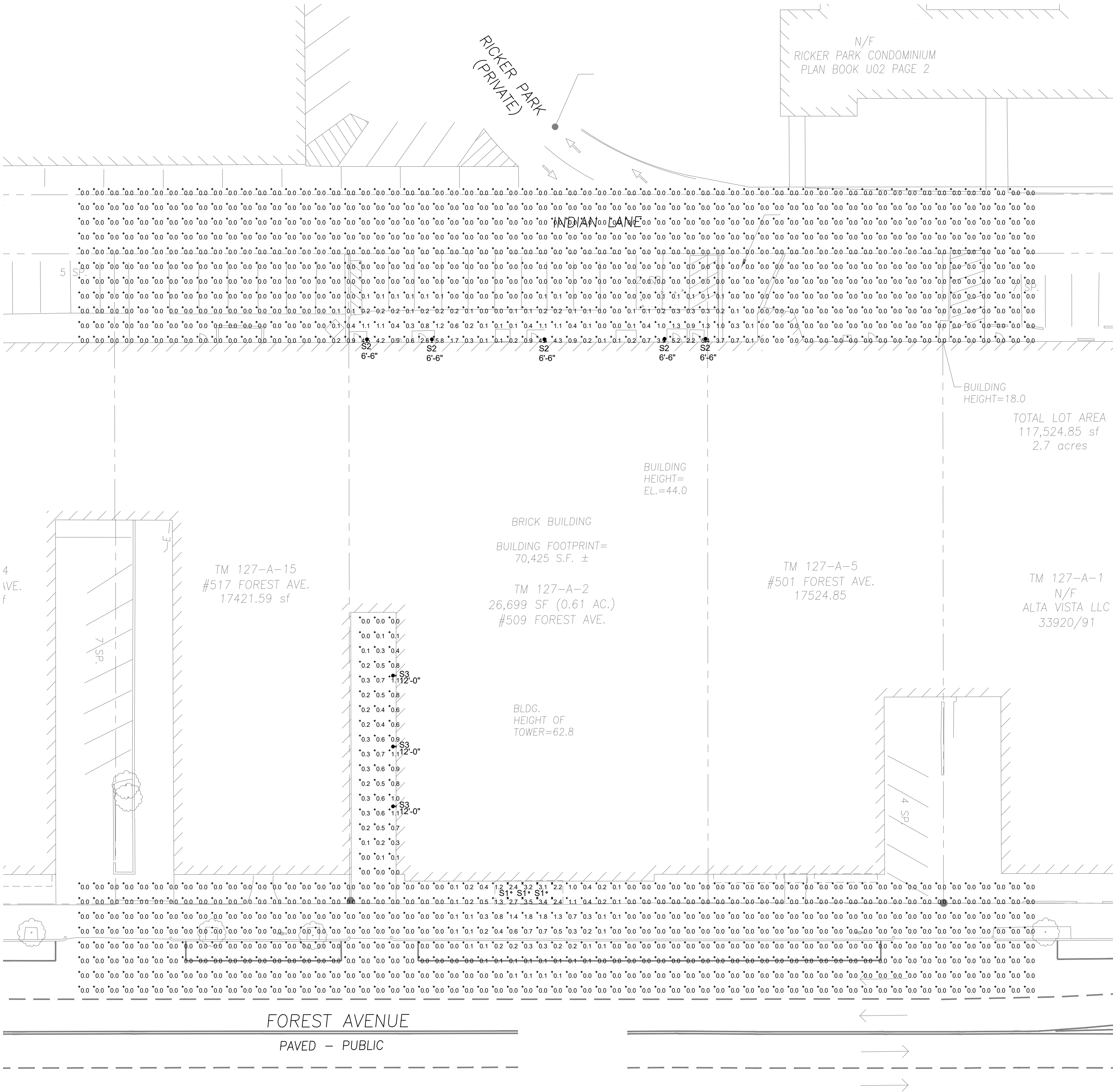
Design:	SRB	Draft:	—	Date:	AUG 2023
Checked:	SRB	Scale:	NTS	Job No.:	4148
File Name: 4148-DETAILS.dwg					
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Drawing Name:	SITE DETAILS
Project:	FOREST AVE CHANGE OF USE FROM OFFICE TO RESIDENTIAL 509 FOREST AVE, PORTLAND, MAINE
Client:	DC 509 FOREST, LLC 631 STEVENS AVE, SUITE 203, PORTLAND, MAINE 04101

Drawing No.	C-4.0
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- DRAWING NOTES:
1. CALCULATIONS REPRESENT MAINTAINED FOOTCANDLE LEVELS AT GRADE.
 2. LIGHT LOSS FACTOR USED IN CALCULATIONS.
 3. EXTERIOR LIGHTING TO BE CONTROLLED BY BUILDING MOUNTED PHOTOCELL ON A DUSK, OFF AT DAWN.
 4. CANOPY LIGHTING STATISTICS:
MIN 2.2 MAX 3.5 AVE 2.9 X/M 1.6:1 A/M 1.3:1
 5. LIGHTING FIXTURES
TYPE S1 PROGRESS #P807-001-028-30
8.3 W / 3000K / 575 LUMENS
TYPE S2 PROGRESS #P580090-031-30K
11.9W / 3000K / 760 LUMENS
TYPE S3 PROGRESS #P5822-2030K9
9W / 3000K / 623

Project:

509 FOREST AVE

PORTLAND, ME

Owner/Client:
Developers Collaborative
631 Stevens Avenue
Portland, ME 04103

Consultant:



Revisions:

Key Plan:

PHOTOMETRIC
LIGHTING PLAN

Scale:
AS NOTED

DECEMBER 15, 2023



Street tree in
esplanade

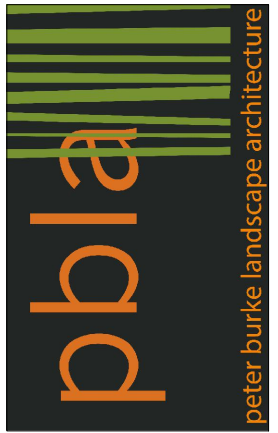
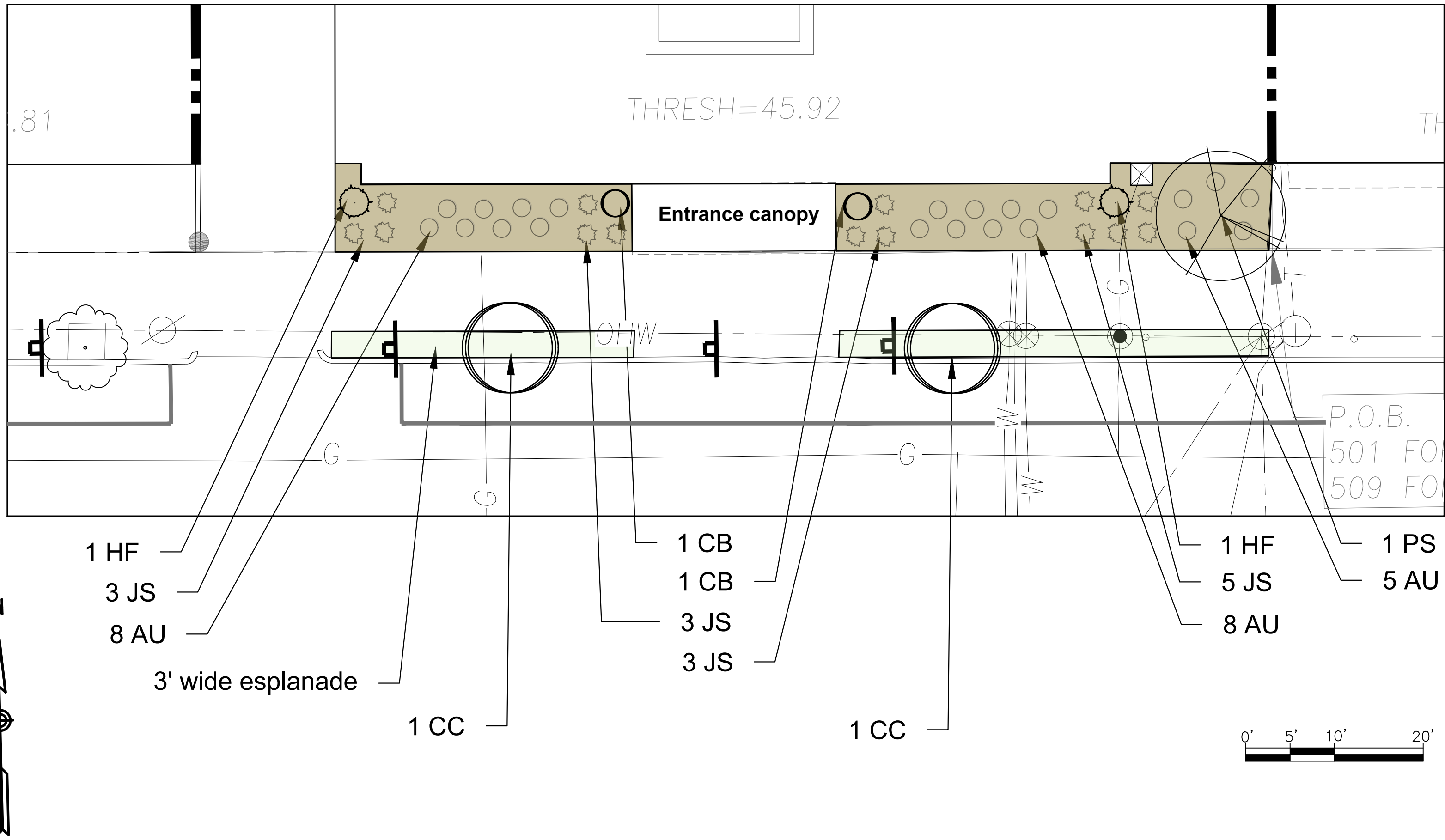
Tube railing?

Low growing
shrubs

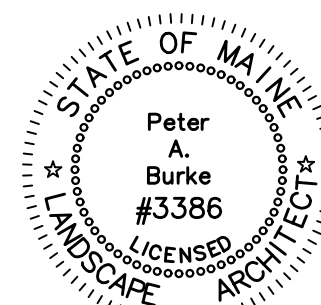
Columnar dwarf tree

Groundcover

Key	Plant List	Mature Size		#
AU	Bearberry/Arcotstaphylos uva-ursi (Evergreen,groundcover)	6'h x 6'w	#1	21
JS	Blue Star Juniper/Juniperus squamata (Evergreen ground hugging shrub)	18"h x 4'w	#5	14
HF	Compact Hinoki Falsecypress/Chamaecyparis obtusa 'Compacta' (evergreen)	10'h x 4'w	5-6'	2
CB	Dwarf Columnar Hornbeam/Carpinus betulus 'Columnaris Nana' (deciduous)	8'h x 3'w	2"	2
CC	Rising Fire American Hornbeam/Carpinus caroliniana 'Uxbridge' (deciduous) (approved by City of Portland in 3' planting strips with high voltage power lines)	30'h x 15'w	2"	2
PS	Flowering Cherry 'Pink Flair'/Prunus sargentii (deciduous tree)	25'h x 20'w	2"	1



Peter Burke
Landscape Architecture
peter@peterburkedesign.com



CLIENT
DC 509 FOREST, LLC

PROJECT
509 FOREST AVE

DRAWING
Planting Plan

REVISIONS					

DRAWING #
L-1

SCALE:
DATE: December 12, 2023

James Cabot <jecabot@me.com>
to planningboard@portlandmaine.gov

Oct 15, 2023, 10:13:57 PM (10 hours ago)



Dear Portland Planning Board,

I recently received a card in the mail regarding 509 Forest Avenue. After a little bit of research, I am writing to express my support for this project. The project proposes to restore (and improve) the historic facade of a significant building on Forest Avenue. More importantly, it creates much-needed housing with easy access to the peninsula along a major transportation corridor (served by bus in addition to car). It is consistent with Portland's long-term plan. This is exactly the kind of project Portland needs and Developers Collaborative is an excellent group that does great work.

Respectfully submitted,
James Cabot
Coyle Street, Portland

Kevin King <Kevink@promptool.com>
to planningboard@portlandmaine.gov

I do not see on site parking. The plan should included on-site parking for at least 76 Cars (2 per residence minimum). We have a site as part of the CVS/TD Bank Shopping Plaza. In previous years, the site was overwhelmed with college parking. Parking proposed off-site only takes car spaces away from current users; once again using up our common parking at the plaza.

Respectfully,

Kevin A. King



Natasha Kypfer <nkypfer@portlandmaine.gov>

Redevelopment of 509 Forest Avenue, Portland — submitted January 23, 2024

Peter Fessenden <pfessenden13@gmail.com>

Tue, Jan 23, 2024 at 10:53 AM

To: planningboard@portlandmaine.gov

Cc: Bruce Dalbeck <bdalbeck@maine.rr.com>, Donna Wampole <travelfar28@yahoo.com>, James Jasper <jamesj@dirigomgmt.com>, Josh Trombley <josh@dcmaine.com>, Natasha Kypfer <nkypfer@portlandmaine.gov>, Steve Bushey <sbushey@gorrillpalmer.com>, "Wendy morrisette.me" <wendy@morrisette.me>

Dear Friends —

My wife and I own and reside at a residential unit in Building Four at Ricker Park (RP). We are in receipt of the postcard notice regarding this evening's hearing. While it is postmarked January 12, we received it on Saturday, January 20. This e-mail is our written statement made on behalf of us alone. I will attend this evening's meeting to discuss any other matters that arise.

Developer's Collaborative is a skilled and reputable company. It has done excellent work elsewhere. We trust that its redevelopment of 509 Forest Avenue — and likely its other adjacent properties adjacent to 509 — will reflect that quality. At this time, however, unconditional approval by the Planning Board would be premature.

We have three primary concerns: (i) traffic on Indian Lane, (ii) light pollution/ intrusion onto the residential units at Ricker Park, and (iii) direction and impact of increased sewer usage. While all have been addressed by the developers, it is not clear if they have been fully settled.

Traffic.

The increased traffic burden on Indian is significantly underestimated.

Indian Lane is a narrow private road bordered almost entirely by properties owned by the applicant to the west and by RP, built in the 1920's and now a condominium association consisting of 54 residential units in four three-story buildings, to the east. The lane is the *only* means of vehicle access and egress to Building Four, RP's parking garage and its primary parking lot; it is the primary vehicle access to Buildings Two and Three and a major access route to Building One. It is used by emergency vehicles, service vehicles, and FedEx/UPS deliveries as well as residents and their guests.

While vehicular access to the 509 development for tenants will be from Forest Avenue, all exiting commercial and residential tenant traffic must use Indian Lane. The developer owns the buildings connected to 509 which have no vehicle access from Forest Avenue; one current tenant is a delivery service. There is also significant commercial traffic from BowStreet Beverage and from the ABC Driving School, located to the south of the applicant's properties.

The application originally stated that there would be 19 basement parking spaces allocated for the 38 residential units of the building. We now understand that 38 spaces will be available for residential tenants along with the 39 for commercial tenants. See chart on page 4 of Gorrill Palmer's December 18 letter. On information and belief, the 39 spaces are for employees and do not account for customers of the commercial tenants.

The applicant continues to predicate the residential traffic burden on Indian Lane based on 0.5 spaces per residential unit. This is based on the assumption that residential tenants will rely principally on public transportation — wishful thinking. In this day and age, especially where the anticipated mix of market-rate and working-income residential tenants is heavily tilted to the former.

The application contemplates foot traffic along the west side of Indian Lane to permit access for residential tenants and guests to the walking trail around Baxter Boulevard (or, perhaps, to walk to Hannaford or Trader Joe's). The path of that walking route is not defined; on information and belief, it is not safe.

The Planning Board should retain jurisdiction over the application to review traffic safety and burdens on Indian Lane during the five years when the developer will retain ownership of the property in order to make such adjustments as will ensure the integrity of the residential neighborhood and the safety of the all residents in the neighborhood.

Lighting.

We appreciate the sensitivity of the developer and the Planning Office to our concerns about light intrusion. The proposed lighting fixtures seem to be a substantial improvement over those currently in place. The devil is always in the details.

The light spread should be the least intrusive permitted by City rules. The specs attached to the December 18 letter provide technical information but no practical understanding. The height of a fixture can change its impact. The developer should show precisely where each fixture will be attached and the spread of the illuminated area.

The Board should make the developer's compliance with its representations regarding lighting an express and enforceable condition of the project's approval.

Sewer.

The application fails to provide us with any meaningful information about sewer configuration and wastewater burdens. At the original public meeting, the developer assured the 25+/- community members present that wastewater would be routed into the sewer under Forest Avenue. It now appears that it will be "routed to the sanitary sewer line in Indian Lane." Studies and testing were promised for the week of December 18. No reporting at all has been provided about the results of those studies.

Observations of sewer, stormwater and drainage configuration over the past four years during the reconstruction of the system under Baxter Boulevard revealed cast iron and ceramic sewer infrastructure, much of it in crumbling condition. On information and belief, there has been no meaningful description whatsoever of the "sanitary sewer line in Indian Lane." The City Planning Office needs it and the RP neighbors deserve it.

The developer should provide information about how access will be assured to Ricker Park for emergency vehicles, service vehicles, deliveries and residents in the event that sewer, stormwater or other drainage demands require attention during the projected life span of the new 509 Forest Avenue redevelopment.

-o0o-

We have been informed that the 509 Forest Avenue redevelopment is a "small project" which will be approved without difficulty. It should not be approved without careful attention. There are a number of important matters that need to be addressed before final approval is in order. It may be that additional concerns will arise as those issues are explored.

Final approval by the Planning Board should be deferred until all information is assembled and presented to the Board and to the affected community.

Thank you for your courtesy and attention.

Peter C. Fessenden
290 Baxter Boulevard - E1
Portland, Maine 04101
207.650.1609
pfessenden13@gmail.com



Natasha Kypfer <nkypfer@portlandmaine.gov>

RE: 509 Forest Ave redevelopment

1 message

wendy morrisette.me <wendy@morrisette.me>

Tue, Jan 23, 2024 at 11:03 AM

To: "planning@portlandmaine.gov" <planning@portlandmaine.gov>

Cc: Peter Fessenden <pfessenden13@gmail.com>, Donna Wamploe <travelfar28@yahoo.com>, Bruce <bdalbeck@maine.rr.com>, Stuart Collins <Stusox33@aol.com>

Good morning,

There will be several Ricker Park Association board members present tonight and we want to express our mixed feelings about the [509 Forest Ave](#) proposal. Developing this building into residential space is necessary as we all know the city lacks housing.

Just a little background about the Ricker Park Association. It has been in existence for almost 100 years and Indian Lane (a privately owned Lane) is how our residents access indoor and outdoor parking. We generally have older residents and about 50% are retired. Indian Lane is a private way, owned 50% by Ricker Park, and the other 50% owned in conjunction with Bow St, Forest Ave Plaza entity, and 509 Forest Ave.

1. Our concerns are increased 2-way traffic on Indian Lane. A traffic study has not been conducted to see if it meets the standards for the increase in road traffic. "The property at 41 Ashmont Street is being considered for redevelopment, and given this, is not being considered as part of the overall parking supply for this development." We believe that the traffic situation,, entrance and exits into these building need to be consciously thought about before moving ahead with the proposal.

2. Another concern is whether Indian Lane will have a new surface when the construction is completed. With the heavy equipment and constant construction worker vehicles, Ricker Park residents, Bow St and Forest Ave Plaza commercial employees will be greatly impacted by the construction. We would like everyone to one good neighbors, courteous of the noise, traffic and overall impact on our residents.

3. Sewer: Availability and Capacity of Public Utilities

*The development will generally be making use of existing utility connections and is still in the process of confirming the adequacy of this infrastructure. The applicant is proposing to video examine the **existing sewer** and is working with CMP to confirm that they have capacity to service the new development. The applicant is also proposing to install a backflow preventer to comply with Portland Water District requirements.*

We would like to know if the development will be tying into Ricker Park sewer system or the Forest Ave system.

There are still several items that need to be addressed before 509 Forest Ave should be allowed to proceed.

Wendy Morrisette
Ricker Park Association Board Member

January 22, 2024

Ms. Natasha Kypfer, Planner

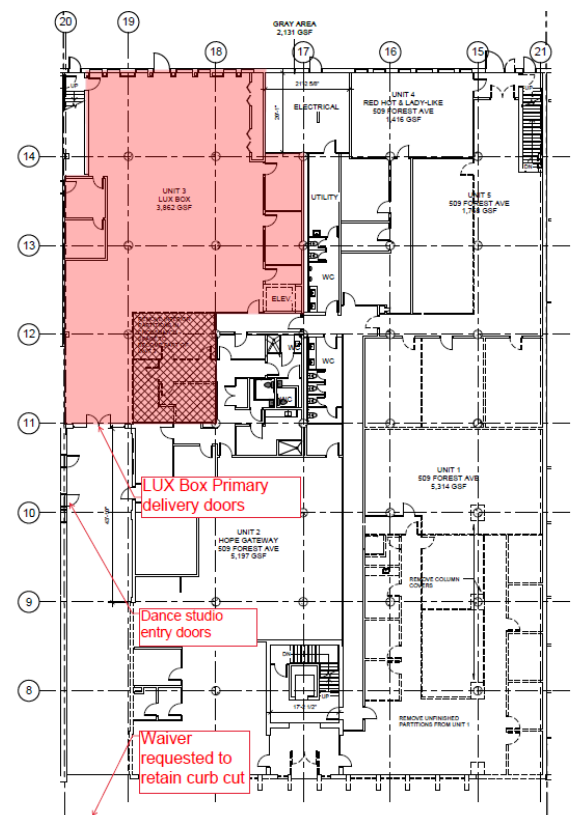
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

**Subject: Change of use
509 Forest Avenue
Waiver Request Driveway Separation
Applicant: DC Forest 509 LLC**

Dear Natasha:

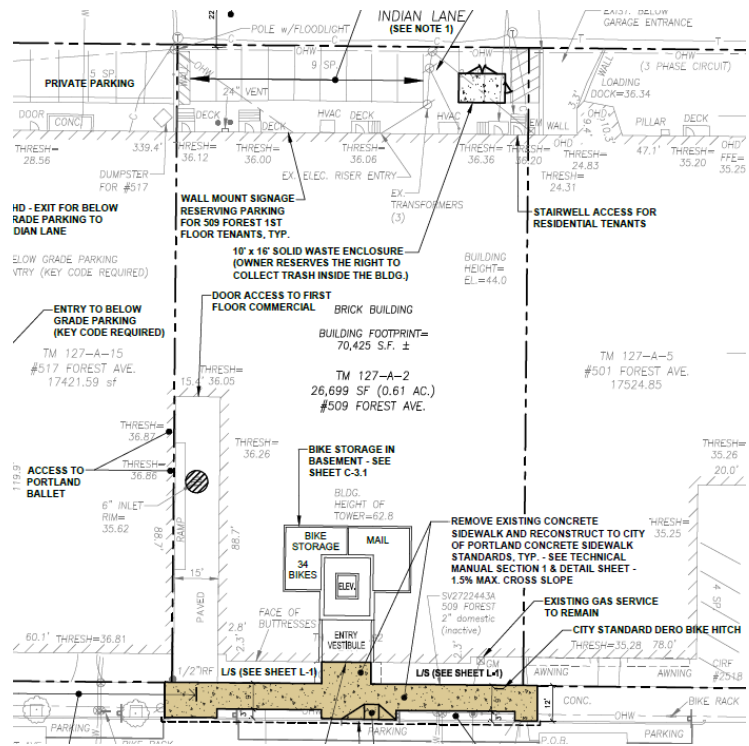
On behalf of **DC 509 Forest LLC (Applicant)**, we offer the following supporting information in response to the Planning Board report and our waiver request #1 for the driveway separation. We understand that the staff does not support the waiver request to retain the existing driveway opening on the north side of the #509 site. We respectfully request your reconsideration of this waiver request on the following basis:

- The existing driveway is used by the tenants in both #509 and #517. The Lux Box Co. ([Your one-stop shop. handling every aspect of the gift-giving process - LUX BOX co.](#)) is a ground level tenant in #509. Their tenant space is identified in Red on the floor plan to the side and they have two ground level access points into the space. They primarily use the existing drive off Forest Ave for product deliveries based on the existing at-grade double door access off the alley. There is a door at the rear of the space, off Indian Lane, however there are steps at that location, which are not ideal for deliveries and use of delivery dollies/hand trucks.



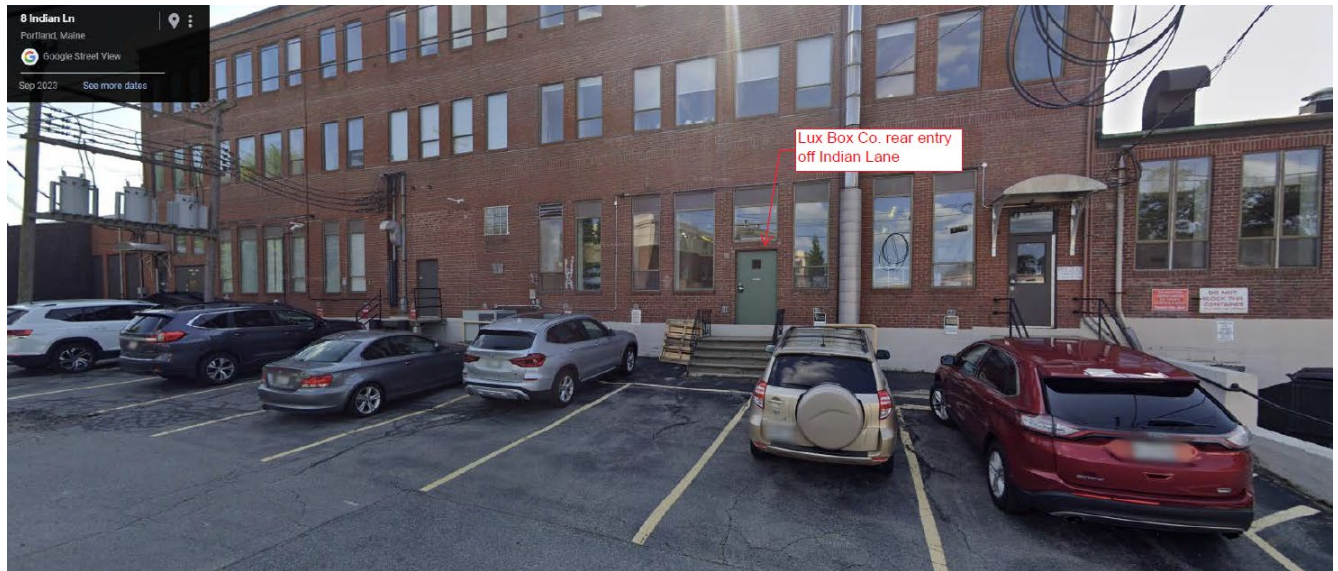


- In accordance with their lease conditions¹, Lux Box delivery vehicles routinely access the curb opening and alley by a reverse movement off Forest Avenue, which is not uncommon for many of the access drives along Forest Avenue. According to Lux Box staff, the alley is often used by Fedex for large pickups, ReadyRefresh, and deliveries with a truck 26" or shorter (they back up their trucks to the double glass doors), and all freight/pallets delivery will park on Forest and use the alley with a lift gate as there is no functioning loading dock in the back of the building. The reverse movement into the alley does allow a much easier exit from the alley upon completion of the delivery and the drivers using the alley are well aware of this condition. If the curb cut remains the applicant is amenable to some signage to clearly promote the reverse-in movement. The applicant can also advise tenants to alert their vendors of this requirement.
- The Casco Bay Movers Dance Studio and Portland Ballet are tenants in the #517 ground level. Both of these tenant's primary entrances are off the alley and they do not have any door access to Indian Lane. The door along the Forest Ave building front is an Exit only. Thus, these tenants also use the alley entrances when they may need vehicular loading/unloading space. Like Lux Box, vehicles for CBM and PB reverse into the alley to allow an easier exiting movement.



#509 Site plan

¹ The Lux Box Lease states “....together with the right to the nonexclusive Use in common with others of all such parking areas, driveways, corridors, Sidewalks, and loading facilities and other common areas and facilities....”



Streetview Indian Lane at #509



#509 Alley – Lux Box/Dance Studios Main entrance

On the basis of these existing tenant conditions and use of the existing curb cut and alley for vehicular unloading/loading, your reconsideration of our waiver request is appreciated. If you have any questions regarding the materials being submitted, please contact this office.

Sincerely,



GORRILL-PALMER

Stephen Bushey, PE

Senior Associate
sbushey@gorrillpalmer.com

c: Kevin Bunker, DC 509 Forest, LLC
Josh Trombley, DC 509 Forest LLC

Reconstruction of the Connector Road
716 Stevens Avenue
Major Site Plan and Site Location of Development
PL-002666-2023
The University of New England, Applicant

Submitted to:	Portland Planning Board	Prepared By:	Maya Balassa
Public Hearing Date:	January 23, 2024	Date:	January 19, 2024

I. INTRODUCTION

The University of New England has submitted a Major Site Plan application to facilitate the reconstruction of the Connector Road that runs from Bishop Street to College Street, and by extension, Stevens Avenue for use by students, faculty, staff, and the campus shuttle bus. This 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 and Site Location of Development standards.

The Planning and Urban Development Department mailed 107 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the January 13 and 16, 2024 editions of the *Portland Press Herald*.

Applicant: Andrew Philippe, University of New England
Applicant Tom Saucier, Site Design Associates
Representatives:

II. REQUIRED REVIEWS

<i>Review</i>	<i>Applicable Standards</i>
Site Plan	Section 14.6
Maine Site Location of Development	Delegated Review

<i>Waiver Requests</i>	<i>Applicable Standards</i>
The applicant is requesting to add lighting with a color temperature of 4000K.	Technical Manual, Section 12.3.5 requires all fixtures shall not exceed 3000K CCT. <i>Staff are supportive of the waiver.</i>

III. PROJECT DATA

Existing Zoning	R-5 Residential, R-3 Residential, IM Moderate Impact Industrial
Property Size	1,224,036 square feet
Existing Use	Roadway
Proposed Use	Roadway

IV. BACKGROUND AND EXISTING CONDITION

The University of New England – Portland Campus is located in Deering Center with its principal frontage along Stevens Avenue, and occupies approximately 40 acres, extending west from Stevens Avenue towards Evergreen Cemetery, and northwest towards Bishop Street. In order to manage traffic and parking for students, faculty and staff, the University has been operating a shuttle bus between the core campus area and its Intermodal Transportation Facility, located off of Bishop Street. This shuttle operates along an existing Connector Road, measuring approximately 20 feet in width, that connects Bishop Street with College Street through an area of dense vegetation and wetlands.

In 2023, the City approved a major site plan ([PL-002343-2023](#)) to redevelop the Bishop Street Intermodal Transportation Facility, which as approved, involves the removal of approximately 2 acres of existing impervious area, and the regrading and repaving of the site to create a 344-space off-street parking area with sidewalks, plantings, stormwater soil filters and a transit shelter for the campus shuttle. The project included an access drive that is intended to connect to the Connector Road when it is realigned.

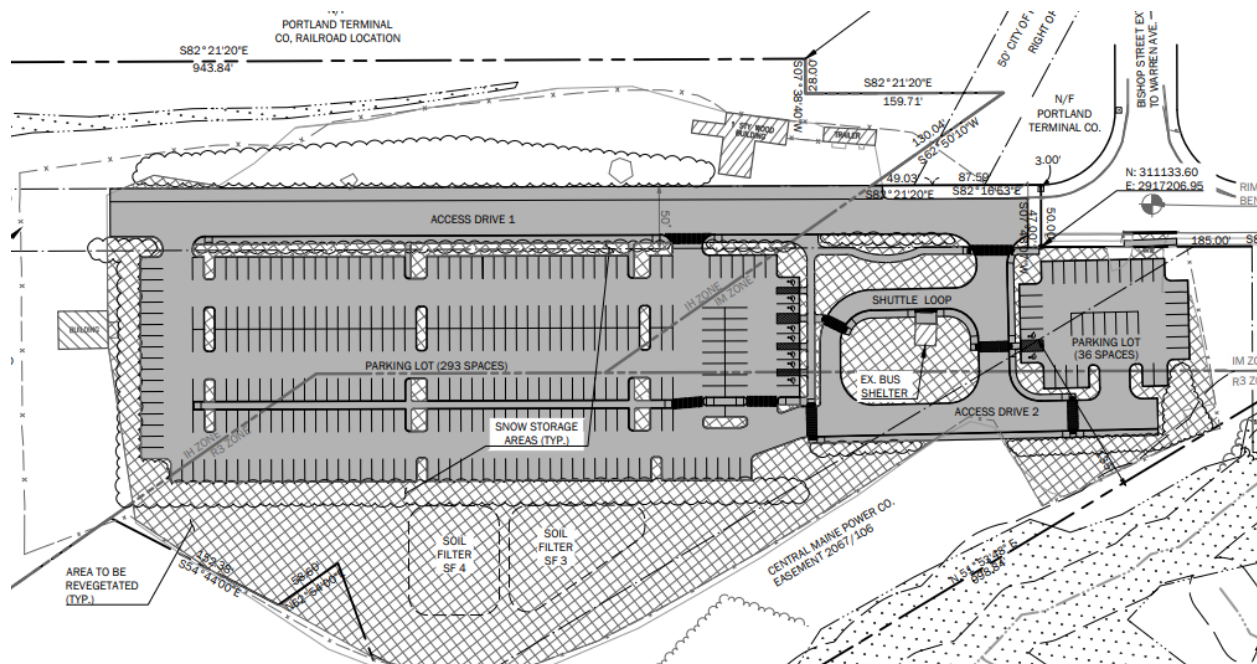


Figure 1 Approved Site Plan for 172 Bishop Street

V. PROPOSED DEVELOPMENT

The proposed Major Site Plan application would facilitate the reconstruction of the Connector Road on the UNE campus. The Connector Road is proposed to be realigned and widened to 31 feet, with a 24-foot street, five-foot sidewalk, and a two-foot gravel shoulder. The road currently connects directly to Bishop Street, however under this proposal, the Connector Road would be realigned to connect into the southeast corner of the Bishop Street Intermodal Transportation Facility. The curb cut along Bishop Street is proposed to be narrowed to ten feet to prohibit cars, but would still allow for pedestrian and bicycle traffic.

The stormwater treatment for this project is being looked at in conjunction with the Intermodal Transportation Facility under a common Site Location of Development Application. Since a Site Location of Development application was reviewed in conjunction with the Bishop Street Intermodal Transportation Facility, for this project, the applicant has submitted a Site Location of Development application

amendment to the previously approved application to include the Connector Drive. The stormwater features for the Intermodal Transportation Facility were oversized in anticipation of the Connector Road being developed with wetland impacts and increased impervious surfaces. Fifty percent of the developed area for both the Intermodal Transportation Facility and the Connector Road is being treated with three separate soil filters. Two soil filters have been approved at the Intermodal Transportation Facility and one is being proposed for this project along the Connector Road.

The site plan shows 45 trees proposed to be removed in and near wetlands for this project. The applicant is proposing to plant 15 trees.

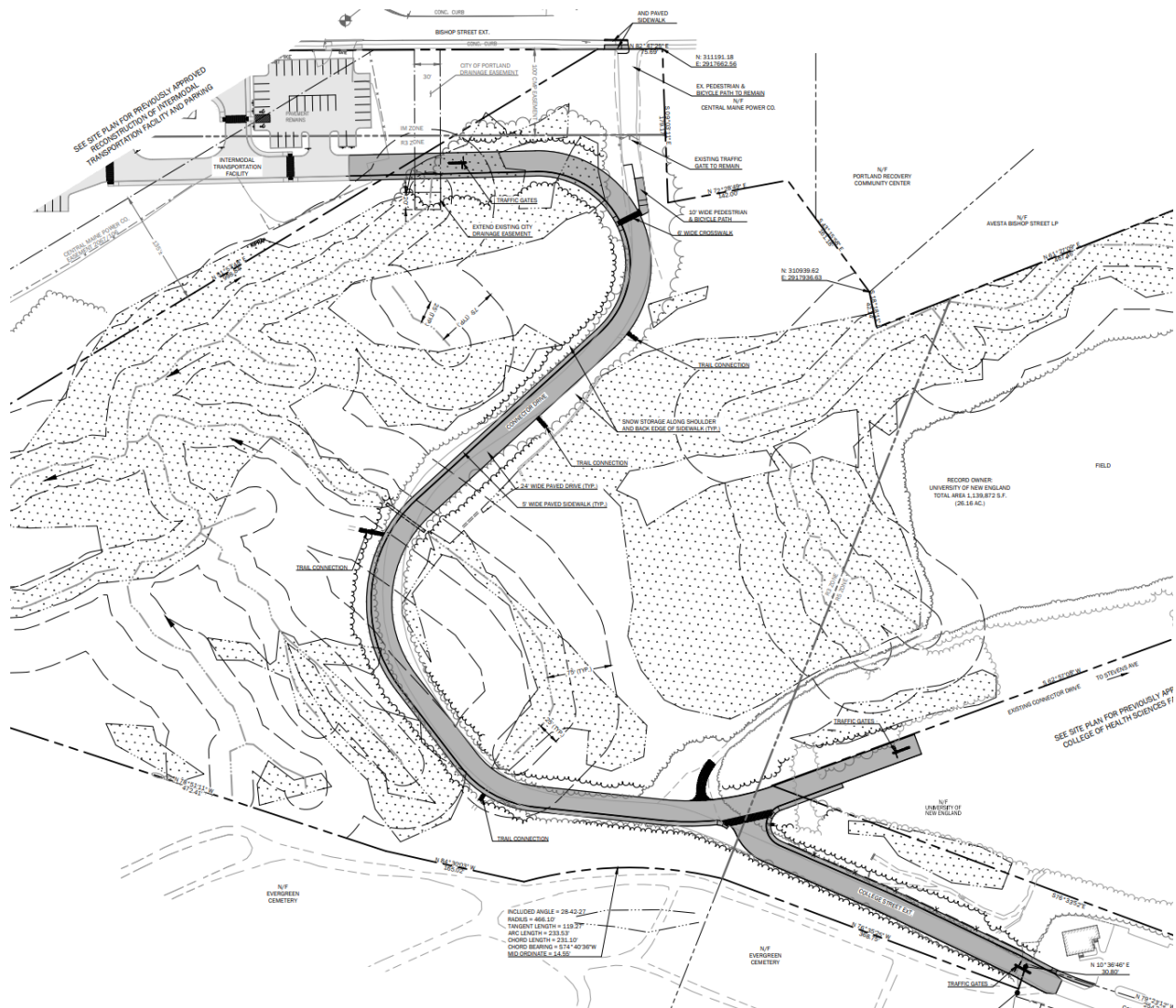


Figure 2 Site Plan

VI. PREVIOUS WORKSHOP

The Planning Board held a workshop for this project on January 9, 2023. During the workshop, staff raised comments with the road width and pedestrian safety. The City suggested that the applicant consider reducing the road width to support a decrease in vegetation removal, wetland impacts, and to support as a traffic calming measure. During the workshop, the Board expressed concerns over the

potential that vehicles may travel at higher than safe speeds given the low traffic volume of the street, and raised procedural questions related to the applicant's Site Location of Development application submission and banking Urban Impaired Stream mitigation credits. Under Technical Manual Section 5-4, banking Urban Impaired Stream mitigation credits is allowed for, as long as the credits are granted in accordance with the Urban Impaired Stream credit table 2 – located in the Maine DEP Chapter 501 rules. Following the workshop, the applicant submitted a response to concerns raised by staff (Applicant Submittal R). The response has been reviewed by staff and several conditions have been proposed to ensure compliance. In response to the Board's concerns regarding vehicle speeds and potential safety hazards, along with the City's concerns regarding the extent of natural resource impacts associated with the project, staff are proposing a condition to reduce the roadway width where feasible based upon the shuttle simulation. The applicant is also proposing signage to support slow speeds and crosswalk visibility.

VII. RIGHT, TITLE, & INTEREST

The University of New England has shown right, title, and interest with the submission of the deed (Applicant Submittal D).

VIII. FINANCIAL & TECHNICAL CAPACITY

The applicant has shown financial and technical capacity in their application documentation. The applicant, the University of New England, has submitted a letter certifying that the institution has secured the required funding (Applicant Submittal F). The application was prepared by Tom Saucier, a licensed professional engineer from Site Design Associates, demonstrating adequate technical capacity (Applicant Submittal L).

IX. ZONING ANALYSIS

The 28.1-acre site lies in the R-5 Residential, R-3 Residential, and I-M Moderate Impact Industrial zones. The proposed road and sidewalk would cover 4.7% of the lot. The proposed project is found to be meeting zoning requirements.

X. SITE PLAN REVIEW STANDARDS (Section 14.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's Site Plan Ordinance, Section 14.6.

1. Transportation Standards (Section 14.6.1)

A. Impact on surrounding street systems

The Connector Road will be utilized by staff, students, faculty, and the University's shuttle bus. By allowing access to and from campus through Bishop Street, the University is seeking to reduce University related traffic through Morrill's corner.

The proposed sidewalk is intended to enable pedestrians and trail users to navigate the improved connector road and provide additional trail connections.

B. Access and circulation

Access is proposed to be restricted at the entrance of the Intermodal Transportation facility and at the end of College Street to the Connector Road. The width of the roadway is proposed to be 24-feet (two 12-foot aisles). In the initial review, staff requested that the lanes be decreased to 11 feet, for a total

roadway width of 22 feet. The City's third-party traffic engineer has attested that 11-foot-wide lanes will function safely as a shared lane with cyclists, while decreasing impervious surface, decreasing wetland impact, and decreasing speed, and decreasing the number of trees that need to be removed. There are least five trees approximately two feet from the line of disturbance.

Following the workshop, the applicant submitted a Shuttle Simulation for a 22-foot drive (Plan 20) and a 24-foot drive (Plan 19). The 22-foot drive simulation shows that the shuttle bus would cross over the center line around the three curves of the road. Staff are amenable to keeping the shuttle bus within the lane, and therefore recommend that the applicant provide 11-foot drive aisles (22-feet total) with a widening to 12-foot aisles (24-feet total) at the curves to adjust for shuttle turning.

The City's third-party traffic engineer submitted the following statement:

"City staff is recommending the travel lane widths be reduced from 12 feet to 11 feet to calm vehicle speeds and reduce construction impacts. The applicant has conducted a vehicle turning template analysis for the connector drive for two scenarios, one with 11-foot lanes and one with 12-foot lanes. Based on a design vehicle that is representative of the UNE shuttle vehicle, there is some vehicle encroachment across the centerline at the curves when assuming 11-foot lanes. To address this issue, it is suggested that the lanes be widened to 12-feet in the areas where encroachment occurs. In my professional opinion, 11-foot travel lanes will function safely and are appropriate for the proposed low volume roadway. I would also note that MaineDOT is designing most roadways in the state using 11-foot lanes and has approved some roadways with 10-foot lanes. MaineDOT and the city are currently designing Congress Street and Park Avenue in the Libbytown neighborhood with a combination of 11 foot and 10-foot lanes, roadways that carry significantly more traffic volume as compared to the proposed connector roadway. Lastly, I would note that narrowing the travel lanes will help to calm traffic such that low vehicle speeds will support shared bicycle accommodations, which I expect bicyclist will take full use of the travel lane."

There are two crosswalks proposed for this project. One crosswalk is proposed for pedestrians and cyclists entering the road from the reduced curb cut along Bishop Street at the northern bend. The southern crosswalk is proposed at the intersection of the Connector Road and College Street Extension, which the City finds to be acceptable as designed.

Staff had concerns over the safety of the northern crosswalk, given the short sightlines. In response to comments, the applicant has added advanced warning signage in accordance with MUTCD and is meeting MDOT sightline requirements. DPW has lingering questions over the safety of the crosswalk as designed, but all standards are being met.

C. Public transit access

Not applicable.

D. Parking

There is no parking associated with this project. The Intermodal Transportation Facility was approved for redevelopment in 2023, and will be utilized in conjunction with the Connector Road.

During the site plan review of the Intermodal Transportation Facility, the applicant and staff discussed opportunities for connecting existing nearby bicycle and pedestrian facilities through the project site,

and agreed to coordinate further around this when the Connector Road application was submitted. Improvements here would provide new trail connections for the trails in Evergreen Cemetery, and would fill a portion of an existing gap in the City's Neighborhood Byway network. Trail connections that would serve as neighborhood byway connections from the Connector Road are recommended to be a minimum of 6 feet in width to meet byway standards. Five bike parking spaces are proposed along the public access off of Bishop Street.

E. Transportation demand management (TDM)

Not applicable. UNE has a TDM plan that is not affected by this project.

2. **Environmental Quality Standards (Section 14.6.2)**

A. Preservation of significant natural features

The project proposes 11,148 square feet of wetland impact. When significant natural features cannot be preserved, the "applicant must demonstrate compliance with applicable state and federal regulations and implement preservation measures to the extent practicable". The applicant has submitted an approved Natural Resource Protection Act permit by the Maine DEP (Applicant Submittal C) to meet the first requirement. The applicant must also demonstrate that they are preserving significant natural features, which includes freshwater wetlands, to the greatest extent practicable. As mentioned above, Staff are recommending that the applicant reduce the width of the proposed roadway to further reduce the amount of wetland impact.

B. Landscape preservation

The applicant is not proposing to preserve any of the trees within the limits of disturbance. Due to the size of the property and the fact that it is almost entirely vegetated, the City did not request that the applicant show all of the trees outside of the limits of disturbance on the site plan.

C. Site landscaping and buffers

The applicant is proposing to plant 15 sugar maple trees. In response to staff comments the applicant has agreed to replace the proposed maples with another species due to the high percentage of maples currently in the city and their susceptibility to the Asian Long-Horned Beetle. A condition has been added for the applicant to replace the proposed maples with approved alternatives. The City Arborist suggests selecting at least three in the following list:

- Northern red oak (*Quercus rubra*)
- Swamp white oak (*Quercus bicolor*)
- Black gum/tupelo (*Nyssa sylvatica*)
- Eastern hophornbeam (*Ostrya virginiana*)
- Sourwood (*Oxydendrum arboreum*)

D. Water quality/storm water management/erosion control

The applicant is proposing a soil filter along the edge of the southern part of the Connector Road. The applicant has submitted stormwater calculations for treatment of both the Connector Road and the Intermodal Transportation Facility (ITF), as much of the stormwater infrastructure intended to treat the Connector Road was included as part of the ITF application. The three soil filters proposed (two at the ITF and one along the Connector Road) will provide treatment for 50% of the redeveloped area. Staff find the proposed treatment to meet Maine DEP requirements.

Since the project will have wetland impacts, a Natural Resource Protection Act permit is required and has been approved by the State of Maine Department of Environmental Protection (Applicant Submittal C). To meet Chapter 500 erosion and sedimentation control standards, the applicant is proposing a double row of erosion control measures.

3. **Public Infrastructure and Community Safety Standards (Section 14.6.3)**

A. Consistency with City Master Plans

By adding bicycle and pedestrian connections, the applicant is increasing connectivity. Offering the Connector Road to students, faculty and staff will support diversion of some traffic away from Morrill's Corner. These outcomes are in alignment with Transportation goals on Portland 2030.

B. Public safety and fire prevention

The Connector Road will be access controlled at either side and will be well lit. The applicant is proposing a Knox Box system at the gates, which is required by the Fire Department.

C. Availability and capacity of public utilities

The applicant is connecting to a connection to CMP installed for the Intermodal Transportation Facility. The applicant needs to request ability to serve from CMP for the additional energy required for the lighting proposed along the Connector Drive. A condition has been added.

4. **Site Design Standards (Section 14.6.4)**

A. Massing, ventilation, and wind impact

Not applicable. No building is proposed.

B. Shadows

Not applicable. No building is proposed.

C. Snow and ice loading

Snow and ice loading are shown on the site plan along the roadway shoulder. The proposed snow removal plan meets the standard.

D. View corridors

Not applicable. Not located in the Downtown Vision View Corridor Protection Plan. No building is proposed.

E. Historic resources

Not applicable. Not located in a historic district.

F. Exterior lighting

The project is proposing 20 street lights along the Connector Road. The applicant is proposing RSX2 LED P6 40K R3 lighting that meets full-cut off, light trespass, and foot-candle standards.

The applicant has requested a waiver of the Technical Manual Section 12.3.5 requiring a maximum color temperature of 3000K, to allow for lighting with a higher color temperature of 4000K. Staff are supportive of the waiver as it was granted on two previous projects for UNE on the basis that it is consistent with their campus wide lighting and public safety scheme.

G. Noise and vibration

Not applicable. No HVAC, AHU, emergency generator or similar equipment is proposed.

H. Signage and wayfinding

The applicant is proposing signage to promote sharing the road with cyclists. Signage is also being discussed for Portland Trail connections. Staff are supportive of the signage being proposed.

I. Zoning-related design standards

Not applicable. There are no zoning related design standards for a roadway in the R-3 Residential, R-5 Residential nor the IM Moderate Impact Industrial zones.

XI. SITE LOCATION OF DEVELOPMENT

The Applicant has evaluated the Center for Health Sciences, Intermodal Transportation Facility and Connector Drive together as part of the Site Location of Development permit application. Per Maine DEP Chapter 500, an impact area analysis was completed to determine that 50% of the three projects' developed area must be treated. Per Section 5 of the City of Portland's Technical Manual, for the three projects of redevelopment work, 50% of non-roof, redeveloped impervious area must be treated. The three projects have been evaluated together for stormwater management for the SLOD permit, and treatment is being provided by three soil filters approved as part of the Center for Health Sciences and Intermodal Transportation Facility projects to provide the adequate level of treatment for the entire permitted area.

The SLODA review standards are listed below.

1. Financial and technical capacity

Please refer to the site plan review above. The application is meeting this standard.

2. Traffic movement

The application is not anticipated to generate 100 or more passenger car equivalents at peak hour, and therefore, this standard is not applicable.

3. No adverse impacts on the natural environment

The project will impact freshwater wetlands and an urban impaired stream. To account for the proposed impacts, the applicant has received a Natural Resource Protection Act permit. The City is recommending that the roadway width be reduced by two feet, so as to further reduce impacts on the natural environment.

4. Soil types

The predominant soil types in the existing condition are Scantic silt loam, Buxton silt loam, and Lyman-Tunbridge complex, which are suitable for the proposed project. The application is meeting this standard.

5. Infrastructure

The only utility for the Connector Road is power for the overhead lighting, for which staff is seeking confirmation from CMP that they have capacity to serve this improvement. Additionally, the realignment of the Connector Road will reduce traffic through Morrill's Corner, and reduce the

number of left-turn movements onto Bishop Street from Stevens Avenue, which will alleviate congestion through this intersection. The application is meeting this standard.

6. Ground water

The project is not proposing any increased direct pollution of groundwater- the proposed infiltration basins work to protect groundwater by allowing for slow infiltration in vegetation that clean stormwater as it infiltrates and feeds groundwater. The application is meeting this standard.

7. Flooding

The project is proposing stormwater infrastructure that result in the infiltration of stormwater of storms from the 2-year, 10-year, and 25-year frequency and reduced flows. The application is meeting this standard.

8. Stormwater management and sediment and erosion control

Please refer to the site plan review above. The application is meeting this standard.

XII. NEIGHBORHOOD MEETING & PUBLIC COMMENT

A neighborhood meeting was held on November 7, 2023. There was one person in attendance.

One public comment has been submitted to the city advocating for bike connectivity through this road for the public.

XIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff recommends that the Planning Board project PL-002666-2023 for the reconstruction of the Connector Drive at the University of New England meets the applicable standards of Portland's Land Use Code.

XIV. 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 held on January 23, 2024 for application PL-002666-2023 at 716 Stevens Avenue 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 – Color Temperature

The Planning Board [**finds/does not find**] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual standard 12.3.5 which requires all fixtures shall not exceed 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**] the Technical Manual standard Section 12.3.5 to allow for lighting with a color temperature of 4000K.

B. SITE PLAN AND SITE LOCATION OF DEVELOPMENT REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing held on January 23, 2024 for application #PL-002666-2023 at 716 Stevens Avenue 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 and site location of development standards subject to the following conditions of approval:

PRIOR TO THE START OF CONSTRUCTION

1. The applicant shall update the site plan to reduce the width of the roadway to 11-foot lanes, except for bends which shall require 12-foot lanes, to be reviewed and approved by the Planning Authority.
2. The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended. This easement shall be reviewed and approved by the Public Works Authority and Corporation Counsel.
3. The applicant shall submit ability to serve confirmation from CMP for the additional capacity needed to support the lighting proposed along the road, to be reviewed and approved by the Planning Authority.
4. The applicant shall replace the proposed maple trees in the landscaping plan with alternatives approved by the City Arborist to be reviewed and approved by the Planning Authority.

C. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on January 23, 2024 related to application PL-002666-2023 at 716 Stevens Avenue, which is attached to the draft approval letter and incorporated therein, the Planning Board **[adopts/does not adopt]** the approval letter as drafted as the Planning Board's decision for application PL-002666-2023, and authorizes the Planning Board Chair to sign the approval letter as drafted.

XV. ATTACHMENTS

APPLICANT SUBMITTAL

- A. Stormwater Report
- B. SLODA Application
- C. Cover Letter and Attachments
- D. Deed
- E. Dewatering Plan
- F. Financial Capacity Letter
- G. Letter of Agent
- H. Light Fixtures and Poles
- I. Lighting Waiver Request
- J. Major Site Plan Checklist
- K. Project Description
- L. Technical Ability
- M. Temp Bus Route
- N. Zoning Analysis Table
- O. Zoning Compliance
- P. Neighborhood Meeting

- Q. Neighborhood Meeting Attendance
- R. Response to Comments 12.12.23
- S. Response to Comments 1.16.24

PLANS

- P1. Landscape Plan
- P2. Existing Condition and Removals Plan
- P3. Site Plan
- P4. Site and Utility Plan
- P5. Connector Road Plan and Profile
- P6. Connector Road Plan and Profile
- P7. College Ave Ext Plan and Profile
- P8. Wetland Impact Plan
- P9. Erosion Control Details
- P10. Site Details
- P11. Site Details
- P12. Site Details
- P13. Cover Letter and Attachments
- P14. Photometric Plan
- P15. Boundary Survey
- P16. Main Campus Boundary
- P17. Connector Road Traffic Gate Plan
- P18. Light Fixtures and Poles
- P19. Connector Drive Shuttle Simulation 24' wide
- P20. Connector Drive Shuttle Simulation 22' wide
- P21. Construction Management Plan
- P22. Temporary Bus Route

REPORT ATTACHMENTS

- 1. Approval Letter
- 2. City Staff Comments 11.1.23
- 3. City Staff Comments 1.10.24

PUBLIC COMMENT

- PC1. Winston Lumpkins 1-8-2024

PLANNING BOARD

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

January 23, 2024

Andrew Philippe
The University of New England
11 Hills Beach Road
Biddeford, ME 04005

Tom Saucier
Site Design Associates
23 Whitney Way
Topsham, ME 04086

Project Name: Connector Drive
Address: 716 Stevens Avenue
Applicant: Andrew Philippe
Planner: Maya Balassa

Project ID: PL-002666-2023
CBL: 145 B014001, 145 B018001, 281 A003001

Dear Andrew Philippe:

On January 23, the Planning Board approved a major site plan and Site Location of Development application for a proposed reconstruction and realignment of the Connector Drive on the University of New England University campus in the R-3 Residential, R-5 Residential, and IM Moderate Impact Industrial zones. The project consists of adding a sidewalk along the road, realigning the road to the Bishop Street Intermodal Transportation Facility, adding stormwater treatment, and expanding the users of the road to students, faculty, staff, and the shuttle bus. The decision is based upon the application, documents and plans as submitted. The Planning Board reviewed the proposal for conformance with the standards of the Site Plan Ordinance, Ch. 14, Article 14, Section 14.6, and the Site Location of Development Standards, Section 14 of the Technical Manual. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board adopted the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 23, 2024, which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions and recommendations, the Planning Board found that the application met all relevant standards and voted [add vote, for and against] to approve the application with the following waivers and conditions as presented below.

Waivers

The Planning Board voted [add vote, for and against] to waive the following City of Portland Technical standards:

The Planning Board finds based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual standard 12.3.5 which requires all fixtures shall not exceed 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 the Technical Manual standard Section 12.3.5 to allow for lighting with a color temperature of 4000K.

Site Plan Review

The Planning Board finds that the plan is in conformance with the site plan standards of the Land Use Code and the Site Location of Development Act, subject to the following conditions of approval:

PRIOR TO THE START OF CONSTRUCTION

1. The applicant shall update the site plan to reduce the width of the roadway to 11-foot lanes, except for bends which shall require 12-foot lanes, to be reviewed and approved by the Planning Authority.
2. The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended. This easement shall be reviewed and approved by the Public Works Authority and Corporation Counsel.
3. The applicant shall submit ability to serve confirmation from CMP for the additional capacity needed to support the lighting proposed along the road, to be reviewed and approved by the Planning Authority.
4. The applicant shall replace the proposed maple trees in the landscaping plan with alternatives approved by the City Arborist to be reviewed and approved by the Planning Authority.

The approval is based on the submitted plans and findings related to site plan review and Site Location of Development review as contained in the Planning Board report dated January 23, 2024 for application PL-002666-2023 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.
2. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

3. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.
4. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.
5. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)
6. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.
7. Stormwater Management The owner/operator of an approved stormwater management system, and all assigns shall comply with the conditions of Chapter 32, Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.
8. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for

additional review and approval.

The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

9. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
10. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.
11. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.
12. Impact Fees New development or changes of use that result in net new residential dwelling units, non-residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit <https://www.portlandmaine.gov/2409/Impact-Fees>

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at (207)874-8901 or via email at DRC@portlandmaine.gov. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Maya Balassa at (207) 207-874-8718 or via mbalassa@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:

2. Planning Board Report
3. Portland City Code: Chapter 32
4. Sample Stormwater Maintenance Agreement
5. Performance Guarantee Packet



Dear Applicant,

We have completed our review of your application (PL-002666-2023) proposing to redevelop the carriage road connecting the Bishop Street Intermodal Transportation Facility with College Street off of Stevens Avenue in the R-5 Residential, R-3 Residential, and IM Moderate Industrial Zones. This development triggers major site plan review, and is subject to the following regulations:

- Site Plan – Article 14.6

An overview of the City's review can be viewed in the attached project review worksheets.

Next Steps

Please review all feedback and reach out to the project review manager if you have any questions or would like to discuss this feedback in more detail. In order to proceed, the applicant shall prepare a written response to all feedback, and shall update plans, documents and other materials as necessary to address the below listed comments. The applicant shall notify the project review manager when a resubmission is uploaded to ProjectDox. Once received, the project review manager will notify the applicant of their scheduled review timeline for this resubmission.

Based upon the City's findings related to your application, the City will advance this application for a workshop with the Planning Board on **Tuesday, 1/9/2023**. Please let me know at your earliest convenience if there are any conflicts with proposed date.

Sincerely,

Maya Balassa
Planner

Attachments

1. Site Plan Worksheet

City Staff and Third-Party Peer Reviewers have completed the latest review of this application based off of the most recent submissions. Comments below have been provided to the Planning & Urban Development Department from the Department of Public Works, Water Resources, Zoning, and Third-Party Consulting Engineers (Stormwater + Traffic).

Please submit a written response to the comments below and upload the response, revised submissions, and new material to Project Dox (make sure all submissions maintain the same file naming format to allow for versioning). Once uploaded, please send an email to mbalassa@portlandmaine.gov notifying the planner of the resubmission.

Be advised that additional comments may be forthcoming and other changes may still be required if the comments are not addressed adequately. If you have any questions, please do not hesitate to ask.

Green signifies the standard is being met; red signifies the there are outstanding comments.

General Review Comments		
Review	Discussion	Status
RTI	Overview: The applicant has shown right, title and interest over the carriage road through the submitted deed.	
Financial & Technical Capacity	Overview: The applicant has demonstrated financial and technical capacity. The applicant has submitted a letter showing financial capacity. The applicant team includes Site Design Associates and Ledgewood.	
Permits / Other Requirements	Overview: A Site Location of Development Permit is needed. An application has been submitted. See below comments.	
Zoning	Overview: Comments:	
Additional Submissions Requested: The address on Energov says 716 Stevens Ave. The documents and site plans utilize 83 College Street. Please alter the application materials to have a single address across.		

14.6.1: Transportation Standards		
Standard	Discussion	Status
Impact on Surrounding Street Systems	Overview: The carriage road will continue to be utilized by the shuttle bus from the Bishop Street Intermodal Transportation Facility to the UNE campus on Stevens Avenue. The public will have access to the pedestrian/bike path. The path is proposed to connect to the trail system in Evergreen Cemetery.	

Access and Circulation	Overview: The road will have gate-controlled access at either side. The shuttle bus from the Bishop Street Parking Lot runs to campus on Stevens Avenue and back on this road. Students, faculty and staff will be some permissions to utilize this road. A five-foot wide path, accessible to the public, will be paved alongside the realigned road for pedestrian and cyclists. The path will connect to some trails in the back of Evergreen Cemetery. The pedestrian and bike lane will support greater bike connectivity throughout the city. Comments: - Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road. - To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet. - Please clarify who specifically will have gate card access. - The Bishop Street driveway is to remain in place and gated. While the city supports a pedestrian/bicycle connection, we would suggest that the curb cut be closed.	
Public Transit Access	Overview: Comments:	
Parking	Overview: The Bishop Street Intermodal Facility was approved by the Planning Board this year. No parking is being proposed as part of this application. Comments: We are in support of adding bike parking on the outside of the Intermodal Transportation Facility to support access to the trail.	
Transportation Demand Management	Overview: The campus has a Transportation Demand Management Plan that will not be impacted by the scope of this project. Comments:	
Additional Submissions Requested:		

14.6.2: Environmental Quality Standards		
Standard	Discussion	Status
Preservation of Significant Natural Features	Overview: Comments:	
Landscape Preservation	Overview: The realignment of the carriage road as proposed will involve removal of vegetation and will have wetland impacts. Comments: Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.	

	- This survey indicates areas with tree canopy cover but not tree locations, size and species information. Per the City's Technical Manual Chapter 4.3.1, the survey should identify location, size and species of all existing trees 10" diameter at breast height (DBH) or greater on the site. Given the predominantly wooded nature of the project site, it is acceptable for the applicant to identify only trees proposed to be removed as part of this project, noting the size (in DBH) and species information for existing trees 10" DBH or greater. - The existing site has some notable patches of Japanese Knotweed. The applicant shall follow the requirements laid out in Technical Manual section 4.7.4 for the containment and removal of invasive plants in the limit of work to prevent them spreading into newly disturbed ground. - For existing trees being preserved that are adjacent to the limit of work, the applicant shall follow tree protection requirements described in Technical Manual chapter 4.3 and tree preservation detail IV-2 - Areas around the carriage road that are being cleared of trees due to grading shall be replanted with native straight species trees and exposed soil shall be covered with undyed wood mulch and/or seeded with native shade-tolerant seed mixes where appropriate.	
Site Landscaping and Buffers	Overview: There are areas of existing gravel that are being removed. Comments: - The area where gravel is being removed is currently proposed to be covered with loam and reseeded with "park mix" grass seed. The area in question is surrounded by woodland and is partly shaded. City staff suggest selecting a seed mix that is composed of native part shade-tolerant forbs that will fit into the woodland setting. The park mix grass seed is more appropriate for maintained lawn areas than forested woodlands. - There are at least three existing footpaths/trails that connect to the carriage road which are not currently represented on the plans. Please locate the existing trails on the site plan and ensure the pathway connections are being maintained or improved as part of the carriage road improvement project. At least one of the trails is heavily used by pedestrians as a connection between Evergreen Cemetery and the UNE campus.	
Water Quality, Stormwater Management and Erosion Control	Overview: The parcel contains a large area of wetlands. The proposed realignment will have wetland impacts and create new impervious area. Comments: The project generally is required to comply with the stormwater regulations as outlined by Maine DEP Chapter 500 and the City of Portland Technical Manual Section 5 requirements. As follow-up to discussions on previous UNE projects, the Applicant has submitted as part of this project a Site Location of Development Application, which is reviewed and approved by the City under their Delegated Review Authority. Overall SLOD – Additional clarity is needed on the area that is intended to be covered by the SLOD Application. As was noted on previous application reviews that highlighted the need for the SLOD permit, looking at the entire site as one is advantageous, allowing for treatment to be accounted for across the site to meet the required standards. The Applicant is proposing to do that here, but additional information is needed. The figures provided show the redevelopment evaluation of the Intermodal Transportation Facility and Connector Drive to determine the amount of treatment that will be required per the MaineDEP standards for redevelopment. The ultimate stormwater management scenario includes systems located within this area, but also	

	a system within the Center for Health Sciences. As I understand the analysis, the Center for Health Services project area is not included as part of the SLOD calculations. - General/Redevelopment Standards - As noted, our understanding of the project intent is that treatment from both the Intermodal Transportation Facility and the Center for Health Sciences is to be counted towards the requirement for the Connector Drive. Detail on the Intermodal Transportation Facility is included, but it is unclear how the Center for Health Sciences site's design fits into the area/treatment calculations. - Basic Standards – Details have been provided for erosion and sedimentation control measures. Erosion control measures are shown on the plan and profile sheets. - Flooding Standards – The entire site has been evaluated for the flooding standard, including both the Intermodal Transportation Facility and the Center for Health Sciences. The site in its entirety will meet the Flooding Standard. The applicant has noted that there will be a Tier 1 NRPA permit for the proposed impacts. This approval should be provided when received from the MaineDEP. - The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended. - The applicant shall submit DEP permits for the proposed stream crossings and wetland impacts for review as part of this site plan review.	
Transportation Demand Management	<u>Overview:</u> <u>Comments:</u>	
<u>Additional Submissions Requested:</u>		

14.6.3: Public Infrastructure + Community Safety Standards		
Standard	Discussion	Status
Public Safety and Fire Prevention	<u>Overview:</u> There are no public safety concerns at this time. <u>Comments:</u>	
Public Utilities	<u>Overview:</u> Lighting is proposed along the road. <u>Comments:</u>	
<u>Additional Submissions Requested:</u>		

14.6.4: Site Design Standards		
Standard	Discussion	Status



Massing, Ventilation and Wind Impact	Overview: Massing, ventilation and wind impacts not anticipated. Comments:	
Shadow	Overview: Not applicable. Comments:	
Snow and Ice Loading	Overview: Snow storage is identified on the edges of the roadway. Comments:	
View Corridors	Overview: Not applicable. Comments:	
Historic Resources	Overview: Not applicable. Comments:	
Exterior Lighting	Overview: The applicant is proposing lighting along the road that is consistent with the campus wide lighting scheme. The lighting is proposed to meet full cutoff standards and have a color temperature of 4000K. The applicant is requesting a waiver for the color temperature standard. Comments: - The city is in support of the color temperature waiver, as it was approved for previous UNE projects and is in line with the campus wide plan. - The photometric plan shows a maximum foot-candle of 6.3 and an average foot-candle of 2.3 in the stat zone. The maximum foot-candle allowed is 5 for this use, with an average of 1.25. Please adjust the lighting plan to meet this standard. - The	
Noise and Vibration	Overview: Noise and vibration impacts are not anticipated. Comments:	
Signage and Wayfinding	Overview: Comments:	
Design Standards	Overview: Not applicable. Comments:	
Additional Submissions Requested:		



Dear Applicant,

We have completed our review of your application (PL-002666-2023) proposing to redevelop the carriage road connecting the Bishop Street Intermodal Transportation Facility with College Street off of Stevens Avenue in the R-5 Residential, R-3 Residential, and IM Moderate Industrial Zones. This development triggers major site plan review, and is subject to the following regulations:

- Site Plan – Article 14.6

An overview of the City's review can be viewed in the attached project review worksheets.

Next Steps

Please review all feedback and reach out to the project review manager if you have any questions or would like to discuss this feedback in more detail. In order to proceed, the applicant shall prepare a written response to all feedback, and shall update plans, documents and other materials as necessary to address the below listed comments. The applicant shall notify the project review manager when a resubmission is uploaded to ProjectDox. Once received, the project review manager will notify the applicant of their scheduled review timeline for this resubmission.

Based upon the City's findings related to your application, the City will advance this application for a hearing with the Planning Board on **Tuesday, 1/23/2023**. Please let me know at your earliest convenience if there are any conflicts with proposed date.

Sincerely,

Maya Balassa
Planner

Attachments

1. Site Plan Worksheet

City Staff and Third-Party Peer Reviewers have completed the latest review of this application based off of the most recent submissions. Comments below have been provided to the Planning & Urban Development Department from the Department of Public Works, Water Resources, Zoning, and Third-Party Consulting Engineers (Stormwater + Traffic).

Please submit a written response to the comments below and upload the response, revised submissions, and new material to Project Dox (make sure all submissions maintain the same file naming format to allow for versioning). Once uploaded, please send an email to mbalassa@portlandmaine.gov notifying the planner of the resubmission.

Be advised that additional comments may be forthcoming and other changes may still be required if the comments are not addressed adequately. If you have any questions, please do not hesitate to ask.

Green signifies the standard is being met; red signifies the there are outstanding comments.

General Review Comments		
Review	Discussion	Status
RTI	<u>Overview:</u> The applicant has shown right, title and interest over the carriage road through the submitted deed.	
Financial & Technical Capacity	<u>Overview:</u> The applicant has demonstrated financial and technical capacity. The applicant has submitted a letter showing financial capacity. The applicant team includes Site Design Associates and Ledgewood.	
Permits / Other Requirements	<u>Overview:</u> A Site Location of Development Permit is needed. An application has been submitted and meets the standards.	
Zoning	<u>Overview:</u> <u>Comments:</u> •	
<u>Additional Submissions Requested:</u> •		

14.6.1: Transportation Standards		
Standard	Discussion	Status
Impact on Surrounding Street Systems	<u>Overview:</u> The carriage road will continue to be utilized by the shuttle bus from the Bishop Street Intermodal Transportation Facility to the UNE campus on Stevens Avenue. The public will have access to the pedestrian/bike path. The path is proposed to connect to the trail system in Evergreen Cemetery.	

Access and Circulation	Overview: The road will have gate-controlled access at either side. The shuttle bus from the Bishop Street Parking Lot runs to campus on Stevens Avenue and back on this road. Students, faculty and staff will be some permissions to utilize this road. A five-foot wide path, accessible to the public, will be paved alongside the realigned road for pedestrian and cyclists. The path will connect to some trails in the back of Evergreen Cemetery. The pedestrian and bike lane will support greater bike connectivity throughout the city. Comments: • Please clarify if bicycles will be able to maneuver around the gate on either end without having to ride into the gravel or the sidewalk. • DPW is very concerned with regards to the proposed shared bicycle use within the roadway due to the unrestricted travel ways that encourage high speeds of vehicular activity combined with the roadway curvature and sight lines associated with the proposed alignment. In addition, given the heading associated with the proposed cross-sections, the installation of guardrail is likely necessary in locations. • The proposed crossing near station 7+50 is not safe due to restricted sight lines for drivers and pedestrians. Please consider relocating the crossing or installing significant advance warning equipment to make the crossing safer. • Please provide dimensions for the reduced curb opening on Bishop Street.	
Public Transit Access	Overview: Comments: •	
Parking	Overview: The Bishop Street Intermodal Facility was approved by the Planning Board this year. No parking is being proposed as part of this application. Comments: • Please clarify where and how many bike parking spots are proposed.	
Transportation Demand Management	Overview: The campus has a Transportation Demand Management Plan that will not be impacted by the scope of this project. Comments: •	
Additional Submissions Requested: •		

14.6.2: Environmental Quality Standards		
Standard	Discussion	Status
Preservation of Significant Natural Features	Overview: Comments: •	
Landscape Preservation	Overview: The realignment of the carriage road as proposed will involve removal of vegetation and will have wetland impacts. Comments:	

Site Landscaping and Buffers	Overview: There are areas of existing gravel that are being removed. Comments: Please replace the proposed maple trees with another native tree- due to the high percentage of maple trees in the city and an invasive beetle moving north that is a looming threat to maple trees.	
Water Quality, Stormwater Management and Erosion Control	Overview: The parcel contains a large area of wetlands. The proposed realignment will have wetland impacts and create new impervious area. Comments: The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended. – We can draft this as a condition of approval for the hearing.	
Transportation Demand Management	Overview: Comments:	
Additional Submissions Requested:		

14.6.3: Public Infrastructure + Community Safety Standards

Standard	Discussion	Status
Public Safety and Fire Prevention	Overview: Gate access is required at both ends of the road. Comments: Please confirm that you are using Knox Box gate access to meet Fire Safety.	
Public Utilities	Overview: Lighting is proposed along the road. Comments:	
Additional Submissions Requested:		

14.6.4: Site Design Standards

Standard	Discussion	Status
Massing, Ventilation and Wind Impact	Overview: Massing, ventilation and wind impacts not anticipated. Comments:	

Shadow	<u>Overview:</u> Not applicable. <u>Comments:</u>	
Snow and Ice Loading	<u>Overview:</u> Snow storage is identified on the edges of the roadway. <u>Comments:</u>	
View Corridors	<u>Overview:</u> Not applicable. <u>Comments:</u>	
Historic Resources	<u>Overview:</u> Not applicable. <u>Comments:</u>	
Exterior Lighting	<u>Overview:</u> The applicant is proposing lighting along the road that is consistent with the campus wide lighting scheme. The lighting is proposed to meet full cutoff standards and have a color temperature of 4000K. The applicant is requesting a waiver for the color temperature standard. <u>Comments:</u> The city is in support of the color temperature waiver, as it was approved for previous UNE projects and is in line with the campus wide plan.	
Noise and Vibration	<u>Overview:</u> Noise and vibration impacts are not anticipated. <u>Comments:</u>	
Signage and Wayfinding	<u>Overview:</u> <u>Comments:</u>	
Design Standards	<u>Overview:</u> Not applicable. <u>Comments:</u>	
<u>Additional Submissions Requested:</u>		

STORMWATER MANAGEMENT REPORT

UNE CONNECTOR DRIVE

83 College Street, Portland, Maine

September 22, 2023

Introduction

Site Design Associates (SDA) was retained to assist the University of New England (UNE) (Applicant) in the design and permitting for the reconstruction of the Connector Drive between the UNE Intermodal Transportation Facility (ITF) (currently under recently approved reconstruction) and the Harold and Bibby Alford Center for Health Sciences facility (CFHS) (currently under previously approved construction) at the UNE campus in Portland, Maine. The spur from the Connector Drive to College Street is also being reconstructed. The widening of the drive itself will result in 25,095 square feet of additional impervious area and a reduction of developed area by 4,707 square feet. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the Connector Drive results in 8.9 acres of redeveloped area with a net reduction of 73,150 square feet of impervious area and a net reduction of 48,182 square feet of developed area.

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 Appendix A and Appendix B of this report, respectively.

Pre-Development Conditions

The existing Connector Drive currently runs between Bishop Street and College Street. The paved drive varies in width, but averages approximately 20 feet wide with varying width grassed shoulders on each side. Minor portions of the redevelopment area (primarily at the new tie-in points at either end) are currently undeveloped and forested. Multiple wetlands are located along

both sides of the existing drive. Once corroded 36-inch CMP stream crossing culvert is located approximately in the middle of the existing connector drive. 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 Scantic silt loam (Sn) (HSG D), Buxton silt loam (Bu) (HSG C/D), and Windsor loamy sand (Wm) (HSG A). 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 (West), D1.1 Pre-development Drainage Plan (East), D2.0 Post-development Drainage Plan (West) and D2.1 Post-development Drainage Plan (East) in Appendix F of this report.

Properly modeling the stormwater conditions for the Connector Drive reconstruction project require including portions of the previously approved predevelopment stormwater models from the CFHS project (subcatchments 4.1 – 4.4) and the ITF reconstruction project (subcatchments 7.0, 7.1, and 8.0). Generally, stormwater from the west side of the campus flows overland and into the large wetland east of the connector drive and then under the connector drive through the 36-inch CMP culvert, where it then continues to flow to the west through the wetland/stream complex and offsite at analysis point AP8. Stormwater from the west side of the campus flows directly into the wetland/stream complex west of the connector drive and offsite at analysis point AP8.

Stormwater peak runoff flow rates from the site for the 2, 10, and 25-year storm events were analyzed at analysis point AP8 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 (West) and D1.1 – Pre Development Drainage Plan (East) are included in Appendix F.

Post-Development Conditions

The proposed project includes the reconstruction and widening of the existing connector drive. The reconstructed drive will include a 24-foot wide paved drive with a curb and sidewalk on the west side. The reconstructed drive will generally follow the same path as the existing drive, except at the ends where it will connect directly to the ITF parking lot on the northwesterly end and directly to the CFHS facility on the southeasterly end. The spur that ties into College Street will also be reconstructed with a curb and a sidewalk on the west side.

The reconstruction and widening of the drive itself will result in 25,095 square feet of additional impervious area. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the drive results in 8.9 acres of redeveloped area with a net reduction of 73,150 square feet of impervious area.

Stormwater will generally be collected in multiple catch basin and storm drain systems along the westerly curbed side of the drive. Stormwater from the east side will drain into a roadside ditch. Multiple culverts will be installed to allow water to cross under the drive. The existing corroded

36-inch CMP stream crossing culvert will be replaced with a 36-inch HDPE culvert with a buried invert.

Portions of the northwesterly and southeasterly ends of the connector drive will be collected in catch basin systems and directed to soil filters SF1 and SF3, which are currently being constructed as part of the Center of Health Sciences and ITF reconstruction projects, respectively. The soil filters were designed with additional capacity to treat the additional runoff from the reconstructed Connector Drive.

Post-development stormwater peak runoff flow rates for the 2, 10, and 25-year storm events at the analysis point are summarized in Table 1 in the Stormwater Quantity section of this report

Stormwater Quantity

Properly modeling the stormwater conditions for the Connector Drive reconstruction project require including portions of the previously approved post development stormwater models from the CFHS project (series 4 subcatchments) and the ITF reconstruction project (series 8 subcatchments).

The overall stormwater runoff volume from the campus is significantly reduced due to the reduction of 73,150 square feet of impervious area associated with the Connector Drive and ITF reconstruction projects and the additional reduction of 43,107 square feet from the CFHS. The total reduction of impervious area on campus results in 2.67 acres. Additional stormwater detention is provided within the four grassed underdrained soil filters (SF1-SF4) that were approved as part of the ITF reconstruction and CFHS projects.

Stormwater runoff from the ends of the Connector Drive are directed to soil filters SF1 and SF3, which were designed with additional capacity to handle the flow from the contributing areas of the reconstructed connector drive.

Stormwater runoff peak flow rates for the 2, 10, and 25-year storm events were analyzed at the 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 the analysis point.

Table 1			
Pre and Post Development Peak Runoff Rates (cfs)			
Storm Frequency	2-Year	10-Year	25-Year
AP8			
Pre-Development	25.5	42.1	56.0
Post-Development	14.4	35.9	51.6

As shown in Table 1, the peak runoff rate at the analysis point under the post-development conditions are less than 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.

Redevelopment and Stormwater Quality

The reconstruction and widening of the drive itself will result in 25,095 square feet of additional impervious area. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the drive results in 8.9 acres of redeveloped area. Therefore, the City of Portland Redevelopment Standard is applicable to this project, which required treatment of 50% of the redeveloped impervious area. The Maine DEP SLODA redevelopment standard is also applicable to this project, which requires treatment of 50% of the redeveloped developed area.

The existing impervious area within the redevelopment window is 293,873 square feet. The proposed impervious area within the redevelopment window is 220,723 square feet, which results in a reduction of 73,150 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.

The existing developed area within the redevelopment window is 342,597 square feet. The proposed developed area within the redevelopment window is 294,415 square feet, which results in a reduction of 48,182 square feet of developed area in the redeveloped condition. 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. It is assumed that a 2-foot wide grassed shoulder will be maintained beyond the edge of the drive and sidewalk and the remaining ditches and slopes will be returned to a meadow conditions and mowed not more than twice per year and considered undeveloped per Maine DEP Chapter 500 rules. Therefore, the total redeveloped developed area at the completion of the project will be 6.8± acres. The total impervious area will also be significantly reduced, therefore, the Ranked Impact Change (RIC) from the pre to post development condition is -0.8, 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. The Maine DEP also requires treatment of 50% of the overall redeveloped developed area for projects that trigger a SLODA permit. 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 (SF3 and SF4) are being constructed to provide stormwater treatment at the site as part of the previously approved ITF project. Runoff from a small portion of the northwesterly end of the Connector Drive will be directed to SF3. Two grassed underdrained soil filters are being constructed as part of the previously approved CFHS project (SF1 and SF2). A portion of the southeasterly end of the Connector Drive will be directed to soil filter SF1. Soil filters SF1 and SF3 were designed with additional capacity to treat the contributing runoff from

the Connector Drive. 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 111,315 square feet of impervious area, which results in treatment of 50.4% of the redeveloped impervious area associated with the ITF/Connector Drive project. The proposed stormwater management plan will collect and treat stormwater runoff from 155,184 square feet of developed area, which results in treatment of 52.7% of the redeveloped developed area associated with the ITF/Connector Drive project. Stormwater treatment calculations are summarized below in Table 2.

Table 2 Water Quality Calculations													
	Center for Health Sciences		Intermodal Transportation Facility and Connector Drive										
Subcatchment Area	Impervious Area (SF)	Landscaped Area (SF)	Impervious Area (Intermodal Trans. Facility) (SF)	Impervious Area (Connector Drive) (SF)	Landscaped Area (SF)	Developed Area (SF)	Filter Area Required ¹ (SF)	Filter Area Provided (SF)	Water Quality Volume Required ² (CF)	Water Quality Volume Provided (CF)	Sediment Forebay Volume required ³ (CF)	Sediment Forebay Volume Provided (CF)	BMP
TREATED AREAS													
4.3	37,812	21,557	0	7,405	440	7,845	2,701	3092	4,479	5,951	58	61	Soil Filter (SF1)
8.1			17,932	215	4,661	22,808	3,166	3,177	5,249	5,393	63	81	Soil Filter (SF3)
8.2			15,948	2,061	12,948	30,957							
8.3			15,232		2,355	17,587							
8.4			0		9,852	9,852							
8.5			28,262		3,314	31,576	2,898	3,128	4,809	5,486	67	203	Soil Filter (SF4)
8.6			14,522		735	15,257							
8.7			9,738		0	9,738							
8.8			0		9,564	9,564							
TOTAL TREATED			111,315		43,429	155,184							
TOTAL REDEVELOPED IMPERVIOUS AND DEVELOPED AREA			220,723			294,416							
PERCENT REDEVELOPED IMPERVIOUS & DEVELOPED AREA TREATED			50.4%			52.7%							
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.													

Urban Impaired Stream Standard

The project is located within the Capisic Brook Urban Impaired Stream (UIS) watershed, as identified by the Maine DEP. Previous projects and impervious area reductions on campus resulted in 7.30 banked UIS watershed credits to be applied to future projects (see previously approved ITF stormwater report). Since the Connector Drive project, by itself, results in a net increase of 25,095 square feet of impervious area from the previously approved ITF project, some of the banked UIS credits will be used to offset the development. The total landscaped area resulting from the Connector Drive project will be reduced, so no credit is required for the landscaped area associated with the Connector Drive.

Table 3 below summarizes the UIS mitigation credits used for this project based on the increase in impervious area per Maine DEP Chapter 501 standards.

Table 3 Urban Impaired Stream Compensation Credits Required				
Development Activity	Area (SF)	Area (AC)	Credit Per Acre	Credit Required
Creation of Non-Roof Impervious Area	25,095	0.58	0.5	0.29
Creation of Landscaped Area	0	0.00	0.5	0.00
Total Mitigation Credit Required				0.29
Total Campus UIS Mitigation Credit Achieved and Previously Banked for Future Development				7.30
Total Campus UIS Mitigation Credit Remaining and Banked for Future Development				7.01

As indicated in Table 3 above, the Connector Drive project requires 0.29 UIS mitigation credits. The table also shows the 7.30 previously achieved UIS credits from the recently permitted CFHS and ITF projects. The remaining total campus credit of 7.01 will be banked for potential future development projects onsite.

Erosion Control

BMPs such as stabilized construction entrances, 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 E. The plan includes a draft of a Stormwater Drainage System Maintenance Agreement, to be finalized and recorded as a condition of approval.

Conclusions

The HydroCAD calculations show that the peak runoff rates at the analysis points under post-development conditions are estimated to be 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. Previously approved stormwater treatment BMPs have been designed to treat stormwater runoff from more than 50% of the redeveloped impervious and more than 50% of the redeveloped developed area in compliance with the City of Portland ordinance and the Maine DEP Chapter 500 standards. 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 & Draindown Calculations

Appendix D: USDA NRCS Soil Map

Appendix E: Inspection & Maintenance Plan & City of Portland Maintenance Agreement

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

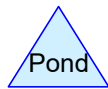
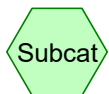
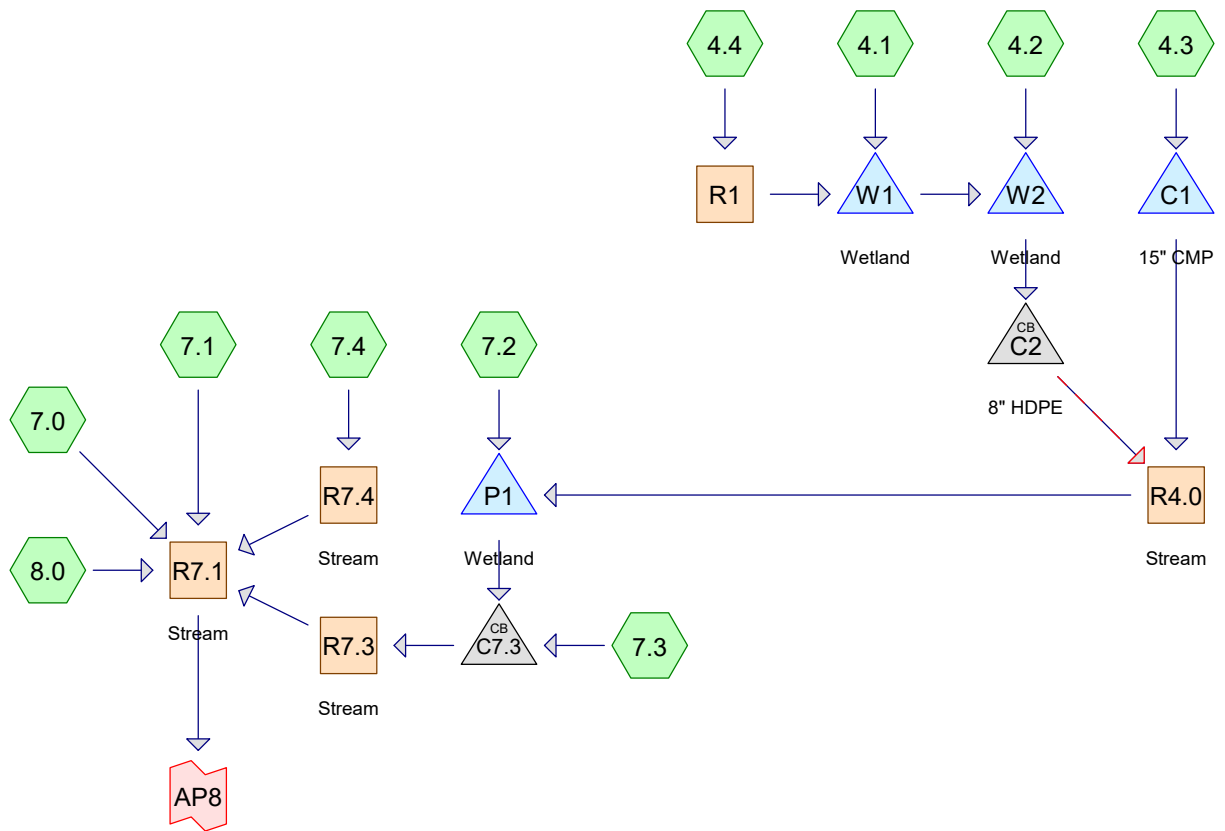
R2.0 – Post Development Pollutant Loading Plan

D1.0 – Pre Development Drainage Plan

D2.0 – Post Development Drainage Plan

D3.0 – Stormwater Treatment Plan

Appendix A:
Pre-Development HydroCAD Calculations



Routing Diagram for Pre-Development_ROAD
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Pre-Development_ROAD

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

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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

Subcatchment 4.1:	Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>0.59" Flow Length=520' Tc=13.8 min CN=66 Runoff=1.50 cfs 0.175 af
Subcatchment 4.2:	Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>2.07" Tc=5.0 min CN=90 Runoff=8.84 cfs 0.613 af
Subcatchment 4.3:	Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>1.14" Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=0.90 cfs 0.076 af
Subcatchment 4.4:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>2.87" Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 af
Subcatchment 7.0:	Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>1.07" Flow Length=270' Tc=49.4 min CN=76 Runoff=4.07 cfs 0.679 af
Subcatchment 7.1:	Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>1.99" Tc=5.0 min CN=89 Runoff=1.27 cfs 0.088 af
Subcatchment 7.2:	Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>1.18" Flow Length=330' Tc=50.7 min CN=78 Runoff=6.37 cfs 1.063 af
Subcatchment 7.3:	Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>0.96" Flow Length=275' Tc=39.9 min CN=74 Runoff=0.96 cfs 0.146 af
Subcatchment 7.4:	Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>0.37" Flow Length=235' Tc=29.3 min CN=60 Runoff=0.44 cfs 0.087 af
Subcatchment 8.0:	Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>2.55" Tc=5.0 min CN=95 Runoff=22.54 cfs 1.636 af
Reach R1:	Avg. Flow Depth=0.24' Max Vel=2.90 fps Inflow=1.78 cfs 0.137 af n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=1.72 cfs 0.137 af
Reach R4.0: Stream	Avg. Flow Depth=0.53' Max Vel=4.64 fps Inflow=16.60 cfs 0.935 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=8.72 cfs 0.933 af
Reach R7.1: Stream	Avg. Flow Depth=1.22' Max Vel=4.93 fps Inflow=27.31 cfs 4.618 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=25.53 cfs 4.607 af
Reach R7.3: Stream	Avg. Flow Depth=0.46' Max Vel=4.62 fps Inflow=7.42 cfs 2.131 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=7.42 cfs 2.128 af
Reach R7.4: Stream	Avg. Flow Depth=0.07' Max Vel=2.05 fps Inflow=0.44 cfs 0.087 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=0.44 cfs 0.086 af
Pond C1: 15" CMP	Peak Elev=95.53' Storage=79 cf Inflow=0.90 cfs 0.076 af 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=0.85 cfs 0.076 af

Pre-Development_ROAD*Type III 24-hr 2-Yr Storm Rainfall=3.10"*

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Pond C2: 8" HDPE

Peak Elev=98.04' Inflow=15.87 cfs 0.859 af
Primary=1.93 cfs 0.616 af Secondary=13.94 cfs 0.243 af Outflow=15.87 cfs 0.859 af

Pond C7.3:

Peak Elev=76.36' Inflow=7.42 cfs 2.131 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=7.42 cfs 2.131 af

Pond P1: Wetland

Peak Elev=83.61' Storage=12,240 cf Inflow=10.17 cfs 1.996 af
Outflow=6.73 cfs 1.985 af

Pond W1: Wetland

Peak Elev=100.41' Storage=6,526 cf Inflow=2.63 cfs 0.312 af
Outflow=0.31 cfs 0.246 af

Pond W2: Wetland

Peak Elev=98.01' Storage=1,215 cf Inflow=8.96 cfs 0.859 af
Outflow=15.87 cfs 0.859 af

Link AP8:

Inflow=25.53 cfs 4.607 af
Primary=25.53 cfs 4.607 af

Total Runoff Area = 39.776 ac Runoff Volume = 4.700 af Average Runoff Depth = 1.42"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

Pre-Development ROAD

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

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD
					Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00'
					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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Pre-Development ROAD

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

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 4.07 cfs @ 12.72 hrs, Volume= 0.679 af, Depth> 1.07"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

Pre-Development ROAD

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

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.088 af, Depth> 1.99"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 6.37 cfs @ 12.73 hrs, Volume= 1.063 af, Depth> 1.18"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

Pre-Development_ROAD

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

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 0.96 cfs @ 12.60 hrs, Volume= 0.146 af, Depth> 0.96"

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
8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 ' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 0.44 cfs @ 12.59 hrs, Volume= 0.087 af, Depth> 0.37"

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"

Pre-Development_ROAD

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

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 'l' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 22.54 cfs @ 12.07 hrs, Volume= 1.636 af, Depth> 2.55"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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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 Reach R4.0: Stream

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

Outflow = 8.72 cfs @ 12.13 hrs, Volume= 0.933 af, Atten= 47%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.64 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.42 fps, Avg. Travel Time= 3.3 min

Peak Storage= 526 cf @ 12.13 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 1.39" for 2-Yr Storm event
Inflow = 27.31 cfs @ 12.08 hrs, Volume= 4.618 af
Outflow = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af, Atten= 6%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.93 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 1.98 fps, Avg. Travel Time= 7.2 min

Peak Storage= 4,445 cf @ 12.11 hrs

Average Depth at Peak Storage= 1.22'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
Inflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af
Outflow = 7.42 cfs @ 12.88 hrs, Volume= 2.128 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.62 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 1.96 fps, Avg. Travel Time= 3.0 min

Peak Storage= 570 cf @ 12.88 hrs

Average Depth at Peak Storage= 0.46'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 0.37" for 2-Yr Storm event
 Inflow = 0.44 cfs @ 12.59 hrs, Volume= 0.087 af
 Outflow = 0.44 cfs @ 12.60 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 1.1 min

Avg. Velocity= 1.08 fps, Avg. Travel Time= 2.2 min

Peak Storage= 30 cf @ 12.60 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 ' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 ' / '

Inlet Invert= 73.00', Outlet Invert= 67.00'

**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

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	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 ' / n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.84 cfs @ 12.19 hrs HW=95.53' TW=94.99' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 ' / n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 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=95.03' (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=95.03' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 13.94 cfs @ 2.16 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
 Inflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af
 Outflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.36' @ 12.86 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 ' / n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Primary OutFlow Max=7.42 cfs @ 12.86 hrs HW=76.36' TW=75.46' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 7.42 cfs @ 2.52 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
 Inflow = 10.17 cfs @ 12.14 hrs, Volume= 1.996 af
 Outflow = 6.73 cfs @ 12.96 hrs, Volume= 1.985 af, Atten= 34%, Lag= 49.5 min
 Primary = 6.73 cfs @ 12.96 hrs, Volume= 1.985 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 83.61' @ 12.96 hrs Surf.Area= 19,988 sf Storage= 12,240 cf

Plug-Flow detention time= 23.8 min calculated for 1.985 af (99% of inflow)
 Center-of-Mass det. time= 20.6 min (899.3 - 878.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=6.73 cfs @ 12.96 hrs HW=83.61' TW=76.36' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 6.73 cfs @ 3.08 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 6.73 cfs of 9.21 cfs potential flow)**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)

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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 AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 1.39" for 2-Yr Storm event
 Inflow = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af
 Primary = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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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

Subcatchment 4.1:	Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>1.46" Flow Length=520' Tc=13.8 min CN=66 Runoff=4.45 cfs 0.432 af
Subcatchment 4.2:	Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>3.49" Tc=5.0 min CN=90 Runoff=14.55 cfs 1.032 af
Subcatchment 4.3:	Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>2.29" Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=1.87 cfs 0.153 af
Subcatchment 4.4:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>4.36" Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 af
Subcatchment 7.0:	Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>2.18" Flow Length=270' Tc=49.4 min CN=76 Runoff=8.66 cfs 1.388 af
Subcatchment 7.1:	Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>3.39" Tc=5.0 min CN=89 Runoff=2.13 cfs 0.150 af
Subcatchment 7.2:	Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>2.35" Flow Length=330' Tc=50.7 min CN=78 Runoff=12.99 cfs 2.107 af
Subcatchment 7.3:	Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>2.03" Flow Length=275' Tc=39.9 min CN=74 Runoff=2.13 cfs 0.308 af
Subcatchment 7.4:	Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>1.06" Flow Length=235' Tc=29.3 min CN=60 Runoff=1.77 cfs 0.252 af
Subcatchment 8.0:	Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>4.02" Tc=5.0 min CN=95 Runoff=34.69 cfs 2.585 af
Reach R1:	Avg. Flow Depth=0.30' Max Vel=3.31 fps Inflow=2.66 cfs 0.208 af n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=2.59 cfs 0.208 af
Reach R4.0: Stream	Avg. Flow Depth=0.73' Max Vel=5.50 fps Inflow=18.05 cfs 1.646 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=14.98 cfs 1.644 af
Reach R7.1: Stream	Avg. Flow Depth=1.61' Max Vel=5.67 fps Inflow=44.40 cfs 8.407 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=42.13 cfs 8.391 af
Reach R7.3: Stream	Avg. Flow Depth=0.65' Max Vel=5.56 fps Inflow=13.21 cfs 4.036 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=13.21 cfs 4.032 af
Reach R7.4: Stream	Avg. Flow Depth=0.16' Max Vel=3.45 fps Inflow=1.77 cfs 0.252 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=1.77 cfs 0.252 af
Pond C1: 15" CMP	Peak Elev=95.80' Storage=271 cf Inflow=1.87 cfs 0.153 af 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=1.64 cfs 0.153 af

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Pond C2: 8" HDPE

Peak Elev=98.08' Inflow=16.90 cfs 1.493 af
Primary=1.94 cfs 0.957 af Secondary=14.95 cfs 0.536 af Outflow=16.90 cfs 1.493 af

Pond C7.3:

Peak Elev=76.84' Inflow=13.21 cfs 4.036 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=13.21 cfs 4.036 af

Pond P1: Wetland

Peak Elev=84.26' Storage=27,654 cf Inflow=18.32 cfs 3.751 af
Outflow=11.79 cfs 3.727 af

Pond W1: Wetland

Peak Elev=101.30' Storage=14,973 cf Inflow=6.09 cfs 0.640 af
Outflow=0.51 cfs 0.462 af

Pond W2: Wetland

Peak Elev=98.21' Storage=1,832 cf Inflow=14.78 cfs 1.494 af
Outflow=16.90 cfs 1.493 af

Link AP8:

Inflow=42.13 cfs 8.391 af
Primary=42.13 cfs 8.391 af

Total Runoff Area = 39.776 ac Runoff Volume = 8.614 af Average Runoff Depth = 2.60"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD
					Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00'
					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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 8.66 cfs @ 12.68 hrs, Volume= 1.388 af, Depth> 2.18"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 2.13 cfs @ 12.07 hrs, Volume= 0.150 af, Depth> 3.39"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 12.99 cfs @ 12.69 hrs, Volume= 2.107 af, Depth> 2.35"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 2.13 cfs @ 12.56 hrs, Volume= 0.308 af, Depth> 2.03"

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
* 8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 1.77 cfs @ 12.47 hrs, Volume= 0.252 af, Depth> 1.06"

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"

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 'l' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 34.69 cfs @ 12.07 hrs, Volume= 2.585 af, Depth> 4.02"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 Reach R4.0: Stream

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

Outflow = 14.98 cfs @ 12.11 hrs, Volume= 1.644 af, Atten= 17%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.50 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.73 fps, Avg. Travel Time= 2.7 min

Peak Storage= 762 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.73'

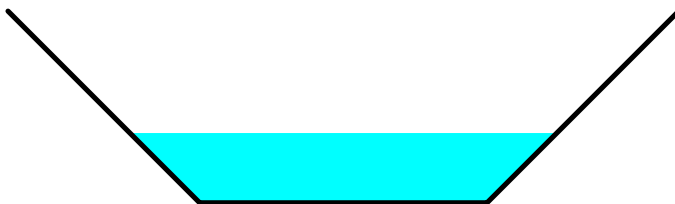
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 2.54" for 10-Yr Storm event
Inflow = 44.40 cfs @ 12.08 hrs, Volume= 8.407 af
Outflow = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af, Atten= 5%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.67 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 2.36 fps, Avg. Travel Time= 6.1 min

Peak Storage= 6,392 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.61'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 860.0' Slope= 0.0093 '/'
Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 2.30" for 10-Yr Storm event
Inflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af
Outflow = 13.21 cfs @ 12.83 hrs, Volume= 4.032 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.56 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.41 fps, Avg. Travel Time= 2.5 min

Peak Storage= 844 cf @ 12.83 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 355.0' Slope= 0.0225 '/'
Inlet Invert= 75.00', Outlet Invert= 67.00'



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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 1.06" for 10-Yr Storm event
 Inflow = 1.77 cfs @ 12.47 hrs, Volume= 0.252 af
 Outflow = 1.77 cfs @ 12.48 hrs, Volume= 0.252 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Max. Velocity= 3.45 fps, Min. Travel Time= 0.7 min
 Avg. Velocity= 1.47 fps, Avg. Travel Time= 1.6 min

Peak Storage= 72 cf @ 12.48 hrs
 Average Depth at Peak Storage= 0.16'
 Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 1.0 ' Top Width= 7.00'
 Length= 140.0' Slope= 0.0429 '
 Inlet Invert= 73.00', Outlet Invert= 67.00'

**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
 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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 ' / n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=1.64 cfs @ 12.20 hrs HW=95.80' TW=95.12' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 ' / n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 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=95.19' (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=95.18' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 14.29 cfs @ 2.18 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 2.30" for 10-Yr Storm event
Inflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af
Outflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af, Atten= 0%, Lag= 0.0 min
Primary = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.84' @ 12.82 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 ' / n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Primary OutFlow Max=13.21 cfs @ 12.82 hrs HW=76.84' TW=75.65' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 13.21 cfs @ 3.04 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 2.34" for 10-Yr Storm event
 Inflow = 18.32 cfs @ 12.14 hrs, Volume= 3.751 af
 Outflow = 11.79 cfs @ 13.03 hrs, Volume= 3.727 af, Atten= 36%, Lag= 53.4 min
 Primary = 11.79 cfs @ 13.03 hrs, Volume= 3.727 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.26' @ 13.03 hrs Surf.Area= 26,516 sf Storage= 27,654 cf

Plug-Flow detention time= 28.6 min calculated for 3.724 af (99% of inflow)
 Center-of-Mass det. time= 25.1 min (892.8 - 867.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=11.79 cfs @ 13.03 hrs HW=84.26' TW=76.82' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 11.79 cfs @ 3.77 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 11.79 cfs of 22.04 cfs potential flow)**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)

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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 AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 2.53" for 10-Yr Storm event
Inflow = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af
Primary = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Pre-Development ROAD

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

Subcatchment 4.1: Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>2.29"
 Flow Length=520' Tc=13.8 min CN=66 Runoff=7.27 cfs 0.678 af

Subcatchment 4.2: Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>4.65"
 Tc=5.0 min CN=90 Runoff=19.09 cfs 1.374 af

Subcatchment 4.3: Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>3.30"
 Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=2.71 cfs 0.220 af

Subcatchment 4.4: Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>5.56"
 Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 af

Subcatchment 7.0: Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>3.17"
 Flow Length=270' Tc=49.4 min CN=76 Runoff=12.65 cfs 2.017 af

Subcatchment 7.1: Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>4.54"
 Tc=5.0 min CN=89 Runoff=2.81 cfs 0.201 af

Subcatchment 7.2: Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>3.37"
 Flow Length=330' Tc=50.7 min CN=78 Runoff=18.67 cfs 3.020 af

Subcatchment 7.3: Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>2.99"
 Flow Length=275' Tc=39.9 min CN=74 Runoff=3.17 cfs 0.454 af

Subcatchment 7.4: Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>1.78"
 Flow Length=235' Tc=29.3 min CN=60 Runoff=3.19 cfs 0.421 af

Subcatchment 8.0: Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>5.21"
 Tc=5.0 min CN=95 Runoff=44.30 cfs 3.349 af

Reach R1: Avg. Flow Depth=0.34' Max Vel=3.56 fps Inflow=3.36 cfs 0.265 af
 n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=3.29 cfs 0.265 af

Reach R4.0: Stream Avg. Flow Depth=0.85' Max Vel=5.95 fps Inflow=21.45 cfs 2.195 af
 n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=19.41 cfs 2.192 af

Reach R7.1: Stream Avg. Flow Depth=1.88' Max Vel=6.11 fps Inflow=58.58 cfs 11.616 af
 n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=55.97 cfs 11.596 af

Reach R7.3: Stream Avg. Flow Depth=0.75' Max Vel=5.98 fps Inflow=16.81 cfs 5.632 af
 n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=16.81 cfs 5.628 af

Reach R7.4: Stream Avg. Flow Depth=0.23' Max Vel=4.27 fps Inflow=3.19 cfs 0.421 af
 n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=3.19 cfs 0.420 af

Pond C1: 15" CMP Peak Elev=95.98' Storage=501 cf Inflow=2.71 cfs 0.220 af
 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=2.25 cfs 0.220 af

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Pond C2: 8" HDPE

Peak Elev=98.16' Inflow=19.70 cfs 1.974 af
Primary=1.98 cfs 1.130 af Secondary=17.72 cfs 0.844 af Outflow=19.70 cfs 1.974 af

Pond C7.3:

Peak Elev=77.11' Inflow=16.81 cfs 5.632 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=16.81 cfs 5.632 af

Pond P1: Wetland

Peak Elev=84.85' Storage=44,412 cf Inflow=24.82 cfs 5.212 af
Outflow=14.87 cfs 5.178 af

Pond W1: Wetland

Peak Elev=102.01' Storage=23,799 cf Inflow=9.33 cfs 0.943 af
Outflow=0.62 cfs 0.601 af

Pond W2: Wetland

Peak Elev=98.37' Storage=2,472 cf Inflow=19.43 cfs 1.975 af
Outflow=19.70 cfs 1.974 af

Link AP8:

Inflow=55.97 cfs 11.596 af
Primary=55.97 cfs 11.596 af

Total Runoff Area = 39.776 ac Runoff Volume = 12.000 af Average Runoff Depth = 3.62"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD
					Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00'
					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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 12.65 cfs @ 12.68 hrs, Volume= 2.017 af, Depth> 3.17"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 2.81 cfs @ 12.07 hrs, Volume= 0.201 af, Depth> 4.54"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 18.67 cfs @ 12.68 hrs, Volume= 3.020 af, Depth> 3.37"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 3.17 cfs @ 12.55 hrs, Volume= 0.454 af, Depth> 2.99"

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
* 8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 3.19 cfs @ 12.45 hrs, Volume= 0.421 af, Depth> 1.78"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 ' / ' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 44.30 cfs @ 12.07 hrs, Volume= 3.349 af, Depth> 5.21"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 Reach R4.0: Stream

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

Outflow = 19.41 cfs @ 12.12 hrs, Volume= 2.192 af, Atten= 9%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.95 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.91 fps, Avg. Travel Time= 2.4 min

Peak Storage= 913 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.85'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event
Inflow = 58.58 cfs @ 12.08 hrs, Volume= 11.616 af
Outflow = 55.97 cfs @ 12.10 hrs, Volume= 11.596 af, Atten= 4%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.11 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 5.5 min

Peak Storage= 7,871 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.88'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 860.0' Slope= 0.0093 '/'
Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 3.21" for 25-Yr Storm event
Inflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af
Outflow = 16.81 cfs @ 12.81 hrs, Volume= 5.628 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.98 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.70 fps, Avg. Travel Time= 2.2 min

Peak Storage= 998 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 355.0' Slope= 0.0225 '/'
Inlet Invert= 75.00', Outlet Invert= 67.00'



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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 1.78" for 25-Yr Storm event
 Inflow = 3.19 cfs @ 12.45 hrs, Volume= 0.421 af
 Outflow = 3.19 cfs @ 12.46 hrs, Volume= 0.420 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.27 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 1.71 fps, Avg. Travel Time= 1.4 min

Peak Storage= 104 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 ' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 ' / '

Inlet Invert= 73.00', Outlet Invert= 67.00'

**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

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	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 '/' Cc= 0.900
 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.25 cfs @ 12.21 hrs HW=95.98' TW=95.22' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 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=95.33' (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=95.33' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 17.45 cfs @ 2.33 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 3.21" for 25-Yr Storm event
 Inflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af
 Outflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af, Atten= 0%, Lag= 0.0 min
 Primary = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.11' @ 12.80 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Primary OutFlow Max=16.81 cfs @ 12.80 hrs HW=77.11' TW=75.75' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 16.81 cfs @ 3.32 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 3.25" for 25-Yr Storm event
 Inflow = 24.82 cfs @ 12.12 hrs, Volume= 5.212 af
 Outflow = 14.87 cfs @ 13.10 hrs, Volume= 5.178 af, Atten= 40%, Lag= 58.4 min
 Primary = 14.87 cfs @ 13.10 hrs, Volume= 5.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.85' @ 13.10 hrs Surf.Area= 30,764 sf Storage= 44,412 cf

Plug-Flow detention time= 33.6 min calculated for 5.178 af (99% of inflow)
 Center-of-Mass det. time= 29.9 min (889.2 - 859.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=14.87 cfs @ 13.10 hrs HW=84.85' TW=77.08' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 14.87 cfs @ 4.73 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 14.87 cfs of 37.46 cfs potential flow)**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)

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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)

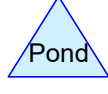
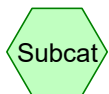
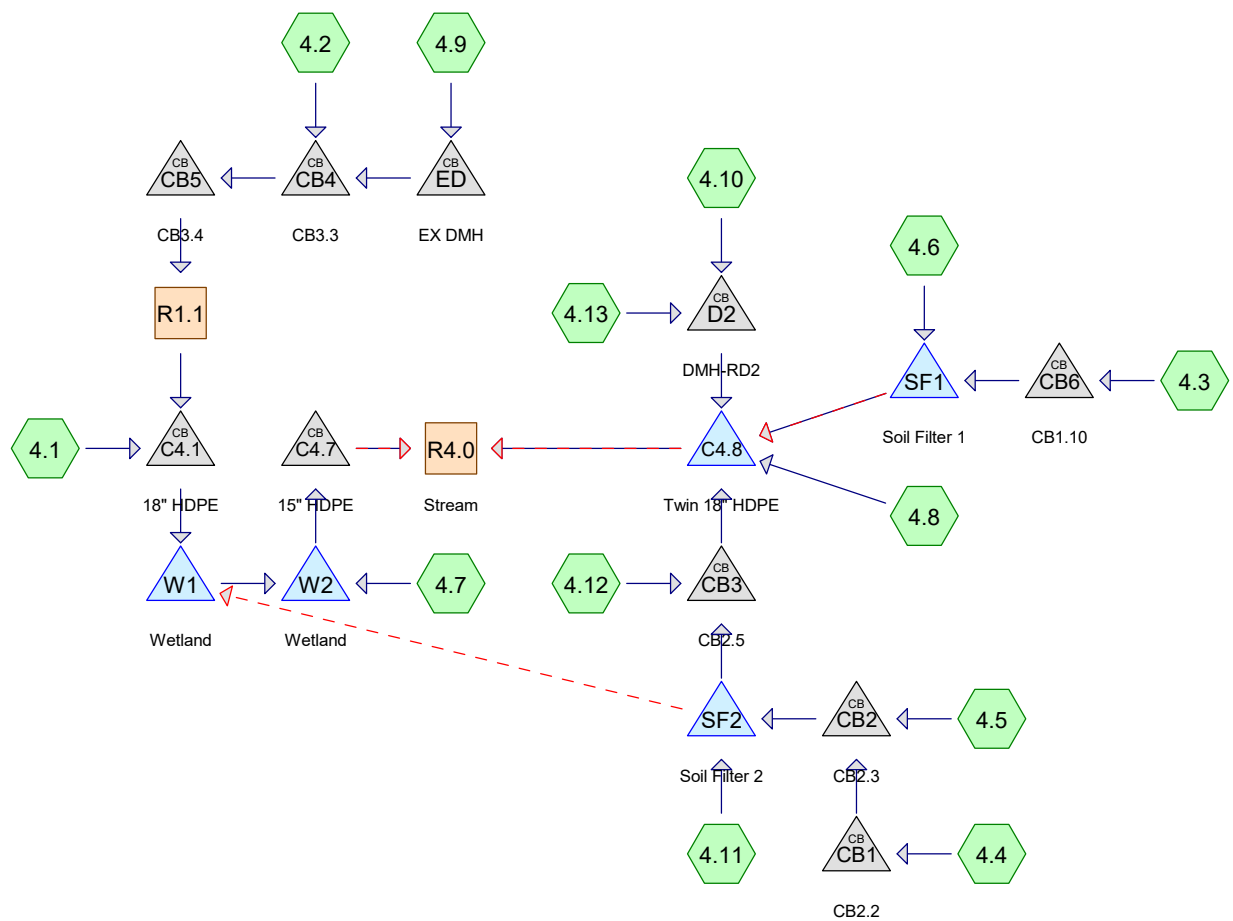
Summary for Link AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event
Inflow = 55.97 cfs @ 12.10 hrs, Volume= 11.596 af
Primary = 55.97 cfs @ 12.10 hrs, Volume= 11.596 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



Routing Diagram for Post-Development EAST
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Type III 24-hr 2-Yr Storm Rainfall=3.10"

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=0.31" Flow Length=338' Tc=8.3 min CN=58 Runoff=0.34 cfs 0.060 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=2.87" Tc=5.0 min CN=98 Runoff=2.77 cfs 0.213 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=1.46" Tc=5.0 min CN=82 Runoff=0.63 cfs 0.043 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=2.76" Tc=5.0 min CN=97 Runoff=2.12 cfs 0.159 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.03" Tc=5.0 min CN=45 Runoff=0.00 cfs 0.000 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.17" Tc=5.0 min CN=53 Runoff=0.08 cfs 0.021 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=2.08" Tc=5.0 min CN=90 Runoff=3.27 cfs 0.227 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=2.65" Tc=5.0 min CN=96 Runoff=1.79 cfs 0.132 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=2.55" Tc=5.0 min CN=95 Runoff=1.56 cfs 0.113 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=1.20" Tc=5.0 min CN=78 Runoff=0.33 cfs 0.023 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=1.03" Tc=5.0 min CN=75 Runoff=1.23 cfs 0.089 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=1.14" Tc=5.0 min CN=77 Runoff=0.80 cfs 0.056 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=2.87" Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 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
Reach R4.0: Stream	Avg. Flow Depth=0.45' Max Vel=4.25 fps Inflow=6.69 cfs 1.274 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=6.65 cfs 1.274 af
Pond C4.1: 18" HDPE	Peak Elev=102.31' Inflow=1.87 cfs 0.217 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=1.87 cfs 0.217 af

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Pond C4.7: 15" HDPE

Peak Elev=95.92' Inflow=1.61 cfs 0.306 af
 Primary=1.61 cfs 0.306 af Secondary=0.00 cfs 0.000 af Outflow=1.61 cfs 0.306 af

Pond C4.8: Twin 18" HDPE

Peak Elev=96.15' Storage=792 cf Inflow=5.81 cfs 0.968 af
 Primary=5.08 cfs 0.968 af Secondary=0.00 cfs 0.000 af Outflow=5.08 cfs 0.968 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=100.25' Inflow=3.27 cfs 0.227 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=3.27 cfs 0.227 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=99.54' Storage=6,147 cf Inflow=3.60 cfs 0.250 af
 Primary=0.25 cfs 0.250 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.250 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=99.84' Storage=2,144 cf Inflow=1.87 cfs 0.217 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=0.76 cfs 0.217 af

Pond W2: Wetland

Peak Elev=97.24' Storage=87 cf Inflow=1.63 cfs 0.306 af
 Outflow=1.61 cfs 0.306 af

Total Runoff Area = 10.780 ac Runoff Volume = 1.274 af Average Runoff Depth = 1.42"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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Summary for Subcatchment 4.1:

Runoff = 0.34 cfs @ 12.31 hrs, Volume= 0.060 af, Depth= 0.31"

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 2-Yr Storm Rainfall=3.10"

Area (sf)	CN	Description
* 29,214	98	Impervious
26,743	39	>75% Grass cover, Good, HSG A
2,976	80	>75% Grass cover, Good, HSG D
10,780	77	Woods, Good, HSG D
31,701	30	Woods, Good, HSG A
101,414	58	Weighted Average
72,200		71.19% Pervious Area
29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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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

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

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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 = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af, Depth= 2.08"

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
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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

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

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

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

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

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Summary for Subcatchment 4.7:

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.089 af, Depth= 1.03"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 1.42" for 2-Yr Storm event
Inflow = 6.69 cfs @ 12.11 hrs, Volume= 1.274 af
Outflow = 6.65 cfs @ 12.13 hrs, Volume= 1.274 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 4.25 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.23 fps, Avg. Travel Time= 3.8 min

Peak Storage= 437 cf @ 12.13 hrs

Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event
 Inflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af
 Outflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.31' @ 12.10 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.86 cfs @ 12.10 hrs HW=102.31' TW=99.73' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.86 cfs @ 2.26 fps)**Summary for Pond C4.7: 15" HDPE**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 0.68" for 2-Yr Storm event
 Inflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af
 Outflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.61 cfs @ 12.11 hrs, Volume= 0.306 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= 95.92' @ 12.11 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=1.61 cfs @ 12.11 hrs HW=95.92' TW=94.95' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.61 cfs @ 3.17 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=94.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 2.16" for 2-Yr Storm event
 Inflow = 5.81 cfs @ 12.07 hrs, Volume= 0.968 af
 Outflow = 5.08 cfs @ 12.12 hrs, Volume= 0.968 af, Atten= 13%, Lag= 2.6 min
 Primary = 5.08 cfs @ 12.12 hrs, Volume= 0.968 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= 96.15' @ 12.12 hrs Surf.Area= 1,870 sf Storage= 792 cf

Plug-Flow detention time= 1.6 min calculated for 0.968 af (100% of inflow)
 Center-of-Mass det. time= 1.5 min (1,128.2 - 1,126.7)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=94.95' (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=94.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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'

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 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'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 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'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 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)

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 ' / Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' / Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 2.08" for 2-Yr Storm event
 Inflow = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af
 Outflow = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.25' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.25 cfs @ 12.07 hrs HW=100.24' TW=98.81' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.25 cfs @ 3.65 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 '/' Cc= 0.900 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)

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Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 1.95" for 2-Yr Storm event
 Inflow = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af
 Outflow = 0.25 cfs @ 13.57 hrs, Volume= 0.250 af, Atten= 93%, Lag= 89.6 min
 Primary = 0.25 cfs @ 13.57 hrs, Volume= 0.250 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= 99.54' @ 13.57 hrs Surf.Area= 4,887 sf Storage= 6,147 cf

Plug-Flow detention time= 681.9 min calculated for 0.250 af (100% of inflow)
 Center-of-Mass det. time= 682.2 min (1,493.3 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.25 cfs @ 13.57 hrs HW=99.54' TW=95.53' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.25 cfs of 6.93 cfs potential flow)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.08 cfs)
 ↑ **3=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.66 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 = 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

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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	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event
 Inflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af
 Outflow = 0.76 cfs @ 12.48 hrs, Volume= 0.217 af, Atten= 59%, Lag= 22.5 min
 Primary = 0.76 cfs @ 12.48 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 99.84' @ 12.48 hrs Surf.Area= 6,613 sf Storage= 2,144 cf

Plug-Flow detention time= 61.6 min calculated for 0.217 af (100% of inflow)
 Center-of-Mass det. time= 61.7 min (892.9 - 831.3)

Post-Development EAST

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

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Volume	Invert	Avail.Storage	Storage Description
#1	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.76 cfs @ 12.48 hrs HW=99.84' TW=97.19' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.76 cfs @ 1.78 fps)

Summary for Pond W2: Wetland

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 0.68" for 2-Yr Storm event
 Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.306 af
 Outflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af, Atten= 1%, Lag= 0.9 min
 Primary = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.24' @ 12.11 hrs Surf.Area= 543 sf Storage= 87 cf

Plug-Flow detention time= 1.2 min calculated for 0.306 af (100% of inflow)

Center-of-Mass det. time= 1.2 min (884.5 - 883.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=1.61 cfs @ 12.11 hrs HW=97.24' TW=95.92' (Dynamic Tailwater)

↑1=Custom Weir/Orifice (Weir Controls 1.61 cfs @ 1.58 fps)

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=0.96" Flow Length=338' Tc=8.3 min CN=58 Runoff=1.96 cfs 0.185 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=4.14 cfs 0.325 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=2.72" Tc=5.0 min CN=82 Runoff=1.18 cfs 0.081 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=4.25" Tc=5.0 min CN=97 Runoff=3.19 cfs 0.245 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.32" Tc=5.0 min CN=45 Runoff=0.02 cfs 0.004 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.68" Tc=5.0 min CN=53 Runoff=0.81 cfs 0.084 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=3.49" Tc=5.0 min CN=90 Runoff=5.38 cfs 0.382 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=4.14" Tc=5.0 min CN=96 Runoff=2.72 cfs 0.206 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=4.02" Tc=5.0 min CN=95 Runoff=2.39 cfs 0.179 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=2.38" Tc=5.0 min CN=78 Runoff=0.66 cfs 0.046 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=2.13" Tc=5.0 min CN=75 Runoff=2.67 cfs 0.184 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=2.29" Tc=5.0 min CN=77 Runoff=1.65 cfs 0.113 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 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
Reach R4.0: Stream	Avg. Flow Depth=0.72' Max Vel=5.47 fps Inflow=14.71 cfs 2.242 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=14.70 cfs 2.242 af
Pond C4.1: 18" HDPE	Peak Elev=102.93' Inflow=5.16 cfs 0.477 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=5.16 cfs 0.477 af

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Pond C4.7: 15" HDPE

Peak Elev=96.42' Inflow=3.62 cfs 0.662 af
 Primary=3.62 cfs 0.662 af Secondary=0.00 cfs 0.000 af Outflow=3.62 cfs 0.662 af

Pond C4.8: Twin 18" HDPE

Peak Elev=96.88' Storage=2,711 cf Inflow=13.66 cfs 1.581 af
 Primary=11.41 cfs 1.581 af Secondary=0.00 cfs 0.000 af Outflow=11.41 cfs 1.581 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=100.85' Inflow=5.38 cfs 0.382 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=5.38 cfs 0.382 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=99.76' Storage=7,223 cf Inflow=6.04 cfs 0.427 af
 Primary=2.74 cfs 0.427 af Secondary=0.00 cfs 0.000 af Outflow=2.74 cfs 0.427 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=100.18' Storage=4,614 cf Inflow=5.16 cfs 0.477 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=2.18 cfs 0.477 af

Pond W2: Wetland

Peak Elev=97.40' Storage=200 cf Inflow=3.66 cfs 0.662 af
 Outflow=3.62 cfs 0.662 af

Total Runoff Area = 10.780 ac Runoff Volume = 2.242 af Average Runoff Depth = 2.50"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Subcatchment 4.1:

Runoff = 1.96 cfs @ 12.14 hrs, Volume= 0.185 af, Depth= 0.96"

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
*	29,214	98	Impervious
	26,743	39	>75% Grass cover, Good, HSG A
	2,976	80	>75% Grass cover, Good, HSG D
	10,780	77	Woods, Good, HSG D
	31,701	30	Woods, Good, HSG A
	101,414	58	Weighted Average
	72,200		71.19% Pervious Area
	29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af, Depth= 3.49"

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
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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

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

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

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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Subcatchment 4.7:

Runoff = 2.67 cfs @ 12.08 hrs, Volume= 0.184 af, Depth= 2.13"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 2.50" for 10-Yr Storm event
Inflow = 14.71 cfs @ 12.18 hrs, Volume= 2.242 af
Outflow = 14.70 cfs @ 12.19 hrs, Volume= 2.242 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 5.47 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 1.38 fps, Avg. Travel Time= 3.4 min

Peak Storage= 752 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.72'

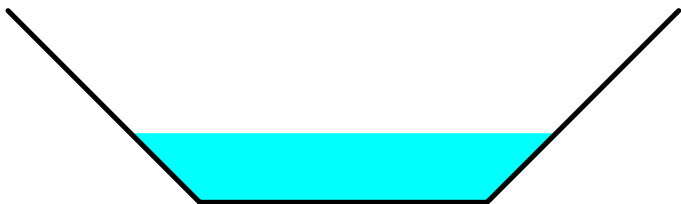
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
 Inflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af
 Outflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.93' @ 12.11 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S= 0.0571 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.12 cfs @ 12.11 hrs HW=102.93' TW=99.95' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.12 cfs @ 3.10 fps)**Summary for Pond C4.7: 15" HDPE**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event
 Inflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af
 Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.662 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= 96.42' @ 12.12 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=3.61 cfs @ 12.12 hrs HW=96.42' TW=95.19' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.61 cfs @ 2.96 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=94.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 3.53" for 10-Yr Storm event
 Inflow = 13.66 cfs @ 12.11 hrs, Volume= 1.581 af
 Outflow = 11.41 cfs @ 12.20 hrs, Volume= 1.581 af, Atten= 16%, Lag= 5.0 min
 Primary = 11.41 cfs @ 12.20 hrs, Volume= 1.581 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= 96.88' @ 12.20 hrs Surf.Area= 3,502 sf Storage= 2,711 cf

Plug-Flow detention time= 2.1 min calculated for 1.581 af (100% of inflow)
 Center-of-Mass det. time= 2.0 min (1,011.5 - 1,009.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.41 cfs @ 12.20 hrs HW=96.88' TW=95.22' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 11.41 cfs @ 3.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' TW=94.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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'

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900 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
Peak Elev= 102.05' @ 12.07 hrs
Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.77'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900 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' @ 12.12 hrs
Flood Elev= 103.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	96.13'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.51 cfs @ 12.11 hrs HW=97.89' TW=96.71' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.51 cfs @ 4.57 fps)

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 '/' Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 '/' Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 3.49" for 10-Yr Storm event
 Inflow = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af
 Outflow = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.85' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.34 cfs @ 12.07 hrs HW=100.83' TW=99.47' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 5.34 cfs @ 4.35 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.00' / 97.00' S= 0.0357 ' 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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 ' S= 0.0260 ' Cc= 0.900 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)

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Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 3.32" for 10-Yr Storm event
 Inflow = 6.04 cfs @ 12.07 hrs, Volume= 0.427 af
 Outflow = 2.74 cfs @ 12.24 hrs, Volume= 0.427 af, Atten= 55%, Lag= 9.8 min
 Primary = 2.74 cfs @ 12.24 hrs, Volume= 0.427 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= 99.76' @ 12.24 hrs Surf.Area= 5,128 sf Storage= 7,223 cf

Plug-Flow detention time= 449.8 min calculated for 0.427 af (100% of inflow)

Center-of-Mass det. time= 450.2 min (1,246.8 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' S= 0.0029 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.74 cfs @ 12.24 hrs HW=99.76' TW=96.86' (Dynamic Tailwater)

1=Culvert (Passes 2.74 cfs of 6.44 cfs potential flow)
 2=Exfiltration (Exfiltration Controls 0.09 cfs)
 3=Orifice/Grate (Weir Controls 2.65 cfs @ 1.65 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

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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	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.83 cfs @ 12.13 hrs HW=100.88' TW=97.88' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 4.83 cfs of 9.53 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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
 Inflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af
 Outflow = 2.18 cfs @ 12.43 hrs, Volume= 0.477 af, Atten= 58%, Lag= 19.2 min
 Primary = 2.18 cfs @ 12.43 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 100.18' @ 12.43 hrs Surf.Area= 7,795 sf Storage= 4,614 cf

Plug-Flow detention time= 52.1 min calculated for 0.477 af (100% of inflow)
 Center-of-Mass det. time= 52.1 min (886.2 - 834.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.18 cfs @ 12.43 hrs HW=100.17' TW=97.36' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.18 cfs @ 2.37 fps)**Summary for Pond W2: Wetland**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event
 Inflow = 3.66 cfs @ 12.10 hrs, Volume= 0.662 af
 Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af, Atten= 1%, Lag= 1.1 min
 Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 97.40' @ 12.12 hrs Surf.Area= 860 sf Storage= 200 cf

Plug-Flow detention time= 1.3 min calculated for 0.662 af (100% of inflow)

Center-of-Mass det. time= 1.1 min (873.8 - 872.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=3.61 cfs @ 12.12 hrs HW=97.40' TW=96.42' (Dynamic Tailwater)↑**1=Custom Weir/Orifice** (Weir Controls 3.61 cfs @ 2.04 fps)

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=1.63" Flow Length=338' Tc=8.3 min CN=58 Runoff=3.76 cfs 0.317 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=5.56" Tc=5.0 min CN=98 Runoff=5.24 cfs 0.414 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=3.80" Tc=5.0 min CN=82 Runoff=1.63 cfs 0.113 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=5.44" Tc=5.0 min CN=97 Runoff=4.04 cfs 0.315 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.72" Tc=5.0 min CN=45 Runoff=0.08 cfs 0.010 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=1.26" Tc=5.0 min CN=53 Runoff=1.88 cfs 0.154 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=4.65" Tc=5.0 min CN=90 Runoff=7.06 cfs 0.509 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=5.33" Tc=5.0 min CN=96 Runoff=3.46 cfs 0.265 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=5.21" Tc=5.0 min CN=95 Runoff=3.06 cfs 0.231 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=3.40" Tc=5.0 min CN=78 Runoff=0.95 cfs 0.066 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=3.11" Tc=5.0 min CN=75 Runoff=3.92 cfs 0.269 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=3.31" Tc=5.0 min CN=77 Runoff=2.38 cfs 0.163 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=5.56" Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 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 '/' Capacity=160.95 cfs Outflow=5.10 cfs 0.419 af
Reach R4.0: Stream	Avg. Flow Depth=0.98' Max Vel=6.40 fps Inflow=25.33 cfs 3.120 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=25.08 cfs 3.120 af
Pond C4.1: 18" HDPE	Peak Elev=104.02' Inflow=8.67 cfs 0.736 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=8.67 cfs 0.736 af

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Pond C4.7: 15" HDPE

Peak Elev=97.21' Inflow=5.48 cfs 1.006 af
 Primary=5.48 cfs 1.006 af Secondary=1.23 cfs 0.029 af Outflow=5.48 cfs 1.006 af

Pond C4.8: Twin 18" HDPE

Peak Elev=97.42' Storage=6,007 cf Inflow=23.18 cfs 2.085 af
 Primary=15.10 cfs 2.069 af Secondary=3.59 cfs 0.017 af Outflow=18.69 cfs 2.085 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=99.56' Inflow=10.56 cfs 0.924 af
 18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=10.56 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=101.29' Inflow=7.06 cfs 0.509 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=7.06 cfs 0.509 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=99.93' Storage=8,136 cf Inflow=8.01 cfs 0.574 af
 Primary=5.88 cfs 0.573 af Secondary=0.14 cfs 0.001 af Outflow=6.02 cfs 0.574 af

Pond SF2: Soil Filter 2

Peak Elev=100.98' Storage=7,170 cf Inflow=8.15 cfs 0.610 af
 Primary=6.98 cfs 0.610 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.610 af

Pond W1: Wetland

Peak Elev=100.48' Storage=7,120 cf Inflow=8.67 cfs 0.736 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=3.82 cfs 0.736 af

Pond W2: Wetland

Peak Elev=97.68' Storage=531 cf Inflow=5.92 cfs 1.006 af
 Outflow=5.48 cfs 1.006 af

Total Runoff Area = 10.780 ac Runoff Volume = 3.091 af Average Runoff Depth = 3.44"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 4.1:

Runoff = 3.76 cfs @ 12.13 hrs, Volume= 0.317 af, Depth= 1.63"

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
*	29,214	98	Impervious
	26,743	39	>75% Grass cover, Good, HSG A
	2,976	80	>75% Grass cover, Good, HSG D
	10,780	77	Woods, Good, HSG D
	31,701	30	Woods, Good, HSG A
	101,414	58	Weighted Average
	72,200		71.19% Pervious Area
	29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

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

Summary for Subcatchment 4.3:

Runoff = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af, Depth= 4.65"

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 25-Yr Storm Rainfall=5.80"

Area (sf)	CN	Description
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

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

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

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 4.7:

Runoff = 3.92 cfs @ 12.08 hrs, Volume= 0.269 af, Depth= 3.11"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 3.47" for 25-Yr Storm event
Inflow = 25.33 cfs @ 12.18 hrs, Volume= 3.120 af
Outflow = 25.08 cfs @ 12.19 hrs, Volume= 3.120 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 6.40 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 1.48 fps, Avg. Travel Time= 3.2 min

Peak Storage= 1,094 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.98'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 2.02" for 25-Yr Storm event
 Inflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af
 Outflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 104.02' @ 12.11 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S= 0.0571 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.62 cfs @ 12.11 hrs HW=104.00' TW=100.19' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 8.62 cfs @ 4.88 fps)**Summary for Pond C4.7: 15" HDPE**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 2.23" for 25-Yr Storm event
 Inflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af
 Outflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af
 Secondary = 1.23 cfs @ 12.18 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.21' @ 12.22 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=5.48 cfs @ 12.22 hrs HW=97.21' TW=95.44' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.48 cfs @ 4.47 fps)**Secondary OutFlow** Max=0.00 cfs @ 12.18 hrs HW=97.17' TW=95.48' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 4.66" for 25-Yr Storm event
 Inflow = 23.18 cfs @ 12.10 hrs, Volume= 2.085 af
 Outflow = 18.69 cfs @ 12.18 hrs, Volume= 2.085 af, Atten= 19%, Lag= 4.8 min
 Primary = 15.10 cfs @ 12.18 hrs, Volume= 2.069 af
 Secondary = 3.59 cfs @ 12.18 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 97.42' @ 12.18 hrs Surf.Area= 10,132 sf Storage= 6,007 cf

Plug-Flow detention time= 2.8 min calculated for 2.085 af (100% of inflow)
 Center-of-Mass det. time= 2.7 min (958.6 - 955.9)

Volume	Invert	Avail.Storage	Storage Description		
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.10 cfs @ 12.18 hrs HW=97.42' TW=95.47' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 15.10 cfs @ 4.27 fps)

Secondary OutFlow Max=3.53 cfs @ 12.18 hrs HW=97.42' TW=95.47' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 3.53 cfs @ 0.40 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'

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900 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'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900 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 = 10.56 cfs @ 12.10 hrs, Volume= 0.924 af
Outflow = 10.56 cfs @ 12.10 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min
Primary = 10.56 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= 99.56' @ 12.11 hrs

Flood Elev= 103.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	96.13'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.54 cfs @ 12.10 hrs HW=99.52' TW=97.22' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 10.54 cfs @ 5.97 fps)

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' / S= 0.0607 ' Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 4.65" for 25-Yr Storm event
 Inflow = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af
 Outflow = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 101.29' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.04 cfs @ 12.07 hrs HW=101.27' TW=99.85' (Dynamic Tailwater)
↑1=Culvert (Barrel Controls 7.04 cfs @ 5.74 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 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=97.05' (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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 '/' Cc= 0.900 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)

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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 = 1.543 ac, 67.27% Impervious, Inflow Depth = 4.46" for 25-Yr Storm event
 Inflow = 8.01 cfs @ 12.07 hrs, Volume= 0.574 af
 Outflow = 6.02 cfs @ 12.14 hrs, Volume= 0.574 af, Atten= 25%, Lag= 4.0 min
 Primary = 5.88 cfs @ 12.14 hrs, Volume= 0.573 af
 Secondary = 0.14 cfs @ 12.14 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 99.93' @ 12.14 hrs Surf.Area= 5,324 sf Storage= 8,136 cf

Plug-Flow detention time= 350.7 min calculated for 0.574 af (100% of inflow)

Center-of-Mass det. time= 351.2 min (1,140.0 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.88 cfs @ 12.14 hrs HW=99.93' TW=97.38' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 5.88 cfs of 6.04 cfs potential flow)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.09 cfs)
 ↑ **3=Orifice/Grate** (Weir Controls 5.78 cfs @ 2.14 fps)

Secondary OutFlow Max=0.14 cfs @ 12.14 hrs HW=99.93' TW=97.38' (Dynamic Tailwater)↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.46 fps)**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 = 6.98 cfs @ 12.12 hrs, Volume= 0.610 af, Atten= 14%, Lag= 2.9 min
 Primary = 6.98 cfs @ 12.12 hrs, Volume= 0.610 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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= 4,431 sf Storage= 7,170 cf

Plug-Flow detention time= 297.3 min calculated for 0.610 af (100% of inflow)
 Center-of-Mass det. time= 297.8 min (1,067.5 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	99.00'	16,412 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.63 cfs @ 12.12 hrs HW=100.98' TW=99.53' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 6.63 cfs @ 5.40 fps)
 ↑ **2=Exfiltration** (Passes < 0.08 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 6.90 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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 2.02" for 25-Yr Storm event
 Inflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af
 Outflow = 3.82 cfs @ 12.39 hrs, Volume= 0.736 af, Atten= 56%, Lag= 16.8 min
 Primary = 3.82 cfs @ 12.39 hrs, Volume= 0.736 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 100.48' @ 12.39 hrs Surf.Area= 8,509 sf Storage= 7,120 cf

Plug-Flow detention time= 46.5 min calculated for 0.736 af (100% of inflow)
 Center-of-Mass det. time= 46.6 min (877.5 - 830.9)

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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	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.82 cfs @ 12.39 hrs HW=100.48' TW=97.66' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.82 cfs @ 2.80 fps)**Summary for Pond W2: Wetland**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 2.23" for 25-Yr Storm event
 Inflow = 5.92 cfs @ 12.10 hrs, Volume= 1.006 af
 Outflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af, Atten= 7%, Lag= 6.9 min
 Primary = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.68' @ 12.19 hrs Surf.Area= 1,564 sf Storage= 531 cf

Plug-Flow detention time= 1.4 min calculated for 1.006 af (100% of inflow)

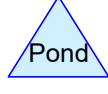
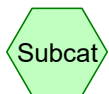
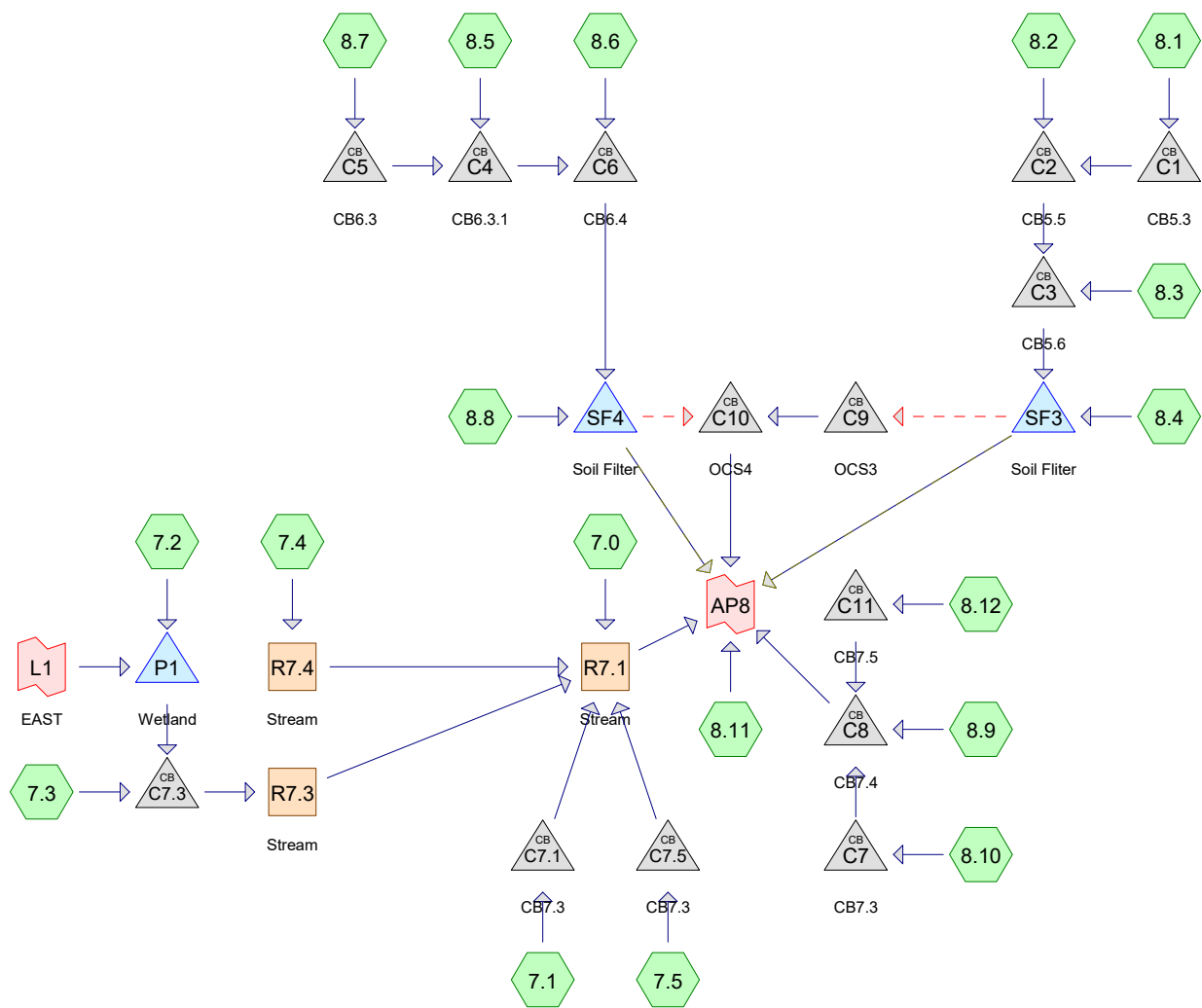
Center-of-Mass det. time= 1.1 min (865.1 - 864.0)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=7.97 cfs @ 12.22 hrs HW=97.68' TW=97.21' (Dynamic Tailwater)↑**1=Custom Weir/Orifice** (Weir Controls 7.97 cfs @ 2.52 fps)



Routing Diagram for Post-Development WEST
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Type III 24-hr 2-Yr Storm Rainfall=3.10"

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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>1.19" Flow Length=270' Tc=49.4 min CN=78 Runoff=4.24 cfs 0.697 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>0.87" Flow Length=115' Tc=6.5 min CN=72 Runoff=0.49 cfs 0.038 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>1.18" Flow Length=330' Tc=50.7 min CN=78 Runoff=6.23 cfs 1.038 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>0.71" Flow Length=275' Tc=39.9 min CN=69 Runoff=0.91 cfs 0.150 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>0.51" Flow Length=235' Tc=29.3 min CN=64 Runoff=0.45 cfs 0.074 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>0.97" Tc=5.0 min CN=74 Runoff=0.63 cfs 0.046 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>2.35" Tc=5.0 min CN=93 Runoff=1.43 cfs 0.101 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>1.91" Tc=5.0 min CN=88 Runoff=4.38 cfs 0.302 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>1.53" Tc=5.0 min CN=83 Runoff=3.13 cfs 0.216 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>2.65" Tc=5.0 min CN=96 Runoff=1.20 cfs 0.088 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>1.99" Tc=5.0 min CN=89 Runoff=1.59 cfs 0.110 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>2.55" Tc=5.0 min CN=95 Runoff=1.18 cfs 0.086 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>1.32" Tc=5.0 min CN=80 Runoff=0.36 cfs 0.025 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>2.65" Tc=5.0 min CN=96 Runoff=2.17 cfs 0.160 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>2.76" Tc=5.0 min CN=97 Runoff=1.07 cfs 0.080 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>2.87" Tc=5.0 min CN=98 Runoff=0.69 cfs 0.053 af

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

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>1.32" Tc=5.0 min CN=80 Runoff=0.35 cfs 0.024 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>2.76" Tc=5.0 min CN=97 Runoff=1.79 cfs 0.134 af
Reach R7.1: Stream	Avg. Flow Depth=0.80' Max Vel=3.97 fps Inflow=12.05 cfs 3.064 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=12.01 cfs 3.054 af
Reach R7.3: Stream	Avg. Flow Depth=0.47' Max Vel=4.63 fps Inflow=7.49 cfs 2.211 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=7.49 cfs 2.209 af
Reach R7.4: Stream	Avg. Flow Depth=0.07' Max Vel=2.07 fps Inflow=0.45 cfs 0.074 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=0.45 cfs 0.074 af
Pond C1: CB5.3	Peak Elev=76.55' Inflow=1.43 cfs 0.101 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=1.43 cfs 0.101 af
Pond C10: OCS4	Peak Elev=71.36' Inflow=2.60 cfs 0.202 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=2.60 cfs 0.202 af
Pond C11: CB7.5	Peak Elev=73.27' Inflow=1.20 cfs 0.088 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=1.20 cfs 0.088 af
Pond C2: CB5.5	Peak Elev=76.00' Inflow=3.02 cfs 0.211 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=3.02 cfs 0.211 af
Pond C3: CB5.6	Peak Elev=74.98' Inflow=4.20 cfs 0.297 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=4.20 cfs 0.297 af
Pond C4: CB6.3.1	Peak Elev=75.19' Inflow=2.86 cfs 0.213 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=2.86 cfs 0.213 af
Pond C5: CB6.3	Peak Elev=75.35' Inflow=0.69 cfs 0.053 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=0.69 cfs 0.053 af
Pond C6: CB6.4	Peak Elev=74.95' Inflow=3.93 cfs 0.294 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=3.93 cfs 0.294 af
Pond C7: CB7.3	Peak Elev=73.91' Inflow=4.38 cfs 0.302 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=4.38 cfs 0.302 af
Pond C7.1: CB7.3	Peak Elev=78.87' Inflow=0.49 cfs 0.038 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=0.49 cfs 0.038 af
Pond C7.3:	Peak Elev=76.70' Inflow=7.49 cfs 2.211 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=7.49 cfs 2.211 af
Pond C7.5: CB7.3	Peak Elev=80.19' Inflow=0.63 cfs 0.046 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=0.63 cfs 0.046 af

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

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Pond C8: CB7.4Peak Elev=72.32' Inflow=7.36 cfs 0.524 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 ' /' Outflow=7.36 cfs 0.524 af**Pond C9: OCS3**Peak Elev=71.68' Inflow=1.29 cfs 0.105 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 ' /' Outflow=1.29 cfs 0.105 af**Pond P1: Wetland**Peak Elev=83.63' Storage=12,495 cf Inflow=8.88 cfs 2.073 af
Outflow=6.84 cfs 2.062 af**Pond SF3: Soil Fliter**Peak Elev=74.66' Storage=6,216 cf Inflow=4.56 cfs 0.322 af
Primary=0.08 cfs 0.096 af Secondary=1.29 cfs 0.105 af Tertiary=0.00 cfs 0.000 af Outflow=1.37 cfs 0.201 af**Pond SF4: Soil Filter**Peak Elev=74.66' Storage=6,168 cf Inflow=4.28 cfs 0.318 af
Primary=0.07 cfs 0.103 af Secondary=1.32 cfs 0.097 af Tertiary=0.00 cfs 0.000 af Outflow=1.40 cfs 0.201 af**Link AP8:**Inflow=14.39 cfs 4.196 af
Primary=14.39 cfs 4.196 af**Link** 2-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=6.65 cfs 1.035 af
Area= 10.780 ac 49.22% Imperv. Primary=6.65 cfs 1.035 af**Total Runoff Area = 30.843 ac Runoff Volume = 3.423 af Average Runoff Depth = 1.33"**
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Summary for Subcatchment 7.0:

Runoff = 4.24 cfs @ 12.69 hrs, Volume= 0.697 af, Depth> 1.19"

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
*	18,020	98	Impervious
	3,144	80	>75% Grass cover, Good, HSG D
	36,715	73	Brush, Good, HSG D
	249,442	77	Woods, Good, HSG D
	307,321	78	Weighted Average
	289,301		94.14% Pervious Area
	18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af, Depth> 0.87"

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
*	2,697	98	Impervious
	750	74	>75% Grass cover, Good, HSG C
	12,331	65	Brush, Good, HSG C
	7,352	73	Brush, Good, HSG D
	23,130	72	Weighted Average
	20,433		88.34% Pervious Area
	2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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

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Summary for Subcatchment 7.2:

Runoff = 6.23 cfs @ 12.73 hrs, Volume= 1.038 af, Depth> 1.18"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 0.91 cfs @ 12.64 hrs, Volume= 0.150 af, Depth> 0.71"

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
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 0.45 cfs @ 12.52 hrs, Volume= 0.074 af, Depth> 0.51"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 0.97"

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"

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

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af, Depth> 2.35"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af, Depth> 1.91"

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 2-Yr Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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

Summary for Subcatchment 8.11:

Runoff = 3.13 cfs @ 12.08 hrs, Volume= 0.216 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af, Depth> 2.65"

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 2-Yr Storm Rainfall=3.10"

Area (sf)	CN	Description
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.110 af, Depth> 1.99"

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"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 1.18 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 2.55"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 1.32"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Summary for Subcatchment 8.5:

Runoff = 2.17 cfs @ 12.07 hrs, Volume= 0.160 af, Depth> 2.65"

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 2-Yr Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 1.07 cfs @ 12.07 hrs, Volume= 0.080 af, Depth> 2.76"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 0.053 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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

Summary for Subcatchment 8.8:

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 1.32"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 1.79 cfs @ 12.07 hrs, Volume= 0.134 af, Depth> 2.76"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: Stream

Inflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 1.09" for 2-Yr Storm event
Inflow = 12.05 cfs @ 12.77 hrs, Volume= 3.064 af
Outflow = 12.01 cfs @ 12.81 hrs, Volume= 3.054 af, Atten= 0%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.97 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 8.9 min

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Peak Storage= 2,602 cf @ 12.81 hrs

Average Depth at Peak Storage= 0.80'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 1.11" for 2-Yr Storm event

Inflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af

Outflow = 7.49 cfs @ 12.93 hrs, Volume= 2.209 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.63 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 1.97 fps, Avg. Travel Time= 3.0 min

Peak Storage= 574 cf @ 12.93 hrs

Average Depth at Peak Storage= 0.47'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 0.51" for 2-Yr Storm event

Inflow = 0.45 cfs @ 12.52 hrs, Volume= 0.074 af

Outflow = 0.45 cfs @ 12.53 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.7 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 2.07 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.04 fps, Avg. Travel Time= 2.2 min

Peak Storage= 30 cf @ 12.53 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'



Summary for Pond C1: CB5.3

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 2.35" for 2-Yr Storm event

Inflow = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af

Outflow = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.55' @ 12.08 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.38 cfs @ 12.07 hrs HW=76.54' TW=75.99' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 1.38 cfs @ 3.07 fps)

Summary for Pond C10: OCS4

Inflow = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af

Outflow = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Primary = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 71.36' @ 12.37 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.60 cfs @ 12.37 hrs HW=71.36' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.60 cfs @ 3.44 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 2.65" for 2-Yr Storm event
Inflow = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af
Outflow = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.27' @ 12.07 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.19 cfs @ 12.07 hrs HW=73.27' TW=72.31' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.19 cfs @ 2.57 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 2.15" for 2-Yr Storm event
Inflow = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af
Outflow = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.00' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.97 cfs @ 12.07 hrs HW=75.99' TW=74.97' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 2.97 cfs @ 3.45 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 2.25" for 2-Yr Storm event
 Inflow = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af
 Outflow = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.98' @ 12.07 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.17 cfs @ 12.07 hrs HW=74.97' TW=74.16' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 4.17 cfs @ 3.95 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 2.70" for 2-Yr Storm event
 Inflow = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af
 Outflow = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.19' @ 12.08 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.65 cfs @ 12.07 hrs HW=75.16' TW=74.95' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 2.65 cfs @ 2.61 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 2.87" for 2-Yr Storm event
 Inflow = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af
 Outflow = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.35' @ 12.10 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.56 cfs @ 12.07 hrs HW=75.31' TW=75.16' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.56 cfs @ 1.33 fps)**Summary for Pond C6: CB6.4**

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 2.72" for 2-Yr Storm event
Inflow = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af
Outflow = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min
Primary = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.95' @ 12.07 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.87 cfs @ 12.07 hrs HW=74.95' TW=74.25' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 3.87 cfs @ 3.93 fps)**Summary for Pond C7: CB7.3**

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 1.91" for 2-Yr Storm event
Inflow = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af
Outflow = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Primary = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.91' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.32 cfs @ 12.07 hrs HW=73.91' TW=72.31' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 4.32 cfs @ 4.56 fps)

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 0.87" for 2-Yr Storm event
 Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af
 Outflow = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 78.87' @ 12.11 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.48 cfs @ 12.11 hrs HW=78.86' TW=76.41' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.48 cfs @ 1.62 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 1.11" for 2-Yr Storm event
 Inflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af
 Outflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.70' @ 12.92 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=7.49 cfs @ 12.92 hrs HW=76.70' TW=75.47' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 7.49 cfs @ 2.60 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 0.97" for 2-Yr Storm event
 Inflow = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af
 Outflow = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.19' @ 12.08 hrs

Flood Elev= 83.00'

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=0.63 cfs @ 12.08 hrs HW=80.19' TW=76.38' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.63 cfs @ 1.12 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 2.18" for 2-Yr Storm event
Inflow = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af
Outflow = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min
Primary = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.32' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.30 cfs @ 12.07 hrs HW=72.31' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 7.30 cfs @ 4.44 fps)**Summary for Pond C9: OCS3**

Inflow = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af
Outflow = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 71.68' @ 12.39 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.30 cfs @ 12.39 hrs HW=71.68' TW=71.36' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.30 cfs @ 2.43 fps)

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 1.17" for 2-Yr Storm event
 Inflow = 8.88 cfs @ 12.53 hrs, Volume= 2.073 af
 Outflow = 6.84 cfs @ 13.00 hrs, Volume= 2.062 af, Atten= 23%, Lag= 28.2 min
 Primary = 6.84 cfs @ 13.00 hrs, Volume= 2.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 83.63' @ 13.00 hrs Surf.Area= 20,135 sf Storage= 12,495 cf

Plug-Flow detention time= 23.7 min calculated for 2.060 af (99% of inflow)
 Center-of-Mass det. time= 20.5 min (885.8 - 865.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S= 0.0560 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=6.84 cfs @ 13.00 hrs HW=83.63' TW=76.70' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 6.84 cfs @ 3.09 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 6.84 cfs of 9.42 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 2.13" for 2-Yr Storm event
 Inflow = 4.56 cfs @ 12.07 hrs, Volume= 0.322 af
 Outflow = 1.37 cfs @ 12.39 hrs, Volume= 0.201 af, Atten= 70%, Lag= 19.2 min
 Primary = 0.08 cfs @ 12.39 hrs, Volume= 0.096 af
 Secondary = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 74.66' @ 12.39 hrs Surf.Area= 4,427 sf Storage= 6,216 cf

Plug-Flow detention time= 188.0 min calculated for 0.201 af (62% of inflow)
 Center-of-Mass det. time= 85.6 min (885.0 - 799.5)

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.39 hrs HW=74.66' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=1.29 cfs @ 12.39 hrs HW=74.66' TW=71.68' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 1.29 cfs @ 1.30 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond SF4: Soil Filter**

Inflow Area =	1.518 ac, 79.42% Impervious, Inflow Depth > 2.51" for 2-Yr Storm event
Inflow =	4.28 cfs @ 12.07 hrs, Volume= 0.318 af
Outflow =	1.40 cfs @ 12.35 hrs, Volume= 0.201 af, Atten= 67%, Lag= 16.7 min
Primary =	0.07 cfs @ 12.35 hrs, Volume= 0.103 af
Secondary =	1.32 cfs @ 12.35 hrs, Volume= 0.097 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.66' @ 12.35 hrs Surf.Area= 4,308 sf Storage= 6,168 cf

Plug-Flow detention time= 185.6 min calculated for 0.201 af (63% of inflow)

Center-of-Mass det. time= 83.3 min (857.1 - 773.8)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.35 hrs HW=74.66' TW=0.00' (Dynamic Tailwater)↑ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)**Secondary OutFlow** Max=1.32 cfs @ 12.35 hrs HW=74.66' TW=71.36' (Dynamic Tailwater)↑ **2=Orifice/Grate** (Weir Controls 1.32 cfs @ 1.31 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
 Inflow = 14.39 cfs @ 12.73 hrs, Volume= 4.196 af
 Primary = 14.39 cfs @ 12.73 hrs, Volume= 4.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 1.15" for 2-Yr Storm event
 Inflow = 6.65 cfs @ 12.13 hrs, Volume= 1.035 af
 Primary = 6.65 cfs @ 12.13 hrs, Volume= 1.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

2-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

Post-Development_WEST

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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>2.35" Flow Length=270' Tc=49.4 min CN=78 Runoff=8.65 cfs 1.381 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>1.89" Flow Length=115' Tc=6.5 min CN=72 Runoff=1.14 cfs 0.084 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>2.35" Flow Length=330' Tc=50.7 min CN=78 Runoff=12.69 cfs 2.059 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>1.65" Flow Length=275' Tc=39.9 min CN=69 Runoff=2.34 cfs 0.346 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>1.32" Flow Length=235' Tc=29.3 min CN=64 Runoff=1.43 cfs 0.192 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>2.05" Tc=5.0 min CN=74 Runoff=1.40 cfs 0.097 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>3.80" Tc=5.0 min CN=93 Runoff=2.26 cfs 0.164 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>3.29" Tc=5.0 min CN=88 Runoff=7.43 cfs 0.520 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>2.81" Tc=5.0 min CN=83 Runoff=5.77 cfs 0.398 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>4.13" Tc=5.0 min CN=96 Runoff=1.82 cfs 0.138 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>3.39" Tc=5.0 min CN=89 Runoff=2.66 cfs 0.187 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>4.02" Tc=5.0 min CN=95 Runoff=1.82 cfs 0.135 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>2.54" Tc=5.0 min CN=80 Runoff=0.70 cfs 0.048 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>4.13" Tc=5.0 min CN=96 Runoff=3.30 cfs 0.250 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>4.25" Tc=5.0 min CN=97 Runoff=1.61 cfs 0.124 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>4.36" Tc=5.0 min CN=98 Runoff=1.04 cfs 0.081 af

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>2.54" Tc=5.0 min CN=80 Runoff=0.68 cfs 0.047 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>4.25" Tc=5.0 min CN=97 Runoff=2.69 cfs 0.207 af
Reach R7.1: Stream	Avg. Flow Depth=1.20' Max Vel=4.88 fps Inflow=24.59 cfs 6.113 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=24.53 cfs 6.100 af
Reach R7.3: Stream	Avg. Flow Depth=0.69' Max Vel=5.74 fps Inflow=14.67 cfs 4.363 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=14.67 cfs 4.359 af
Reach R7.4: Stream	Avg. Flow Depth=0.14' Max Vel=3.19 fps Inflow=1.43 cfs 0.192 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=1.43 cfs 0.192 af
Pond C1: CB5.3	Peak Elev=77.49' Inflow=2.26 cfs 0.164 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=2.26 cfs 0.164 af
Pond C10: OCS4	Peak Elev=72.38' Inflow=10.82 cfs 0.566 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=10.82 cfs 0.566 af
Pond C11: CB7.5	Peak Elev=73.47' Inflow=1.82 cfs 0.138 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=1.82 cfs 0.138 af
Pond C2: CB5.5	Peak Elev=77.02' Inflow=4.92 cfs 0.352 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=4.92 cfs 0.352 af
Pond C3: CB5.6	Peak Elev=75.49' Inflow=6.73 cfs 0.487 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=6.73 cfs 0.487 af
Pond C4: CB6.3.1	Peak Elev=76.52' Inflow=4.34 cfs 0.331 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=4.34 cfs 0.331 af
Pond C5: CB6.3	Peak Elev=76.64' Inflow=1.04 cfs 0.081 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=1.04 cfs 0.081 af
Pond C6: CB6.4	Peak Elev=76.02' Inflow=5.95 cfs 0.455 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=5.95 cfs 0.455 af
Pond C7: CB7.3	Peak Elev=74.43' Inflow=7.43 cfs 0.520 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=7.43 cfs 0.520 af
Pond C7.1: CB7.3	Peak Elev=79.08' Inflow=1.14 cfs 0.084 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=1.14 cfs 0.084 af
Pond C7.3:	Peak Elev=77.28' Inflow=14.67 cfs 4.363 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=14.67 cfs 4.363 af
Pond C7.5: CB7.3	Peak Elev=80.33' Inflow=1.40 cfs 0.097 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=1.40 cfs 0.097 af

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Pond C8: CB7.4

Peak Elev=72.83' Inflow=11.93 cfs 0.865 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=11.93 cfs 0.865 af

Pond C9: OCS3

Peak Elev=72.83' Inflow=5.66 cfs 0.303 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 '/' Outflow=5.66 cfs 0.303 af

Pond P1: Wetland

Peak Elev=84.50' Storage=34,069 cf Inflow=20.93 cfs 4.035 af
Outflow=13.08 cfs 4.016 af

Pond SF3: Soil Fliter

Peak Elev=74.92' Storage=7,419 cf Inflow=7.43 cfs 0.535 af
Primary=0.08 cfs 0.105 af Secondary=5.66 cfs 0.303 af Tertiary=0.00 cfs 0.000 af Outflow=5.74 cfs 0.408 af

Pond SF4: Soil Filter

Peak Elev=74.90' Storage=7,215 cf Inflow=6.63 cfs 0.501 af
Primary=0.08 cfs 0.113 af Secondary=5.17 cfs 0.264 af Tertiary=0.00 cfs 0.000 af Outflow=5.25 cfs 0.376 af

Link AP8:

Inflow=35.94 cfs 8.147 af
Primary=35.94 cfs 8.147 af

Link 10-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=14.70 cfs 1.976 af
Area= 10.780 ac 49.22% Imperv. Primary=14.70 cfs 1.976 af

Total Runoff Area = 30.843 ac Runoff Volume = 6.457 af Average Runoff Depth = 2.51"
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Subcatchment 7.0:

Runoff = 8.65 cfs @ 12.68 hrs, Volume= 1.381 af, Depth> 2.35"

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
*	18,020	98	Impervious
	3,144	80	>75% Grass cover, Good, HSG D
	36,715	73	Brush, Good, HSG D
	249,442	77	Woods, Good, HSG D
	307,321	78	Weighted Average
	289,301		94.14% Pervious Area
	18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af, Depth> 1.89"

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
*	2,697	98	Impervious
	750	74	>75% Grass cover, Good, HSG C
	12,331	65	Brush, Good, HSG C
	7,352	73	Brush, Good, HSG D
	23,130	72	Weighted Average
	20,433		88.34% Pervious Area
	2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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Summary for Subcatchment 7.2:

Runoff = 12.69 cfs @ 12.69 hrs, Volume= 2.059 af, Depth> 2.35"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 2.34 cfs @ 12.58 hrs, Volume= 0.346 af, Depth> 1.65"

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 10-Yr Storm Rainfall=4.60"

Area (sf)	CN	Description
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af, Depth> 1.32"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af, Depth> 2.05"

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"

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af, Depth> 3.80"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af, Depth> 3.29"

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
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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

Summary for Subcatchment 8.11:

Runoff = 5.77 cfs @ 12.07 hrs, Volume= 0.398 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af, Depth> 4.13"

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
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 2.66 cfs @ 12.07 hrs, Volume= 0.187 af, Depth> 3.39"

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"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.135 af, Depth> 4.02"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 0.048 af, Depth> 2.54"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Summary for Subcatchment 8.5:

Runoff = 3.30 cfs @ 12.07 hrs, Volume= 0.250 af, Depth> 4.13"

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
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 1.61 cfs @ 12.07 hrs, Volume= 0.124 af, Depth> 4.25"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 1.04 cfs @ 12.07 hrs, Volume= 0.081 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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

Summary for Subcatchment 8.8:

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.047 af, Depth> 2.54"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 2.69 cfs @ 12.07 hrs, Volume= 0.207 af, Depth> 4.25"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: StreamInflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 2.18" for 10-Yr Storm event
Inflow = 24.59 cfs @ 12.69 hrs, Volume= 6.113 af
Outflow = 24.53 cfs @ 12.73 hrs, Volume= 6.100 af, Atten= 0%, Lag= 2.6 minRouting by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.88 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.98 fps, Avg. Travel Time= 7.2 min

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Peak Storage= 4,318 cf @ 12.73 hrs

Average Depth at Peak Storage= 1.20'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event

Inflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af

Outflow = 14.67 cfs @ 12.83 hrs, Volume= 4.359 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.74 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 2.42 fps, Avg. Travel Time= 2.4 min

Peak Storage= 907 cf @ 12.83 hrs

Average Depth at Peak Storage= 0.69'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 1.32" for 10-Yr Storm event

Inflow = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af

Outflow = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.4 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 3.19 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 1.29 fps, Avg. Travel Time= 1.8 min

Peak Storage= 63 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'

**Summary for Pond C1: CB5.3**

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 3.80" for 10-Yr Storm event

Inflow = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af

Outflow = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min

Primary = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.49' @ 12.09 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.55 cfs @ 12.07 hrs HW=77.22' TW=76.97' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.55 cfs @ 1.97 fps)**Summary for Pond C10: OCS4**

Inflow = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af

Outflow = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af, Atten= 0%, Lag= 0.0 min

Primary = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.38' @ 12.13 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.77 cfs @ 12.13 hrs HW=72.37' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 10.77 cfs @ 4.83 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 4.13" for 10-Yr Storm event
Inflow = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af
Outflow = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.47' @ 12.08 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.74 cfs @ 12.07 hrs HW=73.46' TW=72.82' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.74 cfs @ 3.78 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 3.57" for 10-Yr Storm event
Inflow = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af
Outflow = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.02' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.78 cfs @ 12.07 hrs HW=76.98' TW=75.47' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 4.78 cfs @ 3.90 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 3.68" for 10-Yr Storm event
 Inflow = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af
 Outflow = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.49' @ 12.08 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.41 cfs @ 12.07 hrs HW=75.47' TW=74.85' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 6.41 cfs @ 4.11 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 4.19" for 10-Yr Storm event
 Inflow = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af
 Outflow = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.52' @ 12.09 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / S= 0.0058 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.07 hrs HW=76.39' TW=75.99' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 3.74 cfs @ 3.05 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-Yr Storm event
 Inflow = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af
 Outflow = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.64' @ 12.11 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.07 hrs HW=76.24' TW=76.39' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond C6: CB6.4**

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 4.20" for 10-Yr Storm event
Inflow = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af
Outflow = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af, Atten= 0%, Lag= 0.0 min
Primary = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.02' @ 12.08 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.80 cfs @ 12.07 hrs HW=75.99' TW=74.84' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 5.80 cfs @ 4.72 fps)**Summary for Pond C7: CB7.3**

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 3.29" for 10-Yr Storm event
Inflow = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af
Outflow = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af, Atten= 0%, Lag= 0.0 min
Primary = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.43' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.28 cfs @ 12.07 hrs HW=74.41' TW=72.82' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.28 cfs @ 4.91 fps)

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 1.89" for 10-Yr Storm event
 Inflow = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af
 Outflow = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.08' @ 12.10 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' / S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.14 cfs @ 12.10 hrs HW=79.08' TW=76.67' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.14 cfs @ 2.04 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event
 Inflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af
 Outflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af, Atten= 0%, Lag= 0.0 min
 Primary = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.28' @ 12.82 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=14.67 cfs @ 12.82 hrs HW=77.28' TW=75.69' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 14.67 cfs @ 3.19 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 2.05" for 10-Yr Storm event
 Inflow = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af
 Outflow = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.33' @ 12.08 hrs

Flood Elev= 83.00'

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=1.39 cfs @ 12.08 hrs HW=80.33' TW=76.64' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.39 cfs @ 1.45 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 3.60" for 10-Yr Storm event
Inflow = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af
Outflow = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.0 min
Primary = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.83' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=11.84 cfs @ 12.07 hrs HW=72.82' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 11.84 cfs @ 4.98 fps)**Summary for Pond C9: OCS3**

Inflow = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af
Outflow = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Primary = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.83' @ 12.14 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.50 cfs @ 12.13 hrs HW=72.81' TW=72.37' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 5.50 cfs @ 3.28 fps)

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 2.27" for 10-Yr Storm event
 Inflow = 20.93 cfs @ 12.41 hrs, Volume= 4.035 af
 Outflow = 13.08 cfs @ 13.04 hrs, Volume= 4.016 af, Atten= 38%, Lag= 37.6 min
 Primary = 13.08 cfs @ 13.04 hrs, Volume= 4.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.50' @ 13.04 hrs Surf.Area= 28,180 sf Storage= 34,069 cf

Plug-Flow detention time= 30.7 min calculated for 4.016 af (100% of inflow)
 Center-of-Mass det. time= 27.9 min (873.4 - 845.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S= 0.0560 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=13.08 cfs @ 13.04 hrs HW=84.50' TW=77.26' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 13.08 cfs @ 4.16 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 13.08 cfs of 27.77 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 3.54" for 10-Yr Storm event
 Inflow = 7.43 cfs @ 12.07 hrs, Volume= 0.535 af
 Outflow = 5.74 cfs @ 12.13 hrs, Volume= 0.408 af, Atten= 23%, Lag= 3.7 min
 Primary = 0.08 cfs @ 12.13 hrs, Volume= 0.105 af
 Secondary = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 74.92' @ 12.13 hrs Surf.Area= 4,656 sf Storage= 7,419 cf

Plug-Flow detention time= 129.0 min calculated for 0.408 af (76% of inflow)
 Center-of-Mass det. time= 46.6 min (833.2 - 786.6)

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.13 hrs HW=74.92' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=5.64 cfs @ 12.13 hrs HW=74.92' TW=72.81' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 5.64 cfs @ 2.12 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond SF4: Soil Filter**

Inflow Area =	1.518 ac, 79.42% Impervious, Inflow Depth > 3.96" for 10-Yr Storm event
Inflow =	6.63 cfs @ 12.07 hrs, Volume= 0.501 af
Outflow =	5.25 cfs @ 12.13 hrs, Volume= 0.376 af, Atten= 21%, Lag= 3.5 min
Primary =	0.08 cfs @ 12.13 hrs, Volume= 0.113 af
Secondary =	5.17 cfs @ 12.13 hrs, Volume= 0.264 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.90' @ 12.13 hrs Surf.Area= 4,489 sf Storage= 7,215 cf

Plug-Flow detention time= 135.4 min calculated for 0.376 af (75% of inflow)

Center-of-Mass det. time= 49.5 min (814.1 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.13 hrs HW=74.90' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=5.14 cfs @ 12.13 hrs HW=74.90' TW=72.37' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 5.14 cfs @ 2.06 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 2.35" for 10-Yr Storm event
 Inflow = 35.94 cfs @ 12.10 hrs, Volume= 8.147 af
 Primary = 35.94 cfs @ 12.10 hrs, Volume= 8.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event
 Inflow = 14.70 cfs @ 12.19 hrs, Volume= 1.976 af
 Primary = 14.70 cfs @ 12.19 hrs, Volume= 1.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

10-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>3.37" Flow Length=270' Tc=49.4 min CN=78 Runoff=12.42 cfs 1.980 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>2.83" Flow Length=115' Tc=6.5 min CN=72 Runoff=1.72 cfs 0.125 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>3.37" Flow Length=330' Tc=50.7 min CN=78 Runoff=18.24 cfs 2.951 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>2.53" Flow Length=275' Tc=39.9 min CN=69 Runoff=3.67 cfs 0.530 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>2.11" Flow Length=235' Tc=29.3 min CN=64 Runoff=2.40 cfs 0.307 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>3.01" Tc=5.0 min CN=74 Runoff=2.07 cfs 0.142 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>4.98" Tc=5.0 min CN=93 Runoff=2.91 cfs 0.215 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>4.43" Tc=5.0 min CN=88 Runoff=9.87 cfs 0.701 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>3.90" Tc=5.0 min CN=83 Runoff=7.94 cfs 0.552 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>5.32" Tc=5.0 min CN=96 Runoff=2.32 cfs 0.177 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>4.54" Tc=5.0 min CN=89 Runoff=3.51 cfs 0.251 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>5.21" Tc=5.0 min CN=95 Runoff=2.32 cfs 0.175 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>3.60" Tc=5.0 min CN=80 Runoff=0.98 cfs 0.068 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>5.32" Tc=5.0 min CN=96 Runoff=4.20 cfs 0.322 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>5.44" Tc=5.0 min CN=97 Runoff=2.04 cfs 0.159 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>5.56" Tc=5.0 min CN=98 Runoff=1.31 cfs 0.104 af

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>3.60" Tc=5.0 min CN=80 Runoff=0.96 cfs 0.066 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>5.44" Tc=5.0 min CN=97 Runoff=3.41 cfs 0.265 af
Reach R7.1: Stream	Avg. Flow Depth=1.43' Max Vel=5.35 fps Inflow=34.07 cfs 8.851 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=33.98 cfs 8.836 af
Reach R7.3: Stream	Avg. Flow Depth=0.81' Max Vel=6.25 fps Inflow=19.42 cfs 6.300 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=19.42 cfs 6.296 af
Reach R7.4: Stream	Avg. Flow Depth=0.19' Max Vel=3.86 fps Inflow=2.40 cfs 0.307 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=2.40 cfs 0.307 af
Pond C1: CB5.3	Peak Elev=79.43' Inflow=2.91 cfs 0.215 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=2.91 cfs 0.215 af
Pond C10: OCS4	Peak Elev=72.91' Inflow=15.31 cfs 0.875 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=15.31 cfs 0.875 af
Pond C11: CB7.5	Peak Elev=73.76' Inflow=2.32 cfs 0.177 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=2.32 cfs 0.177 af
Pond C2: CB5.5	Peak Elev=78.66' Inflow=6.42 cfs 0.466 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=6.42 cfs 0.466 af
Pond C3: CB5.6	Peak Elev=76.02' Inflow=8.74 cfs 0.642 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=8.74 cfs 0.642 af
Pond C4: CB6.3.1	Peak Elev=77.70' Inflow=5.51 cfs 0.425 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=5.51 cfs 0.425 af
Pond C5: CB6.3	Peak Elev=77.90' Inflow=1.31 cfs 0.104 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=1.31 cfs 0.104 af
Pond C6: CB6.4	Peak Elev=76.87' Inflow=7.55 cfs 0.584 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=7.55 cfs 0.584 af
Pond C7: CB7.3	Peak Elev=75.70' Inflow=9.87 cfs 0.701 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=9.87 cfs 0.701 af
Pond C7.1: CB7.3	Peak Elev=79.23' Inflow=1.72 cfs 0.125 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=1.72 cfs 0.125 af
Pond C7.3:	Peak Elev=77.61' Inflow=19.42 cfs 6.300 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=19.42 cfs 6.300 af
Pond C7.5: CB7.3	Peak Elev=80.43' Inflow=2.07 cfs 0.142 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=2.07 cfs 0.142 af

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Pond C8: CB7.4

Peak Elev=73.29' Inflow=15.59 cfs 1.143 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=15.59 cfs 1.143 af

Pond C9: OCS3

Peak Elev=73.85' Inflow=8.13 cfs 0.469 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 '/' Outflow=8.13 cfs 0.469 af

Pond P1: Wetland

Peak Elev=85.31' Storage=59,432 cf Inflow=32.95 cfs 5.795 af
Outflow=16.95 cfs 5.770 af

Pond SF3: Soil Fliter

Peak Elev=75.04' Storage=7,964 cf Inflow=9.72 cfs 0.709 af
Primary=0.08 cfs 0.111 af Secondary=8.13 cfs 0.469 af Tertiary=0.19 cfs 0.001 af Outflow=8.40 cfs 0.582 af

Pond SF4: Soil Filter

Peak Elev=75.00' Storage=7,656 cf Inflow=8.51 cfs 0.650 af
Primary=0.08 cfs 0.118 af Secondary=7.18 cfs 0.406 af Tertiary=0.00 cfs 0.000 af Outflow=7.26 cfs 0.523 af

Link AP8:

Inflow=51.61 cfs 11.636 af
Primary=51.61 cfs 11.636 af

Link 25-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=25.08 cfs 2.844 af
Area= 10.780 ac 49.22% Imperv. Primary=25.08 cfs 2.844 af

Total Runoff Area = 30.843 ac Runoff Volume = 9.091 af Average Runoff Depth = 3.54"
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 7.0:

Runoff = 12.42 cfs @ 12.68 hrs, Volume= 1.980 af, Depth> 3.37"

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
*	18,020	98	Impervious
	3,144	80	>75% Grass cover, Good, HSG D
	36,715	73	Brush, Good, HSG D
	249,442	77	Woods, Good, HSG D
	307,321	78	Weighted Average
	289,301		94.14% Pervious Area
	18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af, Depth> 2.83"

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
*	2,697	98	Impervious
	750	74	>75% Grass cover, Good, HSG C
	12,331	65	Brush, Good, HSG C
	7,352	73	Brush, Good, HSG D
	23,130	72	Weighted Average
	20,433		88.34% Pervious Area
	2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 7.2:

Runoff = 18.24 cfs @ 12.68 hrs, Volume= 2.951 af, Depth> 3.37"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 3.67 cfs @ 12.56 hrs, Volume= 0.530 af, Depth> 2.53"

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 25-Yr Storm Rainfall=5.80"

Area (sf)	CN	Description
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af, Depth> 2.11"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af, Depth> 3.01"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af, Depth> 4.98"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af, Depth> 4.43"

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
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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

Summary for Subcatchment 8.11:

Runoff = 7.94 cfs @ 12.07 hrs, Volume= 0.552 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af, Depth> 5.32"

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
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 3.51 cfs @ 12.07 hrs, Volume= 0.251 af, Depth> 4.54"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 2.32 cfs @ 12.07 hrs, Volume= 0.175 af, Depth> 5.21"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.98 cfs @ 12.07 hrs, Volume= 0.068 af, Depth> 3.60"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 8.5:

Runoff = 4.20 cfs @ 12.07 hrs, Volume= 0.322 af, Depth> 5.32"

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
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 2.04 cfs @ 12.07 hrs, Volume= 0.159 af, Depth> 5.44"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 1.31 cfs @ 12.07 hrs, Volume= 0.104 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

Summary for Subcatchment 8.8:

Runoff = 0.96 cfs @ 12.07 hrs, Volume= 0.066 af, Depth> 3.60"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 3.41 cfs @ 12.07 hrs, Volume= 0.265 af, Depth> 5.44"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: Stream

Inflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 3.15" for 25-Yr Storm event
Inflow = 34.07 cfs @ 12.67 hrs, Volume= 8.851 af
Outflow = 33.98 cfs @ 12.70 hrs, Volume= 8.836 af, Atten= 0%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.35 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 6.4 min

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Peak Storage= 5,465 cf @ 12.70 hrs

Average Depth at Peak Storage= 1.43'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 3.18" for 25-Yr Storm event

Inflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af

Outflow = 19.42 cfs @ 12.76 hrs, Volume= 6.296 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 6.25 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 2.72 fps, Avg. Travel Time= 2.2 min

Peak Storage= 1,103 cf @ 12.76 hrs

Average Depth at Peak Storage= 0.81'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 2.11" for 25-Yr Storm event

Inflow = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af

Outflow = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.4 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 3.86 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 1.49 fps, Avg. Travel Time= 1.6 min

Peak Storage= 87 cf @ 12.44 hrs

Average Depth at Peak Storage= 0.19'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'

**Summary for Pond C1: CB5.3**

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 4.98" for 25-Yr Storm event

Inflow = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af

Outflow = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.43' @ 12.09 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.07 cfs @ 12.07 hrs HW=78.99' TW=78.55' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 2.07 cfs @ 2.64 fps)

Summary for Pond C10: OCS4

Inflow = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af

Outflow = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af, Atten= 0%, Lag= 0.0 min

Primary = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.91' @ 12.12 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.27 cfs @ 12.12 hrs HW=72.91' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 15.27 cfs @ 5.27 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 5.32" for 25-Yr Storm event
Inflow = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af
Outflow = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.76' @ 12.08 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.07 hrs HW=73.72' TW=73.27' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 2.12 cfs @ 3.29 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 4.73" for 25-Yr Storm event
Inflow = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af
Outflow = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af, Atten= 0%, Lag= 0.0 min
Primary = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 78.66' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.24 cfs @ 12.07 hrs HW=78.56' TW=76.00' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 6.24 cfs @ 5.08 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 4.85" for 25-Yr Storm event
 Inflow = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af
 Outflow = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.02' @ 12.08 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.07 hrs HW=76.00' TW=75.00' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 8.53 cfs @ 4.83 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 5.38" for 25-Yr Storm event
 Inflow = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af
 Outflow = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.70' @ 12.09 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / S= 0.0058 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.89 cfs @ 12.07 hrs HW=77.53' TW=76.84' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 4.89 cfs @ 3.99 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 5.56" for 25-Yr Storm event
 Inflow = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af
 Outflow = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.90' @ 12.10 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.07 hrs HW=77.33' TW=77.52' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond C6: CB6.4**

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 5.40" for 25-Yr Storm event
Inflow = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af
Outflow = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min
Primary = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.87' @ 12.07 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.42 cfs @ 12.07 hrs HW=76.84' TW=74.95' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.42 cfs @ 6.05 fps)**Summary for Pond C7: CB7.3**

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 4.43" for 25-Yr Storm event
Inflow = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af
Outflow = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.0 min
Primary = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.70' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.65 cfs @ 12.07 hrs HW=75.62' TW=73.27' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 9.65 cfs @ 5.46 fps)

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 2.83" for 25-Yr Storm event
 Inflow = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af
 Outflow = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.23' @ 12.10 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' / S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.72 cfs @ 12.10 hrs HW=79.23' TW=76.87' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.72 cfs @ 2.30 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 3.18" for 25-Yr Storm event
 Inflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af
 Outflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af, Atten= 0%, Lag= 0.0 min
 Primary = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.61' @ 12.75 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=19.42 cfs @ 12.75 hrs HW=77.61' TW=75.81' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 19.42 cfs @ 3.52 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 3.01" for 25-Yr Storm event
 Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af
 Outflow = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.43' @ 12.08 hrs

Flood Elev= 83.00'

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=2.06 cfs @ 12.08 hrs HW=80.43' TW=76.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.06 cfs @ 1.65 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 4.76" for 25-Yr Storm event
Inflow = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af
Outflow = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af, Atten= 0%, Lag= 0.0 min
Primary = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.29' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.47 cfs @ 12.07 hrs HW=73.27' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 15.47 cfs @ 5.30 fps)**Summary for Pond C9: OCS3**

Inflow = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af
Outflow = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.0 min
Primary = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.85' @ 12.13 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.91 cfs @ 12.12 hrs HW=73.81' TW=72.91' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.91 cfs @ 4.48 fps)

Post-Development WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 3.27" for 25-Yr Storm event
 Inflow = 32.95 cfs @ 12.48 hrs, Volume= 5.795 af
 Outflow = 16.95 cfs @ 13.10 hrs, Volume= 5.770 af, Atten= 49%, Lag= 37.2 min
 Primary = 16.95 cfs @ 13.10 hrs, Volume= 5.770 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 85.31' @ 13.10 hrs Surf.Area= 33,935 sf Storage= 59,432 cf

Plug-Flow detention time= 38.5 min calculated for 5.765 af (99% of inflow)
 Center-of-Mass det. time= 35.8 min (872.5 - 836.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S= 0.0560 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=16.95 cfs @ 13.10 hrs HW=85.31' TW=77.56' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 16.95 cfs @ 5.39 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 16.95 cfs of 52.28 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 4.70" for 25-Yr Storm event
 Inflow = 9.72 cfs @ 12.07 hrs, Volume= 0.709 af
 Outflow = 8.40 cfs @ 12.12 hrs, Volume= 0.582 af, Atten= 14%, Lag= 2.7 min
 Primary = 0.08 cfs @ 12.12 hrs, Volume= 0.111 af
 Secondary = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af
 Tertiary = 0.19 cfs @ 12.12 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 75.04' @ 12.12 hrs Surf.Area= 4,757 sf Storage= 7,964 cf

Plug-Flow detention time= 111.6 min calculated for 0.582 af (82% of inflow)
 Center-of-Mass det. time= 40.5 min (820.1 - 779.6)

Post-Development_WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.12 hrs HW=75.04' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=8.11 cfs @ 12.12 hrs HW=75.04' TW=73.81' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 8.11 cfs @ 2.40 fps)**Tertiary OutFlow** Max=0.18 cfs @ 12.12 hrs HW=75.04' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.18 cfs @ 0.49 fps)**Summary for Pond SF4: Soil Filter**

Inflow Area =	1.518 ac, 79.42% Impervious, Inflow Depth > 5.14" for 25-Yr Storm event
Inflow =	8.51 cfs @ 12.07 hrs, Volume= 0.650 af
Outflow =	7.26 cfs @ 12.12 hrs, Volume= 0.523 af, Atten= 15%, Lag= 2.8 min
Primary =	0.08 cfs @ 12.12 hrs, Volume= 0.118 af
Secondary =	7.18 cfs @ 12.12 hrs, Volume= 0.406 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.00' @ 12.12 hrs Surf.Area= 4,563 sf Storage= 7,656 cf

Plug-Flow detention time= 120.1 min calculated for 0.523 af (80% of inflow)

Center-of-Mass det. time= 45.2 min (804.9 - 759.7)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Post-Development_WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.12 hrs HW=75.00' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=7.16 cfs @ 12.12 hrs HW=75.00' TW=72.91' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 7.16 cfs @ 2.30 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 3.35" for 25-Yr Storm event
 Inflow = 51.61 cfs @ 12.10 hrs, Volume= 11.636 af
 Primary = 51.61 cfs @ 12.10 hrs, Volume= 11.636 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 3.17" for 25-Yr Storm event
 Inflow = 25.08 cfs @ 12.19 hrs, Volume= 2.844 af
 Primary = 25.08 cfs @ 12.19 hrs, Volume= 2.844 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

25-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

Appendix C:
Stormwater BMP Spillway and Draindown Calculations

SOIL FILTER SF1 25-YEAR SPILLWAY CALCULATION

Post-Development EAST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond SF1: Soil Filter 1

[80] Warning: Exceeded Pond CB6 by 0.80' @ 24.30 hrs (1.85 cfs 1.158 af)

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 4.46" for 25-Yr Storm event
 Inflow = 8.01 cfs @ 12.07 hrs, Volume= 0.574 af
 Outflow = 5.74 cfs @ 12.14 hrs, Volume= 0.391 af, Atten= 28%, Lag= 4.4 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 5.74 cfs @ 12.14 hrs, Volume= 0.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.26' @ 12.14 hrs Surf.Area= 5,690 sf Storage= 9,935 cf

Plug-Flow detention time= 173.9 min calculated for 0.391 af (68% of inflow)
 Center-of-Mass det. time= 78.8 min (867.6 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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
PROVIDED
WHEN PRIMARY
OUTLETS
CLOSED

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	12.0" Round Culvert X 0.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=5.72 cfs @ 12.14 hrs HW=100.26' TW=97.36' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 5.72 cfs @ 1.61 fps)

SOIL FILTER SF1 100-YEAR SPILLWAY CALCULATION

Post-Development EAST

Type III 24-hr 100-Yr Storm Rainfall=8.10"

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Printed 8/29/2023

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Summary for Pond SF1: Soil Filter 1

[80] Warning: Exceeded Pond CB6 by 0.80' @ 24.32 hrs (1.85 cfs 1.155 af)

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 6.69" for 100-Yr Storm event
 Inflow = 11.76 cfs @ 12.07 hrs, Volume= 0.860 af
 Outflow = 10.12 cfs @ 12.12 hrs, Volume= 0.677 af, Atten= 14%, Lag= 2.7 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 10.12 cfs @ 12.12 hrs, Volume= 0.677 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.42' @ 12.12 hrs Surf.Area= 5,872 sf Storage= 10,879 cf

Plug-Flow detention time= 140.0 min calculated for 0.677 af (79% of inflow)
 Center-of-Mass det. time= 61.6 min (840.1 - 778.5)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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

**BASIN DOES
NOT OVERTOP
WHEN PRIMARY
OUTLETS
CLOSED**

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	12.0" Round Culvert X 0.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=10.09 cfs @ 12.12 hrs HW=100.42' TW=97.45' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 10.09 cfs @ 1.95 fps)

SOIL FILTER SF3 25-YEAR SPILLWAY CALCULATION

Post-Development WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 4.70" for 25-Yr Storm event
 Inflow = 9.72 cfs @ 12.07 hrs, Volume= 0.709 af
 Outflow = 8.45 cfs @ 12.12 hrs, Volume= 0.528 af, Atten= 13%, Lag= 2.6 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 8.45 cfs @ 12.12 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.47' @ 12.12 hrs Surf.Area= 5,149 sf Storage= 10,107 cf

Plug-Flow detention time= 150.4 min calculated for 0.528 af (74% of inflow)

Center-of-Mass det. time= 64.9 min (844.5 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

1' OF FREEBOARD
 PROVIDED WHEN
 PRIMARY/SECONDARY
 OUTLETS CLOSED

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration X 0.00 over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate X 0.00 C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=71.00' (Dynamic Tailwater)

↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Tertiary OutFlow Max=8.42 cfs @ 12.12 hrs HW=75.47' TW=0.00' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 8.42 cfs @ 1.79 fps)

SOIL FILTER SF3 100-YEAR SPILLWAY CALCULATION

Post-Development WEST

Type III 24-hr 100-Yr Storm Rainfall=8.10"

Prepared by Atlantic Resource Consultants

Printed 8/29/2023

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Summary for Pond SF3: Soil Filter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 6.94" for 100-Yr Storm event
 Inflow = 14.10 cfs @ 12.07 hrs, Volume= 1.048 af
 Outflow = 12.67 cfs @ 12.11 hrs, Volume= 0.867 af, Atten= 10%, Lag= 2.3 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 12.67 cfs @ 12.11 hrs, Volume= 0.867 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.60' @ 12.11 hrs Surf.Area= 5,269 sf Storage= 10,795 cf

Plug-Flow detention time= 123.7 min calculated for 0.867 af (83% of inflow)

Center-of-Mass det. time= 54.3 min (824.7 - 770.4)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

**BASIN DOES NOT
OVERTOP WHEN
PRIMARY/SECONDARY
OUTLETS CLOSED**

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration X 0.00 over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate X 0.00 C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=71.00' (Dynamic Tailwater)

↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Tertiary OutFlow Max=12.59 cfs @ 12.11 hrs HW=75.60' TW=0.00' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 12.59 cfs @ 2.09 fps)

SOIL FILTER SF1 DRAINDOWN CALCULATION

Post-Development_EAST

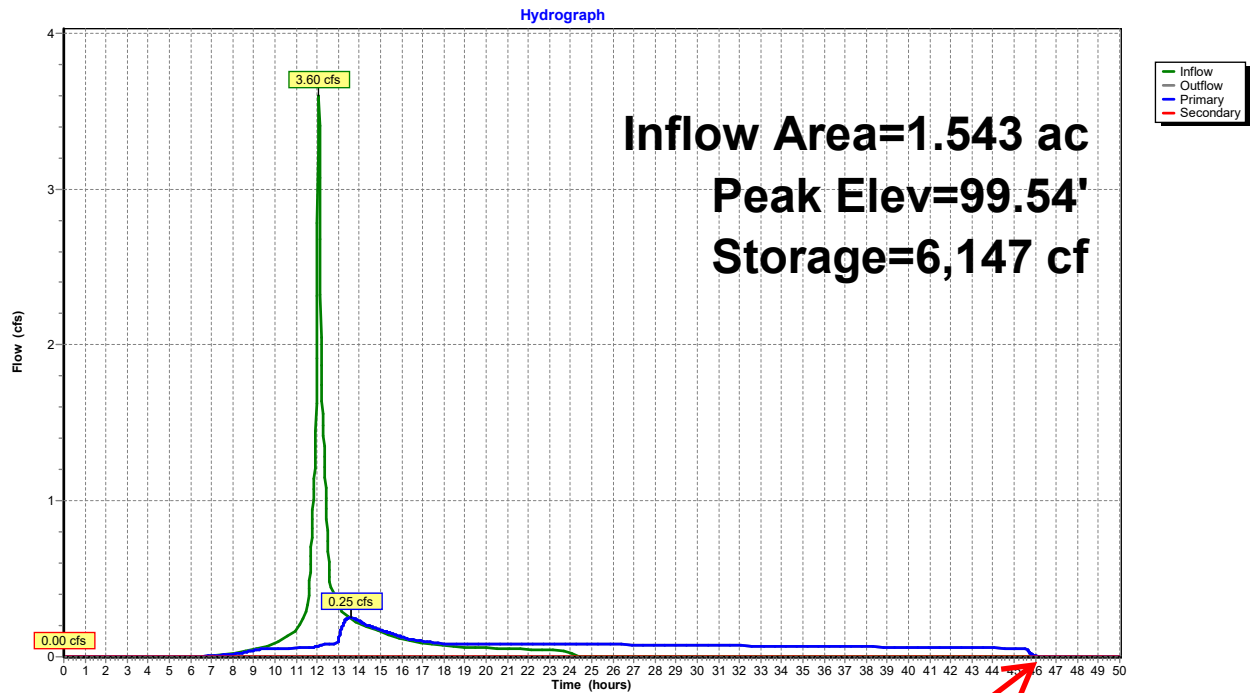
Type III 24-hr 2-Yr Storm Rainfall=3.10"

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Pond SF1: Soil Filter 1



SOIL FILTER
DRAINS IN LESS
THAN 48 HOURS

SOIL FILTER SF3 DRAINDOWN CALCULATION

Post-Development_WEST

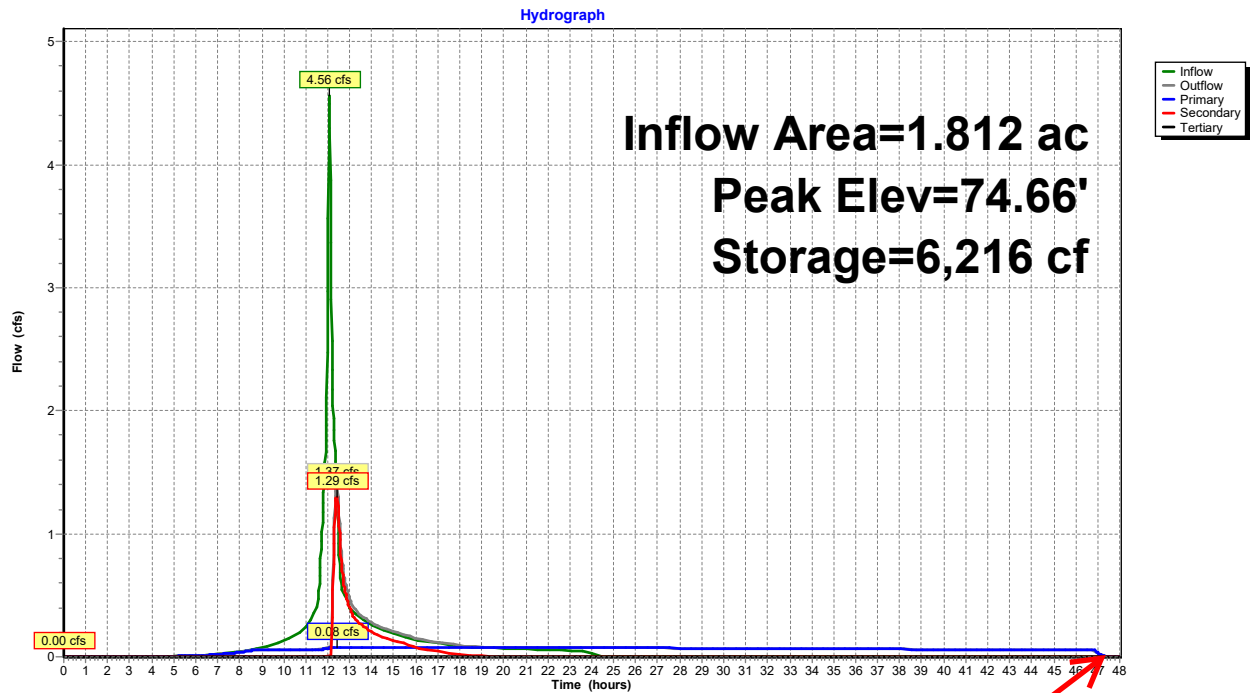
Type III 24-hr 2-Yr Storm Rainfall=3.10"

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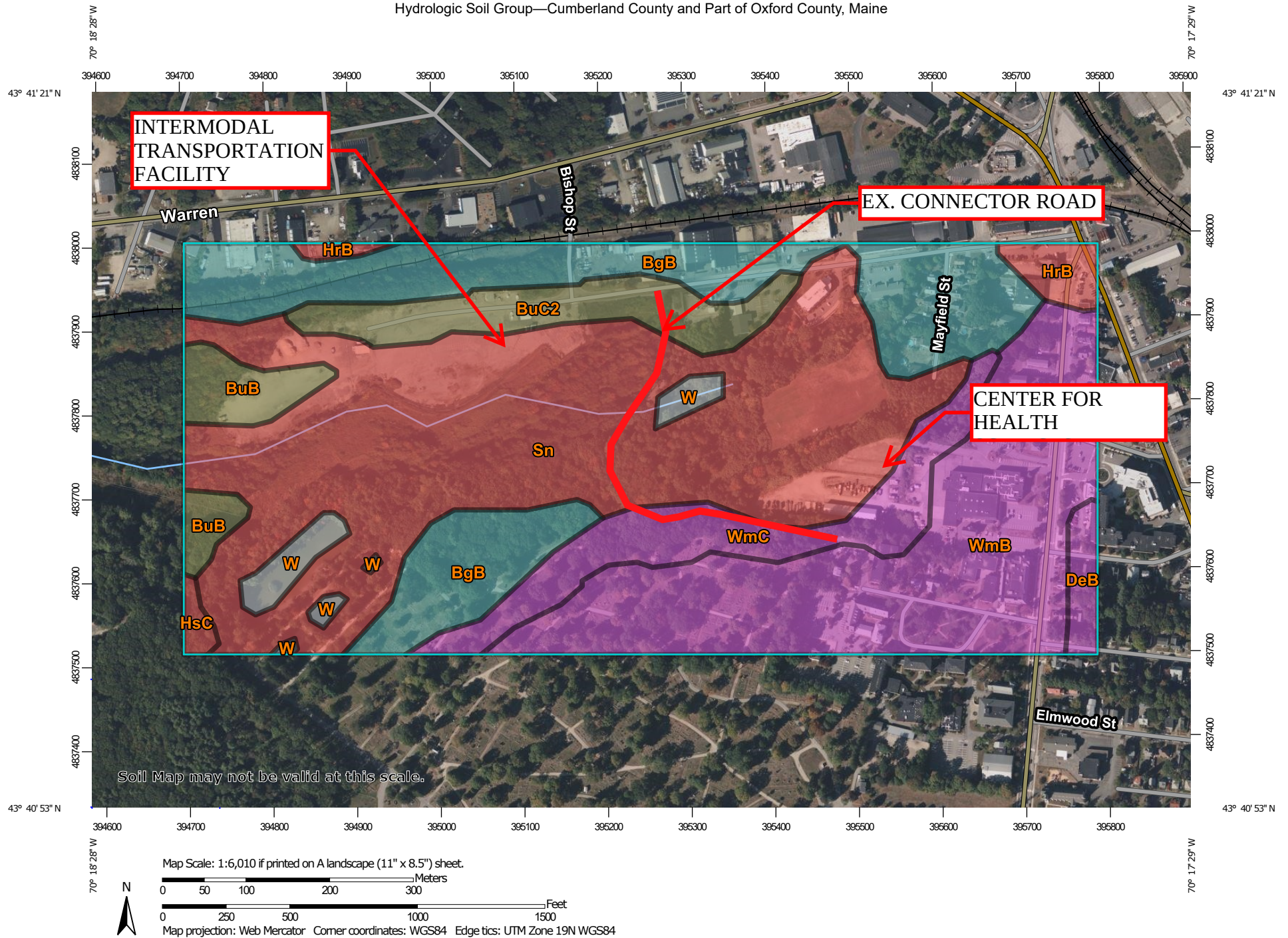
Pond SF3: Soil Fliter



SOIL FILTER
DRAINS IN LESS
THAN 48 HOURS

Appendix D:
USDA Soil Map

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey
Page 384

8/28/2023
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 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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	24.3	18.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	C/D	4.2	3.1%
BuC2	Buxton silt loam, 8 to 15 percent slopes	C/D	7.6	5.7%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	A	1.6	1.2%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	2.2	1.6%
HsC	Lyman-Abram complex, 8 to 15 percent slopes, very rocky	D	0.6	0.5%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	51.0	38.4%
W	Water		2.6	2.0%
WmB	Windsor loamy sand, 0 to 8 percent slopes	A	28.9	21.8%
WmC	Windsor loamy sand, 8 to 15 percent slopes	A	9.9	7.5%
Totals for Area of Interest			132.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

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
Connector Drive
Bishop Street, Portland, Maine
September 2023

Stormwater management facilities include paved surfaces, catch basins, culverts, storm drain pipe, and ditches/swales. 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 drive 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

All catch basins 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.

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.

[illegible]

**UNE Connector Drive
83 College Street, Portland, Maine**

INSPECTION / MAINTENANCE LOG

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.

83 C  9/22/2023 aine					
STORMWATER MANAGEMENT SYSTEM MAINTENANCE PROGRAM 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	
Catch Basins, and Drain Pipes	Inspect for sediment buildup in pipe. Flush and remove as required.			X	

**STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT**

DRAFT

For SITE PLANS (THAT ARE NOT SUBDIVISIONS)

IN CONSIDERATION OF the site plan approval granted by the Planning Board/Planning Authority of the City of Portland for the proposed UNE Connector Drive project, project number TBD, and the associated Site Grading and Drainage Site Erosion and Sediment Control Plan (Exhibit A) submitted by University of New England, prepared by Site Design Associates, Inc. of 23 Whitney Way, Topsham, Maine 04086, dated TBD, and pursuant to a condition thereof, University of New England with a principal place of business in Portland, Maine, and having a mailing address of 11 Hills Beach Road, Biddeford, Maine 04005, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the “Owner”), as follows:

Maintenance Agreement

That it, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the vegetated areas, catch basins, storm drain piping, and ditches (hereinafter collectively referred to as the “stormwater system”), as shown on the plans in Exhibit A and in strict compliance with the approved University of New England Inspection and Maintenance Plan of Stormwater Management Facilities prepared for the Owner by Site Design Associates (copy attached as Exhibit B) and Chapter 32 of the Portland City Code.

Owner of the subject premises further agrees, at its own cost, to keep a Stormwater Maintenance Log. Such log shall be made available for inspection by the City of Portland upon reasonable notice and request.

Said agreement is for the benefit of the said City of Portland and all persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland and said persons in lawful possession may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a stated time to perform, the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon said premises to maintain, repair, or replace said stormwater system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the site plan most recently and formally approved by the Planning Board/Planning Authority of the City of Portland.

This agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear.

The Owner agrees to record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of this Agreement to any Condominium Association or management company, and to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Services and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and lienied if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by the agreement shall be complete on the date the notice is attached to one or more doors providing entry to any buildings and mailed by certified mail, return receipt requested or ordinary mail or both to the owner of record as shown on the tax roles on file in the City Assessor's Office.

If the property has more than one owner on the tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or lienied it or create a cause of action against the City.

Dated at Portland, Maine this ____ day of _____, 2021.

University of New England

Alan Thibeault, Vice President for University Operations

STATE OF MAINE
CUMBERLAND, ss.

Date: _____

Personally appeared the above-named _____ (*name and title*), and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

Notary Public/Attorney at Law

Print name: _____

Exhibit A: Approved Grading, Drainage, and Erosion Control Plan

Exhibit B: University of New England Inspection and Maintenance Plan of Stormwater Management Facilities

Appendix F

Drainage Plans

I1.0 – Pre Development Impervious Area Plan

I2.0 – Post Development Impervious Area Plan

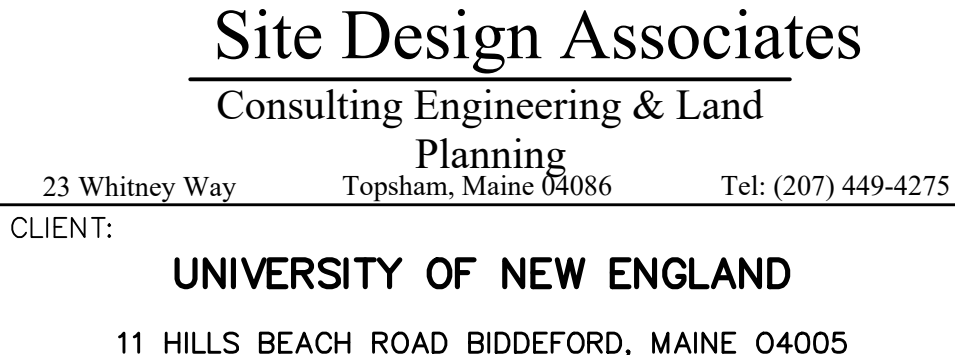
R1.0 – Pre Development Pollutant Loading Plan

R2.0 – Post Development Pollutant Loading Plan

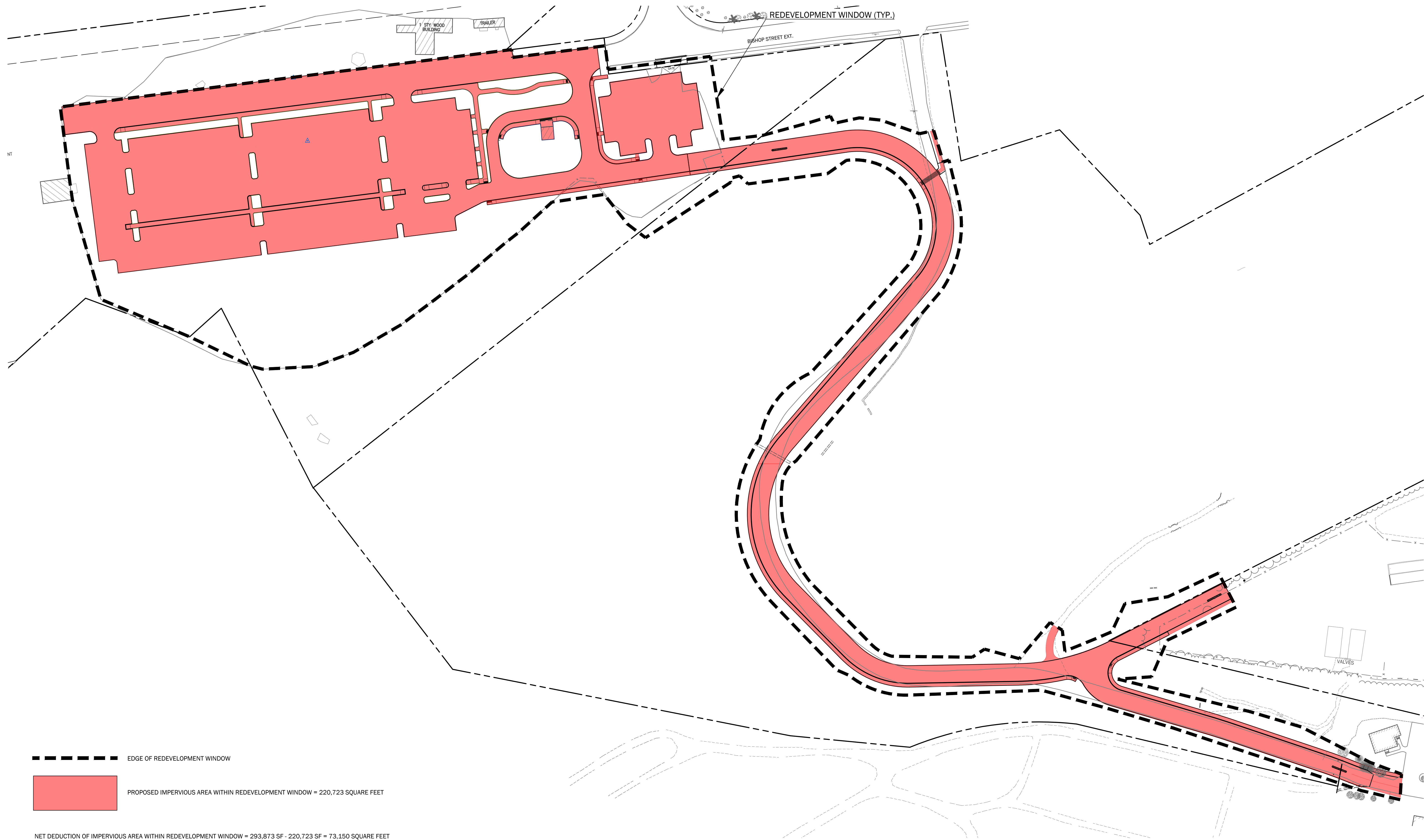
D1.0 – Pre Development Drainage Plan

D2.0 – Post Development Drainage Plan

D3.0 – Stormwater Treatment Plan

[illegible]

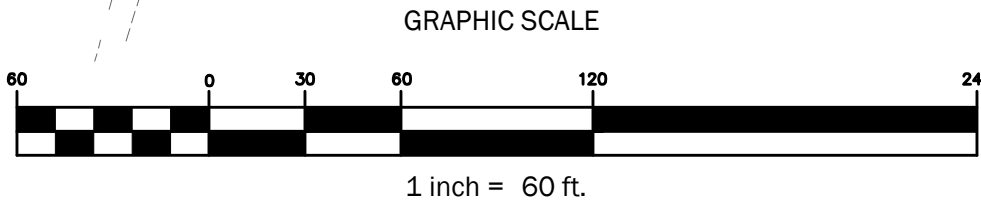
DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	PRE DEVELOPMENT		
	IMPERVIOUS AREA PLAN		
DATE: SEP. 2023	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 60'	DWG. NO.	11.0	A



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.



DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	POST DEVELOPMENT IMPERVIOUS AREA PLAN		
DATE: SEP, 2023	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 60'	DWG. NO.	12.0	A



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.

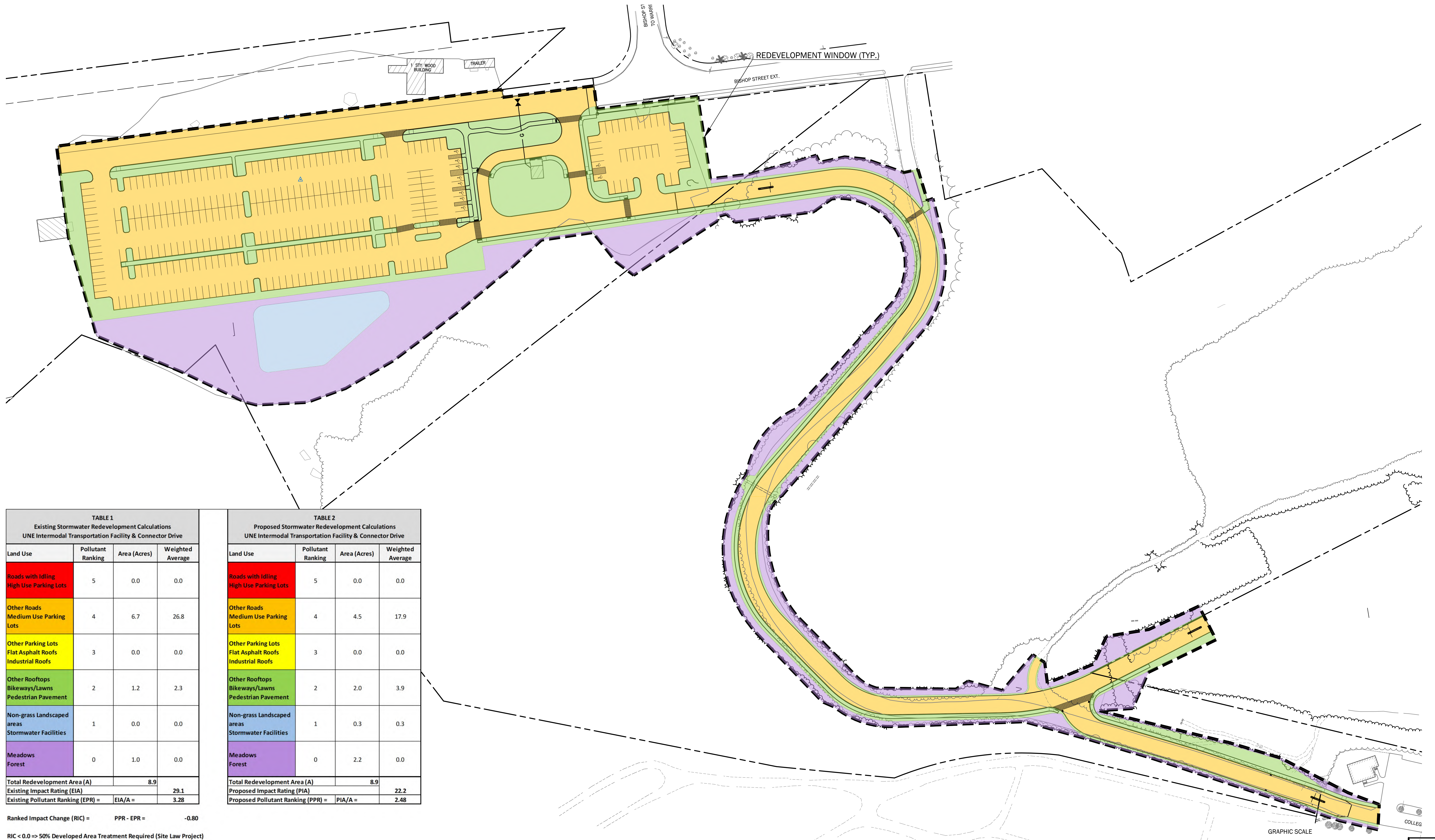


TABLE 1 Existing Stormwater Redevelopment Calculations UNE Intermodal Transportation Facility & Connector Drive			
Land Use	Pollutant Ranking	Area (Acres)	Weighted Average
Roads with Idling High Use Parking Lots	5	0.0	0.0
Other Roads Medium Use Parking Lots	4	6.7	26.8
Other Parking Lots Flat Asphalt Roofs Industrial Roofs	3	0.0	0.0
Other Rooftops Bikeways/Lawns Pedestrian Pavement	2	1.2	2.3
Non-grass Landscaped areas Stormwater Facilities	1	0.0	0.0
Meadows Forest	0	1.0	0.0
Total Redevelopment Area (A)		8.9	
Existing Impact Rating (EIA)			29.1
Existing Pollutant Ranking (EPR) =		EIA/A =	3.28

TABLE 2 Proposed Stormwater Redevelopment Calculations UNE Intermodal Transportation Facility & Connector Drive			
Land Use	Pollutant Ranking	Area (Acres)	Weighted Average
Roads with Idling High Use Parking Lots	5	0.0	0.0
Other Roads Medium Use Parking Lots	4	4.5	17.9
Other Parking Lots Flat Asphalt Roofs Industrial Roofs	3	0.0	0.0
Other Rooftops Bikeways/Lawns Pedestrian Pavement	2	2.0	3.9
Non-grass Landscaped areas Stormwater Facilities	1	0.3	0.3
Meadows Forest	0	2.2	0.0
Total Redevelopment Area (A)		8.9	
Proposed Impact Rating (PIA)			22.2
Proposed Pollutant Ranking (PPR) =		PIA/A =	2.48

Ranked Impact Change (RIC) = PPR - EPR = -0.80

RIC < 0.0 => 50% Developed Area Treatment Required (Site Law Project

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

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: SEP. 2023

SCALE: 1" = 60'

PROJECT: CONNECTOR DRIVE
83 COLLEGE STREET, PORTLAND, MAINE

POST DEVELOPMENT POLLUTANT LOADING PLAN

PROJ. NO.	21-216-00	REV.
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DWG.	B3.0	A
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TAX	MAP	I.D.
291	A001	
291	A005	
290	A003	
145	B014	

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 12/15/2022.

	SUBCATCHMENT BOUNDARY
	SUBCATCHMENT DESIGNATION
	TIME OF CONCENTRATION FLOW
	REACH
	REACH DESIGNATION
	ANALYSIS POINT
	POND TEXT

SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW

SUBCATCHMENT 7.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	27.4	110'	0.055	SHEET FLOW
BC	1.7	50'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.2	75'	0.015	TRAP FLOW

This topographic map depicts a site with various features and labels. Key elements include:

- Topographic Features:** Contour lines indicating elevation, with labels such as 80, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 8

[illegible]

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

SCALE: 1" =

DWG. NO.	D1.0
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TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

REV.

A

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 12/15/2022.

	SUBCATCHMENT BOUNDARY
	SUBCATCHMENT DESIGNATION
	TIME OF CONCENTRATION FLOW
	REACH
	REACH DESIGNATION
	AP#1
	POND TEXT

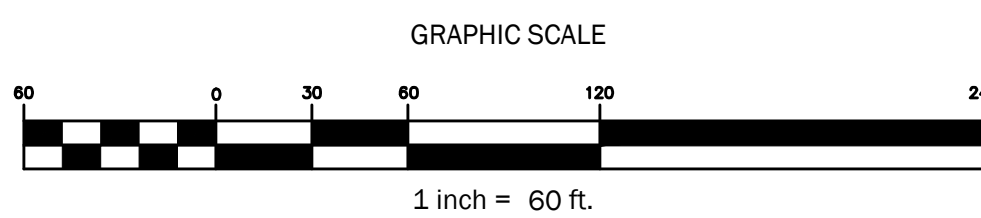
SUBCATCHMENT 4.1				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	12.4	110'	0.014	SHEET FLOW
BC	0.9	110	0.160	SHALLOW CONCENTRATED FLOW
CD	0.5	300	0.017	TRAP FLOW

SUBCATCHMENT 4.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	10.0	80'	0.090	SHEET FLOW

SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW

[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: SEP. 2023

SCALE: 1" = 60'

PROJECT:	CONNECTOR DRIVE
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83 COLLEGE STREET, PORTLAND, MAINE

PRE DEVELOPMENT DRAINAGE PLAN (EAST)

PROJ. NO.	21-216-00	REV.
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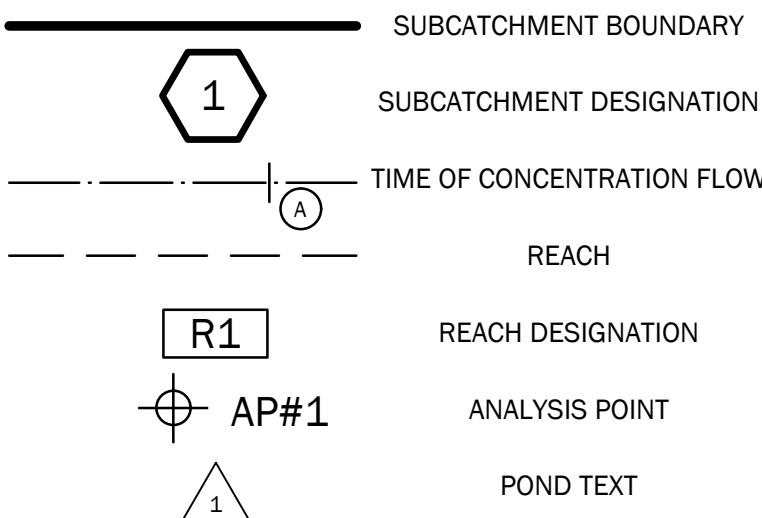
DWG. NO.	P1.1	A
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X	MAP I.D.
1	A001
1	A005
0	A003
5	B014

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/. ACCESSED 12/15/2022.

DRAINAGE LEGEND



To FLOW LINE DATA:

SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

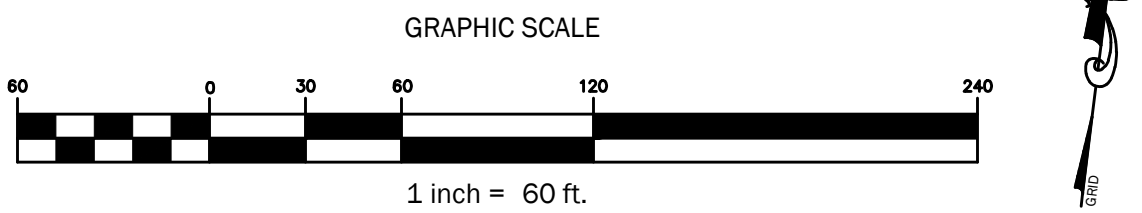
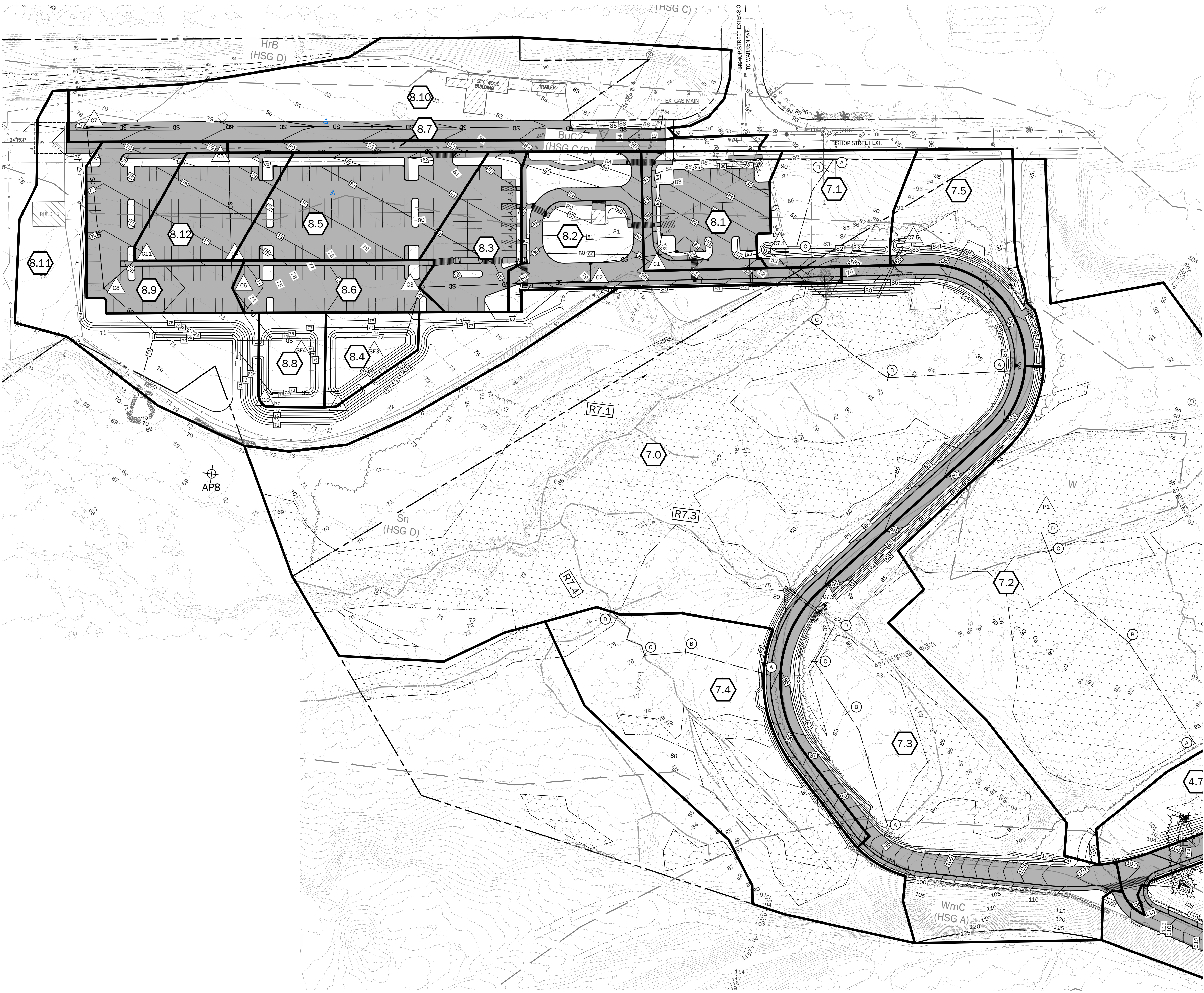
SUBCATCHMENT 7.1				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	0.8	15'	0.200	SHEET FLOW
BC	5.7	100'	0.060	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW

SUBCATCHMENT 7.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	27.4	110'	0.055	SHEET FLOW
BC	1.7	50'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.2	75'	0.015	TRAP FLOW

To FOR ALL REMAINING SUBCATCHMENTS = 5 MINUTES.



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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
A	9/22/2023	FOR DEVELOPMENT REVIEW									



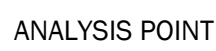
Site Design Associates
Consulting Engineering & Land Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: **UNIVERSITY OF NEW ENGLAND**
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.
DRAWN: DEPT.
CHKD: TWS
DATE: SEP. 2023
SCALE: 1" = 60'

PROJECT:		CONNECTOR DRIVE	
83 COLLEGE STREET, PORTLAND, MAINE			
POST DEVELOPMENT DRAINAGE PLAN (WEST)			
PROJ. NO.	21-216-00		REV.
DWG. NO.	D2.0		A

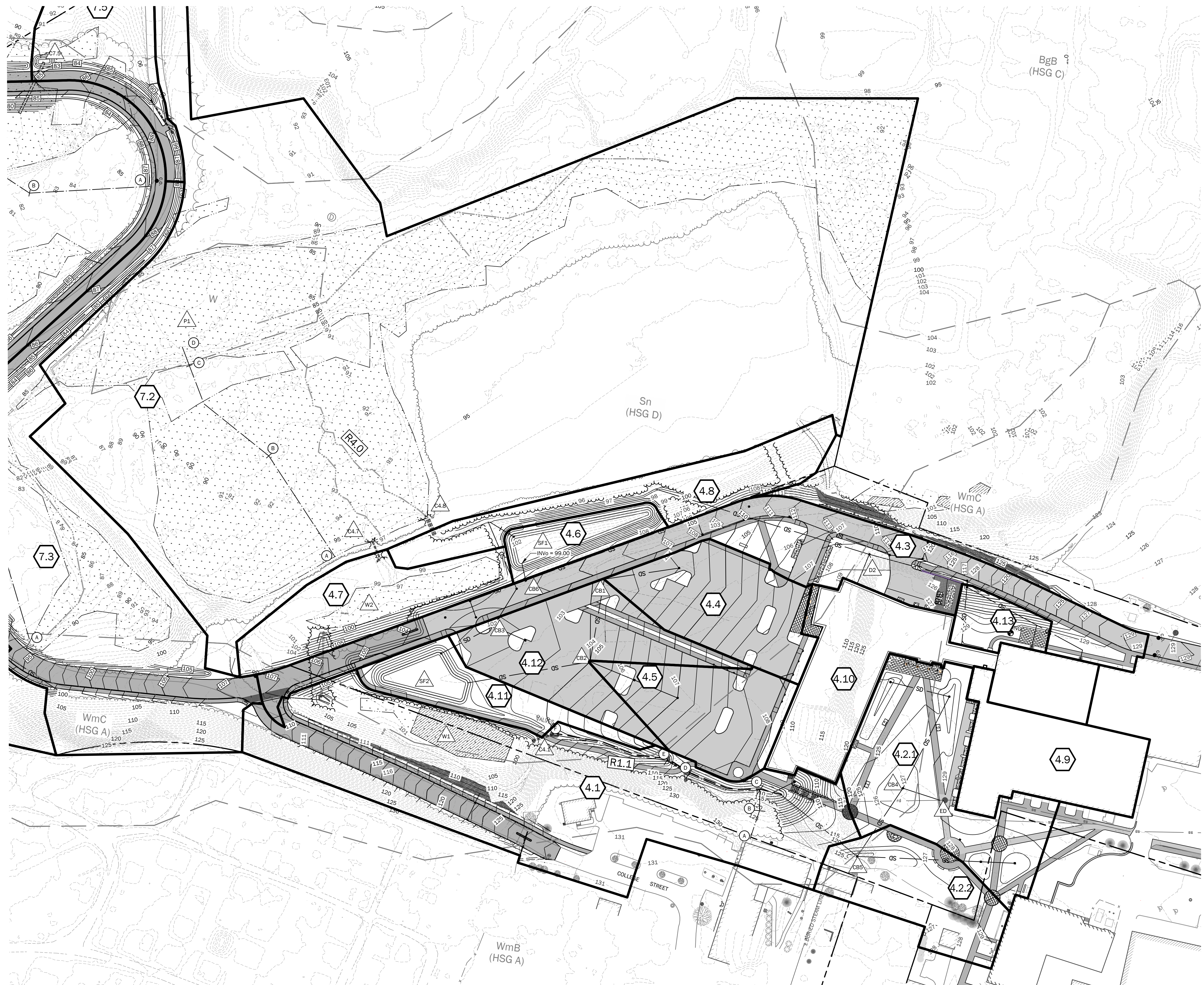
SOIL TYPES AND BOUNDARIES OBTAINED FROM SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE. WEB SOIL SURVEY. AVAILABLE ONLINE AT THE FOLLOWING LINK: [HTTP://WEBSOILSURVEY.SC.EGOV.USDA.GOV/](http://websoilsurvey.sc.egov.usda.gov/). ACCESSED 12/15/2022.

• SUBCATCHMENT BOUNDARY

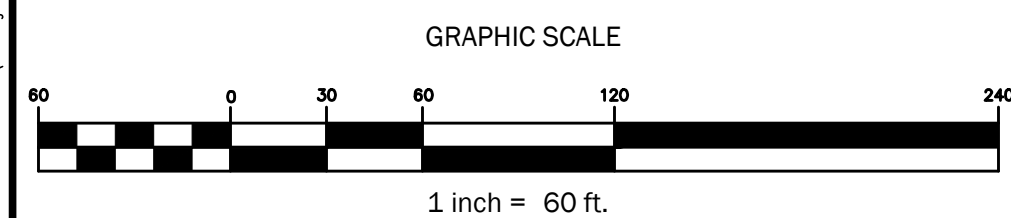


SUBCATCHMENT 4.

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW



TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



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]

Consulting Engineering & Land

23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275

CLIENT: **UNIVERSITY OF NEW ENGLAND**

UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE			143 0014
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE			
CHKD: TWS	POST DEVELOPMENT DRAINAGE PLAN (EAST)			
DATE: SEP. 2023	PROJ. NO.	21-216-00		REV.
SCALE: 1" = 60'	DWG. NO.	D2.1		A

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE
ATS # _____
L- _____
Total Fees: _____
Date: Received _____

FORM A PAGE 1

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.S.A. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)		☐ 20 acre development	☐ Marine Oil Terminal	☐ Major Amendment
		☐ Planning Permit	☒ Structure	☒ Minor Amendment
		☐ Metallic Mining	☐ Subdivision	
1. Name of Applicant:	Andrew Philippe University of New England	6. Name of Agent (if applicable):	Tom Saucier Site Design Associates	
2. Applicant's Mailing Address:	11 Hills Beach Road Biddeford, ME 04005	7. Agent's Mailing Address:	23 Whitney Way Topsham, ME 04086	
3. Applicant's Daytime Phone #:	602-2365	8. Agent's Daytime Phone #:	207-449-4275	
4. Applicant's Fax # (if available):		9. Agent's Fax # (if available):		
5. Applicant's e-mail address (REQUIRED -license will be sent via: e-mail):	aphilippe@une.edu	10. Agent's e-mail address (REQUIRED - license will be sent via e-mail):	tsaucier@sitedesignassociates.biz	

PROJECT INFORMATION

11. Name of Development:	Connector Drive Reconstruction				
12. Map and Lot #'s:	Map #: see plans	Lot #:	13. Deed Reference #'s:	Book #: see attached	Page #:
14. Location of Project City/Town:	Portland	15. County:	Cumberland	16. UTM Northing	17. UTM Easting
18. Brief Description of Project including total parcel size:	Reconstruction of an existing drive				
19. Type of Direct Watershed: (Check all that apply)	☐ Lake not most at risk ☐ River, stream or brook ☐ Coastal wetland ☐ Lake most at risk ☒ Urban impaired stream ☐ Wellhead or public water ☐ Lake most at risk, severely blooming ☒ Freshwater wetland				
20. Name of Waterbody Project Site drains to:	unnamed wetlands				
21. Amount of Developed Area:	Total acres:	Existing Developed area: <u>7.86</u> acres		New Developed area: <u>6.76</u> acres	
22. Amount of Impervious Area:	Total acres:	Existing Impervious areas <u>6.75</u> acres		New Impervious area: <u>5.07</u> acres	
23. Development started prior to obtaining a license?:	☐ Yes ☒ No				
24. Development or any portion of the site subject to enforcement action?	☐ Yes ☒ No		If yes, name of enforcement staff involved?		
25. Common scheme of development?:	☐ Yes ☒ No	26. Title, Right or Interest:	☒ own ☐ lease	☐ purchase option ☐ written agreement	
27. Natural Resources Protection Act permit required?:	☒ Yes ☐ No	If yes:	☒ PBR	☒ Tier 1	☐ Full Permit ☐ Tier 2
28. Existing DEP Permit number (if applicable):					
29. Names of DEP staff person(s) present at the pre-application meeting:					
30. Does agent have an interest in project? If yes, what is the interest?	☐ Yes ☒ No				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)".

Signed: _____ Tom Saucier _____
 Title Agent _____ Date: 09-21-23 _____

**Notice of Intent to Comply
with Maine Construction
General Permit**

With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.

If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.

Signed _____ Tom Saucier _____ Date: 09-21-23 _____

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: Tom Saucier _____

Name (print): Thomas Saucier, P.E. _____

Date: 09-21-23 _____

Re/Cert/Lic No.: _____

Engineer 6095 _____

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____



UNIVERSITY OF
NEW ENGLAND

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207) 283-0171 T

Portland Campus
716 Stevens Avenue
Portland, ME 04103
(207) 797-7261 T

September 20, 2023

Mr. Tom Saucier
Site Design Associates
23 Whitney Way
Topsham, ME 04086

TO WHOM IT MAY CONCERN:

This letter authorizes Tom Saucier to serve as an Agent and Owner's Representative for University of New England for the purpose of permitting the reconstruction of a drive connecting the campus with the Intermodal Transportation Facility.

Sincerely,

A handwritten signature in black ink that reads "alan thibeault". The signature is written in a cursive style with a large, sweeping initial "A".

Alan Thibeault
Vice President for University Operations

83 COLLEGE STREET Section 1 Development Description



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.25
Miles
1 inch = 0.28 miles

Date: 8/30/2022
Time: 10:03:31 AM

Project Description

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to submit a major Site Plan Application the reconstruction of the existing connector drive between the Intermodal Transportation Facility (ITF) and the main campus. We understand the site plan application fee for a project of this size will be invoiced.

The project was reviewed with staff at a pre-application meeting on August 30, 2023. Based on feedback from staff at the meeting, the concept remains as discussed then.

The existing ITF provides parking for students, faculty, and guests, with a regular shuttle service to the main campus along the connector drive. The goals of the reconstruction project include increase safety through the installation of sidewalks, call boxes and cameras, widening of the existing drive to enhance circulation and improve safety, and installation of modern and ordinance compliant lighting.

The proposed drive will connect the Intermodal Transportation Facility (ITF) and the campus on Stevens Avenue. This new access drive will allow student, faculty, and staff vehicles, bicyclists and pedestrians, to travel between the core campus on Stevens Avenue and the ITF and on to Warren Avenue if so desired. This access drive 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 proximate 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.

While the Morrill's Corner intersection is operating acceptably overall, there are some constraints for northbound left-turn movements off Forest Avenue. The plan to provide an internal campus connector road from the primary campus to the ITF will provide for reduced volumes at Morrill's Corner by allowing direct access to Warren Avenue, thus removing those campus trips from Morrill's Corner. The planned connector drive will remove trips from the arterials where the only capacity concerns have been identified. Additionally, the UNE service vehicles and the shuttle currently travel on Bishop Street from the existing connector drive to the ITF. The proposed drive will eliminate trips on Bishop Street.

The connector drive will be gated and access will only be for vehicles driven by UNE, faculty, and staff. Additionally, this connector could be utilized by non-UNE community pedestrians and bicyclists to commute between Stevens Avenue and Warren Avenue without navigating the congested Morrill's Corner, resulting in a significantly safer travel route. The existing access directly to Bishop Street will remain for bicycle and pedestrian use. The University has discussed allowing Portland Trails to utilize this reconstructed access road to connect their existing trail network proximate to the Evergreen Cemetery to the Warren Ave area as well.

One waiver is necessary for the proposed lighting, consistent with the waiver granted for the MEARNG, College of Osteopathic Medicine, and Bishop Street Intermodal facility projects.

Construction Management Plan
University of New England
Connector Drive

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 Connector Drive project consists of construction of a new connector road from UNE Campus and Parking to the Bishop Street parking lot all on UNE'S property. The construction consists of excavation, utilities, paving, landscaping, 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 keep 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.

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.

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.

Construction Parking: Adequate parking for construction workers will be provided on site at the UNE Bishop street parking lot.

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 stakeholders. 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 indicate 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 stockpiled 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.



SAFETY PROGRAM

Revised April 2020

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(This section is blank)	57	01/15

POLICY STATEMENT

Revised: October, 2013

Ledgewood Construction is proud of our employees and their commitment to excellence. Jobsite safety is an integral part of any project and we at Ledgewood Construction firmly believe that a safe work place is a productive work place.

Striving for excellence in safety means that we have set the highest possible standards for ourselves and all of the subcontractors who work with us. An accident free jobsite is within our reach and we are committed to achieving this goal every day.

Safety standards compliance is clearly the first priority of every Ledgewood Construction employee. As a result, Ledgewood Construction has one of the best safety records in the industry. Safety is, without question, key to the successful completion of each construction project and to the long-term success of our company and its employees. At Ledgewood Construction we understand and firmly believe that

A safe job is a more productive job.
A safe job is a cleaner job.
A safe job is a better working environment
and
Only a safe job can be a successful job.

Signed,



Peter J. Pelletier, LEED AP
President

SAFETY PROGRAM

Revised: October, 2013

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 their employees and creates a safe area for other subcontractor employees to perform their work. Each subcontractor must work at safety with every other subcontractor to make safety work for everyone. All subcontractors are required, in accordance with their contractual agreements, to comply with the requirements of Ledgewood Construction's Safety Program.

The United States Congress recognized the importance of the prevention of accidental injuries and occupational illness by enacting the Occupational Safety and Health Act of 1970 (OSHA).

Current OSHA standards shall govern how workers are expected to perform their work in a safe manner. Supervisory personnel shall refer to the OSHA regulations when issues are raised regarding safety. This manual shall be the determining factor in resolving any such disputes.

OFFICIAL POLICY ON A DRUG-FREE WORKPLACE

Revised: October, 2013

Illegal drugs in the workplace are a danger to us all. They impair safety and health, promote crime, lower productivity and quality, and undermine public confidence in the work we do. We will not tolerate the use of illegal drugs. To comply with the federal Drug-Free Workplace Act and in order for Ledgewood Construction to be considered a “responsible source” for the award of Federal, State and Local contracts, Ledgewood Construction has developed the following policy.

Any location at which company business is conducted, whether at this or any other site, is declared to be a drug-free workplace. This means:

1. All employees are absolutely prohibited from unlawfully manufacturing, distributing, dispensing, possessing, transporting in company vehicles, or using controlled substances or alcohol in the workplace.
2. The following is a partial list of controlled substances.
 - Narcotics (heroin, morphine, etc.)
 - Cannabis (marijuana, hashish)
 - Stimulants (cocaine, diet pills, etc.)
 - Depressants (tranquilizers)
 - Hallucinogens (PCP, LCD, “designer drugs”, etc.)

Any employee violating the above policy is subject to discipline, up to and including termination, even for the first offense. Employees have the right to know the dangers of drug abuse in the workplace, Ledgewood Construction’s policy about them, and what help is available to combat drug problems. This document spells out Ledgewood Construction’s policy. To assist employees in overcoming drug abuse problems, Ledgewood Construction may offer rehabilitative help. See your supervisor for details on this.

Any employee convicted of violating a criminal drug statute in this workplace must inform Ledgewood Construction of such conviction (including pleas of guilty and nolocontendere) within five days of the conviction occurring. Failure to inform the company subjects the employee to disciplinary action, up to and including termination for the first offense.

Ledgewood Construction reserves the right to offer employees convicted of violating a criminal drug statute in the workplace participation in an approved rehabilitation or drug abuse assistance program as an alternative to discipline. If such a program is offered, and accepted by the employee, the employee must satisfactorily participate in the program as a condition of continued employment.

All employees are asked to acknowledge that they have read the above policy and agree to abide by it in all respects. By law, this acknowledgement and agreement are required of you as a condition of continued employment.

Please refer any questions on the above policy to your supervisor.

DRUG-FREE WORKPLACE STATEMENT

Revised: October, 2013

The illegal manufacture, distribution, dispensation, transportation, possession or use of a controlled substance is prohibited at this workplace. Employees who engage in any of the above actions at the workplace or who report to work under the influence of controlled drugs or alcohol will be disciplined and/or employment terminated.

Employees addicted to the use of controlled substances or alcohols are encouraged to participate in a program in order to receive rehabilitation and counseling.

As a condition of employment on this jobsite, employees are required to abide by the terms of this statement and to notify their employer, within five days of conviction, of any criminal drug statute or a drug related violation of law at the work site.

I have read and understood this Drug-Free Workplace Statement and agree to abide by the terms of this Statement.

Signature

Printed Name

Date

ALCOHOL-FREE WORKPLACE STATEMENT

Revised: October, 2013

The possession or consumption of alcoholic beverages in company vehicles or on the jobsite is strictly forbidden. Any employee found in violation of the above order shall be removed from the jobsite.

To assist employees in overcoming drug abuse problems, Ledgewood Construction may offer rehabilitative help. See your supervisor for details on this.

This policy shall be reviewed at the weekly safety meetings.

MANAGEMENT RESPONSIBILITIES

Revised: October, 2013

The Ledgewood Construction Management Team is committed to a safety program that is effective and clearly defines everyone's role.

1. Every employee shall be responsible for making the work place safe.
2. Impress upon all supervisory personnel the responsibility and accountability of each individual to maintain a safe work place.
3. The Project Executives and Project Managers will supervise and assist in the management of the safety program. Management personnel will help ensure the success of the program by checking on safety when visiting a jobsite.
4. Management will contractually require that the subcontractors abide by the Ledgewood Construction's Company's safety program.
5. On individual job sites, the Project Superintendent will be designated as the Project Safety Contact for Ledgewood Construction and all on site personnel, including Subcontractors, and be responsible for implementation and monitoring of all on site safety programs and procedures.

PROJECT MANAGER'S RESPONSIBILITIES

Revised: October, 2013

It is the Project Manager's responsibility to assist with the Safety Program on their respective projects. It is towards this end that the following responsibilities are directed:

1. Monitor and assist the Project Superintendent, who has responsibility for safety at his/her jobsite.
2. Maintain appropriate rules, regulations and codes at the jobsite. Distribute relevant reports, data and forms pertinent to the safety program.
3. The Project Manager reserves the right to back charge subcontractors for failure to follow job safety program policies and procedures that require corrective action.
4. Provide advance safety planning for all activities through the use of scheduling and administrative controls.
5. Periodically monitor all aspects of the program for effectiveness, and provide necessary assistance to the field personnel including maintaining an interested participation in safety and compliance.

SUPERINTENDENT'S RESPONSIBILITIES

Revised: October, 2013

- I. The Superintendent is the designated safety contact on the jobsite. The Superintendent will work to ensure full compliance with Ledgewood Construction's safety program for his/her project.
 - a. Plan and require that all work be done in compliance with the Company's Safety Program.
 - b. Impress upon all subcontractor's supervisory personnel, their responsibility and accountability for each individual to maintain a safe workplace and work in a safe manner.
 - c. Work closely with subcontractor foreman in reviewing jobsite safety issues.
 - d. Weekly subcontractor meetings shall include discussions of safety requirements as they apply to specific current and planned construction activities.
2. The Superintendent shall be responsible for routine inspections, making recommendations and notifying the subcontractors of any corrective action to be taken on safety violations. *Safety violation notices and recommended disciplinary action, if any, shall be recorded on the Disciplinary Action. These violations should also be noted in the daily job reports.*
 - a. Maintain a job file for all necessary documentation at the jobsite, i.e. material safety data sheets (MSDS), OSHA and company inspection reports, toolbox safety meeting forms, posters, notices, accident report logs, accident reports and company directives, instructions and educational materials, copies of all safety code manuals and materials, including Ledgewood Construction Safety Program, that are needed to carry out the Safety Program.
 - b. Ensure availability of all necessary personal protective equipment and first aid materials. The Superintendent shall ensure that all subcontractor personnel and visitors wear the necessary protective equipment as circumstances require.
 - c. Ensure the security of the jobsite at all times.
 - d. See that all accident victims are promptly cared for, and that the accident is promptly investigated and reported properly.
 - e. Notify the Project Manager and Project Executive of all bodily injury accidents and/or damage to property within a day of the occurrence. Immediate notification is required on incidents of a serious nature.

- f. The Superintendent shall accompany any and all outside agencies making an inspection of the project (Fire Department, OSHA Compliance Officer, Insurance Company Representatives, etc.).
- g. Insist on each visitor in an official capacity properly identifying himself/herself and his/her name being duly recorded in the visitor's log.
- h. Before starting an OSHA inspection, contact the Project Manager.
- i. Request from any outside agency making an inspection of the project a report stating violations and recommendations before leaving the premises. A copy of this report shall be provided to the Project Manager.
- j. Post emergency phone numbers at all jobsite telephones.
- k. Post daily sign in sheet.
- l. Daily job reports.
- m. E.A.D.
- n. Correspond with the Project Manager on all important matters regarding jobsite safety.
- o. Certified/trained in First Aid and CPR.
- p. Set a good example on matters of jobsite safety.
- q. Make arrangements with the Police and Fire Departments for emergency response and ambulance service at the start of the job.
- r. The Superintendent has the authority to shut down any operation that in his/her opinion is exposing workers or the public to imminent danger.
- s. The Superintendent shall appoint an alternate when leaving the jobsite for any period of time during operating hours. This is to be documented in the Superintendent's daily report.

SUBCONTRACTOR RESPONSIBILITIES

Revised: January, 2015

Each subcontractor has a contractual obligation to perform their work using safe methods in compliance with the Ledgewood Construction Safety Program, the current Occupational Safety and Health Administration Standards and all other Federal, State and Local Codes and Regulations.

All employees shall comply with all Federal, State and Local Codes and Regulations. Each Subcontractor shall ensure that their subcontractors and suppliers, regardless of tier, comply with Ledgewood Construction's Safety Program.

All costs to Ledgewood Construction of Federal, State or Local citations, fines, penalties and/or summonses resulting from any Subcontractor's operations may be back charged to the Subcontractor.

All Subcontractors shall provide their employees with all safety and personal protective equipment and weather protective gear required for the performance of their work and enforce the use of same.

Each Subcontractor shall enforce the wearing of hard hats and any other personal protective equipment necessary for the safety of their employees during the entire construction period of the Project as a condition of their contract.

Each Subcontractor shall have a scheduled safety inspection and maintenance program for all tools, equipment, and personal protective equipment. The inspection reports shall be on an approved form and shall be submitted to Ledgewood Construction's site Superintendent upon request.

Each Subcontractor office trailer shall be equipped with an approved First Aid Kit. If gang boxes are used in lieu of the office trailer, the gang box shall contain the First Aid Kit. Fire extinguishers are required in all office trailers and gang boxes.

If a Subcontractor must remove cables, barricades, or any other safety-related items in order to perform their work, it shall be the responsibility of that Subcontractor to guard the area until the safety item is replaced.

Subcontractors conducting hot work shall provide an approved fire extinguisher for each hot work site. Ledgewood Construction's fire extinguishers are for general fire-fighting and are not to be relied upon for Subcontractor hot work practices.

Each Subcontractor shall provide a copy of their Hazard Communications Program, including MSDS's, to the Ledgewood Construction's Superintendent and are to be kept in the Ledgewood Construction office trailer until the Subcontractor work at the site is concluded.

Each Subcontractor shall be responsible for maintaining general housekeeping in their work area, and all debris shall be placed in appropriate containers or as otherwise directed by Ledgewood Construction's Project Superintendent. Failure to abate any related problem (e.g., failure to clean up work area and remove debris) after 24 hour notice, in writing, (except that in an emergency, an immediate response is required) may result in a back charge to the Subcontractor(s) concerned for the cost of correcting the hazard.

ENTRY PERMIT CONFINED SPACES PROGRAM

Revised: January, 2015

As “entry permit” confined spaces are not located on all jobsites, training shall be given to those individuals specifically assigned to work in same.

Employees required to construct work in a: boiler, cupola, degreaser, furnace, pipeline, pit, pumping station, reaction or process vessel, septic tank, sewage digester, sewer, silo, storage tank, ship’s hold, utility vault, vat or similar type enclosure would be considered working in a confined space. A confined space is any space having any one of the following characteristics.

- Limited openings for entry and exit unfavorable natural ventilation.
- Not designed for continuous worker occupancy.

The purpose of Ledgewood Construction Entry Permit Confined Spaces Program, as outlined below, is to ensure that entrants (employees) are protected from permit space hazards. In this regard, Ledgewood Construction shall undertake the following measures.

RESPONSIBILITIES

Management:

Take deliberate steps once a confined space is identified to protect its employees while performing their respective duties within said spaces. To this end, a Confined Space Entry Permit form has been devised for use in ensuring a safe work environment. No employee is to enter a confined space until such time that an entry permit has been completed by the company’s Superintendent, the Project Foremen or other individual eligible to be in charge of entry, and the entrant has been authorized to enter such confined space.

- Provide training for Superintendent on confined space entry.
- Provide Superintendent with assistance as requested to carry out duties outlined.
- Provide personal protective equipment as required.

General Superintendent:

- Orientates Foreman on Company’s procedures for working in confined spaces. Evaluate, where feasible, confined space hazards and determine their severity.
- Prepare Confined Space Entry Permit, once an entry permit confined space has been identified.
- Provide on-site training for proposed entrants.
- Provide on-site training for proposed attendants.
- Provide on-site training for proposed individuals authorizing or in charge of entry.

Employee:

- Advise Foreman of any potential hazards once recognized.
- Participate in on-site training for confined space entry.
- Follow all instructions given on conduct relating to entry permit confined space.

Record Keeping:

1. This Entry Permit Confined Space Program shall be kept on-site at all times, and made available to any company employee.
2. Copies of all Confined Space Entry Permits shall be kept up-dated and on-site at all times, and made available to any company employee.
3. Copies of all Record Keeping documents listed above shall be provided to this Company's office.
4. The Company's office shall maintain records of confined space entry for a period of no less than three (3) years from the date of cancellation of Confined Space Entry Permits.

CONFINED SPACE ENTRY PERMIT

Revised: January, 2015

All blank spaces must be completed prior to entry.

Project Name and Location: _____

Location of Confined Space: _____

Purpose of Entry: _____

Is Hot Work Intended: _____

A. 1. Known Hazards: _____

2. Suspected Hazards: _____

3. Method of Isolating Confined Space: _____

4. Method of Removal and/or Control of Known/Suspected Hazards: _____

5. Method of Verifying Acceptable Environmental Conditions:_____

6. Testing/Monitoring Equipment for Maintaining Acceptable Environmental Conditions During Entry:_____

7. Rescue Services to be Utilized:_____

8. Specific Rescue Measures to be Used:_____

9. Communication Methods Used by Entrants and Attendants:_____

10. Personal Protective Equipment to be Used:_____

B. Date of Entry:_____ Authorized:_____

Duration:_____

Authorized Entrants:

Eligible Attendants:

Individuals Authorized or in Charge of Entry:

Superintendent:_____

Project Foreman:_____

Others:_____

Others:_____

Names of Other Contractors Receiving this Information:_____

Name of Others Requesting this Information:_____

Note: This information must be available to employees at all times during entry operations.

Sign below verifying that: All actions and conditions necessary for safe entry into Permit Space have been performed.

Printed Name:_____ Signature:_____

Project Name:_____

Foreman:_____

TRAINING AND DUTIES OF INDIVIDUALS AUTHORIZING OR IN CHARGE OF ENTRY

Revised: January, 2015

The purpose of training “Individuals Authorizing or in Charge of Entry” is not only to ensure that Authorized Entrants, and Attendants, have been made aware of the hazard(s) that could be encountered during confined spaces operations, but also to ensure that all required documentation has been completed and records are being kept as identified in the Entry Permit Confined Spaces Program. To this end, the Superintendent and/or Foreman shall instruct/inform employees on the following:

Individuals authorizing or in charge of entry shall:

- Determine that the Entry Permit contains requisite information before authorizing or allowing entry.
- Determine that the necessary procedures, practices and equipment for safe entry are in effect before allowing entry.
- Determine, at appropriate intervals, that entry operations remain consistent with the terms of the Entry Permit, and that acceptable entry conditions are present.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- Take the necessary measure for concluding an entry operation, such as closing off a permit space and cancelling the permit, once the work authorized by the permit has been completed.
- When necessary, serve as Entrants or Attendants (after receiving proper training).
- When dealing with unauthorized personnel, individuals authorizing or in charge of entry shall take appropriate measures to remove unauthorized personnel who are in or near entry permit spaces.

Individuals authorizing or in charge of entry and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be adhered to and duties to be carried out in ensuring safe entry into confined space, acceptable environmental conditions are maintained during entry, safe exit from confined space, and proper documentation is maintained for work performed under the Entry Permit.

Printed Name of Employee/Individual
Authorizing or in Charge of Entry

Date of Training

Signature of Individual
Authorizing or in Charge of Entry

Printed Name & Title of Person
Giving Instruction

Signature of Instructor

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ENTRY PERMIT CONFINED SPACES CHECKLIST

Revised: January, 2015

New Checklist Must be Used Daily

Individual Authorizing or in Charge of Entry:

Printed Name

Signature

Date of Checklist Use:_____

_____ The Entry Permit has been filled out completely.

_____ Training has been given to Authorized Entrants.

_____ Training has been given to Attendants.

_____ Necessary protective equipment is on-hand.

_____ Entry Permit is attached to this Checklist and a copy of Entry Permit has been given to Attendants.

_____ Distributed and collected Attendants records of Authorized Entrants working within confined spaces daily.

_____ All Training Forms are attached to this Checklist.

_____ Company (Ledgewood Construction) copy of this Checklist and all attachments has been turned into the office.

_____ Entry Permit has been cancelled upon completion of work.

Foreman, sign-off above form at the end of each day.

TRAINING AND DUTIES OF AUTHORIZED ENTRANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training "Authorized Entrants" is to ensure employee safety while working within confined spaces on the jobsite. Much of the information needed to provide the proper instruction and give necessary information is outlined on the Confined Spaces Entry Permit. The Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Known hazard(s) which may be faced during entry.
2. Recognition of signs and symptoms of exposure to the hazard(s).
3. Understanding the consequences of exposure to the hazard(s).
4. Understanding the method of maintaining contact with the attendant.
5. Responsibility of notifying attendant when entrant self-initiates evacuation of permit space.
6. Advise of personal protective equipment to be utilized (i.e. retrieval lines, respirators or clothing) needed for safe entry and exit. Protective equipment shall be provided by the company as required. At the time of issuance, the entrant shall be instructed on its care and use.
7. Advise of external barriers needed to protect entrants from external hazards of the proper use of those barriers.
8. Advise entrant of exit procedure (i.e. when attendant orders evacuation, at the end of shift, or when entrant perceives he/she is in danger).
9. Advise entrant of location of Entry Permit, Confined Space Program, Material Safety Data Sheets (MSDS) Program, and inform of their availability for review.

Authorized Entrant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, proper work methods while inside confined space and exit from the confined space.

Printed Name of Employee/Authorize Entrant

Date of Training

Signature of Authorize Entrant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

TRAINING AND DUTIES OF ATTENDANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training “Attendants” is to ensure the safety of Authorized Entrants during confined spaces entry operations. To this end, the Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Attendant is to keep accurate records, at all times, of the number of Authorized Entrants working within a confined space.
 2. The Attendant shall be advised of the hazard(s) and given information relative to the recognition of signs and symptoms of exposure.
 3. The Attendant shall monitor activities inside and outside the permit space to determine if it is safe for Authorized Entrants to remain in the space.
 4. The Attendant shall maintain continuous contact with Authorized Entrants during entry.
 5. The Attendant shall ORDER Authorized Entrants to evacuate permit space immediately when:
 - The Attendant observes a condition which is not allowed in the entry permit.
 - The Attendant detects behavioral effects of hazard exposure.
 - The Attendant detects a situation outside the space which could endanger the entrants.
 - The Attendant detects an uncontrolled hazard within the permit space.
 - The Attendant is monitoring entry in more than one permit space and must focus attention to the rescue of Entrants from one of those spaces.
 - The Attendant must leave the work station.
 - The Attendant shall summon rescue and other emergency services as soon as the Attendant determines those Authorized Entrants need to escape from the permit space hazards.
1. The Attendant shall warn unauthorized persons away from the space.
 2. The Attendant shall request unauthorized persons to exit immediately if they have entered the permit space.
 3. The Attendant shall inform the Authorized Entrants and any other persons designated by the employer (i.e. Superintendent, Foreman, Project Manager, other contractors’ supervisors) if unauthorized persons have entered the permit space.

At no time shall the Attendant enter the confined space to assist in rescue operations of Entrants. The Attendant shall properly use an rescue equipment provided for use and perform any other assigned rescue and emergency duties, without entering the permit space.

TRAINING AND DUTIES OF ATTENDANTS (continued)

Revised: January, 2015

Attendant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, acceptable environmental conditions are maintained during entry, and safe exit from the confined space.

Printed Name of Employee/Attendant

Date of Training

Signature of Attendant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

ATTENDANTS DAILY LOG OF AUTHORIZED ENTRANTS

Revised: January, 2015

Date of Log Use:_____

Printed Name of Attendant

Signature of Attendant

[illegible]

This form must be kept current at all times and turned over to the individual authorizing or in charge of enter at the end of each day.

Note: Complete and fax a copy of this report to main office as soon as possible.

- I. If work in a confined space is anticipated, the services of an Industrial Hygienist will be obtained, in advance, to perform necessary atmospheric testing prior to allowing workers to enter the space.

START-UP CHECKLIST FOR SAFETY AND JOB PLANNING

Revised: January, 2014

Written Hazardous Communication Program required of all Subcontractors on each Project and a copy will be kept in the Ledgewood Construction office trailer.

- I. Planning the Jobsite:
 - a. Communication systems (phone or radio) as needed.
 - b. Water (include drinking water) and sanitary facilities (for number of employees).
 - c. Arrange for security of jobsite (fencing, lights, etc.) to be handled by the Superintendent.
 - d. Temporary Power – All temporary power to be used by workers on Ledgewood Construction projects will be protected by Ground Fault Circuit Interrupters. Temporary lights will be serviced with Romex wire (open wiring not allowed). Branch circuits and all receptacle boxes exposed to the elements will be water tight.
 - e. Provide trash receptacles for water cups, snack and lunch wrappers.
 - f. Perimeter survey of existing conditions (utilities, streets, structures).
 - g. Traffic – Safe access, stairs, ladders, traffic pattern, sidewalk bridge; protection for abutters and general public, allow for setting up double gates.
 - h. Contact the local Fire Department, Police Department as needed to coordinate special traffic conditions and fire safety issues.
 - i. Ledgewood Construction's safety program and rules shall be adapted to the specific jobsite. Communicate Ledgewood Construction's commitment to a safe workplace to Subcontractors at pre-construction meeting and reinforce at weekly safety meetings.
 - j. If a storage area is needed for propane bottles, consider pouring a concrete pad when doing footings and have a chain link fence with lockable gate installed, as per OSHA guide lines and local jurisdiction.

2. Emergency Needs:

- a. First Aid trained personnel. This will usually be the Superintendent.
- b. First Aid supplies (checked at least weekly). A First Aid kit shall be located in LedgeWood Construction's site office, as well as an eyewash cabinet and blood borne pathogens kit.
- c. Fire extinguishers with a 2A rating 10 lb. ABC classification shall be located throughout the jobsite, strategically placed and numbers will be one for every 3,000 SF of construction space.
- d. Fire/Emergency evacuation plans shall be posted in the building reviewed at job safety meetings and updated as required. This will be done on large projects where exit egress is not readily apparent.
- e. Arrange for emergency medical services (ambulance, hospital, doctor). Emergency numbers shall be posted in the office trailers.

JOBSITE SECURITY

Revised: January, 2014

Security of people and property must be considered and planned prior to start of construction. Prevention of loss of equipment, supplies or in-place construction through theft or vandalism is vital to the success of every project.

The need and degree of security must be judged and designed by the Project Team to fit the construction job and its neighborhood.

The following is a checklist meant to meet most job needs:

1. Full time or off-hours guard service, as needed.
2. The site will be fenced in with chain and dual locks on all gates with key for the Fire Department.
3. Outside overnight lights at office trailers, storage trailers and other material storage areas.
4. Post signs, especially a sign with the Company name. Other signs such as "ALL VISITORS MUST REPORT TO LEDGEWOOD CONSTRUCTION'S FIELD OFFICE", "NO TRESSPASSING", and any other sign appropriate to the security of the site.
5. Post local telephone numbers of Company people in charge for guard service or police use in emergencies.
6. Notify and/or meet with local police. Request overnight roving checks by on-duty police officers. Leave names and numbers for emergency purposes.
7. Determine trailer locations for office and storage trailers for security.
8. Take inventory of the valuable tools and equipment that the Company has on site whether it be construction or office type equipment. Include description and appropriate serial numbers.
9. Food service vehicles are required to have liability insurance is they are going to drive on the site to serve the workers. Request that their company provide a Certificate of Insurance.
10. Provide for and maintain traffic control for trucks and equipment moving on and off the site as required. If Traffic Controllers are required they will wear traffic vests, carry flashlights during hours of darkness and must be trained if in a public area.
11. Identify and protect any exposed transmission lines and utilities prior to any excavating taking place.

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12. Public relations will go a long way for jobsite security, theft and vandalism. The Project Team should promote a “good neighbor” policy with the neighbors, Police, Fire Department and other interested private or public people having influence around the construction site. Any Public Relations issues will be coordinated through the Project Manager and the Project Executive.

INCLEMENT WEATHER

Revised: January, 2014

When there are warning signs of impending severe weather (heavy rains, strong winds, hurricanes, flood, etc.), conditions shall be monitored and appropriate precautions taken to protect personnel and property from the effects of severe weather.

Procedures shall include, but not be limited to:

1. Securing all loose materials that could be blown about by high winds.
2. In the event of extreme high winds, secure all structures from possible collapse.
3. Protect property and building materials from rain as needed.
4. Protect hazardous materials from spilling or spreading by securing same in a safe location. Do not store in an area that might flood.
5. Special care should be taken to ensure masonry staging is properly secured. If #9 wire is used that spreaders are in place and secure; that all scaffolding sections are secured with locking pins; also ensure additional tie ins are provided when tarps are affixed to scaffolds. Special care should be taken with scaffolding planks. Tie them down or remove them.
6. During winter months, special care should be given to icing conditions. Shovels, scrapers, ice melt and sand should be readily available on site to treat slippery areas. Special caution should be exercised early in the morning when frost is present on surfaces, especially on scaffold planks and roof areas.
7. Each Subcontractor shall be responsible for securing their equipment when inclement weather or high winds are forecast.

PROTECTION OF PUBLIC AND NON-PROJECT PROPERTY

Revised: January, 2014

A construction site should not have to be a dangerous condition to the general public living, working or traveling in the vicinity nor should it be a liability to adjacent non-project property.

Ledgewood Construction, and/or its Subcontractors will provide for the following:

1. Notification and pre-planning with City or Town traffic engineers on the potential impact on traffic patterns around the jobsite.
2. Design and installation of temporary protection to suit the needs of the surroundings of the site. Lights, signs, fences, barricades, and traffic control are just some of the requirements for protection. Windblown flying debris, falling objects, water, dust, welding sparks, etc. are just some of the dangers requiring safeguards.
3. Maintenance and change of the protection as required during the on-going progress and changing of jobsite conditions.
4. Ensuring the jobsite is secure to prevent off-hours injury to the general public and property. Generally, this will be accomplished by a walk thru by the Superintendent and his/her designee at the end of the work day.
5. Blasting, pile driving, deep foundations, de-watering, demolition, high rise structures, etc. are just some of the unique activities requiring inherent design for protection to the general public and to non-project property. All activities at each jobsite should be pre-planned and well thought out.

EXCAVATIONS

Revised: January, 2014

EXCAVATION PERMIT

Prior to the start of any work involving trenching or excavation operations the Subcontractor Foreman involved in the work must notify Ledgewood Construction's Superintendent, and provide the appropriate "Dig Safe" file number if necessary.

Trenching/excavating is one of the most dangerous operations on any construction site. It is the responsibility of the Ledgewood Construction Superintendent to assure that all excavations are conducted in accordance with OSHA Standards. Close monitoring of all trenching/excavation operations by the Subcontractor's Competent Person is an absolute must.

1. Any Subcontractor found excavating a trench improperly must be stopped immediately and not allowed to continue until proper corrective action has been taken to abate the hazard. A pre-excavation safety meeting will be held with the Superintendent and Foreman prior to any trenching operations taking place.
2. The Subcontractor conducting the excavation operation will designate the person competent to perform the work. The competent person will demonstrate to the Superintendent his/her knowledge of soil conditions and his/her ability to conduct a safe operation.
3. In excavations where oxygen deficiency (atmosphere containing less than 19.5 percent oxygen) or Hazardous Atmosphere exists or could reasonably be expected to exist, the atmosphere shall be tested before employees are allowed to enter.
4. Excavations 5 feet or greater in depth shall be protected by sloping, trench shields or shoring. The Competent Person shall determine the soil classification prior to any excavating taking place.
5. Ladders shall be positioned in excavations 4 feet or deeper so that no employee has to travel more than 25 feet to access such ladder.
6. During the excavating process, caution shall be taken to ensure that excavated material is placed no closer than 2 feet from the edge of the trench.
7. Excavations left open shall be inspected prior to the start of the next day's activities to ensure the continued stability of the walls of the excavation by the Competent Person.

PAPERWORK REQUIREMENTS

Revised: January, 2014

1. Current OSHA Standards will be located in Ledgewood Construction's office trailer.
2. Safety Bulletin Board to display safety posters, pamphlets, letters, etc.
3. Post all required Federal and State posters in the Ledgewood Construction office trailer.
4. Post emergency phone numbers, Fire, Police & Ambulance at all trailers. Include copies of directions to local hospital near the trailer door.
5. Post OSHA 300 Log.
6. Warning signs (Hard Hat, No Trespassing, Laser In Use, Danger, Caution, etc.). International symbols should be used where applicable.
7. Required certification and maintenance records for equipment (cranes, material hoists, welders, etc.). These certificates are required to be submitted to Ledgewood Construction before equipment is used on site.
8. Required approvals for deep trenches, high scaffolds, demolition surveys and shoring will be cleared with the Superintendent. (Dig Safe and local utility companies must be notified prior to any excavation taking place).
9. Proof of training and safety instructions must be provided by Subcontractor (lasers, power actuated tools, first aid, propane, hazardous substances, etc.).
10. Written respiratory protection programs (if respirators are in use) will be submitted to Ledgewood Construction.
11. Require special permits (burning, welding, traffic etc.) as required by the local Fire Department.
12. Accident report forms for jobsite injuries will be filled out by Subcontractors the day their employee is injured and forwarded to Ledgewood Construction. All work related injuries will be reported on the First Notice of Injury Report form for the State in which the worker was injured.
13. Safety meetings (records of meetings with Subcontractors) will be maintained by Ledgewood Construction and should be part of the weekly meetings.

PROTECTIVE EQUIPMENT REQUIRED

Revised: January, 2014

1. Hard hats – at all times. Long pants and work boots required. T-shirts at a minimum (no tank tops). Safety glasses as required.
2. Portable “Ground Fault Circuit Interrupter” cords shall be provided as needed by the Electrical Contractor.
3. Respirators – as needed. Nuisance masks when needed for sweeping or other dusty conditions are to be provided by each Subcontractor.
4. Ear protection (ear plugs) – as needed by each subcontractor.
5. Guarding material for perimeter, scaffolds and floor holes.
6. Safety cans for flammable and combustible liquids.
7. Safety harnesses, lifeline, lanyards or nets – as required by job specific hazards analysis.
8. Trench shields and excavation shoring materials.
9. Personal protective equipment for visitors will include hard hats and visitors safety glasses as required.
10. Atmospheric testers (carbon monoxide, oxygen, combustible gases, as special conditions warrant) shall be provided by subcontractor.
11. Flashers, signals, barricades, reflective clothing for traffic control – as needed, according to training guidelines.
12. Fire extinguishers, fire hoses, fire retardant blankets, water buckets, etc.
13. Grounded extension cords are required on Ledgewood Construction jobsites.

JOBSITE INSPECTION

Revised: January, 2014

Safety inspections are among the oldest accident prevention methods, and they constitute an integral part of an effective safety program. When conducted properly, they reveal unsafe acts and conditions that lead to accidents. Frequent informal inspections and follow-ups to correct noted deficiencies are essential for the smooth operation of a construction project.

1. The Superintendent will conduct routine inspections and institute correction of unsafe acts and/or unsafe conditions.
2. The Project Manager will report to the Superintendent any unsafe acts/conditions as he/she views them during his/her visits to the jobsite.
3. Company management personnel will assist by pointing out safety concerns during jobsite visits.
4. OSHA Compliance Officers visit construction sites normally without notice. They are to be received with courtesy. If an OSHA inspection results from an employee complaint, then the inspection will usually be limited to the scope of the complaint and not a wall to wall inspection. Superintendents are to immediately notify the Project Manager and to inform the OSHA Compliance Officer and will request that the OSHA Compliance Officer waits for his/her arrival to begin the inspection.

WEEKLY SAFETY AUDIT PROCEDURES

Revised: January, 2014

I. PURPOSE

- a. This weekly safety audit procedure will provide another avenue for communication between the Subcontractor and Ledgewood Construction. It will give all parties a chance to review our prospective “team” efforts relating to Construction Project Safety.
- b. The basis of this weekly review will be the attached “Jobsite Safety and Health Check List”. This form will be completed by the Superintendent.
- c. The previous week’s form shall be reviewed to ensure safety issues, noted at that time, have in fact been corrected.
- d. This should be recorded in Procore.

JOBSITE CLEANLINESS & HOUSEKEEPING

Revised: May, 2014

Good housekeeping on any construction site is absolutely essential in maintaining a safe workplace. The following guidelines will be adhered to:

1. Adequate dumpsters will be provided by either the individual Subcontractor or Ledgewood Construction dependent on contract requirements.
2. All construction debris will be picked up daily by all Subcontractors.
3. Each Subcontractor will be responsible for construction waste materials generated by their work.
4. Ledgewood Construction will monitor and enforce good housekeeping practices.
5. Failure of any Subcontractor to comply with this policy will result in Ledgewood Construction hiring laborers to clean and then back charging the delinquent Subcontractor(s).
6. Dust control shall be maintained at all times by watering affected areas for the safety of the public as well as the workers.
7. Indoor air quality should be reviewed. This is very important on occupied sites.

SUPERINTENDENT – SUBCONTRACTOR'S FOREMEN MEETINGS

Revised: May, 2014

1. Through the use of Safety Meetings, it is possible to reach employees who are Supervisors of the major trades involved on each project. At this time, the importance of project safety will be demonstrated to these Supervisors so they, in turn, can transmit this information to the personnel under their control.
2. The Safety Meetings, as part of the regular job meeting, will be held weekly at a predetermined time. These meetings will be documented on forms provided by the Superintendent.
3. In addition to helping reduce hazards, this forum also provides legal protection, in that safety items are included as part of the written safety meeting record and can be referred to in demonstrating Ledgewood Construction's interest and commitment to safety.
4. Procore should be used to document subcontractor meetings as well as safety items.

MEETING PROCEDURES

Revised: May, 2014

1. The Superintendent shall act as Chairman.
2. The subject matter for the “Weekly Safety Meeting” must be adapted to job conditions. Discussing actual conditions on each project will have more meaning and actually improve safety conditions on the job.
3. Special topics such as issues developed during weekly jobsite inspections, by the Superintendent can also serve as a valuable safety topic.
4. Any items or work that has been performed, that concern safety, shall be reviewed.
5. Any new criteria, amendments to OSHA regulations or safety in general, shall be reviewed.
6. Questions or recommendations from those in attendance shall be discussed. Comments and suggestions should be encouraged.
7. All attendees, including the Project Superintendent, must sign the form under the “Meeting Attended By” section with their name and their company’s name. Log onto Procore to track meetings.
8. Review any new Material Safety Data Sheets regarding hazardous products that may have been delivered to the site.

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Revised: May, 2014

FIRE PROTECTION PROGRAM

Revised: May, 2014

The Project Team shall be responsible for the development of a Fire Protection Program to fit the jobsite conditions. The following should be used as guidelines to set up such a program:

1. Review the current OSHA guidelines.
2. Request the Fire Chief to visit the site, acquaint him with the project and make any plans required in preparation for any potential emergency.
3. Locate and identify any existing hydrants in the project area for fire department water supply. Provide clear access to same. Any inoperative hydrants will be covered.
4. Activate any new on-site hydrants and interior fire water risers with hose connections for fire department use as soon as possible. Activate sprinklers as soon as possible.
5. Provide, maintain and conspicuously locate all-purpose ABC type of fire extinguishers on the jobsite. One 2A – 10 lb. ABC extinguishers for every 3,000 SF of construction space or portion thereof (i.e. 5,000 SF requires 2 fire extinguishers).
6. Fire department telephone number shall be posted at all jobsite telephones.
7. “No Smoking” signs shall be posted and enforced as required.
8. Cutting and welding operations should include the following: Floors should be swept free of combustibles within 35 feet of the work area and any flammable liquids should be removed from the area. Wet down the immediate area, where applicable. A fire watch, when necessary, should be available while work is being performed, at lunch time and at least 30 minutes after operation is shut down. Fire extinguishers will be required. The sweeping of floors, hosing down the area, the fire watch and the fire extinguishers all will be provided by the Subcontractor. (Prior to any burning taking place, a permit, if required, must be obtained).
9. Fuel for cutting and burning torches shall be stored in locations and protected as directed by Ledgewood Construction’s Superintendent, in conformance with local fire regulations and OSHA requirements.
10. Emergency evacuation plans shall be developed and implemented as needed. These shall be reviewed at each job meeting and posted in conspicuous places. This will be part of the Emergency Action plan for each site.
11. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within the building except with the express approval of Ledgewood Construction’s Project Superintendent.

12. Bulk storage of volatile liquids shall be outside the building at a location determined by LedgeWood Construction's Project Superintendent and shall be posted as such. Permit for storage, if required, must be obtained by the Subcontractor from the Fire Department. In addition, the Subcontractor who is storing these materials shall furnish the proper type of fire extinguisher to be located within 50 feet of any point on the perimeter of the stored materials. Also, these areas are to be identified with signs restricting access and prohibiting sources of ignition.
13. Daily clean-up of scrap materials, sawdust, rags, oil and grease and other residue of construction operations will not only remove or reduce the fire hazard, but will promote general safety at the same time.
14. Improperly installed and controlled temporary heating devices could result in loss of life and property on construction sites from fire, asphyxiation and explosion. The following safe practices and procedures should be followed:
 - a. Temporary heating devices should not be installed or used by anyone on the job until authorized by the Project Superintendent and cleared with the local Fire Department.
 - b. Use only approved containers for fuel storage.
 - c. Adequate fire extinguishers should be provided (2A – 10 lb. ABC).
 - d. At least a 10-foot clearance should be maintained in any direction from any combustible materials.
 - e. Heating units should be well constructed with a stable base. Fireproof materials should be placed under the base.
 - f. When tarpaulins or canvas coverings are used near heating units, they must be U.L. listed. Fire Resistive Material per local Fire Department shall be used and at least a 10-foot clearance should be maintained. These materials should be securely fastened.
 - g. Heating devices should not be used in confined or unventilated spaces unless properly vented to the outside.
 - h. Kerosene, gasoline, oil or gas fired units should be shut down and cooled prior to refueling or moving them.
 - i. Liquid fueled heating devices should be provided with a manual shut-off system on the fuel line. The valve should be located at a safe distance from the unit.
 - j. All fuel tanks should be properly secured.
 - k. LPG gas cylinders should be stored away from the building out of doors. A cap should be provided to protect the valves on the stored cylinders.

- I. All bulk storage of flammable material listed above shall be reported to the Superintendent for approval.
15. Maintain fire prevention program by checking electrical equipment, use common sense, maintain good housekeeping, provide proper flammable liquid storage, provide proper refueling equipment and procedures, utilize cutting and welding fire watches, etc.
16. Provide security services if needed or required.
17. Provide fire instructions to all personnel:
- a. Install Exit signs.
 - b. Know how to get out. Learn what escape route to take from all work areas.
 - c. If you spot a fire, sound the alarm and get to safety, telling other about the fire as you go.
 - d. Know the location of the fire extinguishers and any other firefighting equipment.
 - e. Learn how to use a fire extinguisher.
 - f. Do not attempt to fight a fire that is too big for you.
 - g. And, if there is a fire, DON'T PANIC, follow your escape plan quickly and calmly.

PROTECTIVE CLOTHING AND FOOTWEAR

Revised: May, 2014

It is a strict requirement that all workers on LedgeWood Construction's projects adhere to the following code:

1. At the minimum, every worker shall have a T-shirt, long pants, and construction boots. It is strongly recommended that boots with steel toes to be worn. Sneakers will not be allowed at any time. Medical restrictions involving footwear will be decided by the Superintendent on a case by case basis.
2. Should specific operation involve materials that are hazardous, the Superintendent will be consulted and the required proper training will be provided by the Subcontractor. Protective clothing and personal protective equipment will be obtained prior to start up.
3. Hard hats shall be worn 100% of the time until the temporary certificate of occupancy has been issued or otherwise determined by the Superintendent.
4. On renovation projects, hard hats shall be required until the entire project is in the punch list stage.

GROUND FAULT PROTECTION

Revised: May, 2014

Ledgewood Construction shall provide, through their Electrical Subcontractor, the necessary equipment for a ground-fault protection program.

1. Any electrical equipment will be treated as if it were energized.
2. Only authorized licensed electricians under contract with Ledgewood Construction will be allowed to work on any electrical equipment whether it be activated or de-activated.
3. Any electrical equipment, panels, junction boxes that are energized will be posted. Live panels shall not be left unattended unless protective panel covers have been put back in place protecting workers from coming into contact with live parts.
4. Any energized equipment or electrical switch gear will be equipped with and fall under the current OSHA's guidelines lock out/tag out standard, (1926.417). A lock out/tag out program shall be developed, if needed utilizing the program established by Ledgewood Construction and the electrical contractor to assure that all employees are trained in the same manner following the same policies.
5. Should there be any questions as to the status of any electrical equipment, a licensed electrician will make that determination.
6. Construction workers shall not work next to electrical equipment until the area has been made safe.
7. Only approved three-wire grounded or double insulated tools shall be brought onto the jobsite. Only three-wire round extension cords are allowed.
8. Ground Fault Circuit Interrupters (GFCI) shall be the sole source of power available to employees on this site.
9. Although a (GFCI) Ground Fault Protection Program system will be in use, tools and electrical cords shall be maintained in good working order and condition. Electrical cords will be free of cuts. Cords with missing ground pins will be taken out of service immediately.
10. Employees shall visually inspect flexible cord sets and equipment connected by cord and plug before each day's use for external defects (deformed or missing pins, insulation damage and indication of possible internal damage). Where there is evidence of damage, the damaged item shall be taken out of service, by the employee, taken to his/her foreman who will tag the item "out of service", and removed from service until it is tested.

11. The Electrical Contractor shall test the GFCI system on a frequent basis and keep a record of such tests. Employees prior to connecting their tools or cords into the GFCI system will manually test the GFCI to ensure that it is operating.
12. The Electrical Contractor shall devise a method to continue providing GFCI protection after the permanent power has been activated in the building. If necessary, each Subcontractor will provide his or her employees with portable GFCI units.

FIRST AID AND MEDICAL SERVICES

Revised: May, 2014

Ledgewood Construction field office trailer is designed as the location for the first aid station under the control and supervision of the Project Superintendent. First aid kits with supplies meeting OSHA requirements are to be available and replenished as required. First aid treatment requiring further off-site medical attention shall be coordinated with the Project Superintendent.

Hospital / Emergency Room / Rescue Service

Emergency telephone numbers shall be posted in the field office on the card provided and at jobsite pay telephones established by the Company for construction worker's use. The Fire Rescue Department is the responding agency for Medical Emergencies at Ledgewood Construction jobsites.

Ledgewood Construction has designated the Superintendent as the General Contractor's on site Safety Representative. The Company urges each employee to obtain a certificate in first aid training in accordance with OSHA 1926.50(c).

EMERGENCY PROCEDURES

Revised: May, 2014

- Identify the on-site first aiders – List will be updated monthly.
- Provide the required first aid equipment:
 1. First Aid Kit in Ledgewood Construction Field Office.
 2. First Responder bag in Ledgewood Construction Field Office.
 3. Stretcher in Ledgewood Construction Field Office, if required.
- Emergency phone numbers at each phone location:
 1. Hospital:_____
 2. Fire Department:_____
 3. Police Department:_____
 4. Rescue:_____
 5. Poison Control:_____
 6. Ambulance:_____
- Name and location of preferred hospital:

NOTE ** A sketch and directions to the nearest medical facility are located in Ledgewood Construction field office.

- Keep records of first aid activity.
 1. To be recorded and discussed at weekly safety meeting.
- Establish and train for emergency procedures.
 1. Evacuation procedures to be reviewed at weekly safety meetings. NOTE ** Sketch of evacuation routes for all areas of the construction site will be posted throughout the jobsite. Any changes in evacuation procedures will be reviewed in advance at weekly safety and toolbox meetings.
 2. Changes in emergency fire procedures to be reviewed at weekly safety meetings.

INCIDENT NOTIFICATION PROCEDURE

Revised: May, 2014

Procedure:

1. Fire emergency on site. Be alert.
2. Stop all machinery and power tools.
3. Follow the direction of your foreman.
4. Be prepared to evacuate. If evacuation is necessary, use stairs and/or ladders only.
5. If necessary, assists in providing a clear entrance and exit for the Fire Department.
6. Assist in clearing street of all public traffic.
7. Await further instructions.

Emergency plans to ensure safety in the event of fire or other emergency shall be in accordance with current OSHA guidelines.

A site-specific emergency evacuation plan shall be posted throughout the building.

This Emergency Action plan shall include employee training to include instructing workers where to meet for a head count and what specific instructions to follow in the event of an emergency. A copy of this plan shall be posted in the field office.

INCIDENT REPORTING PROCEDURE

1. Any incident, whether it be an accident, near miss or an unsafe condition shall be reported to the Superintendent.
2. Accidents involving personal injury shall be reported to the Superintendent immediately.
3. Accidents involving damage to property or equipment shall be reported to the Superintendent immediately.
4. Damage to property or equipment, as a result of vandalism, shall be reported to the Superintendent as soon as possible. The Police Department will be notified.
5. Theft of construction materials or tools shall be reported to the Superintendent as soon as possible. A detailed list of materials and tools missing shall be provided to the Police Department.
6. Any unsafe condition shall be reported to the Superintendent so corrective actions can be instituted.
7. Take photos.

EMERGENCY SUBCONTRACTOR NOTIFICATION LIST

Revised: May, 2014

Please refer to the Emergency Action Plan.

POST-ACCIDENT OR LOSS REPORTING AND INVESTIGATION PROCEDURES

Revised: May, 2014

1. Purpose:

- a. To establish a standard procedure for all accident reporting and processing.

2. Reportable Cases:

- a. First Aid cases are defined as one time treatment and subsequent observation of minor scratches, cuts, burns, splinters and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.

3. Serious Accidents:

- a. Serious accidents are those which can be classified under any of the following:
 1. Occupational death(s), regardless of the time between injury and death, or the length of the illness; or
 2. Occupational illness or illness resulting in permanent or significant disabilities; or
 3. Occupational accidents that involve one or more of the following:
 - Minor – Those property damage accidents resulting in less than \$1,000 damage.
 - Large - \$1,000 to \$10,000 damage.
 - Major – Any property damage accident resulting in greater than \$10,000 damage.

All occurrences shall be investigated thoroughly. The proper investigation of a “near miss” will subsequently reduce the change of a re-occurrence and the possibility of an injury or an additional insurance claim. Do not limit investigations only to bodily injury (Workmen’s Compensation) accidents. An accident is an unwanted, unplanned event that interrupts the normal flow of scheduled activity. Investigated properly, the cause can be determined, corrected, and a re-occurrence eliminated.

Accident investigation records should not be concerned with the fixing of blame for an accident, but with determining the causes of an accident. It is the elimination of the causes and sub-causes of an accident that will lead to the prevention of future occurrences.

ACCIDENT REPORTING

Revised: May, 2014

1. Any injury, even of a minor type that is requiring a visit to an outpatient medical clinic for treatment must be reported on the Ledgewood Construction Accident Investigation Report form.
2. Any property damage accident, whether project property or non-project property, must also be reported on the Ledgewood Construction Accident Investigation Report form.
3. Verbally notify your Project Manager of any bodily injury accident and/or damage to property within two hours of its occurrence.
4. Submit written investigation reports to the Project Manager within 24 hours. Maintain a copy on file at the jobsite.
5. Any company owned automobile/truck accident, involving personal injury, must be verbally reported immediately to Ledgewood Construction's office. The accident must be reported on the Registry of Motor Vehicles' operator's report and sent to the main office along with police reports, witness statements, photographs, etc. within 48 hours of the accident.
6. Any instances of fire, theft or vandalism shall be verbally reported to the Project Manager as soon as possible.

ACCIDENT INVESTIGATION

Revised: May, 2014

The Project Superintendent shall investigate and provide a written report of all accidents.

1. Follow emergency procedure until the accident is stabilized.
2. Investigate the accident. Find out who, what, when, where and how.
3. Take photographs of the accident scene and the surrounding area. Indicate on the back of photographs the date the photograph was taken, date of incident, what the photograph depicts, and who took it.
 - a. All projects are to be equipped with one date camera, at a minimum.

Automobile Accidents:

1. Contractors, who have an automobile accident on jobsite property, involving their company-owned vehicle, must provide Ledgewood Construction's Superintendent with a completed automobile accident report within 24 hours of the accident. State Motor Vehicle procedures for reporting automobile accidents will be complied with by Ledgewood Construction and their Subcontractors.
2. Draw diagrams, mark-up drawings.
3. Record status of construction at the scene at the time of accident. Indicate what work was in place and what work was going on.
4. Determine how many Subcontractors were working in the area, with how many workers each, and what activity they were performing.
5. Identify witnesses and attempt to obtain telephone numbers. Record their names and employers. Try to interview them in private regarding accident description and cause. Ask them to sign a statement of description and cause.
6. Obtain copies of reports by others (Police, Fire Department, Subcontractors, doctors, etc.).
7. Describe any corrective action taken to prevent re-occurrence.
8. Provide written report as described below.
9. A copy of all reports including hospital, Fire, Police, etc. must be turned over to the Project Manager within twenty-four (24) hours of mishap.

10. A separate file containing accident/incident reports shall be kept in the field. A copy of all safety/accident/incident reports shall be forwarded to Ledgewood Construction's office.
11. The Daily Report in Procore should include a brief entry relative to the accident, for future reference.
12. Take photos.

PROCEDURE IF A LEDGEWOOD CONSTRUCTION EMPLOYEE IS INJURED

Revised: May, 2014

1. Notify the main office and the Project Manager. Next, begin your own investigation and fill out the LedgeWood Construction Accident Investigation Report.
2. The Superintendent must also fill out the "Employer's First Report of Injury" form. It is important that the form used is from the State in which the employee is "employed", which means the State to which he/she is paying payroll taxes, etc.
3. Send the original copy of the form to the Project Manager and attach to it the original of the LedgeWood Construction, Accident Investigation Report form along with any other pertinent information.

PROCEDURE IF A SUBCONTRACTOR EMPLOYEE IS INJURED

Revised: May, 2014

1. Ledgewood Construction Project Superintendent must be verbally notified by the Subcontractor's foreman immediately that an accident has taken place and that one or more of his/her employees have been injured.
2. Notify the main office and the Project Manager. Next, begin your own investigation and fill out the Ledgewood Construction Accident Investigation Report.
3. It is the responsibility of the Subcontractor's foreman or management to process the "Employer's First Report of Injury" form. The Subcontractor is obligated to provide the original of the completed form to the Ledgewood Construction Project Superintendent. Original will be sent to the Labor Department and copies to Ledgewood Construction.
4. Obtain same as soon as possible and attached to Ledgewood Construction Accident Investigation Report along with any other pertinent information, then submit a copy of all items to the Project Manager.
5. Injured worker can only return when he/she produces a full medical release from his/her doctor.

PROCEDURE IF A PUBLIC PERSON IS INJURED

Revised: May, 2014

1. Institute emergency procedures if appropriate providing emergency first aid and medical attention as required.
2. If emergency assistance is needed, coordinate and cooperate with Police, Fire, Rescue and other public officials having jurisdiction.
3. Notify the main office (Safety Director and Project Manager) by telephone that an accident took place and then begin an immediate investigation.
4. Complete the Ledgewood Construction Accident Investigation Report form and submit this and any other pertinent information to the Project Manager.
5. Obtain name and addresses of all injured people and witnesses.
6. A copy of all accident/incident reports shall be sent to the Safety Director.
7. Take photos.
8. Do statement of responsibility.

ACCIDENTS CAUSING PROPERTY DAMAGE TO PROJECT PROPERTY AND/OR NON-PROJECT PROPERTY

Revised: May, 2014

1. Institute immediately any emergency procedures required to make damaged property stable and safe to prevent further loss.
2. Notify the main office and the Project Manager by telephone that an accident took place and then begin an immediate investigation. Any MEDIA contact shall be coordinated with upper management.
3. Do not talk to the Press.
4. Take photos of the damage.

ACCIDENT RECORD KEEPING

Revised: June, 2014

1. Federal OSHA laws require accidents and illness of Company employees to be summarized and submitted in January of each year and posted in the project site offices each February (OSHA 300 Form). Failure to post same could result in our being fined by OSHA.
2. State laws require annual reports (OSHA 300-S form) summarizing totals from OSHA-300 to be submitted to the State Department of Labor each February.

PUBLIC RELATIONS FOLLOWING SERIOUS INJURY OR ACCIDENT

Revised: June, 2014

Statement of Policy:

In the event of fire, accidents or serious injuries, it is the policy of Ledgewood Construction to immediately restrict access to the site to only authorized personnel and to close the site to all unauthorized persons. All workers should be evacuated from the building and directed to safe areas. Company personnel are to aid the Police and Fire Departments. The project site must be secured at the earliest possible time.

No one is allowed on site except those required to aid in the resolution of the incident because of the hazards which may be involved.

The Project Superintendent, or his/her designated alternative, will take charge in the event of a major accident. The following is a checklist which should be followed in case of such an accident:

1. Stop work.
2. Call for assistance from the Fire Department, ambulance service, Police Department, main office, etc.
3. Initiate firefighting, if required; secure the building, etc.
4. Call for site evacuation, clear site access roads.
5. Issue instructions to foremen.
6. Set up security measures at the accident site.
7. Set up communications center in the field office.
8. Call in operators for heavy equipment, such as cranes, front-end loaders, backhoes, etc.
9. Other desirable actions as conditions warrant them.
10. Notify the Main Office and Project Manager.

IMPLEMENTATION OF POLICY FOLLOWING SERIOUS INCIDENT

Revised: June, 2014

Project personnel should be courteous to members of the public, reporters and photographers, but make no statements. There is to be no interference with reporters' and photographers' work outside the construction site. Access to jobsite by the Media will be handled by Ledgewood Construction upper management.

** NOTE: Any statements with respect to any accident made to person(s) not connected with the project will be handled through Ledgewood Construction corporate office.

OSHA regulations require that any incident resulting in the death of one or more workers or any single incident resulting in injury to 5 or more workers be reported to OSHA within 8 hours of the occurrence. This notification will be handled by the Project Manager or one acting in his/her capacity. The General Superintendent overseeing that project or any of the General Superintendents will be notified immediately. In addition, the President of Ledgewood Construction will be notified immediately.

The name and address of seriously or fatally injured construction workers shall not be released by project personnel.

No statements about monetary damages or information are to be made by anyone until a statement has been authorized by the President of Ledgewood Construction, or their authorized representative. Before such information is available, a courteous reply will be made that the amount of damage is not yet known and will be estimated as soon as possible.

To inquiries regarding cause, a reply will be made only when proper information has been reviewed and cleared by the President or their authorized representative. Whenever the cause is in doubt, the individual will courteously request inquiries to defer their questions until there has been time to gather more information.

DISCIPLINARY PROGRAM

Revised: June, 2014

1. Policy:

- a. A Safety Disciplinary Program has been incorporated so that consistency is maintained throughout the organization when disciplinary action is necessary. The purpose of the Safety Program is to channel all safety activities toward a single goal, (i.e. the elimination of accidents). The achievement of this goal can only be obtained through the efforts of all employees and to this end we have established a corporate disciplinary program that will be uniformly enforced throughout all corporate operations. All employees, including employees of Subcontractors, will be subject to disciplinary action if they violate Company Safety Standards and/or safety rules.

2. Scope:

- a. This policy applies to all employees of Ledgewood Construction, and employees of Subcontractors, at all Ledgewood Construction jobsites.

3. Responsibility:

- a. The Safety Program mandates that all supervisory employees accept their responsibility for the prevention of accidents on work under their direction and be responsible for the safety training and instructions of employees under their direct supervision. It then follows that these same supervisory employees are responsible for administering discipline when safety violations occur. Under all circumstances, the supervisors shall follow the disciplinary procedure so that consistency and fairness can be maintained.
- b. Project Managers / Superintendents are directly responsible for seeing that discipline is administered in a fair and consistent manner. The Project Executive shall provide direction and guidance to the management personnel in the administration of this program.

4. Procedure:

- a. Except in cases involving major violations of Company Safety Rules and Regulations, the company subscribes to a philosophy of progressive, constructive discipline. What this means is that discipline will be administered for the purpose of producing a corrective change in the employee's future behavior, but if the change does not occur then a more serious form of discipline will be administered. An example of a major safety violation would be the false report of injury to claim Workmen's Compensation benefits, fighting, use of drugs or alcohol on the jobsite, etc. These types of violations will result in the employee's immediate discharge.
- b. Rules of conduct have been established for project safety. All employees must follow these rules; violation of these safety rules will result in disciplinary action up to and including discharge.

- c. Safety Rules must be posted on the bulletin board(s) of each project so that all employees are made aware of each rule. Subcontractors should sign the Jobsite Rules and Policies Form.
- d. Safety Rules are “rules of conduct” based primarily upon the Safety Standards established for the company. The communication of the safety rules to employees is important but of equal importance is the enforcement of these safety rules in a fair and consistent manner. To maintain fairness and consistency, the supervisor must administer the proper discipline in accordance with the severity of the safety violation. Proper discipline is determined as follows:
 - 1. Has safety violation been verified?
 - 2. Is the violation deserving of a reprimand?
 - 3. Has a similar violation occurred before? If so, what discipline was administered?

If the supervisor can answer yes to (1) and (2) above, then it is fair to administer discipline. If the discipline administered is similar to that administered previously for similar offenses, then “consistency” is maintained.
- e. The typical disciplinary action pattern is as follows; however, the severity of a violation will determine the level of disciplinary action administered:
 - 1. Verbal Reprimand – The supervisor will inform the employee that he/she has committed a safety violation which, if repeated, could result in further disciplinary action.
 - 2. Written Reprimand – A formal written notice will be issued by the supervisor informing the employee of the safety violation and notifying the employee that future violations may result in suspension or discharge from work.
 - 3. Suspension – The employee’s supervisor will inform the employee that he/she is suspended from work without pay for a specific period of time for a violation of company safety rules or regulations and that a future violation may result in discharge.
 - 4. Discharge – Employment will be terminated as a result of a major safety violation or a pattern of safety violations.
- f. Documentation of Disciplinary Action. Whenever administered is, proper documentation of the action taken should be maintained. The documentation should state what Safety Rule was violated, the level of disciplinary action administered and any other comments the supervisor wishes to note relative to the incident. Documentation of disciplinary action involving Ledgewood Construction employees shall be placed in the individual’s personnel file.

JOBSITE RULES AND POLICIES

Revised: June, 2014

1. Safety head protection (hard hats) must be worn at all times while on the work site. Safety glasses must be worn whenever performing work that could result in eye injury.
2. Long pants, shirts and work shoes shall be worn at all times by all personnel on the work site. Shirt sleeves must be at least T-shirt length. No tank tops are allowed.
3. All injuries, accidents, and incidents will be reported immediately to a supervisor.
4. False claims of injury will result in discharge.
5. Personal protective equipment (respirators, earmuffs or plugs, gloves, boots, safety belts, etc.) will be used as required by the hazards involved in work assignments. This equipment must be worn when specified by project supervision or when conditions warrant their use.
6. Report defective machines, tools, etc. and have them taken out of service.
7. Reporting to work under the influence of alcohol, intoxicants, tranquilizers, narcotics, or other dangerous drugs, or possession of such is prohibited and will result in discharge.
8. No employee shall remove, displace, damage, destroy or alter any safety device or safeguard furnished or provided for use in any place of employment. Nor shall anyone interfere in any way with the use thereof.
9. Any employee who observes unsafe acts or unsafe conditions in a work area which might result in an accident or injury shall report such acts or conditions to his/her supervisor immediately.
10. Familiarize yourself with signs and posters bearing pertinent information, warnings, directions, and instructions. Know locations of fire extinguishers in your work areas.
11. Housekeeping, safety and productivity go hand in hand. You are responsible for keeping your work area clean.
12. Fighting, creating a disturbance or horseplay will not be tolerated.
13. Modify for each jobsite. Have Subcontractors sign and scan into Procore.

NOTE: Violation of Safety Rules or Safety Standards will result in disciplinary action.

Disciplinary Action Notice

Date_____

Name_____

Project_____

Subcontractor_____

Trade_____

Employer (Ledgewood Construction or Subcontractor)_____

Reason: (explain below)

Type of Disciplinary Action Taken:

- | | | | | | |
|----|-----------------|-----|----|------------|-----|
| 1. | Verbal Warning | () | 3. | Suspension | () |
| 2. | Written Warning | () | 4. | Discharge | () |

I have discussed the above cited reprimand with subject employee effective this date:

Supervisor_____
Date_____
Employee_____
Date_____
Superintendent
(Suspension or discharge only)_____
Date

Comments:

Copies: Employee, Personnel File or Subcontractor File and Project Manager.

CONTRACTOR MOBILE CRANE SAFETY PROCEDURE

Revised: June, 2014

1. Scope:

This on-site procedure outlines requirements for control, inspection and operation of on-site Contractor mobile cranes and rental cranes. This procedure does not relieve any Subcontractor or crane operator of their responsibility to comply with OSHA crane standards and other provisions of Industry Standards.

2. Responsibility:

Subcontractor supervisors and equipment operators are responsible for inspection, operation and control of mobile cranes as outlined in this procedure.

- a. If a qualified crane inspector is not present on-site to conduct a crane inspection and verification of crane operator's qualification as required in Subsection 3 and 4 below is not possible, Ledgewood Construction shall cause this requirement to be met by other means. For example:
 1. Instruct the Subcontractor to arrange for a qualified crane inspector to inspect the crane prior to start-up.
 2. Instruct the Subcontractor to secure the services of an independent crane inspection agency to verify the inspection/qualification requirements.

3. Inspection:

- a. Rental cranes must arrive on site in a safe operating condition.
- b. Upon arriving on the site, the crane operator will have available for examination both the crane certification records and the crane maintenance records.

4. Operator Qualification:

Subcontractors shall demonstrate to Ledgewood Construction's Superintendent that their crane operator is properly licensed.

- a. Trained signal person and rigger (hand and radio).
- b. Check subsurface conditions.
- c. Review soils conditions (build crane pad).

5. Crane Load Capacity Charts:

Crane load capacity charts shall be posted in the cab of each crane.

6. Critical Lifts:

a. Definition – A critical lift is when any of the following conditions exists:

1. The load exceeds 75% of the crane capacity as shown on applicable crane manufacture's load (capacity) charts for the configuration to be used.
2. Lifts involving more than one crane to handle a common load.
3. Use of crane or lifting device in an application that deviates from manufacturer's recommendations including, but not limited to:
 - a. Boom configuration not in accordance with the boom make-up chart.
 - b. Moving a crane with longer boom than recommended.
 - c. Exceeding capacities or restrictions shown on the load chart.

b. Written Critical Lift Plan:

The Subcontractor shall prepare a written critical lift plan for all critical lifts. The following information should be included:

1. Why the lift is critical.
2. Type of crane.
3. Boom length.
4. Boom angle.
5. Radius.
6. Weight of load (weighing may be necessary).
7. Dimensions of load.
8. Attachment points for rigging.
9. Obstructions in path of load.
10. Crane operator's qualifications.

c. Approvals:

If the crane operator anticipates any deviation from crane manufacturer's recommendations, the crane operator shall secure approval from the manufacturer.

Note: Cranes are rated while performing in a level position, on a solid surface, with no wind conditions considered.

7. Crane Operation:

a. Only the following qualified personnel shall operate cranes:

1. Designated operators complying with State or City laws.
2. Maintenance and test personnel when they have the specific training and hands on work experience to operate, test or maintain the type of crane that they are servicing.
3. Qualified Crane Inspectors.

b. Maintain continuous contact, visual or vocal, between the crane operator and one qualified signalman. If for any reason contact is lost, the crane operator shall stop all operations and not resume any crane function until full contact is restored.

c. The crane must have sufficient capacity and proper type (crawler, rough terrain, truck cranes, mechanical or hydraulic) to fulfill all requirements of the work without endangering personnel or equipment.

d. Outriggers on all truck cranes shall be fully extended and set for all lifts. Lifts shall not be attempted with outriggers partially extended and set. No pick and carry lifts are to be made with truck cranes.

e. Rough terrain cranes operated in stationary position shall have outriggers fully extended and set before any lift is made.

f. Pick and carry loads with rough terrain should be avoided. Where necessary to do so the following applies:

1. Use the load chart on truck cranes with rubber wheels.
2. Investigate route to be followed for solid and level footing.
3. Restrict travel speed to maintain control of the load.
4. Tie load to the frame of the crane.
5. Personnel will not touch the load for any reason. In addition to Item (6), tag lines will be used for control of the load, if required.

6. Where possible, outriggers should be extended and set within a few inches of ground level.
- g. Establish positively the weight of the load before handling. Check brakes and machine stability when load is still only inches above the ground.
- h. The operator must not attempt any lift he/she feels conditions are inadequate.
- i. Only qualified crane personnel shall direct the changing or disassembly of crane booms. Consideration should be given to having the manufacturer's representative present.
- j. The operator shall observe the following precautions when leaving the control station of a machine:
 1. Disengage the master clutch.
 2. Lower buck or crane load to the ground.
 3. Set safety pawls on all drums where these are operated manually.
 4. Set the swing brake and travel brakes to prevent machine movement when lifts unattended for short periods and operator remains in immediate area.
 5. When crane is left unattended for extended periods of time or the operator leaves the immediate area, all brakes and locks shall be engaged.
- k. Cranes shall be operated smoothly, avoiding sudden stops and starts.
- l. The hoist line must be vertical at all times.
- m. At no time shall personnel be positioned beneath suspended loads.
- n. No one is permitted to ride the hook or the load.
- o. The boom hoist drum pawl should be engaged at all times except when lowering the boom.
- p. Do not get on or off a machine when it is in motion. No adjustment, repair, or lubrication is permitted on moving machinery unless required by the manufacturers.
- q. Work within 15 feet of electric lines requires a special procedure and permit which must be posted in the cab.
- r. All loads require a tag line.
- s. No tool boxes, oil cans, choker racks, water coolers or similar additional may be placed in the radius of the swing of the counterweight where a person could conceivably be crushed.

- t. Swing radius of the counterweight must be barricaded.
- u. Lifts associated with steel erection and concrete bucket handling are the only crane operations where free-fall can be used.

8. Crane Work Near Overhead Electric or Hazardous Pipe Lines:

- a. Ledgewood Construction's site Superintendent and Subcontractor foreman shall review the scope of work.
- b. These individuals will decide whether:
 - 1. The line will be shut down;
 - 2. The crane will be grounded;
 - 3. If an electrical department stand-by man is necessary;
 - 4. If protective equipment must be worn.

Note: Employees handling tag lines or attaching or disconnecting loads must wear tested Linemen's gloves of adequate voltage rating with protectors and rubber footwear as per OSHA standards.

- c. No crane shall be operated under these conditions unless:
 - 1. A signal man is present whose sole function shall be to assure that clearances are maintained.
 - 2. Signs and barricades warning personnel to stay clear are posted around the crane.
 - 3. The crane operator is the only person on the rig under any high tension line. Booms must be lowered or tied off; using load line.

Precautions noted in this procedure apply to all electric lines. Similar considerations must be given to piping systems which contain potentially hazardous materials.

Correct identification of all overhead electric lines is vital since there is considerable resemblance between some high voltage lines and "telephone" lines.

All crane operators will be instructed to stay on the rig in case of contact with any electrical lines.

Fixed leads shall be provided which ladder and climbing devices, and adequate rings, or similar attachment points, so that the loft worker may engage his/her safety harness lanyard to the leads.

SCAFFOLDING

Revised: June, 2014

1. All Subcontractors who intend to utilize any type of scaffolding whether it be rolling scaffolds, tubular welded frame scaffolding, etc. shall appoint a competent person to supervise and be held accountable for the erection and maintenance of the scaffolding system per OSHA guidelines.
2. A tubular welded frame scaffolding shall be set on a firm base or mudsill, utilizing screw jacks on all frames for leveling and stability. Each frame shall be fully cross braced and locking pins shall be in place.
3. All planking shall be free of splits and dry rot. Planking shall be placed so it overlaps 12 inches. Planks shall extend over the end of the frame no less than 6 inches and no more than 12 inches. All planking shall be full 2 inch scaffold grade planking.
4. If an employee can fall 6 feet or more, the operation must be protected by guardrails, top rail 42 inches, intermediate rail 21 inches and toe-board if persons passing underneath or alongside could be struck by falling debris.
5. To prevent movement the scaffold will be secured to the building at intervals not to exceed 30 feet horizontally and 26 feet vertically. Additional tie-ins will be used in the event of high winds and/or when the scaffold is enclosed with tarps.
6. Ladders shall be provided for accessing scaffolds unless scaffold is designed for climbing. Workers shall not climb corners of scaffolding to access scaffold.
7. Free-standing mobile scaffolds shall not exceed four times the smallest base dimension.
8. Prior to the operation of so called scissors lifts and articulating boom platforms, Subcontractor foreman shall demonstrate to Ledgewood Construction Superintendent that personnel have been trained and are familiar with operation of the equipment. Must have card for that unit.
9. Personnel working in articulating boom platforms (Condors) shall wear a harness and lanyard secured to basket.
10. So called Baker scaffolds shall be equipped with guardrails if employee is exposed to a fall greater than 6 feet.

STEEL ERECTION

Revised: June, 2014

1. All Steel Erection shall take place in accordance with OSHA Regulations.
2. Crane operations during the erection of steel shall follow the guidelines set forth in this Safety Program.
3. All workers not directly involved with the actual initial connecting of beams shall be tied off when working more than 15 feet above any surface.
4. A safety railing of ½ inch wire rope shall be installed approximately 42 inches high around the periphery of all temporary metal decked floors. It shall be the responsibility of the steel erector to install a second wire rope prior to any other trades working on the floor. A toe-board or netting shall be installed when material could be subjected to falling through the opening. The wire rope connections shall be secured with at least three (3) Crosby clips.
5. No loads being carried by the crane will be swung over areas where employees are working.
6. Whenever the potential fall distance exceeds 15' above working surfaces they shall be protected from fall hazards by means of guardrail systems, safety nets, personal fall arrest systems, positioning device systems, or fall restraint systems.
7. Floor openings shall be addressed as they occur, including stairwell and elevator shafts which will be planked over every other floor during steel erection. Standard floor openings shall be covered with ¾" plywood or the equivalent and secured from accidental displacement. In addition the words "floor hole" shall be painted on the cover with orange paint.
8. Plumbing-up lines shall be secured with a minimum of (3) Crosby clips to prevent any slippage.
9. A fire extinguisher of at least 2A – 10 lb. ABC classification will be located with each welding or burning operation during steel erection.
10. Ladders to access floors and specific work areas will be tied off to prevent displacement at all times. Ladders will be of sufficient length to extend 36" above the surface being accessed. A clear landing surface, protected by safety rails, shall be available at the top of the ladder. Workers shall not be required to climb through cables or rails to access a floor.
11. If "Christmas Treeing", so called, is utilized during steel erection, a maximum of (3) pieces will be lifted at any time.
12. Metal decking shall not be left unsecured at the end of the work day to prevent displacement by unexpected high winds.

13. Bar joists shall not be placed on structural steel framework unless such framework is safely bolted or welded, not shall bar joists be put in place without securing to framework.
14. Impact wrenches shall be provided with a locking device to prevent displacement of the socket.
15. Commencement of steel erection: Steel erector shall not erect steel unless it has received written notification that the concrete in the footings, piers, and walls is either 75% of intended minimum compressive strength or sufficient to support the loads imposed during erection.
16. Columns shall be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim plates which are adequate to transfer the loads.
17. Anchor bolts shall not be repaired, replaced or field modified without approval of the Project Structural Engineer of record.
18. The perimeter columns shall not be erected unless they have holes or other devices in or attached at 42-45" AFF and the midpoint to permit installation of perimeter safety cables.
19. Site specific erection plan is good for all involved.

LOCKOUT / TAGOUT POLICY

Revised: January, 2015

NOTE: This section is the responsibility of the Electrical Contractor.

Purpose and Scope:

Purpose of these procedures is to establish an energy control program that includes (1) documented energy control procedures, (2) employee training, and (3) periodic inspection of the procedures.

There are two types of energy isolating devices: those capable of being locked and those that are not.

The lockout device provides protection by holding the energy-isolating device in the safe position, thus preventing the machine or equipment from being energized. The tagout device does so by identifying the energy-isolating device as a source of potential danger; it indicates that the energy-isolating device and the equipment being controlled may not be operated until the tagout is removed.

Lockout is a more reliable method of de-energizing equipment than tagout and is the preferred method used by Ledgewood Construction, however, when the energy-isolating device cannot be locked out, Ledgewood Construction employees will use tagout.

I. Responsibilities:

Management: Under the Federal Occupational Safety & Health Act, Management is responsible for planning deliberate energy control program to ensure that machines and equipment are isolated and inoperative before any employees perform servicing or maintenance where the unexpected energization, start up or release of stored energy could occur and cause injury; training a competent and safety-minded force; and maintaining records prescribed for accidents, illness and injuries.

Project Managers: Responsible for periodic inspections to assure that energy control procedures (locks and tags) continue to be implemented properly and that employees are familiar with their responsibilities under these procedures. The Project Manager will certify that the periodic inspections have been performed.

Superintendent/Foreman: Responsible for training dealing with the equipment, type(s) of energy, and hazard(s) specific to his/her particular jobsite. In addition, the Superintendent/Foreman will be responsible for obtaining from the Warehouse Manager the appropriate lockout-tagout devices.

Authorized Employee: Responsible for implementing the energy control procedures and performing the service or installation.

Affected Employees/Other Employees: Responsible for recognizing when the control procedure is being implemented, and understanding the purpose of the procedure and the importance of not attempting to start up or use the equipment that has been locked or tagged out.

2. Training:

Prior to starting work, each employee attends a health and safety orientation. At that time each employee will receive training in the purpose, function and restrictions of the energy control program. Each employee will sign a form verifying that they have received training in LedgeWood Construction energy control program.

Training for Authorized Employees will cover, at a minimum:

- a. Details about the type and magnitude of the hazardous energy sources present in the workplace, and
- b. The methods and means necessary to isolate and control those energy sources (i.e. the elements of the energy control procedures).

Training for Affected Employees and Other Employees will cover the following:

- a. Whenever there is a lockout or tagout device in place on an energy-isolating device, leave it alone and do not attempt to operate the equipment.

3. Application of Controls and Lockout/Tagout Devices:

Generally, the procedure for applying energy controls includes the following elements and actions that must be implemented in sequence. Procedures for shutting down specific pieces of equipment (pumps, boilers, air handling equipment, etc.) that LedgeWood Construction installs, starts-up and services are outlined in the Installation and Operation and Maintenance Manuals that accompany each piece of equipment at shipment and should be followed. Additionally, work that involves the transmission and distribution systems for gas, steam, water or petroleum products, valves will be locked in either the open or closed position (as appropriate) or, if the valve cannot be locked, the handle will be removed and tagged-out.

- a. Prepare for shut down.
- b. Shut down the machine or equipment.
- c. Apply the lockout or tagout device.
- d. Render safe all stored or residual energy.
- e. Verify the location and de-energization of the machine or equipment.

4. Removal of Locks and Tags:

Before lockout or tagout devices are removed, the Authorized Employee(s) will take the following actions or observe the following procedures:

- a. Inspect the work area to ensure that non-essential items have been removed and that machine or equipment components are intact and capable of operating properly;
- b. Check the area around the machine or equipment to ensure that all employees have been safely positioned or removed;
- c. Notify the Affected Employee(s) immediately after removing locks or tags and before starting equipment or machines; and
- d. Make sure that locks or tags are removed **ONLY** by those employees are attached them.
- e. Follow the manufacturer's start-up procedures outlined in the Installation Manuals and Operations and Maintenance Manuals, which accompany each piece of equipment at shipment.

5. Additional Safety Requirements:

a. Testing or Positioning of Machines:

Temporary removal of locks or tags and the re-energization of the machine or equipment is allowed **ONLY** when necessary under special conditions, (i.e. when power is needed for the testing or positioning of machines, equipment, or components). The re-energization must be conducted in accordance with the sequence of steps listed below:

1. Clear the machines or equipment of tools and materials.
2. Remove employees from the machines or equipment area.
3. Remove the lockout or tagout devices as specified above.
4. Energize and proceed with testing or positioning.
5. De-energize all systems, isolate the machine or equipment from the energy source, and re-apply lockout or tagout devices as specified.

b. Outside Personnel (Contractors, etc.):

Ledgewood Construction will inform other Contractors of our lockout/tagout procedures. Ledgewood Construction will ensure that their personnel will understand and comply with all restrictions and/or prohibitions of the other employer's energy control program.

c. Group Lockout or Tagout:

During all group lockout/tagout operations where the release of hazardous energy is possible, each Authorized Employee performing servicing or maintenance shall be protected by their own personal lockout or tagout device.

d. Shift or Personnel Changes:

Occasionally Ledgewood Construction works on a project that requires more than one work-shift during the day. On this type of project, there is an overlap of workers (both shifts on the job for a short period of time, usually one-half hour). During this overlap locks and tags will be removed by the Authorized Employee and replaced with the locks and tags of the Authorized Employee on the new shift. On the rare occasions that a worker working and a piece of equipment would leave the project (either to go to another project, or leaving Ledgewood Construction's employ) while the piece of equipment was still locked or tagged-out, the Superintendent/Foreman may remove the locks and/or tags by strictly following the procedures outlined above.

SANITATION FACILITIES

Revised: January, 2015

- I. Portable Sanitation Facilities for workers assigned to this project are located on the jobsite and are provided by Ledgewood Construction.

NEW HIRE INDOCTRINATION PROJECT RULES & SAFETY REGULATIONS

Revised: January, 2015

Project Rules:

1. At the Preconstruction Meeting, Ledgewood Construction will take the opportunity to familiarize Subcontractors with the Project Safety Rules.
2. A copy of the Project Safety Rules will be issued to each Ledgewood Construction employee. The employee will sign a form acknowledging that he/she has read and understands and agrees to abide by the Rules.
3. The following Rules and Safety Regulations will be incorporated with Ledgewood Construction "Project Safety Rules".
 - a. All vehicles and containers entering or leaving the jobsite, or vehicles located on the jobsite, are subject to security inspections.
 - b. Employees will be expected to perform a full day's work with a cooperative and willing attitude. Uncooperative, careless and neglectful work performance will not be tolerated.
 - c. Proper conduct on the job is essential to the common good of all employees and the daily progress of the job. Therefore, unsatisfactory conduct, including, but not limited to, the following violations, will be subject to appropriate disciplinary action or discharge.
 - Loafing on the job.
 - Dishonesty or fraud involving the company.
 - Sleeping on the job.
 - Failure to use or wear safety equipment.
 - Making or faking false injury claims.
 - Fighting or engaging in horseplay.
 - Damaging materials, tools or equipment, either willfully or carelessly.
 - Insubordination, refusing to accept work assignments and interfering with fellow workers or supervisors.
 - Gambling at any time on the jobsite.
4. The possession and/or use of alcohol or other intoxicants on site may result in immediate dismissal.

5. The possession or use of narcotics and/or being under the influence of non-prescription depressant or stimulant drugs on site at any time may result in immediate dismissal. If you are taking medication advise your supervisor.
6. Bringing firearms or weapons of any kind onto the site will result in dismissal.
7. Drinking water is available at all times. Used cups are to be disposed of in provided containers, as well as any cans, glass bottles, lunch bags, sandwich wrapping, etc.
8. Adequate sanitary facilities are provided on the jobsite. We request your cooperation in maintaining the facilities in a clean and orderly condition.
9. First aid facilities are available at the jobsite. A first aid kit will be located in the Ledgewood Construction field office.
10. All employees shall strictly comply with project and employer safety rules and regulations. Any employee in violation is subject to discharge.
11. Any solicitation or posting must have prior approval of Ledgewood Construction.

SAFETY REGULATIONS

Revised: January, 2015

All local and OSHA safety rules and regulations must be complied with including, but not limited to, the following:

1. Hard hats must be worn at all times.
2. The use of safety shoes is strongly recommended.
3. Riding material hoists, crane loads, or the hook will not be permitted.
4. Eye protection, hearing protection, and respiratory protection must be worn when the operation requires.
5. All ladders must be tied off or anchored extending 36" above working deck.
6. No smoking, except in designated areas, on this jobsite.
7. All gas and oxygen bottles must be stored in an upright position with caps attached and tied off. Storage facilities must comply with OSHA standards and local Fire Department Regulations.
8. All work areas must be free of debris and waste materials.
9. Where craft persons normally furnish their own tools, such tools shall conform to the prescribed requirements for safe and efficient work.
10. Safety harnesses, properly tied off, shall be worn when working at heights over 6 feet, unless an adequately constructed scaffold with a top rail, mid rail and toe board is provided.
11. All persons shall comply with the Federal OSHA safety standards and the safety requirements of the Division of Labor & Industries, pertaining to the construction industry.
12. Consult Ledgewood Construction for specific details of safety requirements.

PORTABLE TOOLS – FUELING REQUIREMENTS

Revised: January, 2015

1. Extreme caution should be exercised when fueling portable tools, generators, propane equipment, etc.
2. A fire extinguisher with a rating of 2A – 10 lb. ABC should be available in the event of a fire.
3. Only approved metal safety cans will be allowed on site. Containers shall be equipped with a spring loaded cap and a flash arrester in the spout.
4. Fueling within the confines of any building is prohibited.
5. Fuel storage permits, if required, will be obtained from the Local Fire Department.
6. All fuel containers will be properly labeled with the contents of the can.
7. All fuel operated equipment will be shut down and allowed to cool before any refueling is attempted.

HAZARD ANALYSIS FORM

Revised: January, 2015

Procedure for filling out form:

1. The Hazards Analysis form shall be filled out by each Subcontractor Foreman when requested by Ledgewood Construction. The completed form shall be reviewed with the Superintendent.
2. The purpose of the form is to identify and plan Safety issues in advance of the work taking place.
3. This exercise will enable both the Subcontractor foreman and the Superintendent to plan ahead and with the assistance of the Project Manager head off potential exposures to accidents and/or injuries.
4. See attached sample of the Hazard Analysis Form.

JOB HAZARD ANALYSIS

Revised: January, 2015

Project: _____

Operation: _____

Contractor:_____

Maximum # of Employees:_____

Foreman: _____

Date: _____

[illegible]

CONTRACTOR EMERGENCY EVACUATION PROCEDURE

Revised: January, 2015

Purpose:

To provide for the safe and orderly evacuation of all employees who may be in danger as the result of a fire, collapse or any unforeseen emergency.

1. Subcontractors:

- a. Review with Ledgewood Construction Superintendent, the detailed site emergency evacuation procedures for each location where Ledgewood Construction and their Subcontractors will be working on this project.
- b. Request that Ledgewood Construction and their Subcontractors conduct an immediate head count to determine if any employees are missing.

2. Contractor Site Superintendent:

Ledgewood Construction Superintendent Shall:

- a. Ensure that his/her Supervisory Personnel are completely familiar with the appropriate emergency evacuation procedures to follow each jobsite location where they have employees working.
- b. Respond to the scene of the emergency and direct Contractor employees to evacuate to the appropriate assembly point as required by the scope of the hazardous exposure(s).
- c. Conduct an employee headcount and immediately advise Rescue Personnel if any Ledgewood Construction or Subcontractor employees are missing.

3. Construction Employees:

- a. Each construction employee shall immediately stop work and leave his/her work area and assemble as directed by Ledgewood Construction Personnel or Subcontractor Foreman when a potential or actual hazardous condition exists.

4. Various Evacuation Routes and Assembly Points:

- a. Various evacuation routes and assembly points, as needed will be developed by Ledgewood Construction Safety Personnel for specific work locations throughout the project area.
- b. Evacuation route sketches, if needed, based on the above information shall be developed by Ledgewood Construction Superintendent.
- c. Evacuation procedures, including changes in evacuation routes and assembly points shall be reviewed at weekly safety meetings and this information will be covered at Subcontractor Toll Box Meetings.

POWDER-ACTUATED TOOLS

Revised: January, 2015

The following procedure shall be followed for the use of Powder-Actuated tools on this project:

1. Only qualified operators shall operate explosive-actuated tools. A qualified operator is one who has:
 - a. Been trained by an authorized instructor and provided with an authorized instructor's card by the tool manufacturer or by an authorized representative of the tool manufacturer.
 - b. Possesses a qualified operator's card supplied by the manufacturer and issued and signed by both the instructor and operator.
2. Each tool shall be provided with the following:
 - a. A lockable container.
 - b. Operator's instruction and service manual.
 - c. Powder load and fastener charts.
 - d. Tool inspection record.
 - e. Service tools and accessories.
3. Tool maintenance and inspection:
 - a. Daily inspection, cleaning and testing shall be performed as recommended by the manufacturer.
 - b. Explosive-actuated tools shall be inspected each day prior to use to check that safety devices are in proper working conditions.
4. Tool Security:
 - a. Explosive-actuated tools and the charges shall be secured at all times to prevent unauthorized possession or use.

- b. Explosive-actuated tools shall not be loaded until just prior to the intended firing time; neither loaded nor empty tools are to be pointed at anyone; hands are to be kept clear of the barrel end.
- c. All spent and any unspent charges shall be placed in containers kept for that purpose and removed from the jobsite on a daily basis. At no time will charges be allowed to remain unattended.
- d. When not being used, powder-actuated tools and charges will be kept under lock and key in a secure container such as a gang box. Only a sufficient number of charges shall be available in the work area to accomplish the planned work for any given day.
- e. Each Subcontractor required to use powder-actuated tools shall advise Ledgewood Construction Superintendent where they are storing their powder-actuated tools and charges. Each Subcontractor will keep an inventory of supplies brought onto the project and charges.

ENTRY PERMIT CONFINED SPACES PROGRAM

Revised: January, 2015

NOTE: This section has also been added to “Subcontractor Responsibilities” (Section #9)

As “entry permit” confined spaces are not located on all jobsites, training shall be given to those individuals specifically assigned to work in same.

Employees required to construct work in a: boiler, cupola, degreaser, furnace, pipeline, pit, pumping station, reaction or process vessel, septic tank, sewage digester, sewer, silo, storage tank, ship’s hold, utility vault, vat or similar type enclosure would be considered working in a confined space. A confined space is any space having any one of the following characteristics.

- Limited openings for entry and exit unfavorable natural ventilation.
- Not designed for continuous worker occupancy.

The purpose of Ledgewood Construction Entry Permit Confined Spaces Program, as outlined below, is to ensure that entrants (employees) are protected from permit space hazards. In this regard, Ledgewood Construction shall undertake the following measures.

RESPONSIBILITIES

Management:

Take deliberate steps once a confined space is identified to protect its employees while performing their respective duties within said spaces. To this end, a Confined Space Entry Permit form has been devised for use in ensuring a safe work environment. No employee is to enter a confined space until such time that an entry permit has been completed by the company’s Superintendent, the Project Foremen or other individual eligible to be in charge of entry, and the entrant has been authorized to enter such confined space.

- Provide training for Superintendent on confined space entry.
- Provide Superintendent with assistance as requested to carry out duties outlined.
- Provide personal protective equipment as required.

General Superintendent:

- Orientates Foreman on Company’s procedures for working in confined spaces. Evaluate, where feasible, confined space hazards and determine their severity.
- Prepare Confined Space Entry Permit, once an entry permit confined space has been identified.
- Provide on-site training for proposed entrants.
- Provide on-site training for proposed attendants.
- Provide on-site training for proposed individuals authorizing or in charge of entry.
-

Employee:

- Advise Foreman of any potential hazards once recognized.
- Participate in on-site training for confined space entry.
- Follow all instructions given on conduct relating to entry permit confined space.

Record Keeping:

1. This Entry Permit Confined Space Program shall be kept on-site at all times, and made available to any company employee.
2. Copies of all Confined Space Entry Permits shall be kept up-dated and on-site at all times, and made available to any company employee.
3. Copies of all Record Keeping documents listed above shall be provided to this Company's office.
4. The Company's office shall maintain records of confined space entry for a period of no less than three (3) years from the date of cancellation of Confined Space Entry Permits.

CONFINED SPACE ENTRY PERMIT

Revised: January, 2015

All blank spaces must be completed prior to entry.

Project Name and Location: _____

Location of Confined Space: _____

Purpose of Entry: _____

Is Hot Work Intended: _____

A. 1. Known Hazards: _____

2. Suspected Hazards: _____

3. Method of Isolating Confined Space: _____

4. Method of Removal and/or Control of Known/Suspected Hazards: _____

5. Method of Verifying Acceptable Environmental Conditions:_____

6. Testing/Monitoring Equipment for Maintaining Acceptable Environmental Conditions During Entry:_____

7. Rescue Services to be Utilized:_____

8. Specific Rescue Measures to be Used:_____

9. Communication Methods Used by Entrants and Attendants:_____

10. Personal Protective Equipment to be Used:_____

B. Date of Entry:_____ Authorized:_____

Duration:_____

Authorized Entrants:

Eligible Attendants:

Individuals Authorized or Charge of Entry:

Superintendent:_____

Project Foreman:_____

Others:_____

Others:_____

Names of Other Contractors Receiving this Information:_____

Name of Others Requesting this Information:_____

Note: This information must be available to employees at all times during entry operations.

Sign below verifying that: All actions and conditions necessary for safe entry into Permit Space have been performed.

Printed Name:_____ Signature:_____

Project Name:_____

Foreman:_____

TRAINING AND DUTIES OF INDIVIDUALS AUTHORIZING OR IN CHARGE OF ENTRY

Revised: January, 2015

The purpose of training “Individuals Authorizing or in Charge of Entry” is not only to ensure that Authorized Entrants, and Attendants, have been made aware of the hazard(s) that could be encountered during confined spaces operations, but also to ensure that all required documentation has been completed and records are being kept as identified in the Entry Permit Confined Spaces Program. To this end, the Superintendent and/or Foreman shall instruct/inform employees on the following:

Individuals authorizing or in charge of entry shall:

- Determine that the Entry Permit contains requisite information before authorizing or allowing entry.
- Determine that the necessary procedures, practices and equipment for safe entry are in effect before allowing entry.
- Determine, at appropriate intervals, that entry operations remain consistent with the terms of the Entry Permit, and that acceptable entry conditions are present.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- Take the necessary measure for concluding an entry operation, such as closing off a permit space and cancelling the permit, once the work authorized by the permit has been completed.
- When necessary, serve as Entrants or Attendants (after receiving proper training).
- When dealing with unauthorized personnel, individuals authorizing or in charge of entry shall take appropriate measures to remove unauthorized personnel who are in or near entry permit spaces.

Individuals authorizing or in charge of entry and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be adhered to and duties to be carried out in ensuring safe entry into confined space, acceptable environmental conditions are maintained during entry, safe exit from confined space, and proper documentation is maintained for work performed under the Entry Permit.

Printed Name of Employee/Individual
Authorizing or in Charge of Entry

Date of Training

Signature of Individual
Authorizing or in Charge of Entry

Printed Name & Title of Person
Giving Instruction

Signature of Instructor

-52.5-

ENTRY PERMIT CONFINED SPACES CHECKLIST

Revised: January, 2015

New Checklist Must be Used Daily

Individual Authorizing or in Charge of Entry:

Printed Name

Signature

Date of Checklist Use:_____

_____ The Entry Permit has been filled out completely.

_____ Training has been given to Authorized Entrants.

_____ Training has been given to Attendants.

_____ Necessary protective equipment is on-hand.

_____ Entry Permit is attached to this Checklist and a copy of Entry Permit has been given to Attendants.

_____ Distributed and collected Attendants records of Authorized Entrants working within confined spaces daily.

_____ All Training Forms are attached to this Checklist.

_____ Company (Ledgewood Construction) copy of this Checklist and all attachments has been turned into the office.

_____ Entry Permit has been cancelled upon completion of work.

Foreman, sign-off above form at the end of each day.

TRAINING AND DUTIES OF AUTHORIZED ENTRANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training "Authorized Entrants" is to ensure employee safety while working within confined spaces on the jobsite. Much of the information needed to provide the proper instruction and give necessary information is outlined on the Confined Spaces Entry Permit. The Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Known hazard(s) which may be faced during entry.
2. Recognition of signs and symptoms of exposure to the hazard(s).
3. Understanding the consequences of exposure to the hazard(s).
4. Understanding the method of maintaining contact with the attendant.
5. Responsibility of notifying attendant when entrant self-initiates evacuation of permit space.
6. Advise of personal protective equipment to be utilized (i.e. retrieval lines, respirators or clothing) needed for safe entry and exit. Protective equipment shall be provided by the company as required. At the time of issuance, the entrant shall be instructed on its care and use.
7. Advise of external barriers needed to protect entrants from external hazards of the proper use of those barriers.
8. Advise entrant of exit procedure (i.e. when attendant orders evacuation, at the end of shift, or when entrant perceives he/she is in danger).
9. Advise entrant of location of Entry Permit, Confined Space Program, Material Safety Data Sheets (MSDS) Program, and inform of their availability for review.

Authorized Entrant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, proper work methods while inside confined space and exit from the confined space.

Printed Name of Employee/Authorize Entrant

Date of Training

Signature of Authorize Entrant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

TRAINING AND DUTIES OF ATTENDANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training “Attendants” is to ensure the safety of Authorized Entrants during confined spaces entry operations. To this end, the Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Attendant is to keep accurate records, at all times, of the number of Authorized Entrants working within a confined space.
2. The Attendant shall be advised of the hazard(s) and given information relative to the recognition of signs and symptoms of exposure.
3. The Attendant shall monitor activities inside and outside the permit space to determine if it is safe for Authorized Entrants to remain in the space.
4. The Attendant shall maintain continuous contact with Authorized Entrants during entry.
5. The Attendant shall ORDER Authorized Entrants to evacuate permit space immediately when:
 - The Attendant observes a condition which is not allowed in the entry permit.
 - The Attendant detects behavioral effects of hazard exposure.
 - The Attendant detects a situation outside the space which could endanger the entrants.
 - The Attendant detects an uncontrolled hazard within the permit space.
 - The Attendant is monitoring entry in more than one permit space and must focus attention to the rescue of Entrants from one of those spaces.
 - The Attendant must leave the work station.
 - The Attendant shall summon rescue and other emergency services as soon as the Attendant determines those Authorized Entrants need to escape from the permit space hazards.
1. The Attendant shall warn unauthorized persons away from the space.
2. The Attendant shall request unauthorized persons to exit immediately if they have entered the permit space.
3. The Attendant shall inform the Authorized Entrants and any other persons designated by the employer (i.e. Superintendent, Foreman, Project Manager, other contractors’ supervisors) if unauthorized persons have entered the permit space.

At no time shall the Attendant enter the confined space to assist in rescue operations of Entrants. The Attendant shall properly use an rescue equipment provided for use and perform any other assigned rescue and emergency duties, without entering the permit space.

TRAINING AND DUTIES OF ATTENDANTS (continued)

Revised: January, 2015

Attendant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, acceptable environmental conditions are maintained during entry, and safe exit from the confined space.

Printed Name of Employee/Attendant

Date of Training

Signature of Attendant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

ATTENDANTS DAILY LOG OF AUTHORIZED ENTRANTS

Revised: January, 2015

Date of Log Use:_____

Printed Name of Attendant

Signature of Attendant

[illegible]

This form must be kept current at all times and turned over to the individual authorizing or in charge of enter at the end of each day.

Note: Complete and fax a copy of this report to main office as soon as possible.

- I. If work in a confined space is anticipated, the services of an Industrial Hygienist will be obtained, in advance, to perform necessary atmospheric testing prior to allowing workers to enter the space.

FALL PROTECTION PROGRAM

Revised: January, 2015

I. Fall Protection Program:

- a. It is the policy of Ledgewood Construction to provide a safe workplace for all employees where fall hazards exist.
- b. It is Ledgewood Construction's position where fall hazards exist to either:
 - 1. Eliminate the hazard.
 - 2. Provide protection against the hazard.

Where elimination of the hazard is not possible, the company will provide Personal Protection Equipment (PPE), a guardrail system, a warning system, proper ladder use or job specific needs to deal with the existing fall hazards on each site.

- c. It is the intent of Ledgewood Construction's fall protection program to follow the standards set forth for fall protection.
- d. Fall protection training by a "competent" person will take place before any employee is placed in a fall hazard situation. The purpose of this training is:
 - 1. To identify the nature of fall protection.
 - 2. To correctly use and set up fall protection equipment.
 - 3. To identify the limitations of this equipment.
 - 4. To understand the correct handling and storage of this equipment.
 - 5. To learn the basic OSHA guidelines/regulations for fall protection in this construction industry.
- e. This fall protection program will be under ongoing review by the Safety Committee to meet the specific needs of each Ledgewood Construction project to better eliminate fall hazards and create a safer workplace for all employees.

2. Fall Protection Plan:

- a. The goal of this plan is to protect all Ledgewood Construction employees who need to work six feet or more above a lower level.
- b. This goal will be met by following the standards of OSHA for fall protection.

c. The Ledgewood Construction plan follows basic fall protection systems as follows:

1. Fall Arrest Systems:

- a. This is an engineered system, all components must work as one and the complete system is only as strong as its weakest part.
- b. Anchor or tie-off points must be capable of supporting 5,000 pounds per person.
- c. Ledgewood Construction requires only full body harnesses belts.
- d. Each employee should be rigged to free fall no more than six feet or before coming into contact with a lower level.
- e. D-rings, harnesses, ropes and self-locking snap-hooks shall be tested to a tensile load of 3,000 pounds.
- f. All equipment will be checked out properly for its intended use.

2. Guardrail System:

- a. The top rail must be 42" above the working level.
- b. This top rail must be secured properly and capable of withstanding a force of at least 200 pounds applied outward or inward upon it.
- c. A mid rail along with the toe board should be installed.
- d. All connection points in the system should be properly secured.

3. Warning Systems:

- a. Warning systems shall be rigged or supported so that the lowest point is no less than 34" and no higher than 39" from a working level.
- b. Stanchions with rope or chain are at the leading edge and around all openings.
- c. The rope or chain has a tensile strength of at least 500 pounds.
- d. Flagged at no more than 6' intervals with a highly visible material.

4. Ladders:

- a. Use the ladder only for its intended purpose.
- b. Foot or secure the ladder whenever possible.
- c. The angle of 75 degrees (1 in 4) should always be followed.
- d. The top of the ladder must extend past the landing area at least 36".
- e. The ladder must be tied off at the landing area.

BLOOD BORNE PATHOGENS EXPOSURE CONTROL PLAN

Revised: January, 2015

In accordance with OSHA blood borne pathogens the following exposure control plan has been developed for Ledgewood Construction.

1. Exposure Determination:

- a. Ledgewood Construction being a General Contractor in the building construction business may have employees exposed to blood or other potentially infectious materials. These employees in general are classified as: supervisors, carpenters and laborers. Their tasks in which exposure may occur is due to flesh injuries typical of the building trades industry.

2. Compliance Methods:

- a. Ledgewood Construction on its jobsites will use universal precautions to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious materials will be considered infectious regardless of the perceived status of the source individual. Exposure Control Kits are provided in each jobsite office trailer.
- b. Latex gloves and any other appropriate PPE will be used for any injury where blood or other potentially infectious materials are dripping and immediate first aid is necessary.
- c. In the event of blood being on floors, tools, etc. a 10% solution of chlorinated bleach will be used for disinfecting and clean-up.
- d. All employees who may have come in contact with blood or potentially infectious material need to thoroughly wash hands or possible infected areas as soon as possible.
- e. Latex gloves and other appropriate PPE will be carefully disposed of and the container sealed immediately as not to expose any other employee to blood or potentially infectious material.
- f. Any clothing exposed to blood or potentially infectious material will be removed as soon as possible and properly discarded in the same way as latex gloves and other appropriate PPE.
- g. Any equipment and/or tools that have blood or any other potentially infectious materials on it that cannot be immediately and appropriately cleaned will be packaged in a plastic bag and sent to the main office for decontamination or disposal procedures.

- h. The Project Manager will be immediately notified of a situation where blood or other potentially infectious materials are present. A list of all employees that may be exposed shall be given to the Project Manager so he/she can take record keeping and procedures initiated in this plan. At this time, the Project Manager will take over control of this plan.

3. Hepatitis B Vaccine:

- a. All employees who have been identified as having exposure to blood or other potentially infectious material will be offered the hepatitis B vaccine at no cost to the employee. This vaccine should be given within (10) ten days of potential exposure. Any employee who declines the vaccine will sign a waiver with Ledgewood Construction's President. If after signing the waiver the employee decides to have the vaccine, this will be provided at no cost to the employee.
- b. Training for all employees will be conducted prior to working and/or exposure to jobsite conditions. This training will include location of latex gloves, bleach and 10% mixture, how to clean up and dispose of blood soiled clothes and latex gloves. These items will be sealed in a plastic bag for proper disposal.

POST-EXPOSURE EVALUATION AND FOLLOW UP

Revised: January, 2015

When an employee incurs an exposure incident, it is reported to the Superintendent for that particular jobsite. The Project Manager will follow up. This follow up will include the following:

1. Documentation of the path of entry for each employee.
2. Identification of the source individual. The blood of the source individual will be tested (after consent) for HIV/HBV infection.
3. Results of testing of the source individual will be made available to the exposed individual(s).
4. The employee will be offered the option of having his/her blood collected for testing.
5. The employee will be offered post exposure prophylactics in accordance with the current recommendations of the U.S. Public Health Services (contact made by the Project Manager).
6. The employee will be given appropriate counseling concerning precautions to be taken during the period after the exposure. The employee will also be given information on what potential illness to be alert for and report any related experiences to the Project Manager.
7. The Project Manager has been designated to make certain that the policy outlined is carried out and recorded to maintain the proper records and the overall safety of the employee(s) who may be potentially exposed.

Training:

The training for all employees will be conducted prior to working and/or exposure to jobsite. The procedures outlined in the plan will be followed.

Recordkeeping:

All records required by OSHA standard will be maintained by the main office.

LEDGEWOOD CONSTRUCTION SUPERINTENDENT'S ACCIDENT REPORT

Revised: January, 2015

NOTE: Complete and fax a copy of this report to the main office as soon as possible.

Superintendent:_____ Today's Date:_____

Project:_____

Name of Injured:_____

Age:_____ Sex: Male / Female Time at Present Job:_____

Company Employed by:_____ Supervisor:_____

Date / Time of Accident:_____ Date Loss Reported:_____

Weather Conditions:_____

Exact Loss Location:_____ Secured for Investigation? Yes / No

Describe Nature of Injury:_____

Injured Transported to Hospital? Yes / No What Hospital?_____

Method of Transportation?_____

Injured Transported Home? Yes / No If Yes, by Whom?_____

Method of Transportation? (specify - Auto, Ambulance) _____

First Aid Given at Scene? Yes / No If Yes, by Whom?_____

Treatment (specify):_____

Has Injured Resumed Work? Yes / No

Date Returned:_____

List any Tools and/or Equipment or Other Evidence Involved with Accident:_____

Type (serial number, make & model):_____

Ownership:_____

User:_____

Tools and/or Equipment or Other Evidence Retained: Yes / No

Describe Accident: (Include loss description, full identification and employee affiliation of a witness, attach all photographs and statements of investigation)_____

Use Open Area for Sketch if needed:

Superintendent's Signature

Date

Distribution: Project Manager, Main Office, Subcontractor

Keeping Our Work Environments Safe

Revised: April, 2020

Ledgewood Construction is fully committed to protecting the health and welfare of our employees, subcontractors, clients and job sites. During this time of emergency, as outlined by state and local government, we are implementing the measures below to be followed by anyone who enters our job sites, effective immediately.

1. All workers to the maximum extent practical, must practice social distancing by maintaining a minimum distance of 6 feet from other individuals or wear face coverings where physical distancing measures are difficult to maintain.
2. All workers should know where the hand washing station is at each job site and utilize regularly.
3. All job site and crew meetings will be held in a place that allows everyone to follow social distancing.
4. All subcontractors must clean their area of usage each day, including any tools or equipment they may be using.
5. Prior to starting a shift, each subcontractor employee will self-certify to their supervisor that they:
 - Have no signs of a fever or a measured temperature above 100.3 degrees, no cough or trouble breathing in last 24 hours.
 - Have not had “close contact” with an individual DIAGNOSED WITH COVID-19. “Close contact” means:
 - Living in the same household as a person who has tested positive for COVID-19.
 - Caring for a person who has tested positive for COVID-19.
 - Being within 6 feet of a person who has tested positive for COVID-19 for 15 minutes or more.
 - Coming in direct contact with secretions from a person that has tested positive for COVID-19, while that person was symptomatic.
 - Have not been asked to self-isolate or quarantine by their Doctor, local public health.
 - Have not traveled outside of the United States in the last 14 days.

Any person exhibiting symptoms or unable to self-certify will be directed to notify their supervisor and the Site Superintendent, leave the work site immediately, seek a replacement for their work and medical attention to complete applicable testing by their health care provider. They will not be able to return to the work site until cleared by a medical professional.

Thank you for agreeing to follow these practices regularly while on our job sites.

(This section is blank)

Revised: January, 2015

FIRE PROTECTION PROGRAM

Revised: May, 2014

The Project Team shall be responsible for the development of a Fire Protection Program to fit the jobsite conditions. The following should be used as guidelines to set up such a program:

1. Review the current OSHA guidelines.
2. Request the Fire Chief to visit the site, acquaint him with the project and make any plans required in preparation for any potential emergency.
3. Locate and identify any existing hydrants in the project area for fire department water supply. Provide clear access to same. Any inoperative hydrants will be covered.
4. Activate any new on-site hydrants and interior fire water risers with hose connections for fire department use as soon as possible. Activate sprinklers as soon as possible.
5. Provide, maintain and conspicuously locate all-purpose ABC type of fire extinguishers on the jobsite. One 2A – 10 lb. ABC extinguishers for every 3,000 SF of construction space or portion thereof (i.e. 5,000 SF requires 2 fire extinguishers).
6. Fire department telephone number shall be posted at all jobsite telephones.
7. “No Smoking” signs shall be posted and enforced as required.
8. Cutting and welding operations should include the following: Floors should be swept free of combustibles within 35 feet of the work area and any flammable liquids should be removed from the area. Wet down the immediate area, where applicable. A fire watch, when necessary, should be available while work is being performed, at lunch time and at least 30 minutes after operation is shut down. Fire extinguishers will be required. The sweeping of floors, hosing down the area, the fire watch and the fire extinguishers all will be provided by the Subcontractor. (Prior to any burning taking place, a permit, if required, must be obtained).
9. Fuel for cutting and burning torches shall be stored in locations and protected as directed by Ledgewood Construction’s Superintendent, in conformance with local fire regulations and OSHA requirements.
10. Emergency evacuation plans shall be developed and implemented as needed. These shall be reviewed at each job meeting and posted in conspicuous places. This will be part of the Emergency Action plan for each site.
11. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within the building except with the express approval of Ledgewood Construction’s Project Superintendent.

12. Bulk storage of volatile liquids shall be outside the building at a location determined by LedgeWood Construction's Project Superintendent and shall be posted as such. Permit for storage, if required, must be obtained by the Subcontractor from the Fire Department. In addition, the Subcontractor who is storing these materials shall furnish the proper type of fire extinguisher to be located within 50 feet of any point on the perimeter of the stored materials. Also, these areas are to be identified with signs restricting access and prohibiting sources of ignition.
13. Daily clean-up of scrap materials, sawdust, rags, oil and grease and other residue of construction operations will not only remove or reduce the fire hazard, but will promote general safety at the same time.
14. Improperly installed and controlled temporary heating devices could result in loss of life and property on construction sites from fire, asphyxiation and explosion. The following safe practices and procedures should be followed:
 - a. Temporary heating devices should not be installed or used by anyone on the job until authorized by the Project Superintendent and cleared with the local Fire Department.
 - b. Use only approved containers for fuel storage.
 - c. Adequate fire extinguishers should be provided (2A – 10 lb. ABC).
 - d. At least a 10-foot clearance should be maintained in any direction from any combustible materials.
 - e. Heating units should be well constructed with a stable base. Fireproof materials should be placed under the base.
 - f. When tarpaulins or canvas coverings are used near heating units, they must be U.L. listed. Fire Resistive Material per local Fire Department shall be used and at least a 10-foot clearance should be maintained. These materials should be securely fastened.
 - g. Heating devices should not be used in confined or unventilated spaces unless properly vented to the outside.
 - h. Kerosene, gasoline, oil or gas fired units should be shut down and cooled prior to refueling or moving them.
 - i. Liquid fueled heating devices should be provided with a manual shut-off system on the fuel line. The valve should be located at a safe distance from the unit.
 - j. All fuel tanks should be properly secured.
 - k. LPG gas cylinders should be stored away from the building out of doors. A cap should be provided to protect the valves on the stored cylinders.

- I. All bulk storage of flammable material listed above shall be reported to the Superintendent for approval.
15. Maintain fire prevention program by checking electrical equipment, use common sense, maintain good housekeeping, provide proper flammable liquid storage, provide proper refueling equipment and procedures, utilize cutting and welding fire watches, etc.
16. Provide security services if needed or required.
17. Provide fire instructions to all personnel:
- a. Install Exit signs.
 - b. Know how to get out. Learn what escape route to take from all work areas.
 - c. If you spot a fire, sound the alarm and get to safety, telling other about the fire as you go.
 - d. Know the location of the fire extinguishers and any other firefighting equipment.
 - e. Learn how to use a fire extinguisher.
 - f. Do not attempt to fight a fire that is too big for you.
 - g. And, if there is a fire, DON'T PANIC, follow your escape plan quickly and calmly.



University of New England

Bishop Street parking lot reconstruction project

Contact list

Ledgewood Construction

1. Mike Taylor
Project Manager
Cell number (207) 272-3592
3. Peter Reynolds
Project Manager
Cell number (207) 749-9358
4. Peter Pelletier
President
Cell number (207) 615-4443

University of New England

1. University of New England Security
(207) 602-2298
2. Steve Duhaime
Associate Director for Campus Planning
(207) 221-4133

Section 2 - Title, Right, or Interest

Doc#: 10603 Bk:29387 Pg: 289

WARRANTY DEED (Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, that **PIKE INDUSTRIES, INC.**, a Delaware corporation with a place of business and mailing address at 58 Main Street, Westbrook, Maine 04092 ("Grantor"), for consideration paid, hereby grants to **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation with a mailing address of 11 Hills Beach Road, Biddeford, Maine 04005 ("Grantee"), with **WARRANTY COVENANTS**, those certain lots or parcels of land, together with any buildings and improvements thereon, situated in Portland, Cumberland County, Maine, being more particularly described on **Exhibit A** attached hereto and incorporated herein by reference (the "Premises").

The following restrictions shall run with the land, shall inure to the benefit of the Grantor, and its successors and assigns, and shall be binding upon the Grantee, and its successors and assigns:

1. The Grantee covenants and agrees that the Premises shall not be used for excavation of earth materials, crushing of rock and other materials, production of hot-mix asphalt or other similar products (e.g., cement, ready mix concrete, etc.), storage of earth materials and/or hot-mix, cement or ready-mix products or the sale (retail or wholesale) and distribution of such materials from the Premises or the use of such material or existing processed material unless such excavation and/or use of such materials is for the benefit of the Grantee on the Premises or on contiguous land in common ownership of the Grantee.
2. In the event of a violation of any or all of this restrictive covenant, the Grantor, in addition to all other remedies available to it, may obtain an injunction against the Grantee issued by a court of competent jurisdiction enjoining such breach and shall be entitled to recover its costs and expenses, including, but not limited to, reasonable attorney's fees in the enforcement or defense of the restrictions or any of them.

Being parcels 2 and 3 in the deed of Oldcastle Materials, Inc. to Pike Industries, Inc. dated March 20, 2002, and recorded in the Cumberland County Registry of Deeds in Book 17835, Page 301.

IN WITNESS WHEREOF, the Grantor has caused this instrument to be signed and sealed this 28th day of February, 2012.

WITNESS:

PIKE INDUSTRIES, INC.

By: _____

Brian J. Donovan

Print/type name: Brian J. Donovan

Its: Authorized Agent

STATE OF MAINE
CUMBERLAND, ss.

February 28, 2012

Then personally appeared the above named Brian J. Donovan, its Authorized Agent, of Pike Industries, Inc. who acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Pike Industries, Inc.

Before me,

Peter J. Van Hemel
~~Notary Public~~ / Maine Attorney-at-Law
Name Printed: Peter J. Van Hemel
My Commission Expires: _____

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EXHIBIT A

TRACT 1

A certain lot or parcel of land in the Morrill's Corner region of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Commencing at a point or stake standing on the old southerly line of the Portland & Rochester Railroad, now the Portland Terminal Company, and at a point where the same intersects with land formerly of Franklin M. Purington,

THENCE South $65 \frac{3}{4}^{\circ}$ West 108 Rods 15 Links, more or less, to land now owned by the City of Portland;

THENCE North $24 \frac{1}{4}^{\circ}$ West 5 Rods 16 Links, more or less, to a stake;

THENCE South $65 \frac{3}{4}^{\circ}$ West 34 Rods 9 Links, more or less, to a stake standing on land owned by said City;

THENCE North 11° West 11 Rods 7 Links, more or less, to a stake, standing on land formerly owned by Hiram Sawyer;

THENCE North $61 \frac{1}{2}^{\circ}$ East 107 Rods, more or less, to line of said location of Portland & Rochester Railroad;

THENCE by the line of said Railroad on its southerly side as aforesaid $83 \frac{1}{4}^{\circ}$ East 38 $\frac{1}{2}$ Rods, more or less, to the place of beginning.

EXCEPTING from the above described premises, the premises conveyed by Adam W. Wilson to City of Portland by deed dated March 25, 1889, and recorded in the Cumberland County Registry of Deeds in Book 556, Page 132; and the premises conveyed by Adam W. Wilson to Boston & Maine Railroad by deed dated April 4, 1907, and recorded in said Registry in Book 803, Page 232, and by deed dated August 5, 1910, and recorded in said Registry in Book 863, Page 137.

TRACT II

Another certain lot or parcel of land situated near Morrill's Corner in that part of Portland that was formerly Deering, in the County of Cumberland and State of Maine, lying adjacent to and lying northwesterly of the above described premises, being bounded and described as follows:

Beginning at the northwesterly corner of land formerly of one Smith, on the southerly side of land formerly of Portland & Rochester Railroad, now the Portland Terminal Company, and running South 62° West 106 Rods to land of Portland Cemetery;

THENCE northwesterly by said Cemetery lot 30 Rods to the Old Kenney lot;

THENCE North 52 1/2° East by said Kenney's lot 49 Rods 2 Links to the Portland Terminal Company railroad land, formerly of the Portland & Rochester Railroad;

THENCE southeasterly by said Portland Terminal Company location 70 Rods to the first mentioned bounds or place of beginning.

EXCEPTING, however, from the above described premises two certain pieces or parcels of land, that first being 200 feet in length by 28 feet in width and lying parallel with the above-mentioned railroad, said parcel being conveyed by F.O.J. Bodge to Boston & Maine Railroad by warranty deed November 20, 1907, and recorded in the Cumberland County Registry of Deeds in Book 817, Page 29; and the second being a strip along a portion of the southeasterly and southwesterly side thereof, being conveyed by Lewis Lumber Co. to Central Maine Power Company by deed dated November 23, 1951, and recorded in said Registry in Book 2067, Page 107.

Both tracts are conveyed subject to the rights acquired for a sewer by the City of Portland by taking dated May 26, 1944, and recorded in the office of the City Clerk of the City of Portland, Maine, in Vol. 66, Page 263.

Also excepting the land described in the deed from Tilcon Minerals, Inc. to the City of Portland dated November 22, 1996, recorded in the Cumberland County Registry of Deeds in Book 12886, Page 212.

The premises are conveyed subject to the following rights and easements:

1. Rights and easements granted by Warren Bros. Roads Co. to Central Maine Power Company by instrument dated June 19, 1952, and recorded in the Cumberland County Registry of Deeds in Book 2097, Page 221.
2. Rights and easements granted by Warren Brothers Roads Company to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 27, 1967, and recorded in the Cumberland County Registry of Deeds in Book 2996, Page 102.
3. Rights and easements granted by Warren Brothers Co. to Portland Water District by instrument dated December 15, 1977, and recorded in the Cumberland County Registry of Deeds in Book 4150, Page 72.
4. Rights and easements granted by Warren Bros., a Div. of Ashland-Warren Inc. to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 31, 1978, and recorded in the Cumberland County Registry of Deeds in Book 4239, Page 326.
5. Rights and easements granted by Tilcon Minerals, Inc. to the City of Portland by deed dated November 22, 1996, and recorded in the Cumberland County Registry of Deeds in Book 12886, Page 214.

6. Rights and easements granted by Lewis Lumber Company to Central Maine Power Company by instrument dated November 23, 1951, and recorded in the Cumberland County Registry of Deeds in Book 2067, Page 106.
7. Rights, easements, and exceptions set forth in deed from Rosa Lewis to Warren Brothers Roads Company dated May 26, 1962, recorded in said Registry of Deeds in Book 2676, Page 74.

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Received
Recorded Register of Deeds
Mar 02, 2012 11:36:47A
Cumberland County
Pamela E. Lovley

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

Under authority of
37-B MRSA 390-C.
Attorney at Law

Commission Expires:

Print Name: Stacy M. Bradbury

Received
Recorded Register of Deeds
Jun 17, 2015 08:54:11A
Cumberland County
Nancy A. Lane

Abstract of Title to the following described land:

A certain lot or parcel of land with the building thereon, situated number 374 Stevens Avenue in that part of said Portland formerly Deering, and being bounded and described as follows:

~~Beginning at a stone post standing on the northerly side of College~~
Street, formerly Seminary Street, one hundred and fifty-eight (158) feet more or less from the northwesterly corner of said College Street and Stevens Avenue, and running north, twenty-four and one-fourth ($24 \frac{1}{4}$) degrees east, one hundred and forty-eight and one-half ($148 \frac{1}{2}$) feet to land now or late of Captain Sargent; thence south, seventy (70) degrees east by said Sargent's land one hundred and forty-one and one half ($141 \frac{1}{2}$) feet more or less to said Stevens Avenue; thence southerly by said Stevens Avenue seventy-four (74) feet to land now or late of Arabella W. Roberts; thence westerly by land now or late of said Roberts in a line parallel with said College Street one hundred (100) feet; thence southerly again by land now or late of said Roberts in a line parallel with said Stevens Avenue ninety (90) feet to said College Street; and thence westerly by said College Street to point of beginning; be any or all of said measurements more or less, or however otherwise bounded, measured or described.

Being the same premises conveyed by Lydia J. Snow to Thalia L. Clement, formerly Thalia L. Scamman, by warranty deed dated April 22, 1902, and recorded in Cumberland County Registry of Deeds, Book 716, Page 326.

bounded, measured or described.

Being the same premises conveyed by Lydia J. Snow to Thalia L. Clement, formerly Thalia L. Scamman, by warranty deed dated April 22, 1902, and recorded in Cumberland County Registry of Deeds, Book 716, Page 326.

Excepting that certain lot or parcel of land conveyed by the said Thalia L. Clement to Victor Brewster by warranty deed dated October 19, 1908, and recorded in Cumberland County Registry of Deeds, Book 831, Page 38.

RECORD OF DEEDS TO THE PORTLAND SAVINGS BANK

377-518.

(Elizur)

Eleazer B. Forbes to Joseph C. Snow;

Warranty; July 29, 1870;

Tract embracing lot described.

478-428.

Joseph C. Snow to Lydia J. Snow, wife;

Warranty; December 13, 1880;

Same tract as 377-518.

716-326.

Lydia J. Snow to Thalia L. Scamman;

Warranty, April 22, 1902.

721-20.

Thalia L. Scamman to Portland Savings Bank;

Mortgage; September 30, 1902; Discharged on margin

Mar. 2, 1905.

Thalia L. Clement to Portland Savings Bank, June 10, 1910.

Mortgage;

Discharged on margin September 22, 1914.

At the present time there are no encumbrances of record.

Dated at Portland, Maine, this fifth day of April,

A.D. 1919.

Quicker Quicker

Quit-Claim Deed

CORPORATION — WITH COVENANT

FROM

ALL SOULS UNIVERSALIST CHURCH OF
PORTLAND, MAINE
(ALL SOULS CHURCH PARISH)

TO

WESTBROOK SEMINARY AND JUNIOR COLLEGE

Dated February 9, 1940

State of Maine.

Cumberland ME Registry of Deeds

Received FEB 9 1940

at 2 H. 36, C. M., and

recorded in Book 1599 Page 276


REGISTER

FROM THE OFFICE OF

Bradley, Linnell, Nulty & Brown
192 Middle Street
Portland, Maine

MARTIN'S, PORTLAND, MAINE — LAW OFFICE SUPPLIES AND EQUIPMENT

MARTIN'S FORM NO. 9

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it, the said Westbrook Seminary and Junior College, its successors

~~And~~ and Assigns forever.

And the said Grantor Corporation does warrant with the said Westbrook Seminary and Junior College, its successors

~~And~~ and Assigns, that it will warrant and forever defend the premises to it, the said Grantee, its successors

~~And~~ and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said All Souls Universalist Church of Portland, Maine (All Souls Church Parish)

has caused this instrument to be sealed with its ~~corporate~~ seal

and signed in its corporate name by *Herbert B. Seal, President of its Board of Trustees,*

thereunto duly authorized, this *9th* day of February

in the year one thousand nine hundred and forty.

Signed, Sealed and Delivered
in presence of

E. F. Perkins

ALL SOULS UNIVERSALIST CHURCH OF
PORTLAND, MAINE
(ALL SOULS CHURCH PARISH)

By *Herbert B. Seal*
Its President of
Board of Trustees.

~~CORPORATE SEAL~~

State of Maine.

CUMBERLAND,

February 9, 1940.

Personally appeared the above named *Herbert B. Seal, President*
of the Board of Trustees of said Grantor Corporation
as aforesaid, and acknowledged the foregoing instrument to be his
free act and deed in his said capacity, and the free act and deed of
said corporation.



Before me,

Elliott P. Perkins
Justice of the Peace

W. L. Brown - 10/1/10
 10/1/10 - 10/1/10
 10/1/10 - 10/1/10
 10/1/10 - 10/1/10

Warranty Deed

FROM

WALTER G. WHITMAN

TO

WESTBROOK SEMINARY AND JUNIOR COLLEGE

Dated _____, 1940

State of Maine

Cumberland ss. Registry of Deeds

Received MAR 28 1940

at 4 H. 55 M. P. M., and

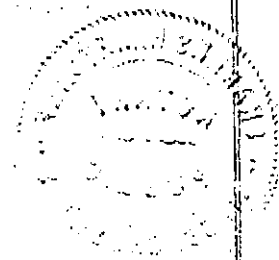
recorded in Book 1603 Page 98

Attest:
Charles C. Carville
 Register.

FROM THE OFFICE OF

Bradley, Linnell, Nulty & Brown
 192 Middle Street
 Portland, Maine

MARTIN'S PORTLAND, MAINE - OFFICE FURNITURE AND SPECIALS
 TYPEWRITERS - ADDING MACHINES - FILING CABINETS - ETC - ETC
 MARTIN'S FORM NO. 1 - STANDARD REGISTRY FORM



Indeke

Know all Men by these Presents

That ALL SOULS UNIVERSALIST CHURCH OF PORTLAND, MAINE, a religious society duly organized under the laws of the State of Maine and located at Portland, in the County of Cumberland and State of Maine, formerly known as and called ALL SOULS CHURCH PARISH,
~~a corporation organized and existing under the laws of the State~~

~~of~~

~~xxxxxxxxxxxx~~

~~xxxxxxxxxxxx~~

~~xxxxxxxxxxxx~~

in consideration of one dollar and other valuable consideration

paid by WESTBROOK SEMINARY AND JUNIOR COLLEGE, a corporation organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof it does hereby acknowledge, does hereby remise,
 release, bargain, sell and convey, and forever quit-claim unto the said

Westbrook Seminary and Junior College, its successors

~~back~~ and assigns forever,

the following described premises situated in said Portland:

1. A certain lot or parcel of land situated in said Portland and bounded and described as follows: Beginning at an iron stake at the northwesterly corner of the lot of land conveyed by Ella Louise Fernald to Susie Whitman by deed dated May 11, 1908 and recorded in Cumberland County Registry of Deeds in Book 826, Page 72; thence by land conveyed to said Whitman as aforesaid and by land conveyed to said Whitman by Cordelia S. Pierce by deed dated August 3, 1892 and recorded in said Registry of Deeds, Book 593, Page 256, on a course of South sixty-four degrees forty-two minutes East (S. 64° 42' E.) two hundred thirty-three (233) feet to an iron stake; thence by other land of said Grantor on a course of North twenty-one degrees fifty-six minutes East (N. 21° 56' E.) sixty-eight and fifty-five hundredths (68.55) feet to the Southeasterly corner of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to other land of said Grantee; thence by land of said Grantee on a course of South thirty-one degrees forty-five minutes West (S. 31° 45' W.) sixty-eight and one tenth (68.1) feet to the point of beginning.

Said above described lot is subject to the life lease to Ella L. Perry as granted to her by All Souls Church Parish by lease dated October 17, 1924 and recorded in said Registry in Book 1204, Page 65.

2. A certain other lot or parcel of land in said Portland was devised and conveyed to said Cordelia S. Pierce by her last will and testament under the name of Society of All Souls Church by her last will and testament.

Westbrook Seminary and Junior College, its successors

hereby and assigns forever,

the following described premises situated in said Portland:

1. A certain lot or parcel of land situated in said Portland and bounded and described as follows: Beginning at an iron stake at the northwesterly corner of the lot of land conveyed by Ella Louise Fernald to Susie Whitman by deed dated May 11, 1908 and recorded in Cumberland County Registry of Deeds in Book 826, Page 72; thence by land conveyed to said Whitman as aforesaid and by land conveyed to said Whitman by Cordelia S. Pierce by deed dated August 3, 1892 and recorded in said Registry of Deeds, Book 593, Page 236, on a course of South sixty-four degrees forty-two minutes East (S. 64° 42' E.) two hundred thirty-three (233) feet to an iron stake; thence by other land of said Grantor on a course of North twenty-one degrees fifty-six minutes East (N. 21° 56' E.) sixty-eight and fifty-five hundredths (68.55) feet to the Southeasterly corner of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to other land of said Grantee; thence by land of said Grantee on a course of South thirty-one degrees forty-five minutes West (S. 31° 45' W.) sixty-eight and one tenth (68.1) feet to the point of beginning.

Said above described lot is subject to the life lease to Ella L. Perry as granted to her by All Souls Church Parish by lease dated October 17, 1924 and recorded in said Registry in Book 1204, Page 86.

2. A certain other lot or parcel of land in said Portland and bounded and described as follows: Beginning at a stake on the northerly line of the lot of land which Cordelia S. Pierce devised to All Souls Universalist Church of Portland, Maine under the name of Society of All Souls Church by her last will and testament, an abstract of which is recorded in Cumberland County Registry of Deeds in Book 757, Page 136, said stake being distant one hundred forty-five (145) feet westerly of the westerly line of Stevens Avenue as established by deed from Westbrook Seminary to the City of Portland dated May 29, 1917 and recorded in said Registry in Book 1086, Page 449; thence by other land of said Grantor on a course of South twenty-one degrees fifty-six minutes West (S. 21° 56' W.) sixty-eight and fifty-five hundredths (68.55) feet to the northerly line of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to land of said Grantee; thence by land of said Grantee on a course of North thirty-one degrees forty-five minutes East (N. 31° 45' E.) sixty-eight and one tenth (68.1) feet to a stake; thence by land of said Grantee on a course of South sixty-five degrees eight minutes East (S. 65° 08' E.) two hundred nine and sixty-four hundredths (209.64) feet to the point of beginning.

Said aforementioned courses are magnetic and of the date of 1935.

Being a part of the property devised to All Souls Universalist Church of Portland, Maine under the name of Society of All Souls Church by the last will and testament of Cordelia S. Pierce, an abstract thereof being recorded in said Registry of Deeds in Book 757, Page 136.

On ~~Now~~ and in ~~Full~~ the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Westbrook Seminary and Junior College, its successors ~~heirs~~ and assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its ^{successors} ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances; except as aforesaid;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will ~~Warrant and Bind~~ the same to the said Grantee, its ^{successors} ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons except as aforesaid.

In ~~Witness Whereof~~. I, the said Walter G. Whitman,

and I, Grace B. Whitman,

wife of the said

Walter G. Whitman,

Joining in this deed as Grantor, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hands and seals this 26th day of March in the year of our Lord one thousand nine hundred and forty.

Signed, Sealed and Delivered
in presence of

Sumner Y. Wheeler



Walter G. Whitman
Grace B. Whitman

premises, have not come
day of *march*

in the year of our Lord one thousand nine

hundred and forty.

Signed, Sealed and Delivered
in presence of

Sumner Y. Wheeler



Walter S. Whitman

Grace B. Whitman

COMMONWEALTH OF MASSACHUSETTS,
~~Essex, ss.~~

Essex,

ss.

march 26, 1940.

Personally appeared the above named

Walter G. Whitman

and acknowledged

the foregoing instrument to be his

free act and deed.

Before me,

Charles A. Metcalf

Justice of the Peace
Notary Public

My commission expires Apr. 28, 1940

0000

00000

KNOW ALL MEN BY THESE PRESENTS, That the CITY OF PORTLAND, a body politic⁵ and corporate located in the County of Cumberland and State of Maine, in consideration of One Dollar (\$1.00) and other good and valuable considerations, paid by Westbrook College, a corporation organized and existing under the laws of the State of Maine and located at 716 Stevens Avenue in said Portland in said County and State, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said Westbrook College, its successors and assigns forever, certain real estate located in said Portland, lying Westerly of College Street and Southerly of Bishop Street, bounded and described as follows:

Beginning at a point on the Northerly line of the land of Portland Railroad Company where the same intersects with land hereby conveyed and land formerly of George H. Smardon, commonly known as the Smardon Gravel Pit, formerly Read's Gravel Pit; thence from said point North 19° 30' East 28.68 rods; thence North 60° West Seven and thirty-two hundredths (7.32) rods to a point; thence South 74° 45' West Thirty-six and sixty-four hundredths (36.64) rods to a point; thence North 5° West Two and fifty-six hundredths (2.56) rods; thence North 30° West Twenty-four and four tenths (24.4) rods; thence South 65° West Forty-seven and twelve hundredths (47.12) rods to center of ditch; thence up the center of said ditch towards what is known as pasture Two Hundred Ninety-eight (298) feet; thence in a straight line to a point in line of Evergreen Cemetery indicated by a spruce stump, said stump being at the intersection between land of said Cemetery and land conveyed by Luther B. Roberts to the said City of Portland; thence from said stump North 80° 21' East Three Hundred Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North 76° 8' East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South 12° 52' East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North 76° 8' East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch

Two Hundred Ninety-eight (298) feet; thence in a straight line to a point in line of Evergreen Cemetery indicated by a stump; said stump being on the intersection of the land of said Cemetery and land conveyed by Luther B. Roberts to the said City of Portland; thence from said stump North $80^{\circ} 21'$ East Three Hundred Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North $76^{\circ} 8'$ East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South $12^{\circ} 52'$ East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North $76^{\circ} 8'$ East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch between the hereinabove described premises and the land hereby conveyed and in line of land now or formerly owned by Adam Wilson and running Southerly by land of said Wilson to the Westerly corner of land of Evergreen Cemetery; thence South Twenty-four (24°) degrees East by land of said Cemetery One hundred and seventy-five (175) feet to a point; thence by land formerly of Dennis F. Gulliver, and being the premises hereinabove described, in a straight line to a point in the center of said ditch; said point being Two Hundred Ninety-eight (298) feet from the point of beginning; thence down the center of said ditch to the point of beginning.

256

- 2 -

Excepting and reserving from the above described premises that portion thereof conveyed by the Grantor to Central Maine Power Company by deed dated February 26, 1967, recorded in said Registry of Deeds in Book 2989, Page 13.

This conveyance is made subject to the right-of-way or easement granted by the Grantor to Central Maine Power Company by deed dated December 13, 1951, recorded in said Registry of Deeds in Book 2055, Page 463.

Reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon a strip of land fifty (50) feet in width lying equally on either side of the storm drain and upon a strip of land fifty (50) feet in width lying equally on either side of the brook presently located on the premises herein conveyed and the right perpetually to maintain, repair, rebuild, relocate, or remove said storm drain and brook with all necessary fixtures and appurtenances within said strips of land, granting to the Grantee, its successors and assigns, the use and enjoyment of said strips of land for such purposes only as will in no way interfere with the perpetual use thereof by the Grantor, its successors and assigns, for the purposes above mentioned, except that no buildings or structures may be erected within said strips of land. Also reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon the premises herein conveyed for the purpose of access and egress by itself, its servants and/or agents to and from said strips of land.

Being the same premises conveyed to the Grantor by deed of James Gulliver, Administrator, d.b.n.c.t.a., of the Estate of Stephen Gulliver by deed dated August 23, 1935, recorded in said Registry of Deeds in Book 1476, Page 441.

Also a certain lot of land lying in the rear of College Street, in the City of Portland, bounded and described as follows, to wit:

Beginning at a point on the Northerly side line of College Street and at the Westerly corner of land belonging to Francis L. Stone; thence North 25° 22' east by land of said Stone eighty-seven and nineteen one hundredths (87.19) feet to land of the Portland Railroad Company; thence North 62° 26' west by land of said Portland Railroad Company four hundred and thirty-one and ninety three one hundredths (431.93) feet

Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North $76^{\circ} 8'$ East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South $12^{\circ} 52'$ East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North $76^{\circ} 8'$ East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch between the hereinabove described premises and the land hereby conveyed and in line of land now or formerly owned by Adam Wilson and running Southerly by land of said Wilson to the Westerly corner of land of Evergreen Cemetery; thence South Twenty-four (24°) degrees East by land of said Cemetery One hundred and seventy-five (175) feet to a point; thence by land formerly of Dennis F. Gulliver, and being the premises hereinabove described, in a straight line to a point in the center of said ditch; said point being Two Hundred Ninety-eight (298) feet from the point of beginning; thence down the center of said ditch to the point of beginning.

Section 3 Financial Capacity



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

September 14, 2023

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 as well as the Bishop Street Connector Road.

From 2018 to 2023, UNE has experienced a total positive change in net assets of \$197.2 million. These surpluses have improved upon the University's liquidity position and overall financial capacity. Total net assets during the same period increased from \$320.5 million to \$517.7 million. This demonstrates UNE's continued commitment to sound management practices and financial sustainability.

To date, UNE has raised over \$39.4 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 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 and cash flow projections provide further confirmation that the University can readily afford the construction and future direct and indirect operating costs of the proposed project.

Taking into consideration the funds raised, \$50 million of debt financing secured, and financial strength of the University, management is confident it has sufficient resources to complete the project.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jim Irwin", is written over a light blue horizontal line.

Jim Irwin
Senior Vice President for Finance and Administration
University of New England

Section 4 Technical Ability

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

Construction Manager

Ledgewood
27 Main St
South Portland, ME 04106

Section 5 Noise

Given the location and use of the connector drive, and the fact that it is an upgrade to an existing facility, there will be no noise impacts.

Section 6 Visual Quality and Scenice Character

The project generally follows the alignment of an existing drive. The short section where the new alignment will be created is undeveloped and industrial in nature. Therefore, there will be no impact on visual quality or scenic character.

Section 7 Wildlife and Fisheries

The project generally follows the alignment of an existing drive. An existing failing culvert will be replaced and installed with an earthen bottom per current standards. The attached letter has been sent to the Maine Department of Inland Fisheries and Wildlife.

Site Design Associates

Consulting Engineering and Land Planning

September 20, 2023

Mr. John Perry
Environmental Review Coordinator
Maine Department of Inland Fisheries and Wildlife
353 Water Street, 41 SHS
Augusta, Maine 04333-0041

**RE: Connector Drive Reconstruction
University of New England
83 College Street
Portland, Maine**

Dear Mr. Perry:

On behalf of our client, University of New England (UNE), we are assisting with the preparation of a Maine Department of Environmental Protection Site Location of Development Act Minor Amendment application. The application is for reconstruction of an existing connector drive on UNE's Portland campus.

The goals of the reconstruction project include increase safety through the installation of sidewalks, call boxes and cameras, widening of the existing drive to enhance circulation and improve safety, and installation of modern and ordinance compliant lighting.

This letter and the enclosed location map serve as a means to notify you of the project and give you an opportunity to determine whether the proposed development would affect Endangered, Threatened, or Special Concern species or designated Essential or Significant Wildlife or Fisheries Habitats located in the vicinity of the site shown on the attached location map.

If you have any questions, please do not hesitate to contact me at tsaucier@sitedesignassociates.biz or 207-449-4275.

Thank you for your assistance and the generosity of your time to review this project.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

Enclosure

83 COLLEGE STREET



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.25 Miles
1 inch = 0.28 miles

Date: 8/30/2022
Time: 10:03:31 AM

Section 8 Historic Sites

There are no known historic or archaeological sites proximate to the connector drive. The attached letter has been forwarded to the Maine Historic Preservation Commission for confirmation.

Site Design Associates
Consulting Engineering and Land Planning

September 21, 2023

Mr. Kirk F. Mohny, SHPO
Maine Historical Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

RE: University of New England
Proposed connector Drive Improvements
83 College Street
Portland, Maine

On behalf of our client, University of New England (UNE), we are assisting with the preparation of Maine Department of Environmental Protection Natural Resources Protection Act and U.S. Army Corps of Engineers Permit applications. The applications are to improve an existing connector drive on UNE's Portland campus.

This letter and the enclosed location map serve as a means to notify you of the project and give you an opportunity to determine whether the proposed development would affect properties of religious and/or cultural significance. We request you research your data base to determine the presence of any sites in the area of historic architecture or archaeological significance, as defined by the National Historic Preservation Act of 1966.

Thank you for your assistance and the generosity of your time to review this project.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

Enclosure

83 COLLEGE STREET



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.25
Miles
1 inch = 0.28 miles

Section 9 Unusual Natural Areas

Based on the attached mapping from the Maine Natural Areas Program, there are no high value plant and animal habitats in the vicinity of the project. The reconstruction will generally follow the alignment of the existing drive.

HIGH VALUE PLANT AND ANIMAL HABITATS



Section 10 Buffers

There are no buffers proposed.

Section 11 Soils

See the soils information included in the stormwater management report in section 12.

STORMWATER MANAGEMENT REPORT

UNE CONNECTOR DRIVE

83 College Street, Portland, Maine

September 22, 2023

Introduction

Site Design Associates (SDA) was retained to assist the University of New England (UNE) (Applicant) in the design and permitting for the reconstruction of the Connector Drive between the UNE Intermodal Transportation Facility (ITF) (currently under recently approved reconstruction) and the Harold and Bibby Alfond Center for Health Sciences facility (CFHS) (currently under previously approved construction) at the UNE campus in Portland, Maine. The spur from the Connector Drive to College Street is also being reconstructed. The widening of the drive itself will result in 25,095 square feet of additional impervious area and a reduction of developed area by 4,707 square feet. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the Connector Drive results in 8.9 acres of redeveloped area with a net reduction of 73,150 square feet of impervious area and a net reduction of 48,182 square feet of developed area.

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 Appendix A and Appendix B of this report, respectively.

Pre-Development Conditions

The existing Connector Drive currently runs between Bishop Street and College Street. The paved drive varies in width, but averages approximately 20 feet wide with varying width grassed shoulders on each side. Minor portions of the redevelopment area (primarily at the new tie-in points at either end) are currently undeveloped and forested. Multiple wetlands are located along

both sides of the existing drive. Once corroded 36-inch CMP stream crossing culvert is located approximately in the middle of the existing connector drive. 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 Scantic silt loam (Sn) (HSG D), Buxton silt loam (Bu) (HSG C/D), and Windsor loamy sand (Wm) (HSG A). 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 (West), D1.1 Pre-development Drainage Plan (East), D2.0 Post-development Drainage Plan (West) and D2.1 Post-development Drainage Plan (East) in Appendix F of this report.

Properly modeling the stormwater conditions for the Connector Drive reconstruction project require including portions of the previously approved predevelopment stormwater models from the CFHS project (subcatchments 4.1 – 4.4) and the ITF reconstruction project (subcatchments 7.0, 7.1, and 8.0). Generally, stormwater from the west side of the campus flows overland and into the large wetland east of the connector drive and then under the connector drive through the 36-inch CMP culvert, where it then continues to flow to the west through the wetland/stream complex and offsite at analysis point AP8. Stormwater from the west side of the campus flows directly into the wetland/stream complex west of the connector drive and offsite at analysis point AP8.

Stormwater peak runoff flow rates from the site for the 2, 10, and 25-year storm events were analyzed at analysis point AP8 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 (West) and D1.1 – Pre Development Drainage Plan (East) are included in Appendix F.

Post-Development Conditions

The proposed project includes the reconstruction and widening of the existing connector drive. The reconstructed drive will include a 24-foot wide paved drive with a curb and sidewalk on the west side. The reconstructed drive will generally follow the same path as the existing drive, except at the ends where it will connect directly to the ITF parking lot on the northwesterly end and directly to the CFHS facility on the southeasterly end. The spur that ties into College Street will also be reconstructed with a curb and a sidewalk on the west side.

The reconstruction and widening of the drive itself will result in 25,095 square feet of additional impervious area. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the drive results in 8.9 acres of redeveloped area with a net reduction of 73,150 square feet of impervious area.

Stormwater will generally be collected in multiple catch basin and storm drain systems along the westerly curbed side of the drive. Stormwater from the east side will drain into a roadside ditch. Multiple culverts will be installed to allow water to cross under the drive. The existing corroded

36-inch CMP stream crossing culvert will be replaced with a 36-inch HDPE culvert with a buried invert.

Portions of the northwesterly and southeasterly ends of the connector drive will be collected in catch basin systems and directed to soil filters SF1 and SF3, which are currently being constructed as part of the Center of Health Sciences and ITF reconstruction projects, respectively. The soil filters were designed with additional capacity to treat the additional runoff from the reconstructed Connector Drive.

Post-development stormwater peak runoff flow rates for the 2, 10, and 25-year storm events at the analysis point are summarized in Table 1 in the Stormwater Quantity section of this report

Stormwater Quantity

Properly modeling the stormwater conditions for the Connector Drive reconstruction project require including portions of the previously approved post development stormwater models from the CFHS project (series 4 subcatchments) and the ITF reconstruction project (series 8 subcatchments).

The overall stormwater runoff volume from the campus is significantly reduced due to the reduction of 73,150 square feet of impervious area associated with the Connector Drive and ITF reconstruction projects and the additional reduction of 43,107 square feet from the CFHS. The total reduction of impervious area on campus results in 2.67 acres. Additional stormwater detention is provided within the four grassed underdrained soil filters (SF1-SF4) that were approved as part of the ITF reconstruction and CFHS projects.

Stormwater runoff from the ends of the Connector Drive are directed to soil filters SF1 and SF3, which were designed with additional capacity to handle the flow from the contributing areas of the reconstructed connector drive.

Stormwater runoff peak flow rates for the 2, 10, and 25-year storm events were analyzed at the 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 the analysis point.

Table 1			
Pre and Post Development Peak Runoff Rates (cfs)			
Storm Frequency	2-Year	10-Year	25-Year
AP8			
Pre-Development	25.5	42.1	56.0
Post-Development	14.4	35.9	51.6

As shown in Table 1, the peak runoff rate at the analysis point under the post-development conditions are less than 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.

Redevelopment and Stormwater Quality

The reconstruction and widening of the drive itself will result in 25,095 square feet of additional impervious area. However, the proposed project is considered an expansion of the redevelopment of the ITF because the drive is and always has been integral to the operation of the ITF. Together with the previously approved ITF reconstruction and reduction of impervious area, the overall project including the drive results in 8.9 acres of redeveloped area. Therefore, the City of Portland Redevelopment Standard is applicable to this project, which required treatment of 50% of the redeveloped impervious area. The Maine DEP SLODA redevelopment standard is also applicable to this project, which requires treatment of 50% of the redeveloped developed area.

The existing impervious area within the redevelopment window is 293,873 square feet. The proposed impervious area within the redevelopment window is 220,723 square feet, which results in a reduction of 73,150 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.

The existing developed area within the redevelopment window is 342,597 square feet. The proposed developed area within the redevelopment window is 294,415 square feet, which results in a reduction of 48,182 square feet of developed area in the redeveloped condition. 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. It is assumed that a 2-foot wide grassed shoulder will be maintained beyond the edge of the drive and sidewalk and the remaining ditches and slopes will be returned to a meadow conditions and mowed not more than twice per year and considered undeveloped per Maine DEP Chapter 500 rules. Therefore, the total redeveloped developed area at the completion of the project will be 6.8± acres. The total impervious area will also be significantly reduced, therefore, the Ranked Impact Change (RIC) from the pre to post development condition is -0.8, 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. The Maine DEP also requires treatment of 50% of the overall redeveloped developed area for projects that trigger a SLODA permit. 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 (SF3 and SF4) are being constructed to provide stormwater treatment at the site as part of the previously approved ITF project. Runoff from a small portion of the northwesterly end of the Connector Drive will be directed to SF3. Two grassed underdrained soil filters are being constructed as part of the previously approved CFHS project (SF1 and SF2). A portion of the southeasterly end of the Connector Drive will be directed to soil filter SF1. Soil filters SF1 and SF3 were designed with additional capacity to treat the contributing runoff from

the Connector Drive. 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 111,315 square feet of impervious area, which results in treatment of 50.4% of the redeveloped impervious area associated with the ITF/Connector Drive project. The proposed stormwater management plan will collect and treat stormwater runoff from 155,184 square feet of developed area, which results in treatment of 52.7% of the redeveloped developed area associated with the ITF/Connector Drive project. Stormwater treatment calculations are summarized below in Table 2.

Table 2 Water Quality Calculations													
	Center for Health Sciences		Intermodal Transportation Facility and Connector Drive										
Subcatchment Area	Impervious Area (SF)	Landscaped Area (SF)	Impervious Area (Intermodal Trans. Facility) (SF)	Impervious Area (Connector Drive) (SF)	Landscaped Area (SF)	Developed Area (SF)	Filter Area Required ¹ (SF)	Filter Area Provided (SF)	Water Quality Volume Required ² (CF)	Water Quality Volume Provided (CF)	Sediment Forebay Volume required ³ (CF)	Sediment Forebay Volume Provided (CF)	BMP
TREATED AREAS													
4.3	37,812	21,557	0	7,405	440	7,845	2,701	3092	4,479	5,951	58	61	Soil Filter (SF1)
8.1			17,932	215	4,661	22,808	3,166	3,177	5,249	5,393	63	81	Soil Filter (SF3)
8.2			15,948	2,061	12,948	30,957							
8.3			15,232		2,355	17,587							
8.4			0		9,852	9,852	2,898	3,128	4,809	5,486	67	203	Soil Filter (SF4)
8.5			28,262		3,314	31,576							
8.6			14,522		735	15,257							
8.7			9,738		0	9,738							
8.8			0		9,564	9,564							
TOTAL TREATED			111,315		43,429	155,184							
TOTAL REDEVELOPED IMPERVIOUS AND DEVELOPED AREA			220,723			294,416							
PERCENT REDEVELOPED IMPERVIOUS & DEVELOPED AREA TREATED			50.4%			52.7%							
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.													

Urban Impaired Stream Standard

The project is located within the Capisic Brook Urban Impaired Stream (UIS) watershed, as identified by the Maine DEP. Previous projects and impervious area reductions on campus resulted in 7.30 banked UIS watershed credits to be applied to future projects (see previously approved ITF stormwater report). Since the Connector Drive project, by itself, results in a net increase of 25,095 square feet of impervious area from the previously approved ITF project, some of the banked UIS credits will be used to offset the development. The total landscaped area resulting from the Connector Drive project will be reduced, so no credit is required for the landscaped area associated with the Connector Drive.

Table 3 below summarizes the UIS mitigation credits used for this project based on the increase in impervious area per Maine DEP Chapter 501 standards.

Table 3 Urban Impaired Stream Compensation Credits Required				
Development Activity	Area (SF)	Area (AC)	Credit Per Acre	Credit Required
Creation of Non-Roof Impervious Area	25,095	0.58	0.5	0.29
Creation of Landscaped Area	0	0.00	0.5	0.00
Total Mitigation Credit Required				0.29
Total Campus UIS Mitigation Credit Achieved and Previously Banked for Future Development				7.30
Total Campus UIS Mitigation Credit Remaining and Banked for Future Development				7.01

As indicated in Table 3 above, the Connector Drive project requires 0.29 UIS mitigation credits. The table also shows the 7.30 previously achieved UIS credits from the recently permitted CFHS and ITF projects. The remaining total campus credit of 7.01 will be banked for potential future development projects onsite.

Erosion Control

BMPs such as stabilized construction entrances, 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 E. The plan includes a draft of a Stormwater Drainage System Maintenance Agreement, to be finalized and recorded as a condition of approval.

Conclusions

The HydroCAD calculations show that the peak runoff rates at the analysis points under post-development conditions are estimated to be 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. Previously approved stormwater treatment BMPs have been designed to treat stormwater runoff from more than 50% of the redeveloped impervious and more than 50% of the redeveloped developed area in compliance with the City of Portland ordinance and the Maine DEP Chapter 500 standards. 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 & Draindown Calculations

Appendix D: USDA NRCS Soil Map

Appendix E: Inspection & Maintenance Plan & City of Portland Maintenance Agreement

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

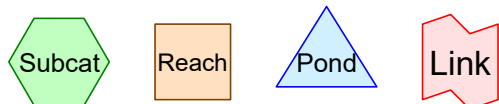
R2.0 – Post Development Pollutant Loading Plan

D1.0 – Pre Development Drainage Plan

D2.0 – Post Development Drainage Plan

D3.0 – Stormwater Treatment Plan

Appendix A:
Pre-Development HydroCAD Calculations



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Pre-Development ROAD

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

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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

Subcatchment 4.1:	Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>0.59" Flow Length=520' Tc=13.8 min CN=66 Runoff=1.50 cfs 0.175 af
Subcatchment 4.2:	Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>2.07" Tc=5.0 min CN=90 Runoff=8.84 cfs 0.613 af
Subcatchment 4.3:	Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>1.14" Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=0.90 cfs 0.076 af
Subcatchment 4.4:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>2.87" Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 af
Subcatchment 7.0:	Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>1.07" Flow Length=270' Tc=49.4 min CN=76 Runoff=4.07 cfs 0.679 af
Subcatchment 7.1:	Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>1.99" Tc=5.0 min CN=89 Runoff=1.27 cfs 0.088 af
Subcatchment 7.2:	Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>1.18" Flow Length=330' Tc=50.7 min CN=78 Runoff=6.37 cfs 1.063 af
Subcatchment 7.3:	Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>0.96" Flow Length=275' Tc=39.9 min CN=74 Runoff=0.96 cfs 0.146 af
Subcatchment 7.4:	Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>0.37" Flow Length=235' Tc=29.3 min CN=60 Runoff=0.44 cfs 0.087 af
Subcatchment 8.0:	Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>2.55" Tc=5.0 min CN=95 Runoff=22.54 cfs 1.636 af
Reach R1:	Avg. Flow Depth=0.24' Max Vel=2.90 fps Inflow=1.78 cfs 0.137 af n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=1.72 cfs 0.137 af
Reach R4.0: Stream	Avg. Flow Depth=0.53' Max Vel=4.64 fps Inflow=16.60 cfs 0.935 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=8.72 cfs 0.933 af
Reach R7.1: Stream	Avg. Flow Depth=1.22' Max Vel=4.93 fps Inflow=27.31 cfs 4.618 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=25.53 cfs 4.607 af
Reach R7.3: Stream	Avg. Flow Depth=0.46' Max Vel=4.62 fps Inflow=7.42 cfs 2.131 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=7.42 cfs 2.128 af
Reach R7.4: Stream	Avg. Flow Depth=0.07' Max Vel=2.05 fps Inflow=0.44 cfs 0.087 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=0.44 cfs 0.086 af
Pond C1: 15" CMP	Peak Elev=95.53' Storage=79 cf Inflow=0.90 cfs 0.076 af 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=0.85 cfs 0.076 af

Pre-Development_ROAD

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

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Pond C2: 8" HDPE

Peak Elev=98.04' Inflow=15.87 cfs 0.859 af
Primary=1.93 cfs 0.616 af Secondary=13.94 cfs 0.243 af Outflow=15.87 cfs 0.859 af

Pond C7.3:

Peak Elev=76.36' Inflow=7.42 cfs 2.131 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=7.42 cfs 2.131 af

Pond P1: Wetland

Peak Elev=83.61' Storage=12,240 cf Inflow=10.17 cfs 1.996 af
Outflow=6.73 cfs 1.985 af

Pond W1: Wetland

Peak Elev=100.41' Storage=6,526 cf Inflow=2.63 cfs 0.312 af
Outflow=0.31 cfs 0.246 af

Pond W2: Wetland

Peak Elev=98.01' Storage=1,215 cf Inflow=8.96 cfs 0.859 af
Outflow=15.87 cfs 0.859 af

Link AP8:

Inflow=25.53 cfs 4.607 af
Primary=25.53 cfs 4.607 af

Total Runoff Area = 39.776 ac Runoff Volume = 4.700 af Average Runoff Depth = 1.42"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

Pre-Development_ROAD

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

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00' 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Pre-Development ROAD

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

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 4.07 cfs @ 12.72 hrs, Volume= 0.679 af, Depth> 1.07"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

Pre-Development ROAD

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

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.088 af, Depth> 1.99"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 6.37 cfs @ 12.73 hrs, Volume= 1.063 af, Depth> 1.18"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

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

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 0.96 cfs @ 12.60 hrs, Volume= 0.146 af, Depth> 0.96"

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
* 8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 ' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 0.44 cfs @ 12.59 hrs, Volume= 0.087 af, Depth> 0.37"

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"

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

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 ' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 22.54 cfs @ 12.07 hrs, Volume= 1.636 af, Depth> 2.55"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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

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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 Reach R4.0: Stream

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

Outflow = 8.72 cfs @ 12.13 hrs, Volume= 0.933 af, Atten= 47%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.64 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.42 fps, Avg. Travel Time= 3.3 min

Peak Storage= 526 cf @ 12.13 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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

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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 1.39" for 2-Yr Storm event
Inflow = 27.31 cfs @ 12.08 hrs, Volume= 4.618 af
Outflow = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af, Atten= 6%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.93 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 1.98 fps, Avg. Travel Time= 7.2 min

Peak Storage= 4,445 cf @ 12.11 hrs

Average Depth at Peak Storage= 1.22'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
Inflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af
Outflow = 7.42 cfs @ 12.88 hrs, Volume= 2.128 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.62 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 1.96 fps, Avg. Travel Time= 3.0 min

Peak Storage= 570 cf @ 12.88 hrs

Average Depth at Peak Storage= 0.46'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 0.37" for 2-Yr Storm event
 Inflow = 0.44 cfs @ 12.59 hrs, Volume= 0.087 af
 Outflow = 0.44 cfs @ 12.60 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 1.1 min

Avg. Velocity= 1.08 fps, Avg. Travel Time= 2.2 min

Peak Storage= 30 cf @ 12.60 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 ' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 ' / '

Inlet Invert= 73.00', Outlet Invert= 67.00'

**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

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	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 ' / n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.84 cfs @ 12.19 hrs HW=95.53' TW=94.99' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 ' / n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.67 2.66 2.65 2.65 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=95.03' (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=95.03' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 13.94 cfs @ 2.16 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
 Inflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af
 Outflow = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.42 cfs @ 12.86 hrs, Volume= 2.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.36' @ 12.86 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 ' / n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Primary OutFlow Max=7.42 cfs @ 12.86 hrs HW=76.36' TW=75.46' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 7.42 cfs @ 2.52 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
 Inflow = 10.17 cfs @ 12.14 hrs, Volume= 1.996 af
 Outflow = 6.73 cfs @ 12.96 hrs, Volume= 1.985 af, Atten= 34%, Lag= 49.5 min
 Primary = 6.73 cfs @ 12.96 hrs, Volume= 1.985 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 83.61' @ 12.96 hrs Surf.Area= 19,988 sf Storage= 12,240 cf

Plug-Flow detention time= 23.8 min calculated for 1.985 af (99% of inflow)
 Center-of-Mass det. time= 20.6 min (899.3 - 878.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=6.73 cfs @ 12.96 hrs HW=83.61' TW=76.36' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 6.73 cfs @ 3.08 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 6.73 cfs of 9.21 cfs potential flow)**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)

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 '/' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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 AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 1.39" for 2-Yr Storm event
Inflow = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af
Primary = 25.53 cfs @ 12.11 hrs, Volume= 4.607 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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

Subcatchment 4.1:	Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>1.46" Flow Length=520' Tc=13.8 min CN=66 Runoff=4.45 cfs 0.432 af
Subcatchment 4.2:	Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>3.49" Tc=5.0 min CN=90 Runoff=14.55 cfs 1.032 af
Subcatchment 4.3:	Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>2.29" Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=1.87 cfs 0.153 af
Subcatchment 4.4:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>4.36" Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 af
Subcatchment 7.0:	Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>2.18" Flow Length=270' Tc=49.4 min CN=76 Runoff=8.66 cfs 1.388 af
Subcatchment 7.1:	Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>3.39" Tc=5.0 min CN=89 Runoff=2.13 cfs 0.150 af
Subcatchment 7.2:	Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>2.35" Flow Length=330' Tc=50.7 min CN=78 Runoff=12.99 cfs 2.107 af
Subcatchment 7.3:	Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>2.03" Flow Length=275' Tc=39.9 min CN=74 Runoff=2.13 cfs 0.308 af
Subcatchment 7.4:	Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>1.06" Flow Length=235' Tc=29.3 min CN=60 Runoff=1.77 cfs 0.252 af
Subcatchment 8.0:	Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>4.02" Tc=5.0 min CN=95 Runoff=34.69 cfs 2.585 af
Reach R1:	Avg. Flow Depth=0.30' Max Vel=3.31 fps Inflow=2.66 cfs 0.208 af n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=2.59 cfs 0.208 af
Reach R4.0: Stream	Avg. Flow Depth=0.73' Max Vel=5.50 fps Inflow=18.05 cfs 1.646 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=14.98 cfs 1.644 af
Reach R7.1: Stream	Avg. Flow Depth=1.61' Max Vel=5.67 fps Inflow=44.40 cfs 8.407 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=42.13 cfs 8.391 af
Reach R7.3: Stream	Avg. Flow Depth=0.65' Max Vel=5.56 fps Inflow=13.21 cfs 4.036 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=13.21 cfs 4.032 af
Reach R7.4: Stream	Avg. Flow Depth=0.16' Max Vel=3.45 fps Inflow=1.77 cfs 0.252 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=1.77 cfs 0.252 af
Pond C1: 15" CMP	Peak Elev=95.80' Storage=271 cf Inflow=1.87 cfs 0.153 af 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=1.64 cfs 0.153 af

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Pond C2: 8" HDPE

Peak Elev=98.08' Inflow=16.90 cfs 1.493 af
Primary=1.94 cfs 0.957 af Secondary=14.95 cfs 0.536 af Outflow=16.90 cfs 1.493 af

Pond C7.3:

Peak Elev=76.84' Inflow=13.21 cfs 4.036 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=13.21 cfs 4.036 af

Pond P1: Wetland

Peak Elev=84.26' Storage=27,654 cf Inflow=18.32 cfs 3.751 af
Outflow=11.79 cfs 3.727 af

Pond W1: Wetland

Peak Elev=101.30' Storage=14,973 cf Inflow=6.09 cfs 0.640 af
Outflow=0.51 cfs 0.462 af

Pond W2: Wetland

Peak Elev=98.21' Storage=1,832 cf Inflow=14.78 cfs 1.494 af
Outflow=16.90 cfs 1.493 af

Link AP8:

Inflow=42.13 cfs 8.391 af
Primary=42.13 cfs 8.391 af

Total Runoff Area = 39.776 ac Runoff Volume = 8.614 af Average Runoff Depth = 2.60"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD
					Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00'
					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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 8.66 cfs @ 12.68 hrs, Volume= 1.388 af, Depth> 2.18"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 2.13 cfs @ 12.07 hrs, Volume= 0.150 af, Depth> 3.39"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 12.99 cfs @ 12.69 hrs, Volume= 2.107 af, Depth> 2.35"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 2.13 cfs @ 12.56 hrs, Volume= 0.308 af, Depth> 2.03"

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
* 8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 1.77 cfs @ 12.47 hrs, Volume= 0.252 af, Depth> 1.06"

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"

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 'f' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 34.69 cfs @ 12.07 hrs, Volume= 2.585 af, Depth> 4.02"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 Reach R4.0: Stream

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

Outflow = 14.98 cfs @ 12.11 hrs, Volume= 1.644 af, Atten= 17%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.50 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.73 fps, Avg. Travel Time= 2.7 min

Peak Storage= 762 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.73'

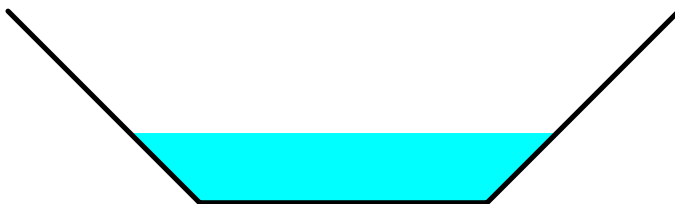
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 2.54" for 10-Yr Storm event
Inflow = 44.40 cfs @ 12.08 hrs, Volume= 8.407 af
Outflow = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af, Atten= 5%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.67 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 2.36 fps, Avg. Travel Time= 6.1 min

Peak Storage= 6,392 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.61'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 860.0' Slope= 0.0093 '/'
Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 2.30" for 10-Yr Storm event
Inflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af
Outflow = 13.21 cfs @ 12.83 hrs, Volume= 4.032 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.56 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.41 fps, Avg. Travel Time= 2.5 min

Peak Storage= 844 cf @ 12.83 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 355.0' Slope= 0.0225 '/'
Inlet Invert= 75.00', Outlet Invert= 67.00'



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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 1.06" for 10-Yr Storm event
 Inflow = 1.77 cfs @ 12.47 hrs, Volume= 0.252 af
 Outflow = 1.77 cfs @ 12.48 hrs, Volume= 0.252 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Max. Velocity= 3.45 fps, Min. Travel Time= 0.7 min
 Avg. Velocity= 1.47 fps, Avg. Travel Time= 1.6 min

Peak Storage= 72 cf @ 12.48 hrs
 Average Depth at Peak Storage= 0.16'
 Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 1.0 ' Top Width= 7.00'
 Length= 140.0' Slope= 0.0429 '
 Inlet Invert= 73.00', Outlet Invert= 67.00'

**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
 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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 ' / n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=1.64 cfs @ 12.20 hrs HW=95.80' TW=95.12' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 ' / n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 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=95.19' (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=95.18' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 14.29 cfs @ 2.18 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 2.30" for 10-Yr Storm event
Inflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af
Outflow = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af, Atten= 0%, Lag= 0.0 min
Primary = 13.21 cfs @ 12.82 hrs, Volume= 4.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.84' @ 12.82 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 ' / n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Primary OutFlow Max=13.21 cfs @ 12.82 hrs HW=76.84' TW=75.65' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 13.21 cfs @ 3.04 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 2.34" for 10-Yr Storm event
 Inflow = 18.32 cfs @ 12.14 hrs, Volume= 3.751 af
 Outflow = 11.79 cfs @ 13.03 hrs, Volume= 3.727 af, Atten= 36%, Lag= 53.4 min
 Primary = 11.79 cfs @ 13.03 hrs, Volume= 3.727 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.26' @ 13.03 hrs Surf.Area= 26,516 sf Storage= 27,654 cf

Plug-Flow detention time= 28.6 min calculated for 3.724 af (99% of inflow)
 Center-of-Mass det. time= 25.1 min (892.8 - 867.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=11.79 cfs @ 13.03 hrs HW=84.26' TW=76.82' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 11.79 cfs @ 3.77 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 11.79 cfs of 22.04 cfs potential flow)**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)

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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 AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 2.53" for 10-Yr Storm event
Inflow = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af
Primary = 42.13 cfs @ 12.11 hrs, Volume= 8.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, 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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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

Subcatchment 4.1: Runoff Area=155,030 sf 42.26% Impervious Runoff Depth>2.29"
 Flow Length=520' Tc=13.8 min CN=66 Runoff=7.27 cfs 0.678 af

Subcatchment 4.2: Runoff Area=154,566 sf 72.80% Impervious Runoff Depth>4.65"
 Tc=5.0 min CN=90 Runoff=19.09 cfs 1.374 af

Subcatchment 4.3: Runoff Area=34,895 sf 0.00% Impervious Runoff Depth>3.30"
 Flow Length=80' Slope=0.0900 '/' Tc=10.0 min CN=77 Runoff=2.71 cfs 0.220 af

Subcatchment 4.4: Runoff Area=24,940 sf 100.00% Impervious Runoff Depth>5.56"
 Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 af

Subcatchment 7.0: Runoff Area=332,135 sf 2.58% Impervious Runoff Depth>3.17"
 Flow Length=270' Tc=49.4 min CN=76 Runoff=12.65 cfs 2.017 af

Subcatchment 7.1: Runoff Area=23,135 sf 59.74% Impervious Runoff Depth>4.54"
 Tc=5.0 min CN=89 Runoff=2.81 cfs 0.201 af

Subcatchment 7.2: Runoff Area=468,795 sf 1.99% Impervious Runoff Depth>3.37"
 Flow Length=330' Tc=50.7 min CN=78 Runoff=18.67 cfs 3.020 af

Subcatchment 7.3: Runoff Area=79,357 sf 11.20% Impervious Runoff Depth>2.99"
 Flow Length=275' Tc=39.9 min CN=74 Runoff=3.17 cfs 0.454 af

Subcatchment 7.4: Runoff Area=123,722 sf 9.46% Impervious Runoff Depth>1.78"
 Flow Length=235' Tc=29.3 min CN=60 Runoff=3.19 cfs 0.421 af

Subcatchment 8.0: Runoff Area=336,062 sf 87.02% Impervious Runoff Depth>5.21"
 Tc=5.0 min CN=95 Runoff=44.30 cfs 3.349 af

Reach R1: Avg. Flow Depth=0.34' Max Vel=3.56 fps Inflow=3.36 cfs 0.265 af
 n=0.022 L=300.0' S=0.0167 '/' Capacity=111.27 cfs Outflow=3.29 cfs 0.265 af

Reach R4.0: Stream Avg. Flow Depth=0.85' Max Vel=5.95 fps Inflow=21.45 cfs 2.195 af
 n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=19.41 cfs 2.192 af

Reach R7.1: Stream Avg. Flow Depth=1.88' Max Vel=6.11 fps Inflow=58.58 cfs 11.616 af
 n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=55.97 cfs 11.596 af

Reach R7.3: Stream Avg. Flow Depth=0.75' Max Vel=5.98 fps Inflow=16.81 cfs 5.632 af
 n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=16.81 cfs 5.628 af

Reach R7.4: Stream Avg. Flow Depth=0.23' Max Vel=4.27 fps Inflow=3.19 cfs 0.421 af
 n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=3.19 cfs 0.420 af

Pond C1: 15" CMP Peak Elev=95.98' Storage=501 cf Inflow=2.71 cfs 0.220 af
 15.0" Round Culvert n=0.025 L=20.0' S=0.0050 '/' Outflow=2.25 cfs 0.220 af

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Pond C2: 8" HDPE

Peak Elev=98.16' Inflow=19.70 cfs 1.974 af
Primary=1.98 cfs 1.130 af Secondary=17.72 cfs 0.844 af Outflow=19.70 cfs 1.974 af

Pond C7.3:

Peak Elev=77.11' Inflow=16.81 cfs 5.632 af
36.0" Round Culvert w/ 6.0" inside fill n=0.025 L=55.0' S=0.0164 '/' Outflow=16.81 cfs 5.632 af

Pond P1: Wetland

Peak Elev=84.85' Storage=44,412 cf Inflow=24.82 cfs 5.212 af
Outflow=14.87 cfs 5.178 af

Pond W1: Wetland

Peak Elev=102.01' Storage=23,799 cf Inflow=9.33 cfs 0.943 af
Outflow=0.62 cfs 0.601 af

Pond W2: Wetland

Peak Elev=98.37' Storage=2,472 cf Inflow=19.43 cfs 1.975 af
Outflow=19.70 cfs 1.974 af

Link AP8:

Inflow=55.97 cfs 11.596 af
Primary=55.97 cfs 11.596 af

Total Runoff Area = 39.776 ac Runoff Volume = 12.000 af Average Runoff Depth = 3.62"
68.39% Pervious = 27.201 ac 31.61% Impervious = 12.575 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	110	0.0140	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.10"
0.9	110	0.1600	2.00		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
0.5	300	0.0170	9.36	112.37	Trap/Vee/Rect Channel Flow, CD
					Bot.W=2.00' D=2.00' Z= 2.0 ' / Top.W=10.00'
					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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.0900	0.13		Sheet Flow, AB 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 (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 7.0:

Runoff = 12.65 cfs @ 12.68 hrs, Volume= 2.017 af, Depth> 3.17"

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
* 8,574	98	Impervious
1,029	74	>75% Grass cover, Good, HSG C
19,605	65	Brush, Good, HSG C
48,667	73	Brush, Good, HSG D
1,406	70	Woods, Good, HSG C
252,854	77	Woods, Good, HSG D
332,135	76	Weighted Average
323,561		97.42% Pervious Area
8,574		2.58% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 2.81 cfs @ 12.07 hrs, Volume= 0.201 af, Depth> 4.54"

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
* 13,822	98	Impervious
5,192	74	>75% Grass cover, Good, HSG C
4,121	80	>75% Grass cover, Good, HSG D
23,135	89	Weighted Average
9,313		40.26% Pervious Area
13,822		59.74% Impervious Area

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

Summary for Subcatchment 7.2:

Runoff = 18.67 cfs @ 12.68 hrs, Volume= 3.020 af, Depth> 3.37"

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
* 9,333	98	Impervious
755	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
149,187	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
290,226	77	Woods, Good, HSG D
468,795	78	Weighted Average
459,462		98.01% Pervious Area
9,333		1.99% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 3.17 cfs @ 12.55 hrs, Volume= 0.454 af, Depth> 2.99"

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
* 8,886	98	Impervious
1,670	39	>75% Grass cover, Good, HSG A
8,218	30	Woods, Good, HSG A
2,830	77	Woods, Good, HSG D
57,753	77	Woods, Good, HSG D
79,357	74	Weighted Average
70,471		88.80% Pervious Area
8,886		11.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 3.19 cfs @ 12.45 hrs, Volume= 0.421 af, Depth> 1.78"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	11,706	98	Impervious
	5,496	39	>75% Grass cover, Good, HSG A
	2,160	74	>75% Grass cover, Good, HSG C
	45,486	30	Woods, Good, HSG A
	3,125	70	Woods, Good, HSG C
	55,749	77	Woods, Good, HSG D
	123,722	60	Weighted Average
	112,016		90.54% Pervious Area
	11,706		9.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 ' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 8.0:

Runoff = 44.30 cfs @ 12.07 hrs, Volume= 3.349 af, Depth> 5.21"

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
*	292,441	98	Impervious
	8,405	74	>75% Grass cover, Good, HSG C
	8,516	80	>75% Grass cover, Good, HSG D
	26,700	70	Woods, Good, HSG C
	336,062	95	Weighted Average
	43,621		12.98% Pervious Area
	292,441		87.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 Reach R4.0: Stream

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

Outflow = 19.41 cfs @ 12.12 hrs, Volume= 2.192 af, Atten= 9%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.95 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.91 fps, Avg. Travel Time= 2.4 min

Peak Storage= 913 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.85'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Reach R7.1: Stream

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event
Inflow = 58.58 cfs @ 12.08 hrs, Volume= 11.616 af
Outflow = 55.97 cfs @ 12.10 hrs, Volume= 11.596 af, Atten= 4%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.11 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 5.5 min

Peak Storage= 7,871 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.88'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 860.0' Slope= 0.0093 '/'
Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 3.21" for 25-Yr Storm event
Inflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af
Outflow = 16.81 cfs @ 12.81 hrs, Volume= 5.628 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.98 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.70 fps, Avg. Travel Time= 2.2 min

Peak Storage= 998 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 355.0' Slope= 0.0225 '/'
Inlet Invert= 75.00', Outlet Invert= 67.00'



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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Reach R7.4: Stream

Inflow Area = 2.840 ac, 9.46% Impervious, Inflow Depth > 1.78" for 25-Yr Storm event
 Inflow = 3.19 cfs @ 12.45 hrs, Volume= 0.421 af
 Outflow = 3.19 cfs @ 12.46 hrs, Volume= 0.420 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.27 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 1.71 fps, Avg. Travel Time= 1.4 min

Peak Storage= 104 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 ' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 ' / '

Inlet Invert= 73.00', Outlet Invert= 67.00'

**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

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	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900

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Inlet / Outlet Invert= 94.90' / 94.80' S= 0.0050 '/' Cc= 0.900
n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.25 cfs @ 12.21 hrs HW=95.98' TW=95.22' (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'	8.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.30' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 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=95.33' (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=95.33' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 17.45 cfs @ 2.33 fps)

Summary for Pond C7.3:

Inflow Area = 21.065 ac, 24.11% Impervious, Inflow Depth > 3.21" for 25-Yr Storm event
Inflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af
Outflow = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af, Atten= 0%, Lag= 0.0 min
Primary = 16.81 cfs @ 12.80 hrs, Volume= 5.632 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.11' @ 12.80 hrs

Flood Elev= 77.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.30'	36.0" Round Culvert w/ 6.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.80' / 73.90' S= 0.0164 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 6.29 sf

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Primary OutFlow Max=16.81 cfs @ 12.80 hrs HW=77.11' TW=75.75' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 16.81 cfs @ 3.32 fps)**Summary for Pond P1: Wetland**

Inflow Area = 19.243 ac, 25.33% Impervious, Inflow Depth > 3.25" for 25-Yr Storm event
 Inflow = 24.82 cfs @ 12.12 hrs, Volume= 5.212 af
 Outflow = 14.87 cfs @ 13.10 hrs, Volume= 5.178 af, Atten= 40%, Lag= 58.4 min
 Primary = 14.87 cfs @ 13.10 hrs, Volume= 5.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.85' @ 13.10 hrs Surf.Area= 30,764 sf Storage= 44,412 cf

Plug-Flow detention time= 33.6 min calculated for 5.178 af (99% of inflow)
 Center-of-Mass det. time= 29.9 min (889.2 - 859.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=14.87 cfs @ 13.10 hrs HW=84.85' TW=77.08' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 14.87 cfs @ 4.73 fps)↑**1=Sharp-Crested Vee/Trap Weir** (Passes 14.87 cfs of 37.46 cfs potential flow)**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)

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	6.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Device 1	99.40'	18.0" Round Culvert L= 14.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 99.40' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 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)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) 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)

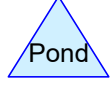
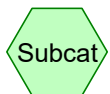
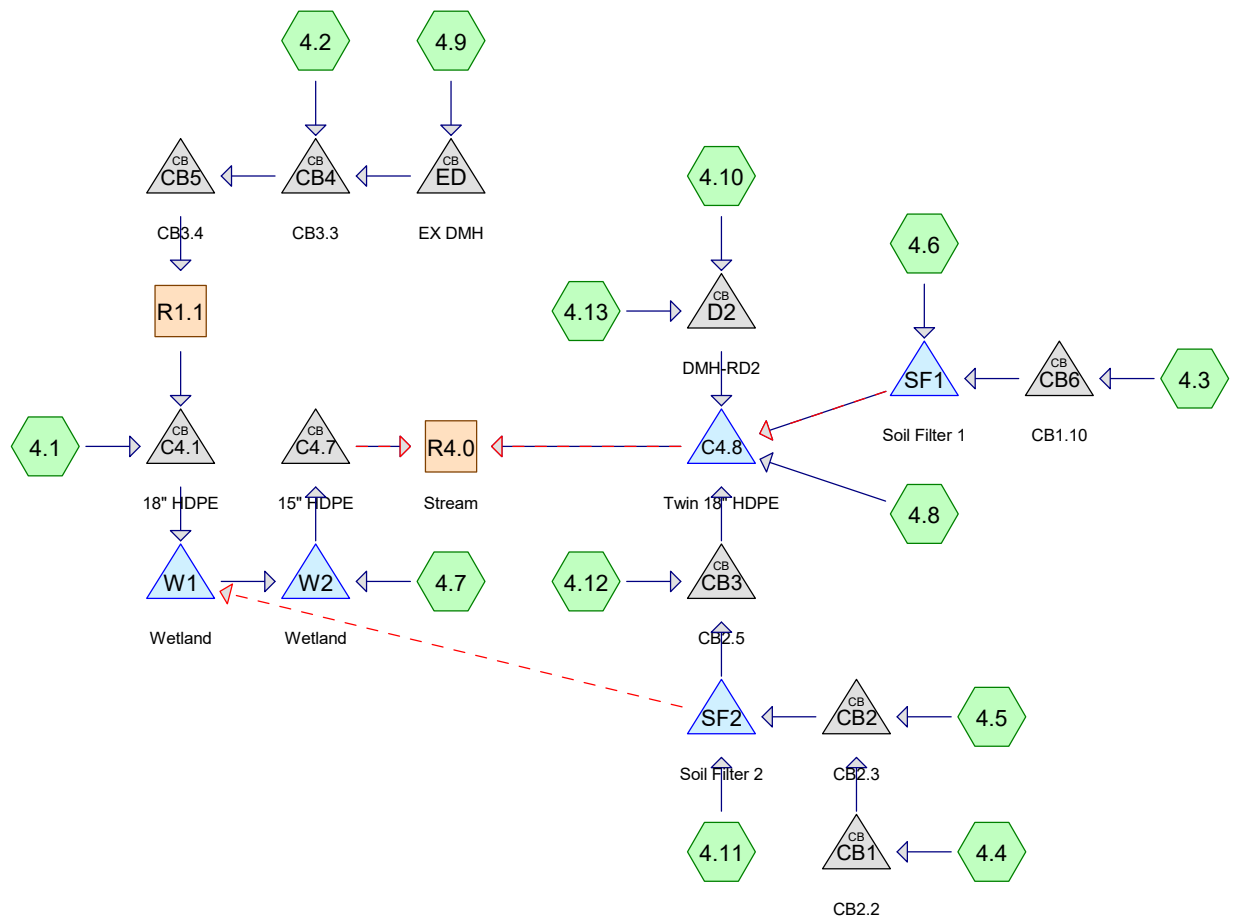
↑1=Custom Weir/Orifice (Weir Controls 15.86 cfs @ 2.15 fps)

Summary for Link AP8:

Inflow Area = 39.776 ac, 31.61% Impervious, Inflow Depth > 3.50" for 25-Yr Storm event
Inflow = 55.97 cfs @ 12.10 hrs, Volume= 11.596 af
Primary = 55.97 cfs @ 12.10 hrs, Volume= 11.596 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



Routing Diagram for Post-Development EAST
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Type III 24-hr 2-Yr Storm Rainfall=3.10"

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=0.31" Flow Length=338' Tc=8.3 min CN=58 Runoff=0.34 cfs 0.060 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=2.87" Tc=5.0 min CN=98 Runoff=2.77 cfs 0.213 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=1.46" Tc=5.0 min CN=82 Runoff=0.63 cfs 0.043 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=2.76" Tc=5.0 min CN=97 Runoff=2.12 cfs 0.159 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.03" Tc=5.0 min CN=45 Runoff=0.00 cfs 0.000 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.17" Tc=5.0 min CN=53 Runoff=0.08 cfs 0.021 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=2.08" Tc=5.0 min CN=90 Runoff=3.27 cfs 0.227 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=2.65" Tc=5.0 min CN=96 Runoff=1.79 cfs 0.132 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=2.55" Tc=5.0 min CN=95 Runoff=1.56 cfs 0.113 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=1.20" Tc=5.0 min CN=78 Runoff=0.33 cfs 0.023 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=1.03" Tc=5.0 min CN=75 Runoff=1.23 cfs 0.089 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=1.14" Tc=5.0 min CN=77 Runoff=0.80 cfs 0.056 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=2.87" Tc=5.0 min CN=98 Runoff=1.78 cfs 0.137 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
Reach R4.0: Stream	Avg. Flow Depth=0.45' Max Vel=4.25 fps Inflow=6.69 cfs 1.274 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=6.65 cfs 1.274 af
Pond C4.1: 18" HDPE	Peak Elev=102.31' Inflow=1.87 cfs 0.217 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=1.87 cfs 0.217 af

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

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Pond C4.7: 15" HDPE

Peak Elev=95.92' Inflow=1.61 cfs 0.306 af
 Primary=1.61 cfs 0.306 af Secondary=0.00 cfs 0.000 af Outflow=1.61 cfs 0.306 af

Pond C4.8: Twin 18" HDPE

Peak Elev=96.15' Storage=792 cf Inflow=5.81 cfs 0.968 af
 Primary=5.08 cfs 0.968 af Secondary=0.00 cfs 0.000 af Outflow=5.08 cfs 0.968 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=100.25' Inflow=3.27 cfs 0.227 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=3.27 cfs 0.227 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=99.54' Storage=6,147 cf Inflow=3.60 cfs 0.250 af
 Primary=0.25 cfs 0.250 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.250 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=99.84' Storage=2,144 cf Inflow=1.87 cfs 0.217 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=0.76 cfs 0.217 af

Pond W2: Wetland

Peak Elev=97.24' Storage=87 cf Inflow=1.63 cfs 0.306 af
 Outflow=1.61 cfs 0.306 af

Total Runoff Area = 10.780 ac Runoff Volume = 1.274 af Average Runoff Depth = 1.42"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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

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Summary for Subcatchment 4.1:

Runoff = 0.34 cfs @ 12.31 hrs, Volume= 0.060 af, Depth= 0.31"

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 2-Yr Storm Rainfall=3.10"

Area (sf)	CN	Description
* 29,214	98	Impervious
26,743	39	>75% Grass cover, Good, HSG A
2,976	80	>75% Grass cover, Good, HSG D
10,780	77	Woods, Good, HSG D
31,701	30	Woods, Good, HSG A
101,414	58	Weighted Average
72,200		71.19% Pervious Area
29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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

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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

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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 = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af, Depth= 2.08"

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
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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

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

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

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

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

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Summary for Subcatchment 4.7:

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.089 af, Depth= 1.03"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 1.42" for 2-Yr Storm event
Inflow = 6.69 cfs @ 12.11 hrs, Volume= 1.274 af
Outflow = 6.65 cfs @ 12.13 hrs, Volume= 1.274 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 4.25 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.23 fps, Avg. Travel Time= 3.8 min

Peak Storage= 437 cf @ 12.13 hrs

Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event
 Inflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af
 Outflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.31' @ 12.10 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.86 cfs @ 12.10 hrs HW=102.31' TW=99.73' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.86 cfs @ 2.26 fps)

Summary for Pond C4.7: 15" HDPE

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 0.68" for 2-Yr Storm event
 Inflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af
 Outflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.61 cfs @ 12.11 hrs, Volume= 0.306 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= 95.92' @ 12.11 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=1.61 cfs @ 12.11 hrs HW=95.92' TW=94.95' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 1.61 cfs @ 3.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=94.50' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 2.16" for 2-Yr Storm event
 Inflow = 5.81 cfs @ 12.07 hrs, Volume= 0.968 af
 Outflow = 5.08 cfs @ 12.12 hrs, Volume= 0.968 af, Atten= 13%, Lag= 2.6 min
 Primary = 5.08 cfs @ 12.12 hrs, Volume= 0.968 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= 96.15' @ 12.12 hrs Surf.Area= 1,870 sf Storage= 792 cf

Plug-Flow detention time= 1.6 min calculated for 0.968 af (100% of inflow)

Center-of-Mass det. time= 1.5 min (1,128.2 - 1,126.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=94.95' (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=94.50' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**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'

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900 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'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900 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'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900 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)

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' / S= 0.0607 ' Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 2.08" for 2-Yr Storm event
 Inflow = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af
 Outflow = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.27 cfs @ 12.07 hrs, Volume= 0.227 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.25' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.25 cfs @ 12.07 hrs HW=100.24' TW=98.81' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.25 cfs @ 3.65 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 '/' Cc= 0.900 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)

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

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Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 1.95" for 2-Yr Storm event
 Inflow = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af
 Outflow = 0.25 cfs @ 13.57 hrs, Volume= 0.250 af, Atten= 93%, Lag= 89.6 min
 Primary = 0.25 cfs @ 13.57 hrs, Volume= 0.250 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= 99.54' @ 13.57 hrs Surf.Area= 4,887 sf Storage= 6,147 cf

Plug-Flow detention time= 681.9 min calculated for 0.250 af (100% of inflow)
 Center-of-Mass det. time= 682.2 min (1,493.3 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.25 cfs @ 13.57 hrs HW=99.54' TW=95.53' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.25 cfs of 6.93 cfs potential flow)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.08 cfs)
 ↑ **3=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.66 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 = 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

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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	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 0.60" for 2-Yr Storm event
 Inflow = 1.87 cfs @ 12.10 hrs, Volume= 0.217 af
 Outflow = 0.76 cfs @ 12.48 hrs, Volume= 0.217 af, Atten= 59%, Lag= 22.5 min
 Primary = 0.76 cfs @ 12.48 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 99.84' @ 12.48 hrs Surf.Area= 6,613 sf Storage= 2,144 cf

Plug-Flow detention time= 61.6 min calculated for 0.217 af (100% of inflow)
 Center-of-Mass det. time= 61.7 min (892.9 - 831.3)

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Volume	Invert	Avail.Storage	Storage Description
#1	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.76 cfs @ 12.48 hrs HW=99.84' TW=97.19' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.76 cfs @ 1.78 fps)

Summary for Pond W2: Wetland

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 0.68" for 2-Yr Storm event
 Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.306 af
 Outflow = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af, Atten= 1%, Lag= 0.9 min
 Primary = 1.61 cfs @ 12.11 hrs, Volume= 0.306 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.24' @ 12.11 hrs Surf.Area= 543 sf Storage= 87 cf

Plug-Flow detention time= 1.2 min calculated for 0.306 af (100% of inflow)

Center-of-Mass det. time= 1.2 min (884.5 - 883.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=1.61 cfs @ 12.11 hrs HW=97.24' TW=95.92' (Dynamic Tailwater)

↑1=Custom Weir/Orifice (Weir Controls 1.61 cfs @ 1.58 fps)

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=0.96" Flow Length=338' Tc=8.3 min CN=58 Runoff=1.96 cfs 0.185 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=4.14 cfs 0.325 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=2.72" Tc=5.0 min CN=82 Runoff=1.18 cfs 0.081 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=4.25" Tc=5.0 min CN=97 Runoff=3.19 cfs 0.245 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.32" Tc=5.0 min CN=45 Runoff=0.02 cfs 0.004 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=0.68" Tc=5.0 min CN=53 Runoff=0.81 cfs 0.084 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=3.49" Tc=5.0 min CN=90 Runoff=5.38 cfs 0.382 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=4.14" Tc=5.0 min CN=96 Runoff=2.72 cfs 0.206 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=4.02" Tc=5.0 min CN=95 Runoff=2.39 cfs 0.179 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=2.38" Tc=5.0 min CN=78 Runoff=0.66 cfs 0.046 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=2.13" Tc=5.0 min CN=75 Runoff=2.67 cfs 0.184 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=2.29" Tc=5.0 min CN=77 Runoff=1.65 cfs 0.113 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=2.66 cfs 0.208 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
Reach R4.0: Stream	Avg. Flow Depth=0.72' Max Vel=5.47 fps Inflow=14.71 cfs 2.242 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=14.70 cfs 2.242 af
Pond C4.1: 18" HDPE	Peak Elev=102.93' Inflow=5.16 cfs 0.477 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=5.16 cfs 0.477 af

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Pond C4.7: 15" HDPE

Peak Elev=96.42' Inflow=3.62 cfs 0.662 af
 Primary=3.62 cfs 0.662 af Secondary=0.00 cfs 0.000 af Outflow=3.62 cfs 0.662 af

Pond C4.8: Twin 18" HDPE

Peak Elev=96.88' Storage=2,711 cf Inflow=13.66 cfs 1.581 af
 Primary=11.41 cfs 1.581 af Secondary=0.00 cfs 0.000 af Outflow=11.41 cfs 1.581 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=100.85' Inflow=5.38 cfs 0.382 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=5.38 cfs 0.382 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=99.76' Storage=7,223 cf Inflow=6.04 cfs 0.427 af
 Primary=2.74 cfs 0.427 af Secondary=0.00 cfs 0.000 af Outflow=2.74 cfs 0.427 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=100.18' Storage=4,614 cf Inflow=5.16 cfs 0.477 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=2.18 cfs 0.477 af

Pond W2: Wetland

Peak Elev=97.40' Storage=200 cf Inflow=3.66 cfs 0.662 af
 Outflow=3.62 cfs 0.662 af

Total Runoff Area = 10.780 ac Runoff Volume = 2.242 af Average Runoff Depth = 2.50"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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Summary for Subcatchment 4.1:

Runoff = 1.96 cfs @ 12.14 hrs, Volume= 0.185 af, Depth= 0.96"

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
*	29,214	98	Impervious
	26,743	39	>75% Grass cover, Good, HSG A
	2,976	80	>75% Grass cover, Good, HSG D
	10,780	77	Woods, Good, HSG D
	31,701	30	Woods, Good, HSG A
	101,414	58	Weighted Average
	72,200		71.19% Pervious Area
	29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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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

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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 = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af, Depth= 3.49"

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
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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

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

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

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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Subcatchment 4.7:

Runoff = 2.67 cfs @ 12.08 hrs, Volume= 0.184 af, Depth= 2.13"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 2.50" for 10-Yr Storm event
Inflow = 14.71 cfs @ 12.18 hrs, Volume= 2.242 af
Outflow = 14.70 cfs @ 12.19 hrs, Volume= 2.242 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 5.47 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 1.38 fps, Avg. Travel Time= 3.4 min

Peak Storage= 752 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.72'

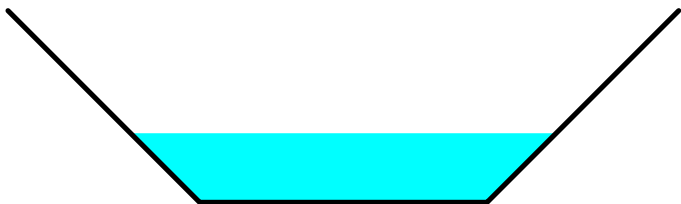
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 ' ' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 ' '

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
 Inflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af
 Outflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 102.93' @ 12.11 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S= 0.0571 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.12 cfs @ 12.11 hrs HW=102.93' TW=99.95' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 5.12 cfs @ 3.10 fps)

Summary for Pond C4.7: 15" HDPE

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event
 Inflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af
 Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.662 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= 96.42' @ 12.12 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=3.61 cfs @ 12.12 hrs HW=96.42' TW=95.19' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 3.61 cfs @ 2.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.20' TW=94.50' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 3.53" for 10-Yr Storm event
 Inflow = 13.66 cfs @ 12.11 hrs, Volume= 1.581 af
 Outflow = 11.41 cfs @ 12.20 hrs, Volume= 1.581 af, Atten= 16%, Lag= 5.0 min
 Primary = 11.41 cfs @ 12.20 hrs, Volume= 1.581 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= 96.88' @ 12.20 hrs Surf.Area= 3,502 sf Storage= 2,711 cf

Plug-Flow detention time= 2.1 min calculated for 1.581 af (100% of inflow)
 Center-of-Mass det. time= 2.0 min (1,011.5 - 1,009.5)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.41 cfs @ 12.20 hrs HW=96.88' TW=95.22' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 11.41 cfs @ 3.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' TW=94.50' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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'

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 '/' Cc= 0.900 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
Peak Elev= 102.05' @ 12.07 hrs
Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.77'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 '/' Cc= 0.900 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' @ 12.12 hrs
Flood Elev= 103.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	96.13'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.51 cfs @ 12.11 hrs HW=97.89' TW=96.71' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.51 cfs @ 4.57 fps)

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' / S= 0.0607 ' Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 3.49" for 10-Yr Storm event
 Inflow = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af
 Outflow = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.38 cfs @ 12.07 hrs, Volume= 0.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.85' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.34 cfs @ 12.07 hrs HW=100.83' TW=99.47' (Dynamic Tailwater)
↑1=Culvert (Barrel Controls 5.34 cfs @ 4.35 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 '/' Cc= 0.900 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)

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Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 3.32" for 10-Yr Storm event
 Inflow = 6.04 cfs @ 12.07 hrs, Volume= 0.427 af
 Outflow = 2.74 cfs @ 12.24 hrs, Volume= 0.427 af, Atten= 55%, Lag= 9.8 min
 Primary = 2.74 cfs @ 12.24 hrs, Volume= 0.427 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= 99.76' @ 12.24 hrs Surf.Area= 5,128 sf Storage= 7,223 cf

Plug-Flow detention time= 449.8 min calculated for 0.427 af (100% of inflow)

Center-of-Mass det. time= 450.2 min (1,246.8 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' S= 0.0029 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.74 cfs @ 12.24 hrs HW=99.76' TW=96.86' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 2.74 cfs of 6.44 cfs potential flow)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.09 cfs)
 ↑ **3=Orifice/Grate** (Weir Controls 2.65 cfs @ 1.65 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

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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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	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.83 cfs @ 12.13 hrs HW=100.88' TW=97.88' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 4.83 cfs of 9.53 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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
 Inflow = 5.16 cfs @ 12.11 hrs, Volume= 0.477 af
 Outflow = 2.18 cfs @ 12.43 hrs, Volume= 0.477 af, Atten= 58%, Lag= 19.2 min
 Primary = 2.18 cfs @ 12.43 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 100.18' @ 12.43 hrs Surf.Area= 7,795 sf Storage= 4,614 cf

Plug-Flow detention time= 52.1 min calculated for 0.477 af (100% of inflow)
 Center-of-Mass det. time= 52.1 min (886.2 - 834.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.18 cfs @ 12.43 hrs HW=100.17' TW=97.36' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.18 cfs @ 2.37 fps)**Summary for Pond W2: Wetland**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 1.47" for 10-Yr Storm event
 Inflow = 3.66 cfs @ 12.10 hrs, Volume= 0.662 af
 Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af, Atten= 1%, Lag= 1.1 min
 Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.662 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.40' @ 12.12 hrs Surf.Area= 860 sf Storage= 200 cf

Plug-Flow detention time= 1.3 min calculated for 0.662 af (100% of inflow)

Center-of-Mass det. time= 1.1 min (873.8 - 872.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=3.61 cfs @ 12.12 hrs HW=97.40' TW=96.42' (Dynamic Tailwater)↑**1=Custom Weir/Orifice** (Weir Controls 3.61 cfs @ 2.04 fps)

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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

Subcatchment 4.1:	Runoff Area=101,414 sf 28.81% Impervious Runoff Depth=1.63" Flow Length=338' Tc=8.3 min CN=58 Runoff=3.76 cfs 0.317 af
Subcatchment 4.10:	Runoff Area=38,900 sf 100.00% Impervious Runoff Depth=5.56" Tc=5.0 min CN=98 Runoff=5.24 cfs 0.414 af
Subcatchment 4.11:	Runoff Area=15,561 sf 10.00% Impervious Runoff Depth=3.80" Tc=5.0 min CN=82 Runoff=1.63 cfs 0.113 af
Subcatchment 4.12:	Runoff Area=30,195 sf 94.29% Impervious Runoff Depth=5.44" Tc=5.0 min CN=97 Runoff=4.04 cfs 0.315 af
Subcatchment 4.13:	Runoff Area=7,038 sf 10.83% Impervious Runoff Depth=0.72" Tc=5.0 min CN=45 Runoff=0.08 cfs 0.010 af
Subcatchment 4.2:	Runoff Area=64,010 sf 24.27% Impervious Runoff Depth=1.26" Tc=5.0 min CN=53 Runoff=1.88 cfs 0.154 af
Subcatchment 4.3:	Runoff Area=57,153 sf 79.12% Impervious Runoff Depth=4.65" Tc=5.0 min CN=90 Runoff=7.06 cfs 0.509 af
Subcatchment 4.4:	Runoff Area=26,029 sf 94.93% Impervious Runoff Depth=5.33" Tc=5.0 min CN=96 Runoff=3.46 cfs 0.265 af
Subcatchment 4.5:	Runoff Area=23,192 sf 94.13% Impervious Runoff Depth=5.21" Tc=5.0 min CN=95 Runoff=3.06 cfs 0.231 af
Subcatchment 4.6:	Runoff Area=10,062 sf 0.00% Impervious Runoff Depth=3.40" Tc=5.0 min CN=78 Runoff=0.95 cfs 0.066 af
Subcatchment 4.7:	Runoff Area=45,242 sf 0.00% Impervious Runoff Depth=3.11" Tc=5.0 min CN=75 Runoff=3.92 cfs 0.269 af
Subcatchment 4.8:	Runoff Area=25,845 sf 0.00% Impervious Runoff Depth=3.31" Tc=5.0 min CN=77 Runoff=2.38 cfs 0.163 af
Subcatchment 4.9:	Runoff Area=24,940 sf 100.00% Impervious Runoff Depth=5.56" Tc=5.0 min CN=98 Runoff=3.36 cfs 0.265 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 '/' Capacity=160.95 cfs Outflow=5.10 cfs 0.419 af
Reach R4.0: Stream	Avg. Flow Depth=0.98' Max Vel=6.40 fps Inflow=25.33 cfs 3.120 af n=0.025 L=280.0' S=0.0196 '/' Capacity=91.72 cfs Outflow=25.08 cfs 3.120 af
Pond C4.1: 18" HDPE	Peak Elev=104.02' Inflow=8.67 cfs 0.736 af 18.0" Round Culvert n=0.013 L=28.0' S=0.0571 '/' Outflow=8.67 cfs 0.736 af

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Pond C4.7: 15" HDPE

Peak Elev=97.21' Inflow=5.48 cfs 1.006 af
 Primary=5.48 cfs 1.006 af Secondary=1.23 cfs 0.029 af Outflow=5.48 cfs 1.006 af

Pond C4.8: Twin 18" HDPE

Peak Elev=97.42' Storage=6,007 cf Inflow=23.18 cfs 2.085 af
 Primary=15.10 cfs 2.069 af Secondary=3.59 cfs 0.017 af Outflow=18.69 cfs 2.085 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=99.56' Inflow=10.56 cfs 0.924 af
 18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=10.56 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=101.29' Inflow=7.06 cfs 0.509 af
 15.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=7.06 cfs 0.509 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=99.93' Storage=8,136 cf Inflow=8.01 cfs 0.574 af
 Primary=5.88 cfs 0.573 af Secondary=0.14 cfs 0.001 af Outflow=6.02 cfs 0.574 af

Pond SF2: Soil Filter 2

Peak Elev=100.98' Storage=7,170 cf Inflow=8.15 cfs 0.610 af
 Primary=6.98 cfs 0.610 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.610 af

Pond W1: Wetland

Peak Elev=100.48' Storage=7,120 cf Inflow=8.67 cfs 0.736 af
 18.0" Round Culvert n=0.013 L=80.0' S=0.0113 '/' Outflow=3.82 cfs 0.736 af

Pond W2: Wetland

Peak Elev=97.68' Storage=531 cf Inflow=5.92 cfs 1.006 af
 Outflow=5.48 cfs 1.006 af

Total Runoff Area = 10.780 ac Runoff Volume = 3.091 af Average Runoff Depth = 3.44"
50.78% Pervious = 5.474 ac 49.22% Impervious = 5.306 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 4.1:

Runoff = 3.76 cfs @ 12.13 hrs, Volume= 0.317 af, Depth= 1.63"

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
*	29,214	98	Impervious
	26,743	39	>75% Grass cover, Good, HSG A
	2,976	80	>75% Grass cover, Good, HSG D
	10,780	77	Woods, Good, HSG D
	31,701	30	Woods, Good, HSG A
	101,414	58	Weighted Average
	72,200		71.19% Pervious Area
	29,214		28.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	40	0.1000	0.12		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	30	0.5000	0.22		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	95	0.0260	8.47	135.53	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
0.1	28	0.0180	7.98	14.09	Pipe Channel, DE 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	145	0.0510	11.86	189.82	Trap/Vee/Rect Channel Flow, EF Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' 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,

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

Summary for Subcatchment 4.3:

Runoff = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af, Depth= 4.65"

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 25-Yr Storm Rainfall=5.80"

Area (sf)	CN	Description
* 45,217	98	Impervious
5,466	39	>75% Grass cover, Good, HSG A
6,470	80	>75% Grass cover, Good, HSG D
57,153	90	Weighted Average
11,936		20.88% Pervious Area
45,217		79.12% Impervious Area

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

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

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

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

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 4.7:

Runoff = 3.92 cfs @ 12.08 hrs, Volume= 0.269 af, Depth= 3.11"

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
25,292	73	Brush, Good, HSG D
19,950	77	Woods, Good, HSG D
45,242	75	Weighted Average
45,242		100.00% Pervious Area

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

Summary for Subcatchment 4.8:

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

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

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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 Reach R4.0: Stream

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth = 3.47" for 25-Yr Storm event
Inflow = 25.33 cfs @ 12.18 hrs, Volume= 3.120 af
Outflow = 25.08 cfs @ 12.19 hrs, Volume= 3.120 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Max. Velocity= 6.40 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 1.48 fps, Avg. Travel Time= 3.2 min

Peak Storage= 1,094 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.98'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 91.72 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 280.0' Slope= 0.0196 '/'

Inlet Invert= 94.50', Outlet Invert= 89.00'



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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond C4.1: 18" HDPE

Inflow Area = 4.370 ac, 36.61% Impervious, Inflow Depth = 2.02" for 25-Yr Storm event
 Inflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af
 Outflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 104.02' @ 12.11 hrs

Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.60'	18.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.60' / 100.00' S= 0.0571 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.62 cfs @ 12.11 hrs HW=104.00' TW=100.19' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 8.62 cfs @ 4.88 fps)**Summary for Pond C4.7: 15" HDPE**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 2.23" for 25-Yr Storm event
 Inflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af
 Outflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af
 Secondary = 1.23 cfs @ 12.18 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.21' @ 12.22 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.20'	15.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.20' / 95.00' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	97.40'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=5.48 cfs @ 12.22 hrs HW=97.21' TW=95.44' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.48 cfs @ 4.47 fps)**Secondary OutFlow** Max=0.00 cfs @ 12.18 hrs HW=97.17' TW=95.48' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Pond C4.8: Twin 18" HDPE

Inflow Area = 5.371 ac, 69.00% Impervious, Inflow Depth = 4.66" for 25-Yr Storm event
 Inflow = 23.18 cfs @ 12.10 hrs, Volume= 2.085 af
 Outflow = 18.69 cfs @ 12.18 hrs, Volume= 2.085 af, Atten= 19%, Lag= 4.8 min
 Primary = 15.10 cfs @ 12.18 hrs, Volume= 2.069 af
 Secondary = 3.59 cfs @ 12.18 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 97.42' @ 12.18 hrs Surf.Area= 10,132 sf Storage= 6,007 cf

Plug-Flow detention time= 2.8 min calculated for 2.085 af (100% of inflow)
 Center-of-Mass det. time= 2.7 min (958.6 - 955.9)

Volume	Invert	Avail.Storage	Storage Description		
#1	95.00'	6,851 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert X 2.00 L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 95.00' S= 0.0050 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	97.40'	400.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.10 cfs @ 12.18 hrs HW=97.42' TW=95.47' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 15.10 cfs @ 4.27 fps)

Secondary OutFlow Max=3.53 cfs @ 12.18 hrs HW=97.42' TW=95.47' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 3.53 cfs @ 0.40 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'

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Device	Routing	Invert	Outlet Devices
#1	Primary	101.57'	15.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.57' / 101.02' S= 0.0050 ' / Cc= 0.900 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'	18.0" Round Culvert L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.77' / 100.00' S= 0.0050 ' / Cc= 0.900 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 = 10.56 cfs @ 12.10 hrs, Volume= 0.924 af
Outflow = 10.56 cfs @ 12.10 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min
Primary = 10.56 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= 99.56' @ 12.11 hrs
Flood Elev= 103.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	96.13'	18.0" Round Culvert L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.13' / 95.41' S= 0.0050 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.54 cfs @ 12.10 hrs HW=99.52' TW=97.22' (Dynamic Tailwater)
↑1=Culvert (Outlet Controls 10.54 cfs @ 5.97 fps)

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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'	15.0" Round Culvert L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.42' / 119.38' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 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'	15.0" Round Culvert L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 119.28' / 112.00' S= 0.0607 ' / S= 0.0607 ' Cc= 0.900 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 = 1.312 ac, 79.12% Impervious, Inflow Depth = 4.65" for 25-Yr Storm event
 Inflow = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af
 Outflow = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.06 cfs @ 12.07 hrs, Volume= 0.509 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 101.29' @ 12.07 hrs

Flood Elev= 103.60'

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Device	Routing	Invert	Outlet Devices
#1	Primary	99.11'	15.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.11' / 99.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.04 cfs @ 12.07 hrs HW=101.27' TW=99.85' (Dynamic Tailwater)
↑1=Culvert (Barrel Controls 7.04 cfs @ 5.74 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'	15.0" Round Culvert L= 280.0' CPP, square edge headwall, Ke= 0.500 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=97.05' (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'	10.0" Round Culvert L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.20' / 122.95' S= 0.0260 '/' Cc= 0.900 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)

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Summary for Pond SF1: Soil Filter 1

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 4.46" for 25-Yr Storm event
 Inflow = 8.01 cfs @ 12.07 hrs, Volume= 0.574 af
 Outflow = 6.02 cfs @ 12.14 hrs, Volume= 0.574 af, Atten= 25%, Lag= 4.0 min
 Primary = 5.88 cfs @ 12.14 hrs, Volume= 0.573 af
 Secondary = 0.14 cfs @ 12.14 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 99.93' @ 12.14 hrs Surf.Area= 5,324 sf Storage= 8,136 cf

Plug-Flow detention time= 350.7 min calculated for 0.574 af (100% of inflow)
 Center-of-Mass det. time= 351.2 min (1,140.0 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	12.0" Round Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.88 cfs @ 12.14 hrs HW=99.93' TW=97.38' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 5.88 cfs of 6.04 cfs potential flow)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.09 cfs)
 ↑ **3=Orifice/Grate** (Weir Controls 5.78 cfs @ 2.14 fps)

Secondary OutFlow Max=0.14 cfs @ 12.14 hrs HW=99.93' TW=97.38' (Dynamic Tailwater)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.46 fps)

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 = 6.98 cfs @ 12.12 hrs, Volume= 0.610 af, Atten= 14%, Lag= 2.9 min
 Primary = 6.98 cfs @ 12.12 hrs, Volume= 0.610 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= 100.98' @ 12.12 hrs Surf.Area= 4,431 sf Storage= 7,170 cf

Plug-Flow detention time= 297.3 min calculated for 0.610 af (100% of inflow)
 Center-of-Mass det. time= 297.8 min (1,067.5 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	99.00'	16,412 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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'	15.0" Round Culvert L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.13' S= 0.0051 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	99.00'	0.750 in/hr Exfiltration over Horizontal area Phase-In= 0.01'
#3	Device 1	100.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	101.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.63 cfs @ 12.12 hrs HW=100.98' TW=99.53' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 6.63 cfs @ 5.40 fps)
 ↑ **2=Exfiltration** (Passes < 0.08 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 6.90 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 = 4.370 ac, 36.61% Impervious, Inflow Depth = 2.02" for 25-Yr Storm event
 Inflow = 8.67 cfs @ 12.11 hrs, Volume= 0.736 af
 Outflow = 3.82 cfs @ 12.39 hrs, Volume= 0.736 af, Atten= 56%, Lag= 16.8 min
 Primary = 3.82 cfs @ 12.39 hrs, Volume= 0.736 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 100.48' @ 12.39 hrs Surf.Area= 8,509 sf Storage= 7,120 cf

Plug-Flow detention time= 46.5 min calculated for 0.736 af (100% of inflow)
 Center-of-Mass det. time= 46.6 min (877.5 - 830.9)

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Volume	Invert	Avail.Storage	Storage Description
#1	99.40'	23,709 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	18.0" Round Culvert L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 99.40' / 98.50' S= 0.0113 ' / S= 0.0113 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.82 cfs @ 12.39 hrs HW=100.48' TW=97.66' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.82 cfs @ 2.80 fps)**Summary for Pond W2: Wetland**

Inflow Area = 5.409 ac, 29.58% Impervious, Inflow Depth = 2.23" for 25-Yr Storm event
 Inflow = 5.92 cfs @ 12.10 hrs, Volume= 1.006 af
 Outflow = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af, Atten= 7%, Lag= 6.9 min
 Primary = 5.48 cfs @ 12.22 hrs, Volume= 1.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 97.68' @ 12.19 hrs Surf.Area= 1,564 sf Storage= 531 cf

Plug-Flow detention time= 1.4 min calculated for 1.006 af (100% of inflow)

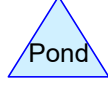
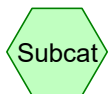
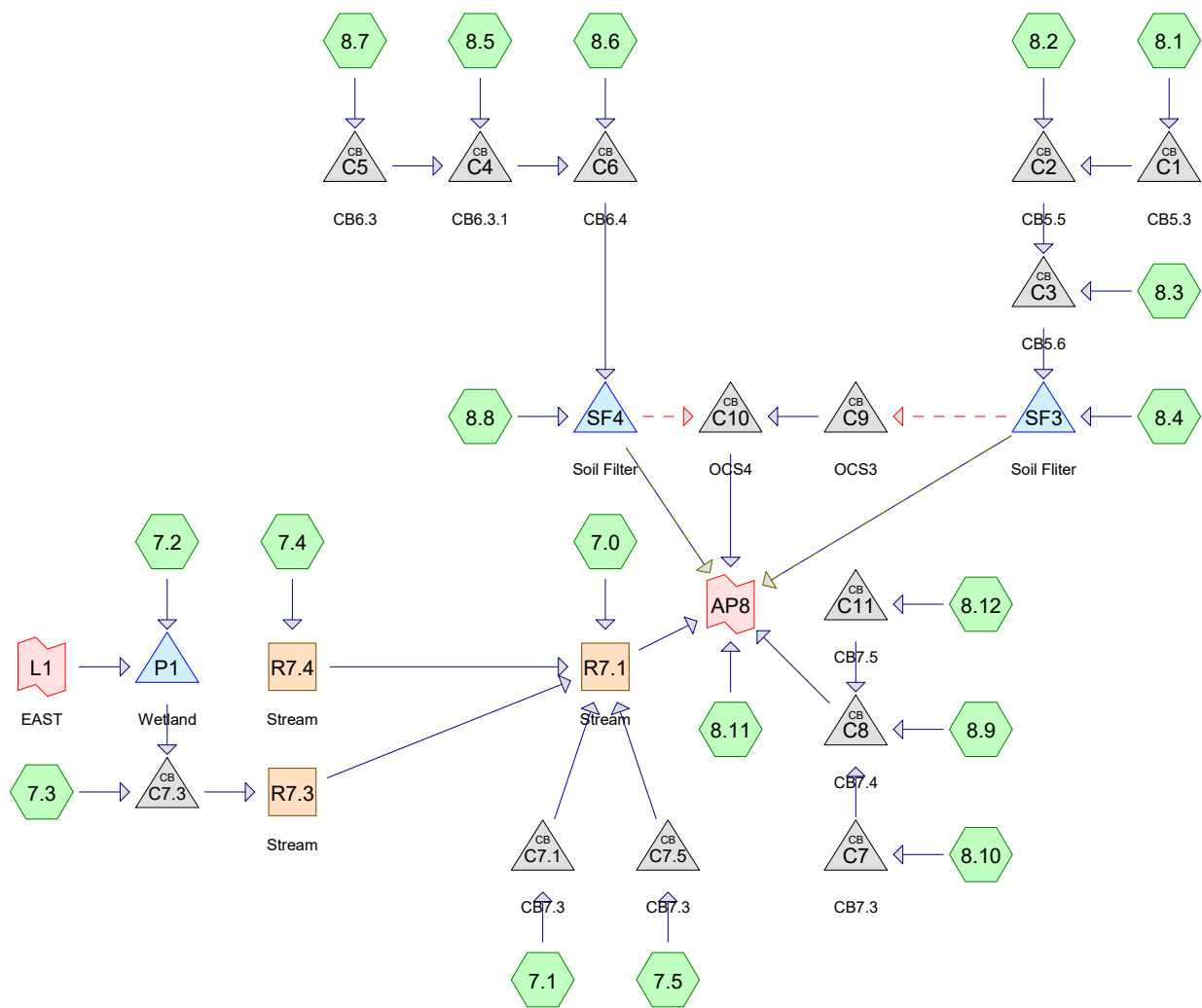
Center-of-Mass det. time= 1.1 min (865.1 - 864.0)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	6,210 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (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'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 2.00 Width (feet) 4.00 6.00 8.00

Primary OutFlow Max=7.97 cfs @ 12.22 hrs HW=97.68' TW=97.21' (Dynamic Tailwater)↑**1=Custom Weir/Orifice** (Weir Controls 7.97 cfs @ 2.52 fps)



Routing Diagram for Post-Development WEST
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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>1.19" Flow Length=270' Tc=49.4 min CN=78 Runoff=4.24 cfs 0.697 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>0.87" Flow Length=115' Tc=6.5 min CN=72 Runoff=0.49 cfs 0.038 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>1.18" Flow Length=330' Tc=50.7 min CN=78 Runoff=6.23 cfs 1.038 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>0.71" Flow Length=275' Tc=39.9 min CN=69 Runoff=0.91 cfs 0.150 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>0.51" Flow Length=235' Tc=29.3 min CN=64 Runoff=0.45 cfs 0.074 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>0.97" Tc=5.0 min CN=74 Runoff=0.63 cfs 0.046 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>2.35" Tc=5.0 min CN=93 Runoff=1.43 cfs 0.101 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>1.91" Tc=5.0 min CN=88 Runoff=4.38 cfs 0.302 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>1.53" Tc=5.0 min CN=83 Runoff=3.13 cfs 0.216 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>2.65" Tc=5.0 min CN=96 Runoff=1.20 cfs 0.088 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>1.99" Tc=5.0 min CN=89 Runoff=1.59 cfs 0.110 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>2.55" Tc=5.0 min CN=95 Runoff=1.18 cfs 0.086 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>1.32" Tc=5.0 min CN=80 Runoff=0.36 cfs 0.025 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>2.65" Tc=5.0 min CN=96 Runoff=2.17 cfs 0.160 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>2.76" Tc=5.0 min CN=97 Runoff=1.07 cfs 0.080 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>2.87" Tc=5.0 min CN=98 Runoff=0.69 cfs 0.053 af

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>1.32" Tc=5.0 min CN=80 Runoff=0.35 cfs 0.024 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>2.76" Tc=5.0 min CN=97 Runoff=1.79 cfs 0.134 af
Reach R7.1: Stream	Avg. Flow Depth=0.80' Max Vel=3.97 fps Inflow=12.05 cfs 3.064 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=12.01 cfs 3.054 af
Reach R7.3: Stream	Avg. Flow Depth=0.47' Max Vel=4.63 fps Inflow=7.49 cfs 2.211 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=7.49 cfs 2.209 af
Reach R7.4: Stream	Avg. Flow Depth=0.07' Max Vel=2.07 fps Inflow=0.45 cfs 0.074 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=0.45 cfs 0.074 af
Pond C1: CB5.3	Peak Elev=76.55' Inflow=1.43 cfs 0.101 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=1.43 cfs 0.101 af
Pond C10: OCS4	Peak Elev=71.36' Inflow=2.60 cfs 0.202 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=2.60 cfs 0.202 af
Pond C11: CB7.5	Peak Elev=73.27' Inflow=1.20 cfs 0.088 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=1.20 cfs 0.088 af
Pond C2: CB5.5	Peak Elev=76.00' Inflow=3.02 cfs 0.211 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=3.02 cfs 0.211 af
Pond C3: CB5.6	Peak Elev=74.98' Inflow=4.20 cfs 0.297 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=4.20 cfs 0.297 af
Pond C4: CB6.3.1	Peak Elev=75.19' Inflow=2.86 cfs 0.213 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=2.86 cfs 0.213 af
Pond C5: CB6.3	Peak Elev=75.35' Inflow=0.69 cfs 0.053 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=0.69 cfs 0.053 af
Pond C6: CB6.4	Peak Elev=74.95' Inflow=3.93 cfs 0.294 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=3.93 cfs 0.294 af
Pond C7: CB7.3	Peak Elev=73.91' Inflow=4.38 cfs 0.302 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=4.38 cfs 0.302 af
Pond C7.1: CB7.3	Peak Elev=78.87' Inflow=0.49 cfs 0.038 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=0.49 cfs 0.038 af
Pond C7.3:	Peak Elev=76.70' Inflow=7.49 cfs 2.211 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=7.49 cfs 2.211 af
Pond C7.5: CB7.3	Peak Elev=80.19' Inflow=0.63 cfs 0.046 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=0.63 cfs 0.046 af

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Pond C8: CB7.4Peak Elev=72.32' Inflow=7.36 cfs 0.524 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=7.36 cfs 0.524 af**Pond C9: OCS3**Peak Elev=71.68' Inflow=1.29 cfs 0.105 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 '/' Outflow=1.29 cfs 0.105 af**Pond P1: Wetland**Peak Elev=83.63' Storage=12,495 cf Inflow=8.88 cfs 2.073 af
Outflow=6.84 cfs 2.062 af**Pond SF3: Soil Fliter**Peak Elev=74.66' Storage=6,216 cf Inflow=4.56 cfs 0.322 af
Primary=0.08 cfs 0.096 af Secondary=1.29 cfs 0.105 af Tertiary=0.00 cfs 0.000 af Outflow=1.37 cfs 0.201 af**Pond SF4: Soil Filter**Peak Elev=74.66' Storage=6,168 cf Inflow=4.28 cfs 0.318 af
Primary=0.07 cfs 0.103 af Secondary=1.32 cfs 0.097 af Tertiary=0.00 cfs 0.000 af Outflow=1.40 cfs 0.201 af**Link AP8:**Inflow=14.39 cfs 4.196 af
Primary=14.39 cfs 4.196 af**Link** 2-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=6.65 cfs 1.035 af
Area= 10.780 ac 49.22% Imperv. Primary=6.65 cfs 1.035 af**Total Runoff Area = 30.843 ac Runoff Volume = 3.423 af Average Runoff Depth = 1.33"**
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Summary for Subcatchment 7.0:

Runoff = 4.24 cfs @ 12.69 hrs, Volume= 0.697 af, Depth> 1.19"

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
* 18,020	98	Impervious
3,144	80	>75% Grass cover, Good, HSG D
36,715	73	Brush, Good, HSG D
249,442	77	Woods, Good, HSG D
307,321	78	Weighted Average
289,301		94.14% Pervious Area
18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af, Depth> 0.87"

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
* 2,697	98	Impervious
750	74	>75% Grass cover, Good, HSG C
12,331	65	Brush, Good, HSG C
7,352	73	Brush, Good, HSG D
23,130	72	Weighted Average
20,433		88.34% Pervious Area
2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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Summary for Subcatchment 7.2:

Runoff = 6.23 cfs @ 12.73 hrs, Volume= 1.038 af, Depth> 1.18"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 0.91 cfs @ 12.64 hrs, Volume= 0.150 af, Depth> 0.71"

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
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 0.45 cfs @ 12.52 hrs, Volume= 0.074 af, Depth> 0.51"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 0.97"

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"

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af, Depth> 2.35"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af, Depth> 1.91"

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 2-Yr Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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

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

Summary for Subcatchment 8.11:

Runoff = 3.13 cfs @ 12.08 hrs, Volume= 0.216 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af, Depth> 2.65"

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 2-Yr Storm Rainfall=3.10"

Area (sf)	CN	Description
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.110 af, Depth> 1.99"

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"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 1.18 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 2.55"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 1.32"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Summary for Subcatchment 8.5:

Runoff = 2.17 cfs @ 12.07 hrs, Volume= 0.160 af, Depth> 2.65"

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 2-Yr Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 1.07 cfs @ 12.07 hrs, Volume= 0.080 af, Depth> 2.76"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 0.053 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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

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

Summary for Subcatchment 8.8:

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 1.32"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 1.79 cfs @ 12.07 hrs, Volume= 0.134 af, Depth> 2.76"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: Stream

Inflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 1.09" for 2-Yr Storm event
Inflow = 12.05 cfs @ 12.77 hrs, Volume= 3.064 af
Outflow = 12.01 cfs @ 12.81 hrs, Volume= 3.054 af, Atten= 0%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.97 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 8.9 min

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Peak Storage= 2,602 cf @ 12.81 hrs

Average Depth at Peak Storage= 0.80'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 1.11" for 2-Yr Storm event

Inflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af

Outflow = 7.49 cfs @ 12.93 hrs, Volume= 2.209 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 4.63 fps, Min. Travel Time= 1.3 min

Avg. Velocity= 1.97 fps, Avg. Travel Time= 3.0 min

Peak Storage= 574 cf @ 12.93 hrs

Average Depth at Peak Storage= 0.47'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 0.51" for 2-Yr Storm event

Inflow = 0.45 cfs @ 12.52 hrs, Volume= 0.074 af

Outflow = 0.45 cfs @ 12.53 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.7 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 2.07 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.04 fps, Avg. Travel Time= 2.2 min

Peak Storage= 30 cf @ 12.53 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'



Summary for Pond C1: CB5.3

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 2.35" for 2-Yr Storm event
Inflow = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af
Outflow = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 12.07 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.55' @ 12.08 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.38 cfs @ 12.07 hrs HW=76.54' TW=75.99' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 1.38 cfs @ 3.07 fps)

Summary for Pond C10: OCS4

Inflow = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af
Outflow = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.60 cfs @ 12.37 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 71.36' @ 12.37 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.60 cfs @ 12.37 hrs HW=71.36' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.60 cfs @ 3.44 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 2.65" for 2-Yr Storm event
Inflow = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af
Outflow = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.07 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.27' @ 12.07 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.19 cfs @ 12.07 hrs HW=73.27' TW=72.31' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.19 cfs @ 2.57 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 2.15" for 2-Yr Storm event
Inflow = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af
Outflow = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.07 hrs, Volume= 0.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.00' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.97 cfs @ 12.07 hrs HW=75.99' TW=74.97' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 2.97 cfs @ 3.45 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 2.25" for 2-Yr Storm event
 Inflow = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af
 Outflow = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.20 cfs @ 12.07 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.98' @ 12.07 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.17 cfs @ 12.07 hrs HW=74.97' TW=74.16' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 4.17 cfs @ 3.95 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 2.70" for 2-Yr Storm event
 Inflow = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af
 Outflow = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.86 cfs @ 12.07 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.19' @ 12.08 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.65 cfs @ 12.07 hrs HW=75.16' TW=74.95' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 2.65 cfs @ 2.61 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 2.87" for 2-Yr Storm event
 Inflow = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af
 Outflow = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.69 cfs @ 12.07 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.35' @ 12.10 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.56 cfs @ 12.07 hrs HW=75.31' TW=75.16' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 0.56 cfs @ 1.33 fps)

Summary for Pond C6: CB6.4

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 2.72" for 2-Yr Storm event
 Inflow = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af
 Outflow = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.93 cfs @ 12.07 hrs, Volume= 0.294 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.95' @ 12.07 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.87 cfs @ 12.07 hrs HW=74.95' TW=74.25' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 3.87 cfs @ 3.93 fps)

Summary for Pond C7: CB7.3

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 1.91" for 2-Yr Storm event
 Inflow = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af
 Outflow = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.38 cfs @ 12.07 hrs, Volume= 0.302 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.91' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.32 cfs @ 12.07 hrs HW=73.91' TW=72.31' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 4.32 cfs @ 4.56 fps)

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 0.87" for 2-Yr Storm event
 Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af
 Outflow = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.49 cfs @ 12.11 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 78.87' @ 12.11 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.48 cfs @ 12.11 hrs HW=78.86' TW=76.41' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.48 cfs @ 1.62 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 1.11" for 2-Yr Storm event
 Inflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af
 Outflow = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.49 cfs @ 12.92 hrs, Volume= 2.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.70' @ 12.92 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=7.49 cfs @ 12.92 hrs HW=76.70' TW=75.47' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 7.49 cfs @ 2.60 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 0.97" for 2-Yr Storm event
 Inflow = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af
 Outflow = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.19' @ 12.08 hrs

Flood Elev= 83.00'

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=0.63 cfs @ 12.08 hrs HW=80.19' TW=76.38' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.63 cfs @ 1.12 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 2.18" for 2-Yr Storm event
Inflow = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af
Outflow = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min
Primary = 7.36 cfs @ 12.07 hrs, Volume= 0.524 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.32' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.30 cfs @ 12.07 hrs HW=72.31' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 7.30 cfs @ 4.44 fps)**Summary for Pond C9: OCS3**

Inflow = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af
Outflow = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 71.68' @ 12.39 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.30 cfs @ 12.39 hrs HW=71.68' TW=71.36' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.30 cfs @ 2.43 fps)

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 1.17" for 2-Yr Storm event
 Inflow = 8.88 cfs @ 12.53 hrs, Volume= 2.073 af
 Outflow = 6.84 cfs @ 13.00 hrs, Volume= 2.062 af, Atten= 23%, Lag= 28.2 min
 Primary = 6.84 cfs @ 13.00 hrs, Volume= 2.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 83.63' @ 13.00 hrs Surf.Area= 20,135 sf Storage= 12,495 cf

Plug-Flow detention time= 23.7 min calculated for 2.060 af (99% of inflow)
 Center-of-Mass det. time= 20.5 min (885.8 - 865.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=6.84 cfs @ 13.00 hrs HW=83.63' TW=76.70' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 6.84 cfs @ 3.09 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 6.84 cfs of 9.42 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 2.13" for 2-Yr Storm event
 Inflow = 4.56 cfs @ 12.07 hrs, Volume= 0.322 af
 Outflow = 1.37 cfs @ 12.39 hrs, Volume= 0.201 af, Atten= 70%, Lag= 19.2 min
 Primary = 0.08 cfs @ 12.39 hrs, Volume= 0.096 af
 Secondary = 1.29 cfs @ 12.39 hrs, Volume= 0.105 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 74.66' @ 12.39 hrs Surf.Area= 4,427 sf Storage= 6,216 cf

Plug-Flow detention time= 188.0 min calculated for 0.201 af (62% of inflow)
 Center-of-Mass det. time= 85.6 min (885.0 - 799.5)

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.39 hrs HW=74.66' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=1.29 cfs @ 12.39 hrs HW=74.66' TW=71.68' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 1.29 cfs @ 1.30 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond SF4: Soil Filter**

Inflow Area =	1.518 ac, 79.42% Impervious, Inflow Depth > 2.51" for 2-Yr Storm event
Inflow =	4.28 cfs @ 12.07 hrs, Volume= 0.318 af
Outflow =	1.40 cfs @ 12.35 hrs, Volume= 0.201 af, Atten= 67%, Lag= 16.7 min
Primary =	0.07 cfs @ 12.35 hrs, Volume= 0.103 af
Secondary =	1.32 cfs @ 12.35 hrs, Volume= 0.097 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.66' @ 12.35 hrs Surf.Area= 4,308 sf Storage= 6,168 cf

Plug-Flow detention time= 185.6 min calculated for 0.201 af (63% of inflow)

Center-of-Mass det. time= 83.3 min (857.1 - 773.8)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.35 hrs HW=74.66' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)**Secondary OutFlow** Max=1.32 cfs @ 12.35 hrs HW=74.66' TW=71.36' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 1.32 cfs @ 1.31 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 1.21" for 2-Yr Storm event
 Inflow = 14.39 cfs @ 12.73 hrs, Volume= 4.196 af
 Primary = 14.39 cfs @ 12.73 hrs, Volume= 4.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 1.15" for 2-Yr Storm event
 Inflow = 6.65 cfs @ 12.13 hrs, Volume= 1.035 af
 Primary = 6.65 cfs @ 12.13 hrs, Volume= 1.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

2-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>2.35" Flow Length=270' Tc=49.4 min CN=78 Runoff=8.65 cfs 1.381 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>1.89" Flow Length=115' Tc=6.5 min CN=72 Runoff=1.14 cfs 0.084 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>2.35" Flow Length=330' Tc=50.7 min CN=78 Runoff=12.69 cfs 2.059 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>1.65" Flow Length=275' Tc=39.9 min CN=69 Runoff=2.34 cfs 0.346 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>1.32" Flow Length=235' Tc=29.3 min CN=64 Runoff=1.43 cfs 0.192 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>2.05" Tc=5.0 min CN=74 Runoff=1.40 cfs 0.097 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>3.80" Tc=5.0 min CN=93 Runoff=2.26 cfs 0.164 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>3.29" Tc=5.0 min CN=88 Runoff=7.43 cfs 0.520 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>2.81" Tc=5.0 min CN=83 Runoff=5.77 cfs 0.398 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>4.13" Tc=5.0 min CN=96 Runoff=1.82 cfs 0.138 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>3.39" Tc=5.0 min CN=89 Runoff=2.66 cfs 0.187 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>4.02" Tc=5.0 min CN=95 Runoff=1.82 cfs 0.135 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>2.54" Tc=5.0 min CN=80 Runoff=0.70 cfs 0.048 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>4.13" Tc=5.0 min CN=96 Runoff=3.30 cfs 0.250 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>4.25" Tc=5.0 min CN=97 Runoff=1.61 cfs 0.124 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>4.36" Tc=5.0 min CN=98 Runoff=1.04 cfs 0.081 af

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>2.54" Tc=5.0 min CN=80 Runoff=0.68 cfs 0.047 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>4.25" Tc=5.0 min CN=97 Runoff=2.69 cfs 0.207 af
Reach R7.1: Stream	Avg. Flow Depth=1.20' Max Vel=4.88 fps Inflow=24.59 cfs 6.113 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=24.53 cfs 6.100 af
Reach R7.3: Stream	Avg. Flow Depth=0.69' Max Vel=5.74 fps Inflow=14.67 cfs 4.363 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=14.67 cfs 4.359 af
Reach R7.4: Stream	Avg. Flow Depth=0.14' Max Vel=3.19 fps Inflow=1.43 cfs 0.192 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=1.43 cfs 0.192 af
Pond C1: CB5.3	Peak Elev=77.49' Inflow=2.26 cfs 0.164 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=2.26 cfs 0.164 af
Pond C10: OCS4	Peak Elev=72.38' Inflow=10.82 cfs 0.566 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=10.82 cfs 0.566 af
Pond C11: CB7.5	Peak Elev=73.47' Inflow=1.82 cfs 0.138 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=1.82 cfs 0.138 af
Pond C2: CB5.5	Peak Elev=77.02' Inflow=4.92 cfs 0.352 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=4.92 cfs 0.352 af
Pond C3: CB5.6	Peak Elev=75.49' Inflow=6.73 cfs 0.487 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=6.73 cfs 0.487 af
Pond C4: CB6.3.1	Peak Elev=76.52' Inflow=4.34 cfs 0.331 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=4.34 cfs 0.331 af
Pond C5: CB6.3	Peak Elev=76.64' Inflow=1.04 cfs 0.081 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=1.04 cfs 0.081 af
Pond C6: CB6.4	Peak Elev=76.02' Inflow=5.95 cfs 0.455 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=5.95 cfs 0.455 af
Pond C7: CB7.3	Peak Elev=74.43' Inflow=7.43 cfs 0.520 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=7.43 cfs 0.520 af
Pond C7.1: CB7.3	Peak Elev=79.08' Inflow=1.14 cfs 0.084 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=1.14 cfs 0.084 af
Pond C7.3:	Peak Elev=77.28' Inflow=14.67 cfs 4.363 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=14.67 cfs 4.363 af
Pond C7.5: CB7.3	Peak Elev=80.33' Inflow=1.40 cfs 0.097 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=1.40 cfs 0.097 af

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Pond C8: CB7.4

Peak Elev=72.83' Inflow=11.93 cfs 0.865 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=11.93 cfs 0.865 af

Pond C9: OCS3

Peak Elev=72.83' Inflow=5.66 cfs 0.303 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 '/' Outflow=5.66 cfs 0.303 af

Pond P1: Wetland

Peak Elev=84.50' Storage=34,069 cf Inflow=20.93 cfs 4.035 af
Outflow=13.08 cfs 4.016 af

Pond SF3: Soil Fliter

Peak Elev=74.92' Storage=7,419 cf Inflow=7.43 cfs 0.535 af
Primary=0.08 cfs 0.105 af Secondary=5.66 cfs 0.303 af Tertiary=0.00 cfs 0.000 af Outflow=5.74 cfs 0.408 af

Pond SF4: Soil Filter

Peak Elev=74.90' Storage=7,215 cf Inflow=6.63 cfs 0.501 af
Primary=0.08 cfs 0.113 af Secondary=5.17 cfs 0.264 af Tertiary=0.00 cfs 0.000 af Outflow=5.25 cfs 0.376 af

Link AP8:

Inflow=35.94 cfs 8.147 af
Primary=35.94 cfs 8.147 af

Link 10-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=14.70 cfs 1.976 af
Area= 10.780 ac 49.22% Imperv. Primary=14.70 cfs 1.976 af

Total Runoff Area = 30.843 ac Runoff Volume = 6.457 af Average Runoff Depth = 2.51"
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Summary for Subcatchment 7.0:

Runoff = 8.65 cfs @ 12.68 hrs, Volume= 1.381 af, Depth> 2.35"

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
*	18,020	98	Impervious
	3,144	80	>75% Grass cover, Good, HSG D
	36,715	73	Brush, Good, HSG D
	249,442	77	Woods, Good, HSG D
	307,321	78	Weighted Average
	289,301		94.14% Pervious Area
	18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af, Depth> 1.89"

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
*	2,697	98	Impervious
	750	74	>75% Grass cover, Good, HSG C
	12,331	65	Brush, Good, HSG C
	7,352	73	Brush, Good, HSG D
	23,130	72	Weighted Average
	20,433		88.34% Pervious Area
	2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Subcatchment 7.2:

Runoff = 12.69 cfs @ 12.69 hrs, Volume= 2.059 af, Depth> 2.35"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 2.34 cfs @ 12.58 hrs, Volume= 0.346 af, Depth> 1.65"

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 10-Yr Storm Rainfall=4.60"

Area (sf)	CN	Description
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af, Depth> 1.32"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af, Depth> 2.05"

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"

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af, Depth> 3.80"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af, Depth> 3.29"

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
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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

Summary for Subcatchment 8.11:

Runoff = 5.77 cfs @ 12.07 hrs, Volume= 0.398 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af, Depth> 4.13"

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
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 2.66 cfs @ 12.07 hrs, Volume= 0.187 af, Depth> 3.39"

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"

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.135 af, Depth> 4.02"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 0.048 af, Depth> 2.54"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Summary for Subcatchment 8.5:

Runoff = 3.30 cfs @ 12.07 hrs, Volume= 0.250 af, Depth> 4.13"

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
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 1.61 cfs @ 12.07 hrs, Volume= 0.124 af, Depth> 4.25"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 1.04 cfs @ 12.07 hrs, Volume= 0.081 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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

Summary for Subcatchment 8.8:

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.047 af, Depth> 2.54"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 2.69 cfs @ 12.07 hrs, Volume= 0.207 af, Depth> 4.25"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: Stream

Inflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 2.18" for 10-Yr Storm event
Inflow = 24.59 cfs @ 12.69 hrs, Volume= 6.113 af
Outflow = 24.53 cfs @ 12.73 hrs, Volume= 6.100 af, Atten= 0%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.88 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.98 fps, Avg. Travel Time= 7.2 min

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Peak Storage= 4,318 cf @ 12.73 hrs

Average Depth at Peak Storage= 1.20'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event

Inflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af

Outflow = 14.67 cfs @ 12.83 hrs, Volume= 4.359 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 5.74 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 2.42 fps, Avg. Travel Time= 2.4 min

Peak Storage= 907 cf @ 12.83 hrs

Average Depth at Peak Storage= 0.69'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 1.32" for 10-Yr Storm event

Inflow = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af

Outflow = 1.43 cfs @ 12.46 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.4 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 3.19 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 1.29 fps, Avg. Travel Time= 1.8 min

Peak Storage= 63 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'

**Summary for Pond C1: CB5.3**

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 3.80" for 10-Yr Storm event

Inflow = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af

Outflow = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min

Primary = 2.26 cfs @ 12.07 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.49' @ 12.09 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.55 cfs @ 12.07 hrs HW=77.22' TW=76.97' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.55 cfs @ 1.97 fps)**Summary for Pond C10: OCS4**

Inflow = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af

Outflow = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af, Atten= 0%, Lag= 0.0 min

Primary = 10.82 cfs @ 12.13 hrs, Volume= 0.566 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.38' @ 12.13 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.77 cfs @ 12.13 hrs HW=72.37' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 10.77 cfs @ 4.83 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 4.13" for 10-Yr Storm event
Inflow = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af
Outflow = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.82 cfs @ 12.07 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.47' @ 12.08 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.74 cfs @ 12.07 hrs HW=73.46' TW=72.82' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.74 cfs @ 3.78 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 3.57" for 10-Yr Storm event
Inflow = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af
Outflow = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.07 hrs, Volume= 0.352 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.02' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.78 cfs @ 12.07 hrs HW=76.98' TW=75.47' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 4.78 cfs @ 3.90 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 3.68" for 10-Yr Storm event
 Inflow = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af
 Outflow = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.73 cfs @ 12.07 hrs, Volume= 0.487 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.49' @ 12.08 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.41 cfs @ 12.07 hrs HW=75.47' TW=74.85' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 6.41 cfs @ 4.11 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 4.19" for 10-Yr Storm event
 Inflow = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af
 Outflow = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.34 cfs @ 12.07 hrs, Volume= 0.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.52' @ 12.09 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / S= 0.0058 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.07 hrs HW=76.39' TW=75.99' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 3.74 cfs @ 3.05 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-Yr Storm event
 Inflow = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af
 Outflow = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.04 cfs @ 12.07 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.64' @ 12.11 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.07 hrs HW=76.24' TW=76.39' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond C6: CB6.4**

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 4.20" for 10-Yr Storm event
Inflow = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af
Outflow = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af, Atten= 0%, Lag= 0.0 min
Primary = 5.95 cfs @ 12.07 hrs, Volume= 0.455 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.02' @ 12.08 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.80 cfs @ 12.07 hrs HW=75.99' TW=74.84' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 5.80 cfs @ 4.72 fps)**Summary for Pond C7: CB7.3**

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 3.29" for 10-Yr Storm event
Inflow = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af
Outflow = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af, Atten= 0%, Lag= 0.0 min
Primary = 7.43 cfs @ 12.07 hrs, Volume= 0.520 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.43' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.28 cfs @ 12.07 hrs HW=74.41' TW=72.82' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.28 cfs @ 4.91 fps)

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 1.89" for 10-Yr Storm event
 Inflow = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af
 Outflow = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.10 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.08' @ 12.10 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' / S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.14 cfs @ 12.10 hrs HW=79.08' TW=76.67' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.14 cfs @ 2.04 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event
 Inflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af
 Outflow = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af, Atten= 0%, Lag= 0.0 min
 Primary = 14.67 cfs @ 12.82 hrs, Volume= 4.363 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.28' @ 12.82 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=14.67 cfs @ 12.82 hrs HW=77.28' TW=75.69' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 14.67 cfs @ 3.19 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 2.05" for 10-Yr Storm event
 Inflow = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af
 Outflow = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.40 cfs @ 12.08 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.33' @ 12.08 hrs

Flood Elev= 83.00'

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=1.39 cfs @ 12.08 hrs HW=80.33' TW=76.64' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.39 cfs @ 1.45 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 3.60" for 10-Yr Storm event
 Inflow = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af
 Outflow = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.93 cfs @ 12.07 hrs, Volume= 0.865 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.83' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=11.84 cfs @ 12.07 hrs HW=72.82' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 11.84 cfs @ 4.98 fps)**Summary for Pond C9: OCS3**

Inflow = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af
 Outflow = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.83' @ 12.14 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.50 cfs @ 12.13 hrs HW=72.81' TW=72.37' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 5.50 cfs @ 3.28 fps)

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Type III 24-hr 10-Yr Storm Rainfall=4.60"

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 2.27" for 10-Yr Storm event
 Inflow = 20.93 cfs @ 12.41 hrs, Volume= 4.035 af
 Outflow = 13.08 cfs @ 13.04 hrs, Volume= 4.016 af, Atten= 38%, Lag= 37.6 min
 Primary = 13.08 cfs @ 13.04 hrs, Volume= 4.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 84.50' @ 13.04 hrs Surf.Area= 28,180 sf Storage= 34,069 cf

Plug-Flow detention time= 30.7 min calculated for 4.016 af (100% of inflow)
 Center-of-Mass det. time= 27.9 min (873.4 - 845.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S= 0.0560 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=13.08 cfs @ 13.04 hrs HW=84.50' TW=77.26' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 13.08 cfs @ 4.16 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 13.08 cfs of 27.77 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 3.54" for 10-Yr Storm event
 Inflow = 7.43 cfs @ 12.07 hrs, Volume= 0.535 af
 Outflow = 5.74 cfs @ 12.13 hrs, Volume= 0.408 af, Atten= 23%, Lag= 3.7 min
 Primary = 0.08 cfs @ 12.13 hrs, Volume= 0.105 af
 Secondary = 5.66 cfs @ 12.13 hrs, Volume= 0.303 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 74.92' @ 12.13 hrs Surf.Area= 4,656 sf Storage= 7,419 cf

Plug-Flow detention time= 129.0 min calculated for 0.408 af (76% of inflow)
 Center-of-Mass det. time= 46.6 min (833.2 - 786.6)

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.13 hrs HW=74.92' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=5.64 cfs @ 12.13 hrs HW=74.92' TW=72.81' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 5.64 cfs @ 2.12 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond SF4: Soil Filter**

Inflow Area = 1.518 ac, 79.42% Impervious, Inflow Depth > 3.96" for 10-Yr Storm event
 Inflow = 6.63 cfs @ 12.07 hrs, Volume= 0.501 af
 Outflow = 5.25 cfs @ 12.13 hrs, Volume= 0.376 af, Atten= 21%, Lag= 3.5 min
 Primary = 0.08 cfs @ 12.13 hrs, Volume= 0.113 af
 Secondary = 5.17 cfs @ 12.13 hrs, Volume= 0.264 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 74.90' @ 12.13 hrs Surf.Area= 4,489 sf Storage= 7,215 cf

Plug-Flow detention time= 135.4 min calculated for 0.376 af (75% of inflow)

Center-of-Mass det. time= 49.5 min (814.1 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.13 hrs HW=74.90' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=5.14 cfs @ 12.13 hrs HW=74.90' TW=72.37' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 5.14 cfs @ 2.06 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 2.35" for 10-Yr Storm event
 Inflow = 35.94 cfs @ 12.10 hrs, Volume= 8.147 af
 Primary = 35.94 cfs @ 12.10 hrs, Volume= 8.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 2.20" for 10-Yr Storm event
 Inflow = 14.70 cfs @ 12.19 hrs, Volume= 1.976 af
 Primary = 14.70 cfs @ 12.19 hrs, Volume= 1.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

10-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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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

Subcatchment 7.0:	Runoff Area=307,321 sf 5.86% Impervious Runoff Depth>3.37" Flow Length=270' Tc=49.4 min CN=78 Runoff=12.42 cfs 1.980 af
Subcatchment 7.1:	Runoff Area=23,130 sf 11.66% Impervious Runoff Depth>2.83" Flow Length=115' Tc=6.5 min CN=72 Runoff=1.72 cfs 0.125 af
Subcatchment 7.2:	Runoff Area=458,111 sf 0.92% Impervious Runoff Depth>3.37" Flow Length=330' Tc=50.7 min CN=78 Runoff=18.24 cfs 2.951 af
Subcatchment 7.3:	Runoff Area=109,454 sf 16.90% Impervious Runoff Depth>2.53" Flow Length=275' Tc=39.9 min CN=69 Runoff=3.67 cfs 0.530 af
Subcatchment 7.4:	Runoff Area=76,277 sf 0.00% Impervious Runoff Depth>2.11" Flow Length=235' Tc=29.3 min CN=64 Runoff=2.40 cfs 0.307 af
Subcatchment 7.5:	Runoff Area=24,701 sf 21.31% Impervious Runoff Depth>3.01" Tc=5.0 min CN=74 Runoff=2.07 cfs 0.142 af
Subcatchment 8.1:	Runoff Area=22,593 sf 79.37% Impervious Runoff Depth>4.98" Tc=5.0 min CN=93 Runoff=2.91 cfs 0.215 af
Subcatchment 8.10:	Runoff Area=82,702 sf 61.99% Impervious Runoff Depth>4.43" Tc=5.0 min CN=88 Runoff=9.87 cfs 0.701 af
Subcatchment 8.11:	Runoff Area=73,887 sf 20.41% Impervious Runoff Depth>3.90" Tc=5.0 min CN=83 Runoff=7.94 cfs 0.552 af
Subcatchment 8.12:	Runoff Area=17,412 sf 91.40% Impervious Runoff Depth>5.32" Tc=5.0 min CN=96 Runoff=2.32 cfs 0.177 af
Subcatchment 8.2:	Runoff Area=28,897 sf 55.19% Impervious Runoff Depth>4.54" Tc=5.0 min CN=89 Runoff=3.51 cfs 0.251 af
Subcatchment 8.3:	Runoff Area=17,587 sf 86.61% Impervious Runoff Depth>5.21" Tc=5.0 min CN=95 Runoff=2.32 cfs 0.175 af
Subcatchment 8.4:	Runoff Area=9,852 sf 0.00% Impervious Runoff Depth>3.60" Tc=5.0 min CN=80 Runoff=0.98 cfs 0.068 af
Subcatchment 8.5:	Runoff Area=31,576 sf 89.50% Impervious Runoff Depth>5.32" Tc=5.0 min CN=96 Runoff=4.20 cfs 0.322 af
Subcatchment 8.6:	Runoff Area=15,257 sf 95.18% Impervious Runoff Depth>5.44" Tc=5.0 min CN=97 Runoff=2.04 cfs 0.159 af
Subcatchment 8.7:	Runoff Area=9,738 sf 100.00% Impervious Runoff Depth>5.56" Tc=5.0 min CN=98 Runoff=1.31 cfs 0.104 af

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Subcatchment 8.8:	Runoff Area=9,564 sf 0.00% Impervious Runoff Depth>3.60" Tc=5.0 min CN=80 Runoff=0.96 cfs 0.066 af
Subcatchment 8.9:	Runoff Area=25,455 sf 93.62% Impervious Runoff Depth>5.44" Tc=5.0 min CN=97 Runoff=3.41 cfs 0.265 af
Reach R7.1: Stream	Avg. Flow Depth=1.43' Max Vel=5.35 fps Inflow=34.07 cfs 8.851 af n=0.025 L=860.0' S=0.0093 '/' Capacity=63.12 cfs Outflow=33.98 cfs 8.836 af
Reach R7.3: Stream	Avg. Flow Depth=0.81' Max Vel=6.25 fps Inflow=19.42 cfs 6.300 af n=0.025 L=355.0' S=0.0225 '/' Capacity=98.24 cfs Outflow=19.42 cfs 6.296 af
Reach R7.4: Stream	Avg. Flow Depth=0.19' Max Vel=3.86 fps Inflow=2.40 cfs 0.307 af n=0.025 L=140.0' S=0.0429 '/' Capacity=135.47 cfs Outflow=2.40 cfs 0.307 af
Pond C1: CB5.3	Peak Elev=79.43' Inflow=2.91 cfs 0.215 af 12.0" Round Culvert n=0.013 L=80.0' S=0.0053 '/' Outflow=2.91 cfs 0.215 af
Pond C10: OCS4	Peak Elev=72.91' Inflow=15.31 cfs 0.875 af 24.0" Round Culvert n=0.013 L=63.0' S=0.0052 '/' Outflow=15.31 cfs 0.875 af
Pond C11: CB7.5	Peak Elev=73.76' Inflow=2.32 cfs 0.177 af 12.0" Round Culvert n=0.013 L=49.0' S=0.0143 '/' Outflow=2.32 cfs 0.177 af
Pond C2: CB5.5	Peak Elev=78.66' Inflow=6.42 cfs 0.466 af 15.0" Round Culvert n=0.013 L=209.0' S=0.0051 '/' Outflow=6.42 cfs 0.466 af
Pond C3: CB5.6	Peak Elev=76.02' Inflow=8.74 cfs 0.642 af 18.0" Round Culvert n=0.013 L=62.0' S=0.0052 '/' Outflow=8.74 cfs 0.642 af
Pond C4: CB6.3.1	Peak Elev=77.70' Inflow=5.51 cfs 0.425 af 15.0" Round Culvert n=0.013 L=31.0' S=0.0058 '/' Outflow=5.51 cfs 0.425 af
Pond C5: CB6.3	Peak Elev=77.90' Inflow=1.31 cfs 0.104 af 12.0" Round Culvert n=0.013 L=129.0' S=0.0056 '/' Outflow=1.31 cfs 0.104 af
Pond C6: CB6.4	Peak Elev=76.87' Inflow=7.55 cfs 0.584 af 15.0" Round Culvert n=0.013 L=78.0' S=0.0051 '/' Outflow=7.55 cfs 0.584 af
Pond C7: CB7.3	Peak Elev=75.70' Inflow=9.87 cfs 0.701 af 18.0" Round Culvert n=0.013 L=196.0' S=0.0098 '/' Outflow=9.87 cfs 0.701 af
Pond C7.1: CB7.3	Peak Elev=79.23' Inflow=1.72 cfs 0.125 af 15.0" Round Culvert n=0.013 L=88.0' S=0.0398 '/' Outflow=1.72 cfs 0.125 af
Pond C7.3:	Peak Elev=77.61' Inflow=19.42 cfs 6.300 af 36.0" Round Culvert w/ 1.0" inside fill n=0.013 L=55.0' S=0.0200 '/' Outflow=19.42 cfs 6.300 af
Pond C7.5: CB7.3	Peak Elev=80.43' Inflow=2.07 cfs 0.142 af 36.0" Round Culvert w/ 12.0" inside fill n=0.013 L=70.0' S=0.0563 '/' Outflow=2.07 cfs 0.142 af

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Pond C8: CB7.4

Peak Elev=73.29' Inflow=15.59 cfs 1.143 af
24.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=15.59 cfs 1.143 af

Pond C9: OCS3

Peak Elev=73.85' Inflow=8.13 cfs 0.469 af
18.0" Round Culvert n=0.013 L=77.0' S=0.0053 '/' Outflow=8.13 cfs 0.469 af

Pond P1: Wetland

Peak Elev=85.31' Storage=59,432 cf Inflow=32.95 cfs 5.795 af
Outflow=16.95 cfs 5.770 af

Pond SF3: Soil Fliter

Peak Elev=75.04' Storage=7,964 cf Inflow=9.72 cfs 0.709 af
Primary=0.08 cfs 0.111 af Secondary=8.13 cfs 0.469 af Tertiary=0.19 cfs 0.001 af Outflow=8.40 cfs 0.582 af

Pond SF4: Soil Filter

Peak Elev=75.00' Storage=7,656 cf Inflow=8.51 cfs 0.650 af
Primary=0.08 cfs 0.118 af Secondary=7.18 cfs 0.406 af Tertiary=0.00 cfs 0.000 af Outflow=7.26 cfs 0.523 af

Link AP8:

Inflow=51.61 cfs 11.636 af
Primary=51.61 cfs 11.636 af

Link 25-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce Inflow=25.08 cfs 2.844 af
Area= 10.780 ac 49.22% Imperv. Primary=25.08 cfs 2.844 af

Total Runoff Area = 30.843 ac Runoff Volume = 9.091 af Average Runoff Depth = 3.54"
80.92% Pervious = 24.957 ac 19.08% Impervious = 5.886 ac

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 7.0:

Runoff = 12.42 cfs @ 12.68 hrs, Volume= 1.980 af, Depth> 3.37"

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
*	18,020	98	Impervious
	3,144	80	>75% Grass cover, Good, HSG D
	36,715	73	Brush, Good, HSG D
	249,442	77	Woods, Good, HSG D
	307,321	78	Weighted Average
	289,301		94.14% Pervious Area
	18,020		5.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.6	150	0.0270	0.05		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
2.8	120	0.0800	0.71		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
49.4	270	Total			

Summary for Subcatchment 7.1:

Runoff = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af, Depth> 2.83"

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
*	2,697	98	Impervious
	750	74	>75% Grass cover, Good, HSG C
	12,331	65	Brush, Good, HSG C
	7,352	73	Brush, Good, HSG D
	23,130	72	Weighted Average
	20,433		88.34% Pervious Area
	2,697		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	15	0.2000	0.32		Sheet Flow, AB
					Range n= 0.130 P2= 3.10"
5.7	100	0.0600	0.29		Sheet Flow, BC
					Range n= 0.130 P2= 3.10"
6.5	115	Total			

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 7.2:

Runoff = 18.24 cfs @ 12.68 hrs, Volume= 2.951 af, Depth> 3.37"

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
* 4,195	98	Impervious
1,074	39	>75% Grass cover, Good, HSG A
5,637	74	>75% Grass cover, Good, HSG C
143,721	80	>75% Grass cover, Good, HSG D
13,657	70	Woods, Good, HSG C
289,827	77	Woods, Good, HSG D
458,111	78	Weighted Average
453,916		99.08% Pervious Area
4,195		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.0	150	0.0330	0.06		Sheet Flow, AB
					Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	155	0.0200	0.35		Shallow Concentrated Flow, BC
					Forest w/Heavy Litter Kv= 2.5 fps
0.4	25	0.2000	1.12		Shallow Concentrated Flow, CD
					Forest w/Heavy Litter Kv= 2.5 fps
50.7	330	Total			

Summary for Subcatchment 7.3:

Runoff = 3.67 cfs @ 12.56 hrs, Volume= 0.530 af, Depth> 2.53"

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 25-Yr Storm Rainfall=5.80"

Area (sf)	CN	Description
* 18,496	98	Impervious
4,537	30	Brush, Good, HSG A
9,423	73	Brush, Good, HSG D
21,947	30	Woods, Good, HSG A
55,051	77	Woods, Good, HSG D
109,454	69	Weighted Average
90,958		83.10% Pervious Area
18,496		16.90% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3	150	0.0470	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
2.5	75	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.1	50	0.0500	16.06	192.72	Trap/Vee/Rect Channel Flow, CD Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.022 Earth, clean & straight
39.9	275	Total			

Summary for Subcatchment 7.4:

Runoff = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af, Depth> 2.11"

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
19,947	30	Woods, Good, HSG A
3,125	70	Woods, Good, HSG C
53,205	77	Woods, Good, HSG D
76,277	64	Weighted Average
76,277		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	110	0.0550	0.07		Sheet Flow, AB Woods: Dense underbrush n= 0.800 P2= 3.10"
1.7	50	0.0400	0.50		Shallow Concentrated Flow, BC Forest w/Heavy Litter Kv= 2.5 fps
0.2	75	0.0150	5.43	32.56	Trap/Vee/Rect Channel Flow, CD Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & winding
29.3	235	Total			

Summary for Subcatchment 7.5:

Runoff = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af, Depth> 3.01"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	5,263	98	Impervious
	567	74	>75% Grass cover, Good, HSG C
	14,440	65	Brush, Good, HSG C
	4,431	73	Brush, Good, HSG D
	24,701	74	Weighted Average
	19,438		78.69% Pervious Area
	5,263		21.31% Impervious Area

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

Summary for Subcatchment 8.1:

Runoff = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af, Depth> 4.98"

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
*	17,932	98	Impervious
	3,258	74	>75% Grass cover, Good, HSG C
	1,403	80	>75% Grass cover, Good, HSG D
	22,593	93	Weighted Average
	4,661		20.63% Pervious Area
	17,932		79.37% Impervious Area

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

Summary for Subcatchment 8.10:

Runoff = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af, Depth> 4.43"

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
*	51,270	98	Impervious
	4,732	74	>75% Grass cover, Good, HSG C
	26,700	70	Woods, Good, HSG C
	82,702	88	Weighted Average
	31,432		38.01% Pervious Area
	51,270		61.99% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

Summary for Subcatchment 8.11:

Runoff = 7.94 cfs @ 12.07 hrs, Volume= 0.552 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
* 15,081	98	Impervious
2,598	74	>75% Grass cover, Good, HSG C
56,208	80	>75% Grass cover, Good, HSG D
73,887	83	Weighted Average
58,806		79.59% Pervious Area
15,081		20.41% Impervious Area

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

Summary for Subcatchment 8.12:

Runoff = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af, Depth> 5.32"

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
* 15,914	98	Impervious
1,498	74	>75% Grass cover, Good, HSG C
17,412	96	Weighted Average
1,498		8.60% Pervious Area
15,914		91.40% Impervious Area

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

Summary for Subcatchment 8.2:

Runoff = 3.51 cfs @ 12.07 hrs, Volume= 0.251 af, Depth> 4.54"

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"

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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	Area (sf)	CN	Description
*	15,948	98	Impervious
	6,561	74	>75% Grass cover, Good, HSG C
	6,388	80	>75% Grass cover, Good, HSG D
	28,897	89	Weighted Average
	12,949		44.81% Pervious Area
	15,948		55.19% Impervious Area

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

Summary for Subcatchment 8.3:

Runoff = 2.32 cfs @ 12.07 hrs, Volume= 0.175 af, Depth> 5.21"

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
*	15,232	98	Impervious
	1,109	74	>75% Grass cover, Good, HSG C
	1,246	80	>75% Grass cover, Good, HSG D
	17,587	95	Weighted Average
	2,355		13.39% Pervious Area
	15,232		86.61% Impervious Area

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

Summary for Subcatchment 8.4:

Runoff = 0.98 cfs @ 12.07 hrs, Volume= 0.068 af, Depth> 3.60"

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
	9,852	80	>75% Grass cover, Good, HSG D
	9,852		100.00% Pervious Area

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

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Subcatchment 8.5:

Runoff = 4.20 cfs @ 12.07 hrs, Volume= 0.322 af, Depth> 5.32"

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
*	28,262	98	Impervious
	2,606	74	>75% Grass cover, Good, HSG C
	708	80	>75% Grass cover, Good, HSG D
	31,576	96	Weighted Average
	3,314		10.50% Pervious Area
	28,262		89.50% Impervious Area

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

Summary for Subcatchment 8.6:

Runoff = 2.04 cfs @ 12.07 hrs, Volume= 0.159 af, Depth> 5.44"

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
*	14,522	98	Impervious
	735	80	>75% Grass cover, Good, HSG D
	15,257	97	Weighted Average
	735		4.82% Pervious Area
	14,522		95.18% Impervious Area

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

Summary for Subcatchment 8.7:

Runoff = 1.31 cfs @ 12.07 hrs, Volume= 0.104 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
*	9,738	98	Impervious
	9,738		100.00% Impervious Area

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Type III 24-hr 25-Yr Storm Rainfall=5.80"

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

Summary for Subcatchment 8.8:

Runoff = 0.96 cfs @ 12.07 hrs, Volume= 0.066 af, Depth> 3.60"

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
9,564	80	>75% Grass cover, Good, HSG D
9,564		100.00% Pervious Area

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

Summary for Subcatchment 8.9:

Runoff = 3.41 cfs @ 12.07 hrs, Volume= 0.265 af, Depth> 5.44"

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
* 23,832	98	Impervious
1,212	74	>75% Grass cover, Good, HSG C
411	80	>75% Grass cover, Good, HSG D
25,455	97	Weighted Average
1,623		6.38% Pervious Area
23,832		93.62% Impervious Area

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

Summary for Reach R7.1: Stream

Inflow Area = 33.714 ac, 19.05% Impervious, Inflow Depth > 3.15" for 25-Yr Storm event
Inflow = 34.07 cfs @ 12.67 hrs, Volume= 8.851 af
Outflow = 33.98 cfs @ 12.70 hrs, Volume= 8.836 af, Atten= 0%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.35 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 6.4 min

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Peak Storage= 5,465 cf @ 12.70 hrs

Average Depth at Peak Storage= 1.43'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 63.12 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 860.0' Slope= 0.0093 '/'

Inlet Invert= 76.00', Outlet Invert= 68.00'



Summary for Reach R7.3: Stream

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 3.18" for 25-Yr Storm event

Inflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af

Outflow = 19.42 cfs @ 12.76 hrs, Volume= 6.296 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 6.25 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 2.72 fps, Avg. Travel Time= 2.2 min

Peak Storage= 1,103 cf @ 12.76 hrs

Average Depth at Peak Storage= 0.81'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 98.24 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 355.0' Slope= 0.0225 '/'

Inlet Invert= 75.00', Outlet Invert= 67.00'



Summary for Reach R7.4: Stream

Inflow Area = 1.751 ac, 0.00% Impervious, Inflow Depth > 2.11" for 25-Yr Storm event

Inflow = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af

Outflow = 2.40 cfs @ 12.44 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.4 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Max. Velocity= 3.86 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 1.49 fps, Avg. Travel Time= 1.6 min

Peak Storage= 87 cf @ 12.44 hrs

Average Depth at Peak Storage= 0.19'

Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 135.47 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 1.0 '/' Top Width= 7.00'

Length= 140.0' Slope= 0.0429 '/'

Inlet Invert= 73.00', Outlet Invert= 67.00'



Summary for Pond C1: CB5.3

Inflow Area = 0.519 ac, 79.37% Impervious, Inflow Depth > 4.98" for 25-Yr Storm event

Inflow = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af

Outflow = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary = 2.91 cfs @ 12.07 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.43' @ 12.09 hrs

Flood Elev= 80.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.80'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.80' / 75.38' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.07 cfs @ 12.07 hrs HW=78.99' TW=78.55' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 2.07 cfs @ 2.64 fps)

Summary for Pond C10: OCS4

Inflow = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af

Outflow = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af, Atten= 0%, Lag= 0.0 min

Primary = 15.31 cfs @ 12.12 hrs, Volume= 0.875 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 72.91' @ 12.12 hrs

Flood Elev= 74.50'

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Device	Routing	Invert	Outlet Devices
#1	Primary	70.59'	24.0" Round Culvert L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.59' / 70.26' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.27 cfs @ 12.12 hrs HW=72.91' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 15.27 cfs @ 5.27 fps)**Summary for Pond C11: CB7.5**

Inflow Area = 0.400 ac, 91.40% Impervious, Inflow Depth > 5.32" for 25-Yr Storm event
Inflow = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af
Outflow = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.07 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.76' @ 12.08 hrs

Flood Elev= 75.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	12.0" Round Culvert L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.07 hrs HW=73.72' TW=73.27' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 2.12 cfs @ 3.29 fps)**Summary for Pond C2: CB5.5**

Inflow Area = 1.182 ac, 65.80% Impervious, Inflow Depth > 4.73" for 25-Yr Storm event
Inflow = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af
Outflow = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af, Atten= 0%, Lag= 0.0 min
Primary = 6.42 cfs @ 12.07 hrs, Volume= 0.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 78.66' @ 12.08 hrs

Flood Elev= 79.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.89'	15.0" Round Culvert L= 209.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.89' / 73.82' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.24 cfs @ 12.07 hrs HW=78.56' TW=76.00' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 6.24 cfs @ 5.08 fps)

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Summary for Pond C3: CB5.6

Inflow Area = 1.586 ac, 71.10% Impervious, Inflow Depth > 4.85" for 25-Yr Storm event
 Inflow = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af
 Outflow = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.74 cfs @ 12.07 hrs, Volume= 0.642 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.02' @ 12.08 hrs

Flood Elev= 78.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.82'	18.0" Round Culvert L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.82' / 73.50' S= 0.0052 ' / S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.07 hrs HW=76.00' TW=75.00' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 8.53 cfs @ 4.83 fps)

Summary for Pond C4: CB6.3.1

Inflow Area = 0.948 ac, 91.98% Impervious, Inflow Depth > 5.38" for 25-Yr Storm event
 Inflow = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af
 Outflow = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.51 cfs @ 12.07 hrs, Volume= 0.425 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.70' @ 12.09 hrs

Flood Elev= 77.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.88'	15.0" Round Culvert L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.88' / 73.70' S= 0.0058 ' / S= 0.0058 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.89 cfs @ 12.07 hrs HW=77.53' TW=76.84' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 4.89 cfs @ 3.99 fps)

Summary for Pond C5: CB6.3

Inflow Area = 0.224 ac, 100.00% Impervious, Inflow Depth > 5.56" for 25-Yr Storm event
 Inflow = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af
 Outflow = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.31 cfs @ 12.07 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.90' @ 12.10 hrs

Flood Elev= 79.10'

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Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	12.0" Round Culvert L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 73.88' S= 0.0056 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.07 hrs HW=77.33' TW=77.52' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond C6: CB6.4**

Inflow Area = 1.299 ac, 92.84% Impervious, Inflow Depth > 5.40" for 25-Yr Storm event
Inflow = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af
Outflow = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min
Primary = 7.55 cfs @ 12.07 hrs, Volume= 0.584 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 76.87' @ 12.07 hrs

Flood Elev= 76.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	15.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.70' / 73.30' S= 0.0051 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.42 cfs @ 12.07 hrs HW=76.84' TW=74.95' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.42 cfs @ 6.05 fps)**Summary for Pond C7: CB7.3**

Inflow Area = 1.899 ac, 61.99% Impervious, Inflow Depth > 4.43" for 25-Yr Storm event
Inflow = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af
Outflow = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.0 min
Primary = 9.87 cfs @ 12.07 hrs, Volume= 0.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.70' @ 12.08 hrs

Flood Elev= 76.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.85'	18.0" Round Culvert L= 196.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.85' / 70.93' S= 0.0098 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.65 cfs @ 12.07 hrs HW=75.62' TW=73.27' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 9.65 cfs @ 5.46 fps)

Post-Development_WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond C7.1: CB7.3

Inflow Area = 0.531 ac, 11.66% Impervious, Inflow Depth > 2.83" for 25-Yr Storm event
 Inflow = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af
 Outflow = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.72 cfs @ 12.10 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 79.23' @ 12.10 hrs

Flood Elev= 82.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	78.50'	15.0" Round Culvert L= 88.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.50' / 75.00' S= 0.0398 ' / S= 0.0398 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.72 cfs @ 12.10 hrs HW=79.23' TW=76.87' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 1.72 cfs @ 2.30 fps)

Summary for Pond C7.3:

Inflow Area = 23.810 ac, 24.47% Impervious, Inflow Depth > 3.18" for 25-Yr Storm event
 Inflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af
 Outflow = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af, Atten= 0%, Lag= 0.0 min
 Primary = 19.42 cfs @ 12.75 hrs, Volume= 6.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 77.61' @ 12.75 hrs

Flood Elev= 84.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.48'	36.0" Round Culvert w/ 1.0" inside fill L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.40' / 74.30' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.01 sf

Primary OutFlow Max=19.42 cfs @ 12.75 hrs HW=77.61' TW=75.81' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 19.42 cfs @ 3.52 fps)

Summary for Pond C7.5: CB7.3

Inflow Area = 0.567 ac, 21.31% Impervious, Inflow Depth > 3.01" for 25-Yr Storm event
 Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af
 Outflow = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.07 cfs @ 12.08 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 80.43' @ 12.08 hrs

Flood Elev= 83.00'

Post-Development WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	36.0" Round Culvert w/ 12.0" inside fill L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 79.00' / 75.06' S= 0.0563 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 5.01 sf

Primary OutFlow Max=2.06 cfs @ 12.08 hrs HW=80.43' TW=76.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.06 cfs @ 1.65 fps)**Summary for Pond C8: CB7.4**

Inflow Area = 2.883 ac, 72.48% Impervious, Inflow Depth > 4.76" for 25-Yr Storm event
Inflow = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af
Outflow = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af, Atten= 0%, Lag= 0.0 min
Primary = 15.59 cfs @ 12.07 hrs, Volume= 1.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.29' @ 12.07 hrs

Flood Elev= 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.93'	24.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.93' / 70.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.47 cfs @ 12.07 hrs HW=73.27' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 15.47 cfs @ 5.30 fps)**Summary for Pond C9: OCS3**

Inflow = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af
Outflow = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.0 min
Primary = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 73.85' @ 12.13 hrs

Flood Elev= 74.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	18.0" Round Culvert L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.00' / 70.59' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.91 cfs @ 12.12 hrs HW=73.81' TW=72.91' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 7.91 cfs @ 4.48 fps)

Post-Development WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond P1: Wetland

Inflow Area = 21.297 ac, 25.37% Impervious, Inflow Depth > 3.27" for 25-Yr Storm event
 Inflow = 32.95 cfs @ 12.48 hrs, Volume= 5.795 af
 Outflow = 16.95 cfs @ 13.10 hrs, Volume= 5.770 af, Atten= 49%, Lag= 37.2 min
 Primary = 16.95 cfs @ 13.10 hrs, Volume= 5.770 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 85.31' @ 13.10 hrs Surf.Area= 33,935 sf Storage= 59,432 cf

Plug-Flow detention time= 38.5 min calculated for 5.765 af (99% of inflow)
 Center-of-Mass det. time= 35.8 min (872.5 - 836.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	82.70'	84,297 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.70	1,800	275.0	0	0	1,800
83.00	13,550	580.0	2,029	2,029	22,552
84.00	24,700	750.0	18,848	20,877	40,557
85.00	31,900	820.0	28,223	49,100	49,338
86.00	38,600	980.0	35,197	84,297	72,274

Device	Routing	Invert	Outlet Devices
#1	Device 2	82.70'	45.0 deg x 3.0' long x 3.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.56 (C= 3.20)
#2	Primary	82.30'	24.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 82.30' / 80.90' S= 0.0560 ' S= 0.0560 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=16.95 cfs @ 13.10 hrs HW=85.31' TW=77.56' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 16.95 cfs @ 5.39 fps)

↑ **1=Sharp-Crested Vee/Trap Weir** (Passes 16.95 cfs of 52.28 cfs potential flow)

Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 4.70" for 25-Yr Storm event
 Inflow = 9.72 cfs @ 12.07 hrs, Volume= 0.709 af
 Outflow = 8.40 cfs @ 12.12 hrs, Volume= 0.582 af, Atten= 14%, Lag= 2.7 min
 Primary = 0.08 cfs @ 12.12 hrs, Volume= 0.111 af
 Secondary = 8.13 cfs @ 12.12 hrs, Volume= 0.469 af
 Tertiary = 0.19 cfs @ 12.12 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 75.04' @ 12.12 hrs Surf.Area= 4,757 sf Storage= 7,964 cf

Plug-Flow detention time= 111.6 min calculated for 0.582 af (82% of inflow)
 Center-of-Mass det. time= 40.5 min (820.1 - 779.6)

Post-Development_WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.12 hrs HW=75.04' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=8.11 cfs @ 12.12 hrs HW=75.04' TW=73.81' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 8.11 cfs @ 2.40 fps)**Tertiary OutFlow** Max=0.18 cfs @ 12.12 hrs HW=75.04' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.18 cfs @ 0.49 fps)**Summary for Pond SF4: Soil Filter**

Inflow Area =	1.518 ac, 79.42% Impervious, Inflow Depth > 5.14" for 25-Yr Storm event
Inflow =	8.51 cfs @ 12.07 hrs, Volume= 0.650 af
Outflow =	7.26 cfs @ 12.12 hrs, Volume= 0.523 af, Atten= 15%, Lag= 2.8 min
Primary =	0.08 cfs @ 12.12 hrs, Volume= 0.118 af
Secondary =	7.18 cfs @ 12.12 hrs, Volume= 0.406 af
Tertiary =	0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.00' @ 12.12 hrs Surf.Area= 4,563 sf Storage= 7,656 cf

Plug-Flow detention time= 120.1 min calculated for 0.523 af (80% of inflow)

Center-of-Mass det. time= 45.2 min (804.9 - 759.7)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	18,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Post-Development_WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,128	0	0
74.50	4,186	5,486	5,486
75.00	4,566	2,188	7,674
76.00	5,370	4,968	12,642
77.00	6,231	5,801	18,442

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 12.12 hrs HW=75.00' TW=0.00' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Secondary OutFlow** Max=7.16 cfs @ 12.12 hrs HW=75.00' TW=72.91' (Dynamic Tailwater)↑**2=Orifice/Grate** (Weir Controls 7.16 cfs @ 2.30 fps)**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link AP8:**

Inflow Area = 41.623 ac, 26.89% Impervious, Inflow Depth > 3.35" for 25-Yr Storm event
 Inflow = 51.61 cfs @ 12.10 hrs, Volume= 11.636 af
 Primary = 51.61 cfs @ 12.10 hrs, Volume= 11.636 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link L1: EAST

Inflow Area = 10.780 ac, 49.22% Impervious, Inflow Depth > 3.17" for 25-Yr Storm event
 Inflow = 25.08 cfs @ 12.19 hrs, Volume= 2.844 af
 Primary = 25.08 cfs @ 12.19 hrs, Volume= 2.844 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

25-Yr Storm Outflow Imported from Post-Development_EAST~Reach R4.0.hce

Appendix C:
Stormwater BMP Spillway and Draindown Calculations

SOIL FILTER SF1 25-YEAR SPILLWAY CALCULATION

Post-Development EAST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond SF1: Soil Filter 1

[80] Warning: Exceeded Pond CB6 by 0.80' @ 24.30 hrs (1.85 cfs 1.158 af)

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 4.46" for 25-Yr Storm event
 Inflow = 8.01 cfs @ 12.07 hrs, Volume= 0.574 af
 Outflow = 5.74 cfs @ 12.14 hrs, Volume= 0.391 af, Atten= 28%, Lag= 4.4 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 5.74 cfs @ 12.14 hrs, Volume= 0.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.26' @ 12.14 hrs Surf.Area= 5,690 sf Storage= 9,935 cf

Plug-Flow detention time= 173.9 min calculated for 0.391 af (68% of inflow)
 Center-of-Mass det. time= 78.8 min (867.6 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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
PROVIDED
WHEN PRIMARY
OUTLETS
CLOSED

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	12.0" Round Culvert X 0.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=5.72 cfs @ 12.14 hrs HW=100.26' TW=97.36' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 5.72 cfs @ 1.61 fps)

SOIL FILTER SF1 100-YEAR SPILLWAY CALCULATION

Post-Development EAST

Type III 24-hr 100-Yr Storm Rainfall=8.10"

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Summary for Pond SF1: Soil Filter 1

[80] Warning: Exceeded Pond CB6 by 0.80' @ 24.32 hrs (1.85 cfs 1.155 af)

Inflow Area = 1.543 ac, 67.27% Impervious, Inflow Depth = 6.69" for 100-Yr Storm event
 Inflow = 11.76 cfs @ 12.07 hrs, Volume= 0.860 af
 Outflow = 10.12 cfs @ 12.12 hrs, Volume= 0.677 af, Atten= 14%, Lag= 2.7 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 10.12 cfs @ 12.12 hrs, Volume= 0.677 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 100.42' @ 12.12 hrs Surf.Area= 5,872 sf Storage= 10,879 cf

Plug-Flow detention time= 140.0 min calculated for 0.677 af (79% of inflow)
 Center-of-Mass det. time= 61.6 min (840.1 - 778.5)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	15,804 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (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

BASIN DOES NOT OVERTOP WHEN PRIMARY OUTLETS CLOSED

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	12.0" Round Culvert X 0.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.40' S= 0.0029 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	98.00'	0.750 in/hr Exfiltration over Surface area Phase-In= 0.01'
#3	Device 1	99.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	99.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 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=10.09 cfs @ 12.12 hrs HW=100.42' TW=97.45' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Weir Controls 10.09 cfs @ 1.95 fps)

SOIL FILTER SF3 25-YEAR SPILLWAY CALCULATION

Post-Development WEST

Type III 24-hr 25-Yr Storm Rainfall=5.80"

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Summary for Pond SF3: Soil Fliter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 4.70" for 25-Yr Storm event
 Inflow = 9.72 cfs @ 12.07 hrs, Volume= 0.709 af
 Outflow = 8.45 cfs @ 12.12 hrs, Volume= 0.528 af, Atten= 13%, Lag= 2.6 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 8.45 cfs @ 12.12 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.47' @ 12.12 hrs Surf.Area= 5,149 sf Storage= 10,107 cf

Plug-Flow detention time= 150.4 min calculated for 0.528 af (74% of inflow)

Center-of-Mass det. time= 64.9 min (844.5 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

1' OF FREEBOARD
 PROVIDED WHEN
 PRIMARY/SECONDARY
 OUTLETS CLOSED

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration X 0.00 over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate X 0.00 C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=71.00' (Dynamic Tailwater)

↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Tertiary OutFlow Max=8.42 cfs @ 12.12 hrs HW=75.47' TW=0.00' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 8.42 cfs @ 1.79 fps)

SOIL FILTER SF3 100-YEAR SPILLWAY CALCULATION

Post-Development_WEST

Type III 24-hr 100-Yr Storm Rainfall=8.10"

Prepared by Atlantic Resource Consultants

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Summary for Pond SF3: Soil Filter

Inflow Area = 1.812 ac, 62.22% Impervious, Inflow Depth > 6.94" for 100-Yr Storm event
 Inflow = 14.10 cfs @ 12.07 hrs, Volume= 1.048 af
 Outflow = 12.67 cfs @ 12.11 hrs, Volume= 0.867 af, Atten= 10%, Lag= 2.3 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 12.67 cfs @ 12.11 hrs, Volume= 0.867 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 75.60' @ 12.11 hrs Surf.Area= 5,269 sf Storage= 10,795 cf

Plug-Flow detention time= 123.7 min calculated for 0.867 af (83% of inflow)

Center-of-Mass det. time= 54.3 min (824.7 - 770.4)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	19,064 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	3,078	0	0
74.50	4,290	5,526	5,526
75.00	4,722	2,253	7,779
76.00	5,628	5,175	12,954
77.00	6,591	6,110	19,064

**BASIN DOES NOT
OVERTOP WHEN
PRIMARY/SECONDARY
OUTLETS CLOSED**

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	0.750 in/hr Exfiltration X 0.00 over Surface area Phase-In= 0.01'
#2	Secondary	74.50'	24.0" Horiz. Orifice/Grate X 0.00 C= 0.600 Limited to weir flow at low heads
#3	Tertiary	75.00'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.00' TW=71.00' (Dynamic Tailwater)

↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Tertiary OutFlow Max=12.59 cfs @ 12.11 hrs HW=75.60' TW=0.00' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 12.59 cfs @ 2.09 fps)

SOIL FILTER SF1 DRAINDOWN CALCULATION

Post-Development_EAST

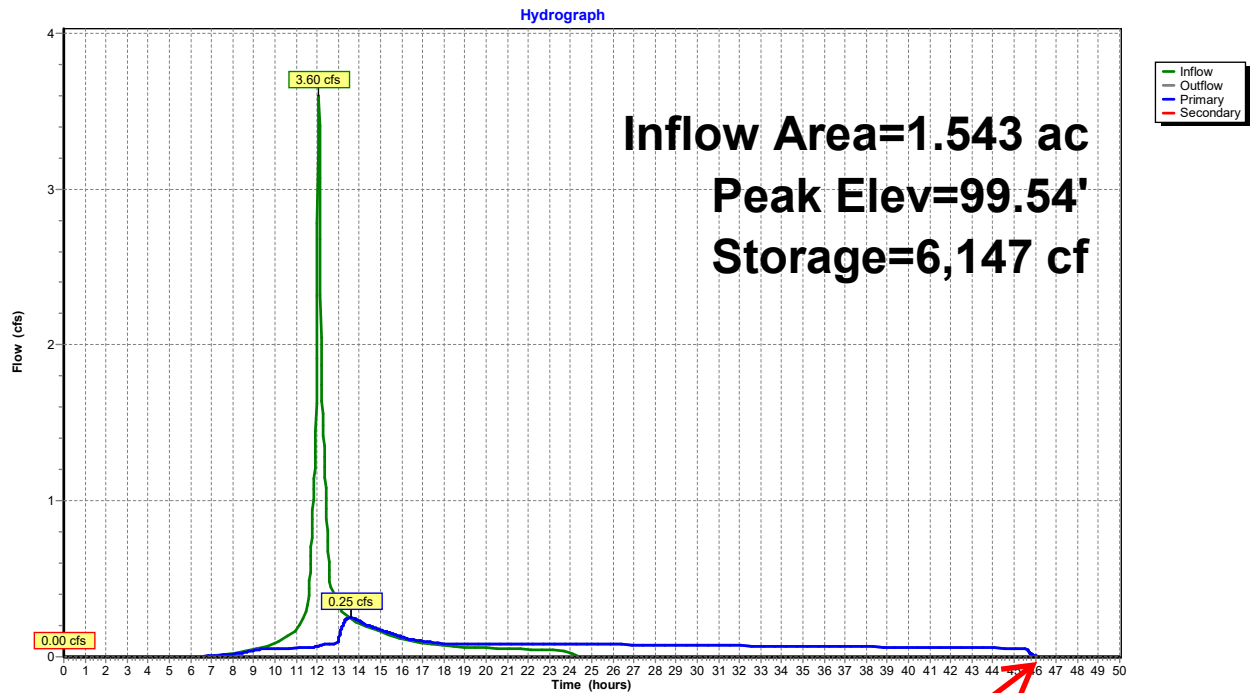
Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Atlantic Resource Consultants

Printed 8/29/2023

HydroCAD® 10.00-26 s/n 08018 © 2020 HydroCAD Software Solutions LLC

Pond SF1: Soil Filter 1



SOIL FILTER
DRAINS IN LESS
THAN 48 HOURS

SOIL FILTER SF3 DRAINDOWN CALCULATION

Post-Development_WEST

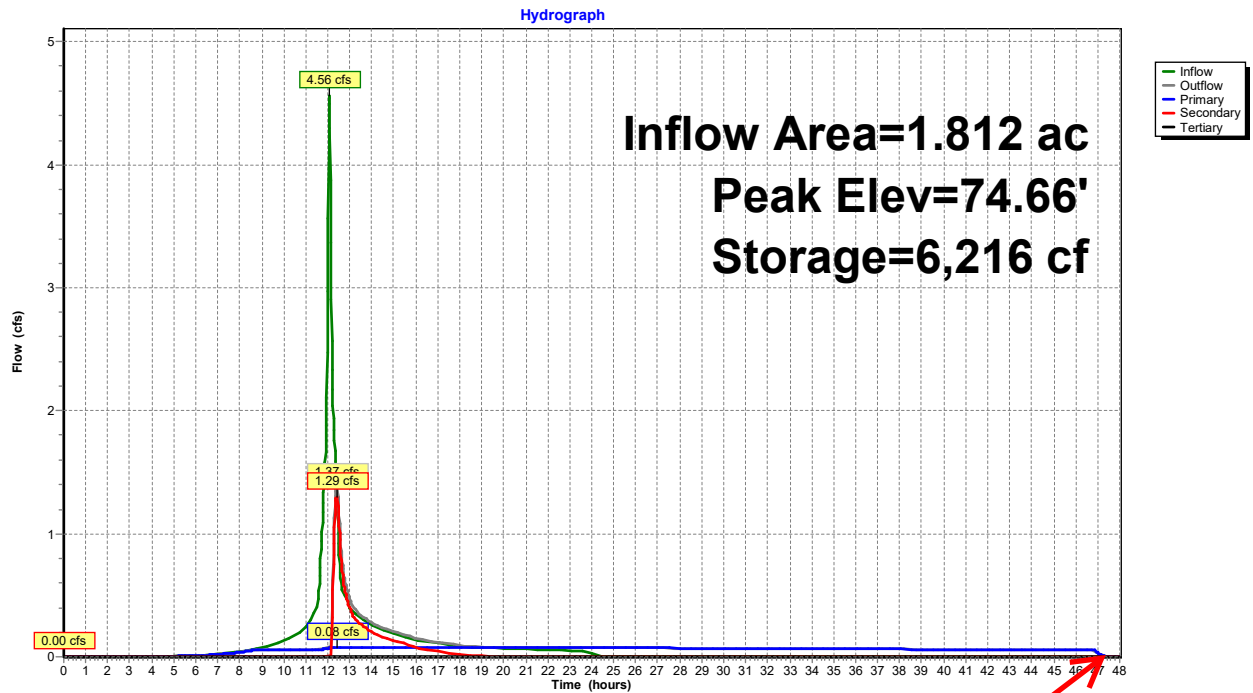
Type III 24-hr 2-Yr Storm Rainfall=3.10"

Prepared by Atlantic Resource Consultants

Printed 8/29/2023

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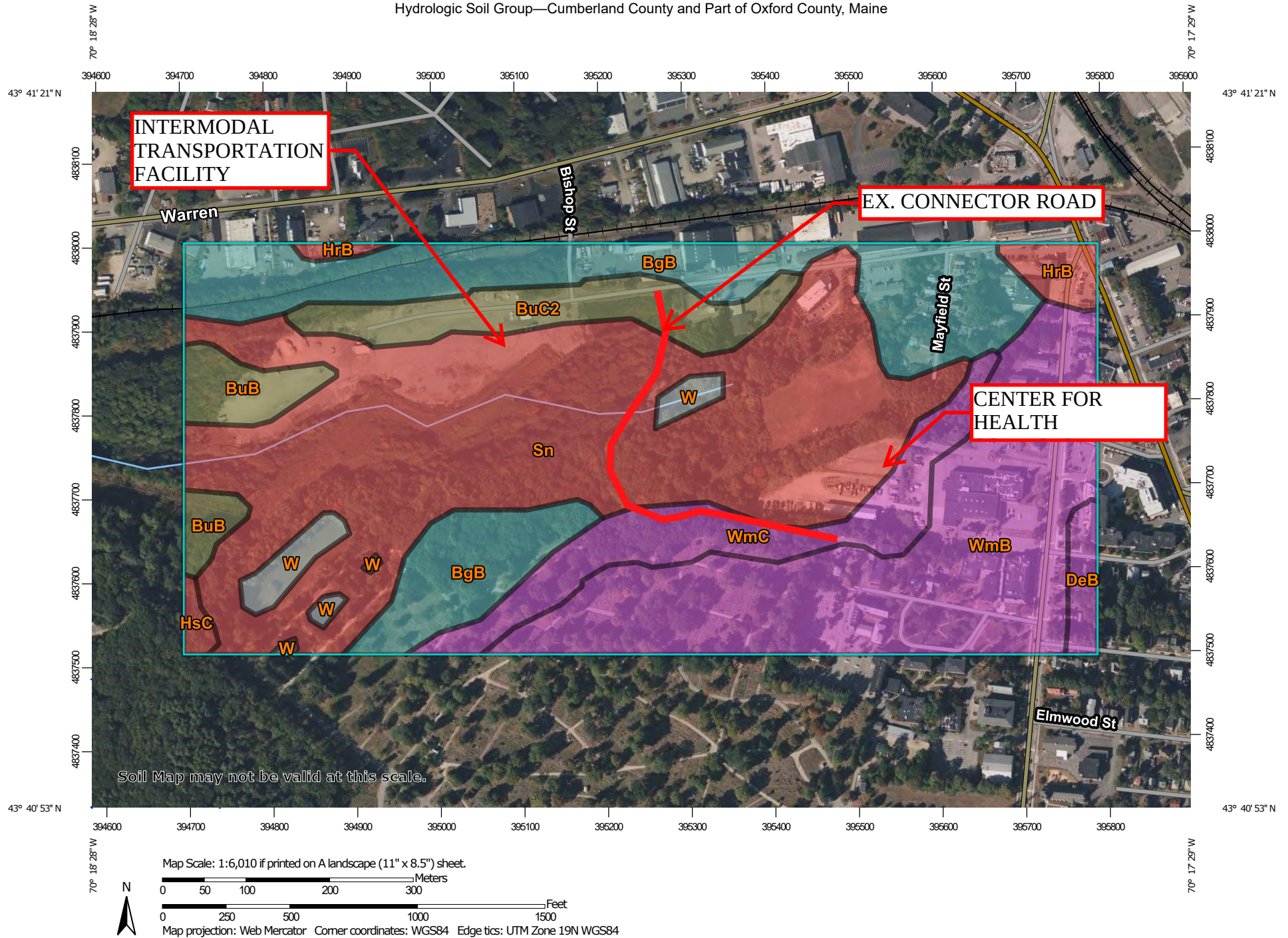
Pond SF3: Soil Fliter



SOIL FILTER
DRAINS IN LESS
THAN 48 HOURS

Appendix D:
USDA Soil Map

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine

Survey Area Data: Version 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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	24.3	18.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	C/D	4.2	3.1%
BuC2	Buxton silt loam, 8 to 15 percent slopes	C/D	7.6	5.7%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	A	1.6	1.2%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	2.2	1.6%
HsC	Lyman-Abram complex, 8 to 15 percent slopes, very rocky	D	0.6	0.5%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	51.0	38.4%
W	Water		2.6	2.0%
WmB	Windsor loamy sand, 0 to 8 percent slopes	A	28.9	21.8%
WmC	Windsor loamy sand, 8 to 15 percent slopes	A	9.9	7.5%
Totals for Area of Interest			132.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

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
Connector Drive
Bishop Street, Portland, Maine
September 2023

Stormwater management facilities include paved surfaces, catch basins, culverts, storm drain pipe, and ditches/swales. 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 drive 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

All catch basins 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.

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.

[illegible]

UNE Connector Drive
83 College Street, Portland, Maine

INSPECTION / MAINTENANCE LOG

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 Connector Drive 83 College Street, Portland, Maine					
STORMWATER MANAGEMENT SYSTEM MAINTENANCE PROGRAM 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	
Catch Basins, and Drain Pipes	Inspect for sediment buildup in pipe. Flush and remove as required.			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



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

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: SEP. 2023

SCALE: 1" = 60'

PROJECT:

CONNECTOR DRIVE

83 COLLEGE STREET, PORTLAND, MAINE

PRE DEVELOPMENT
IMPERVIOUS AREA PLAN

PROJ.	
NO.	

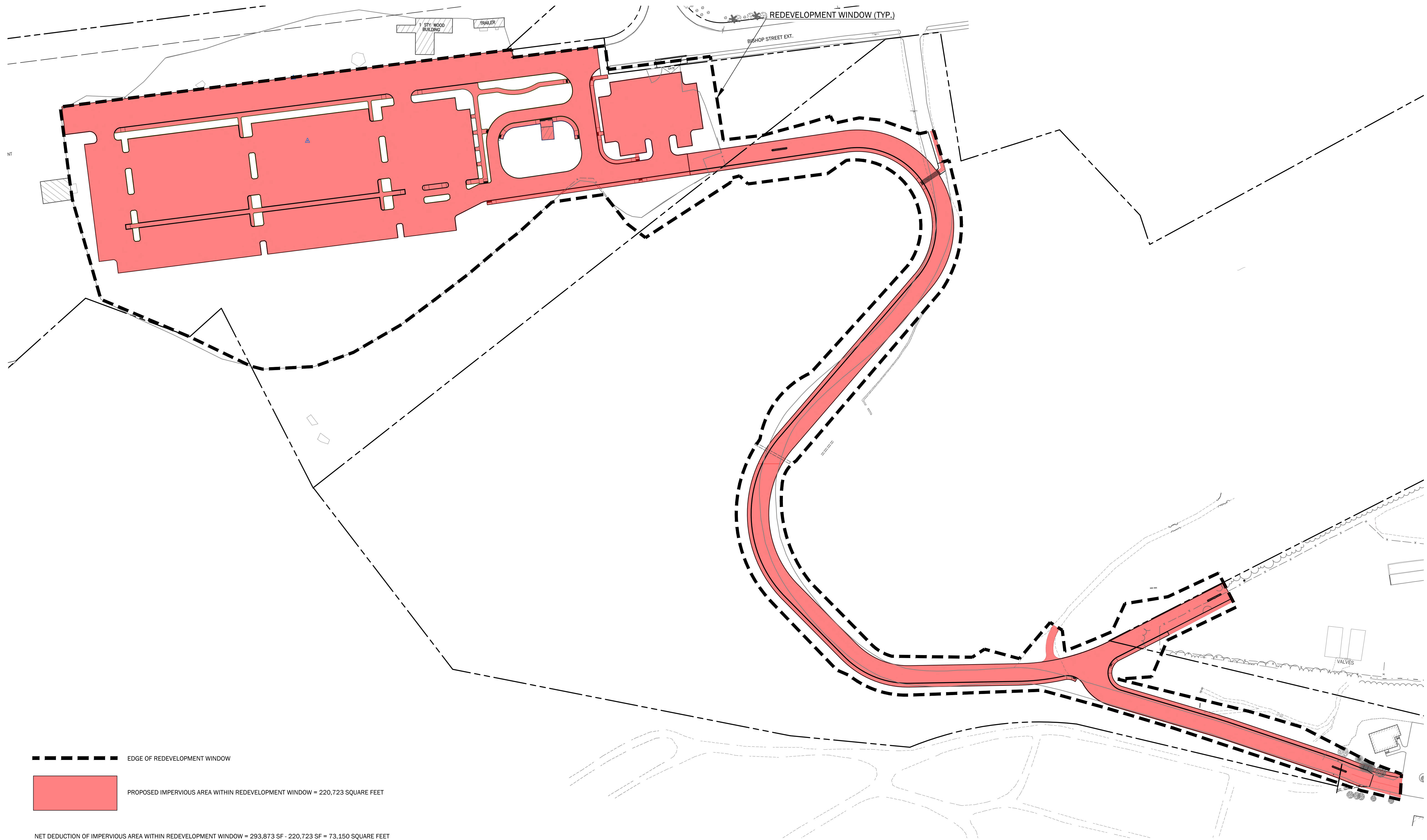
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21-216-00	RE
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11.0	A
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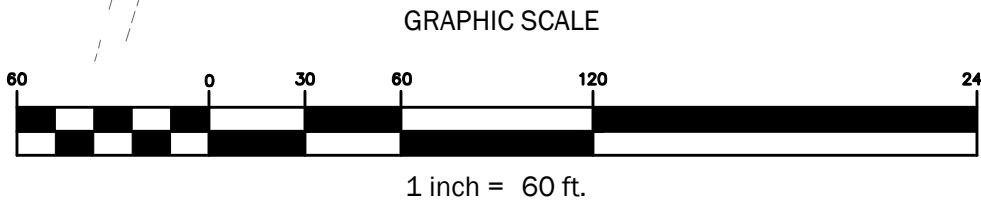
Page 752



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DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	POST DEVELOPMENT IMPERVIOUS AREA PLAN		
DATE: SEP. 2023	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 60'	DWG. NO.	12.0	A



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.

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 12/15/2022.

	SUBCATCHMENT BOUNDARY
	SUBCATCHMENT DESIGNATION
	TIME OF CONCENTRATION FLOW
	REACH
	REACH DESIGNATION
	ANALYSIS POINT
	POND TEXT

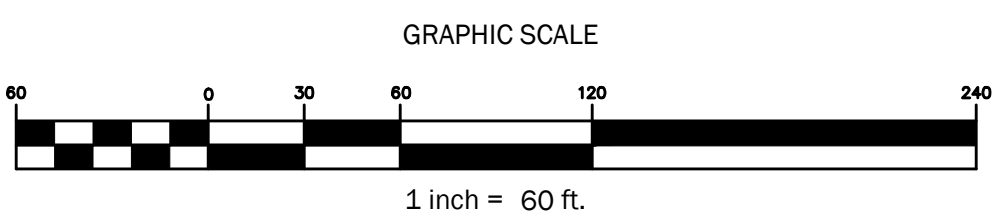
SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW

SUBCATCHMENT 7.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	27.4	110'	0.055	SHEET FLOW
BC	1.7	50'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.2	75'	0.015	TRAP FLOW

This topographic map shows a site with various features and labels. The map includes contour lines indicating elevation, with labels such as 80, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896,

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11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

SCALE: 1" =

DWG.	B1.0
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TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

A

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 12/15/2022.

 SUBCATCHMENT BOUNDARY
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 TIME OF CONCENTRATION FLOW
 REACH
 REACH DESIGNATION
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 POND TEXT

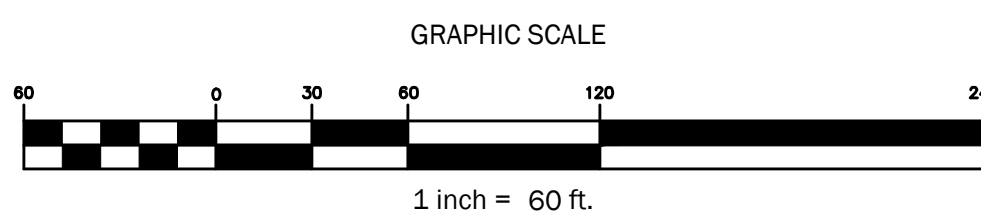
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AB	12.4	110'	0.014	SHEET FLOW
BC	0.9	110	0.160	SHALLOW CONCENTRATED FLOW
CD	0.5	300	0.017	TRAP FLOW

SUBCATCHMENT 4.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	10.0	80'	0.090	SHEET FLOW

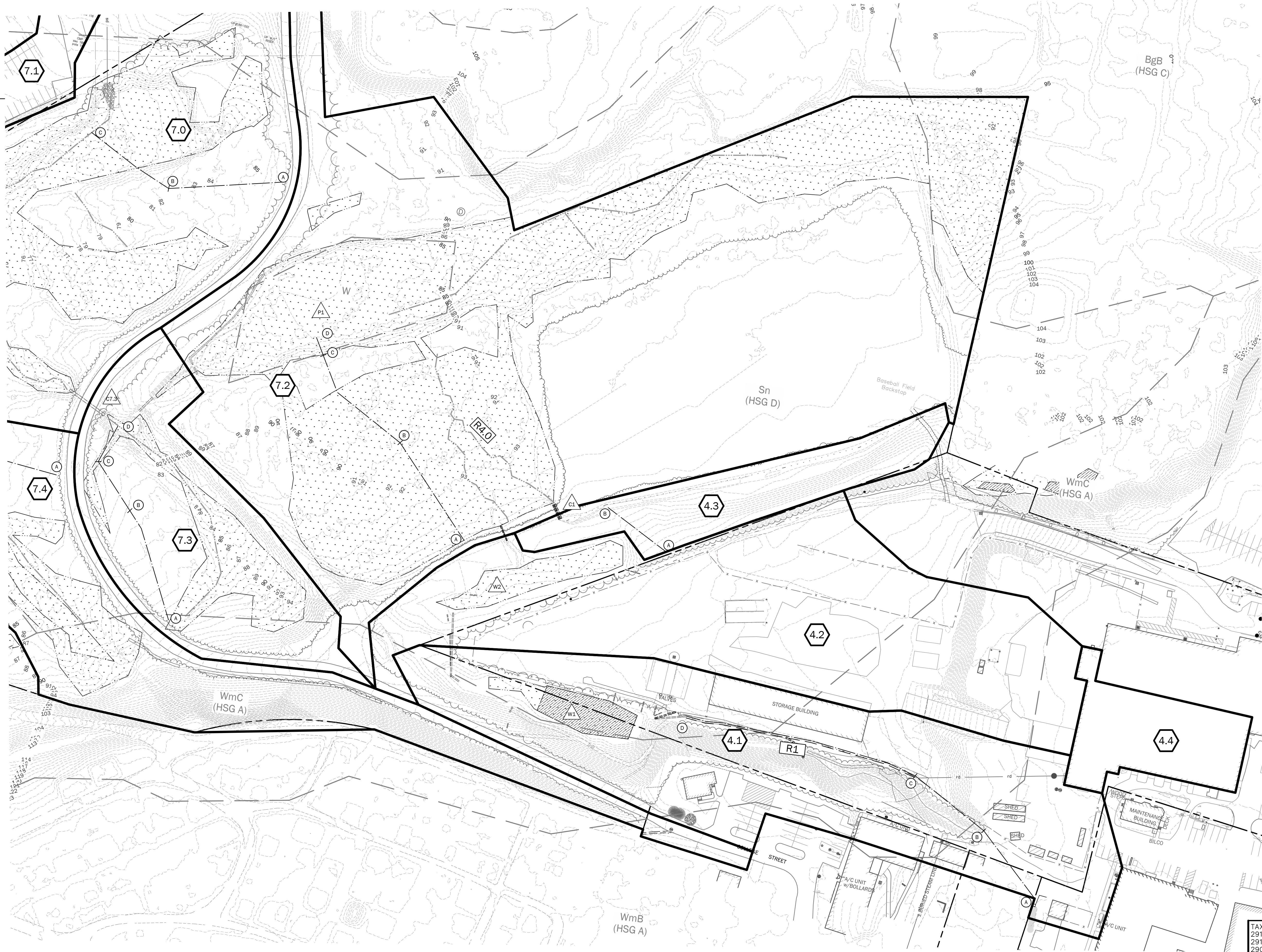
SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW



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REV.	DATE	STATUS

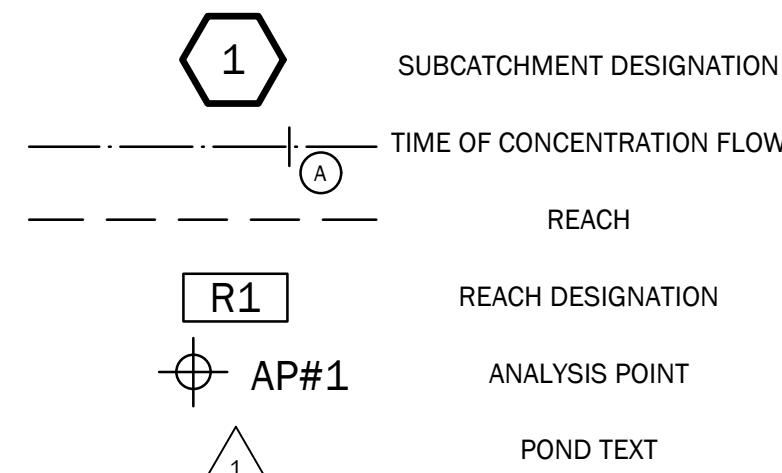


TAX MAP I.D.
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291 A005
290 A003
145 B014

[illegible]

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 12/15/2022.

SUBCATCHMENT BOUNDARY



Tc FLOW LINE DATA:

SUBCATCHMENT 7.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	46.6	150'	0.027	SHEET FLOW
BC	2.8	120'	0.080	SHALLOW CONCENTRATED FLOW

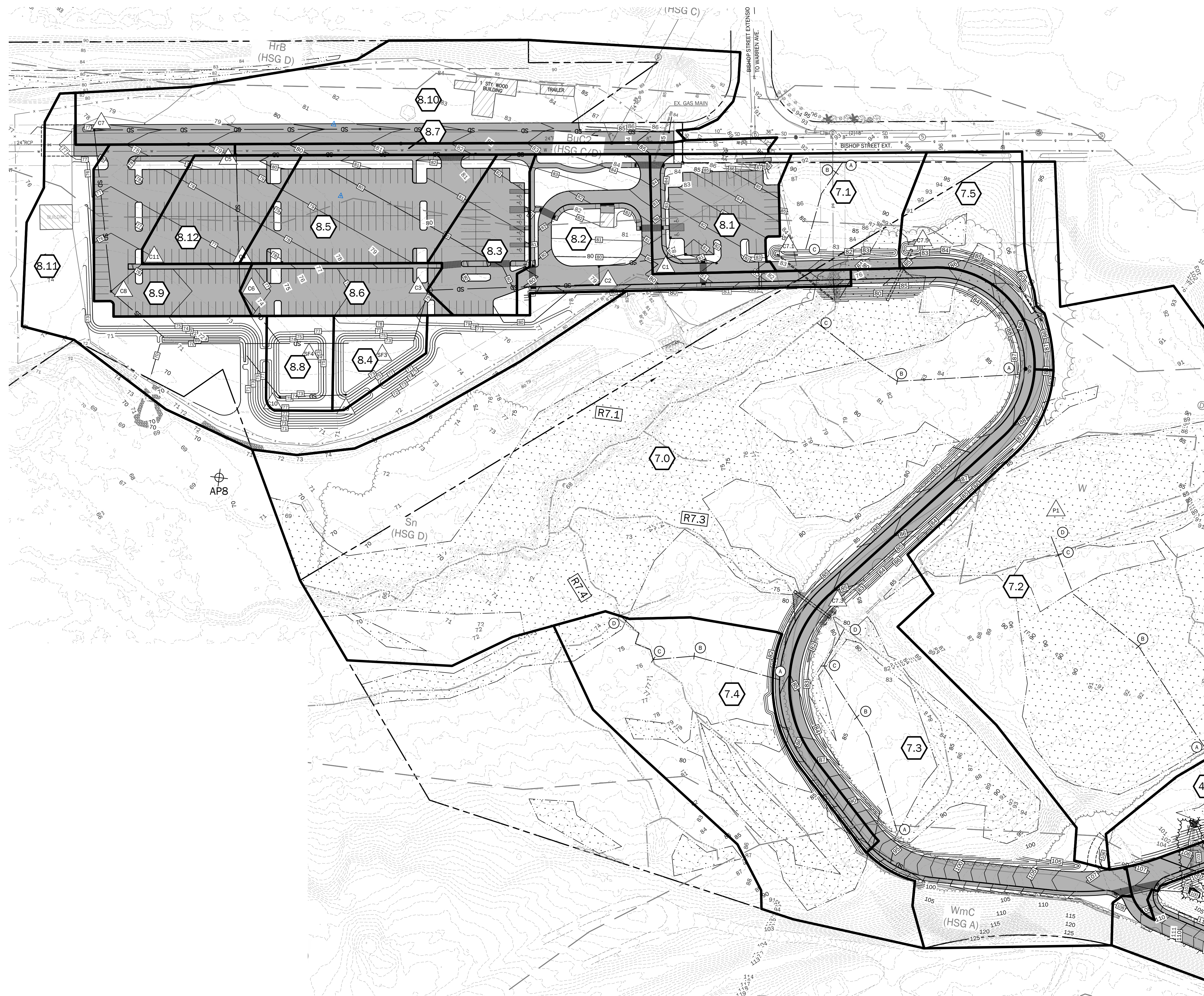
SUBCATCHMENT 7.1				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	0.8	15'	0.200	SHEET FLOW
BC	5.7	100'	0.060	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	43.0	150'	0.033	SHEET FLOW
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 7.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	37.3	150'	0.047	SHEET FLOW
BC	2.5	75'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.1	50'	0.050	TRAP FLOW

SUBCATCHMENT 7.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
AB	27.4	110'	0.055	SHEET FLOW
BC	1.7	50'	0.040	SHALLOW CONCENTRATED FLOW
CD	0.2	75'	0.015	TRAP FLOW

Tc FOR ALL REMAINING SUBCATCHMENTS = 5 MINUTES.



TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

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

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: SEP. 2023

00115 4" 001

PROJECT:	CONNECTOR DRIVE
----------	-----------------

83 COLLEGE STREET, PORTLAND, MAINE

POST DEVELOPMENT DRAINAGE PLAN (WEST)

PROJ. NO.	21-216-00
--------------	-----------

NO.	
DWG.	53.2

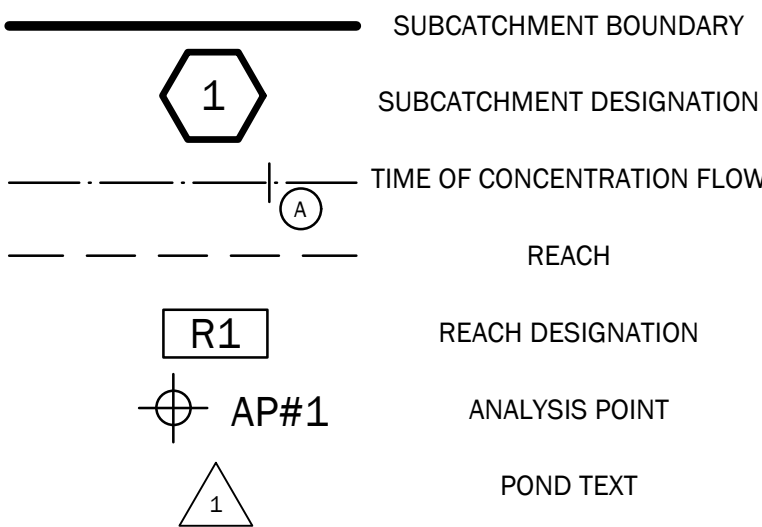
REV.	
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A

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/. ACCESSED 12/15/2022.

DRAINAGE LEGEND

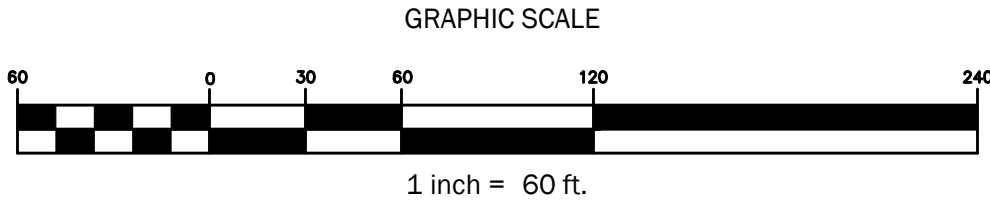
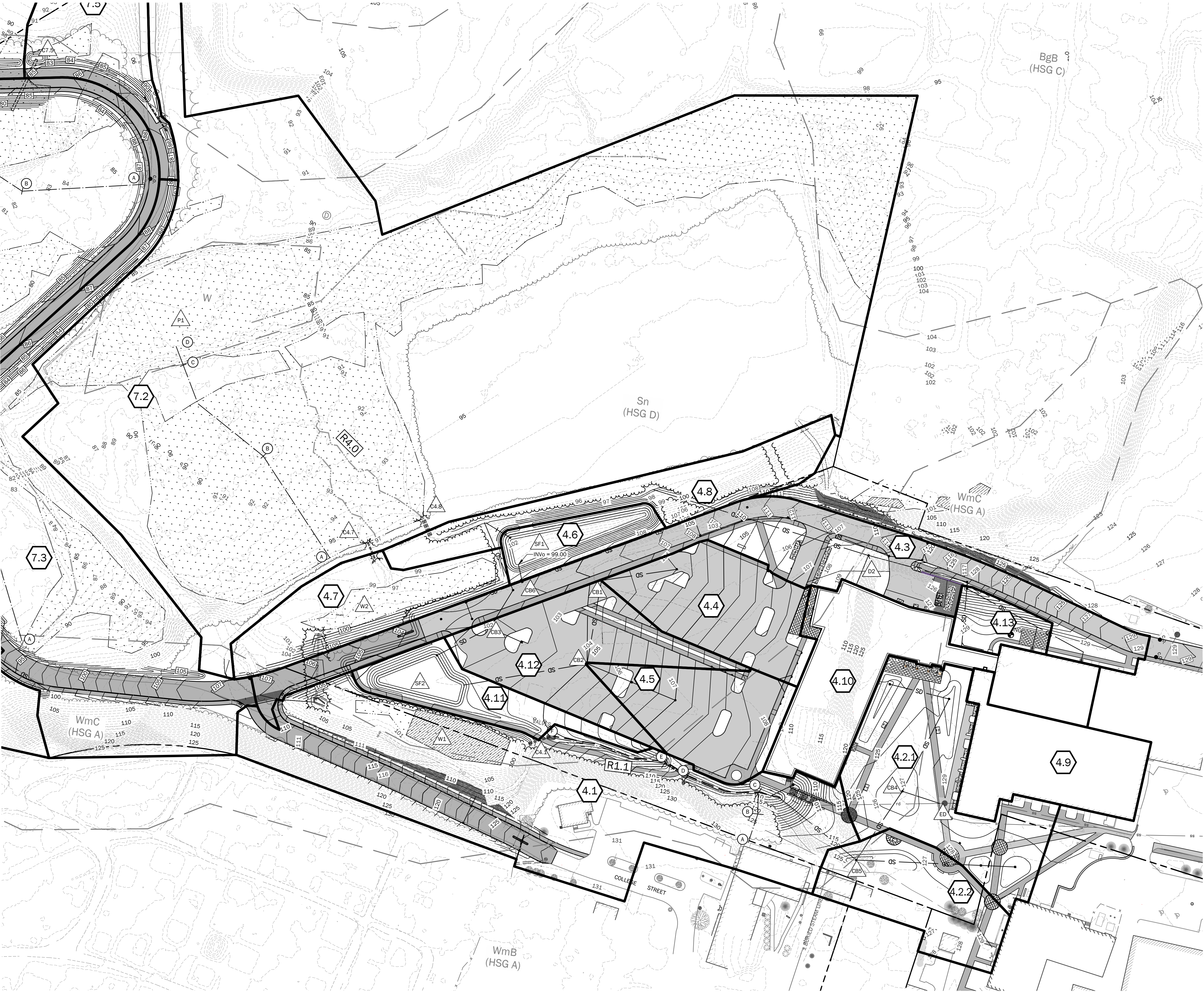


Tc FLOW LINE DATA:

SUBCATCHMENT 4.1					
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE	
AB	5.5	40'	0.100	SHEET FLOW	
BC	2.3	30'	0.500	SHEET FLOW	
CD	0.2	95'	0.026	TRAP FLOW	
DE	0.1	28'	0.018	PIPE FLOW	
EF	0.2	145'	0.051	TRAP FLOW	

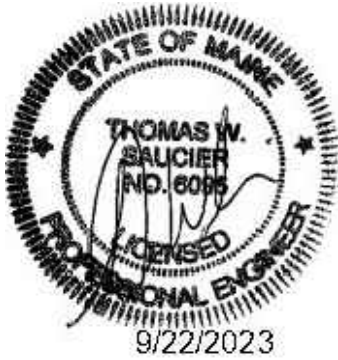
SUBCATCHMENT 7.2					
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE	
AB	43.0	150'	0.033	SHEET FLOW	
BC	7.3	155'	0.020	SHALLOW CONCENTRATED FLOW	
CD	0.4	25'	0.200	SHALLOW CONCENTRATED FLOW	

Tc FOR ALL REMAINING SUBCATCHMENTS = 5 MINUTES.



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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
A	9/22/2023	FOR DEVELOPMENT REVIEW									



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: SEP. 2023
SCALE: 1" = 60'

PROJECT: CONNECTOR DRIVE	
83 COLLEGE STREET, PORTLAND, MAINE	
POST DEVELOPMENT DRAINAGE PLAN (EAST)	
PROJ. NO.	21-216-00
DWG. NO.	D2.1

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

Section 13 Urban Impaired Stream

See the stormwater management report in section 12.

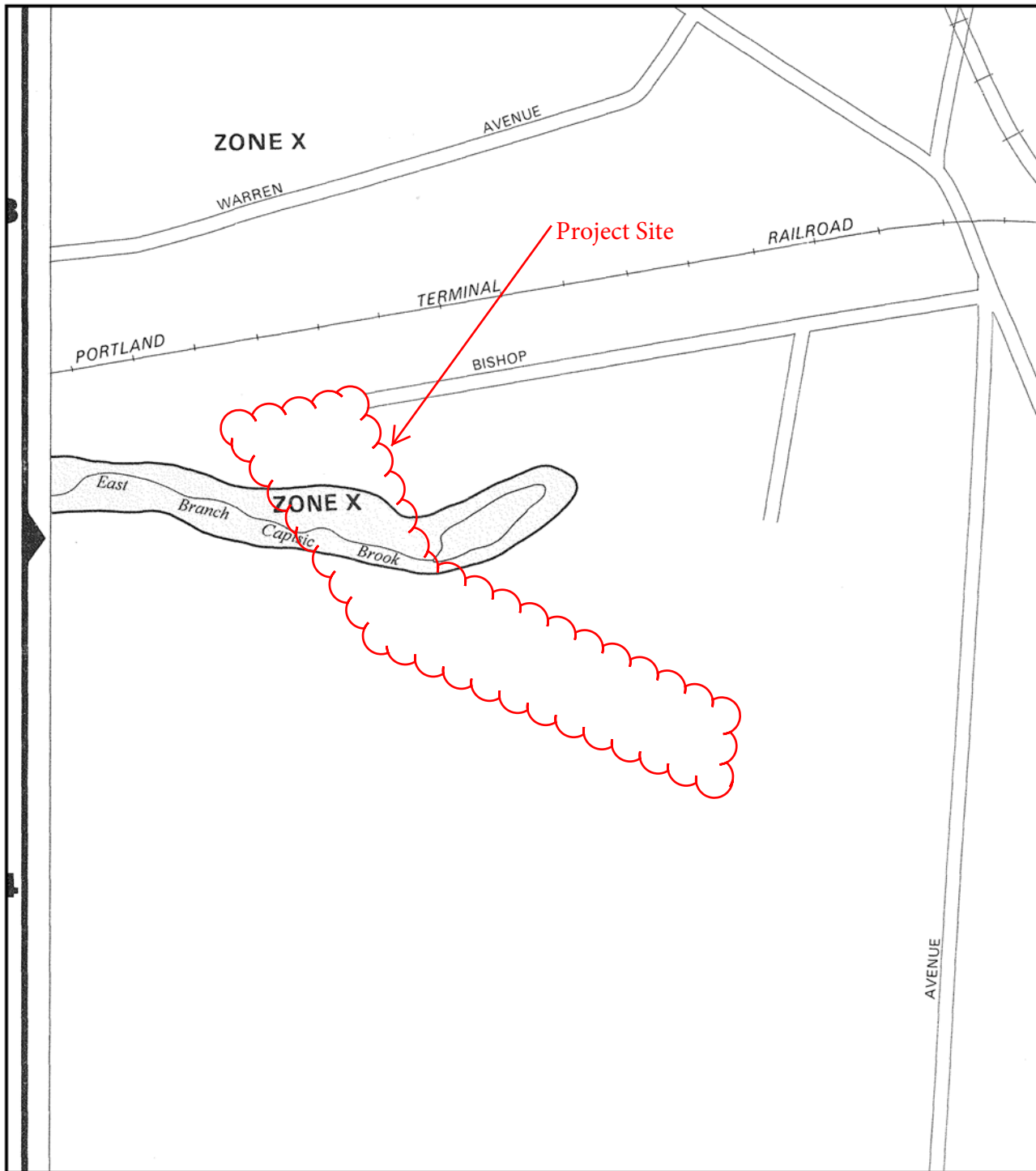
Section 14 Basic Standards

See section 12 and the drawings.

Sections 15 -18 Not Applicable

Section 19 Flooding

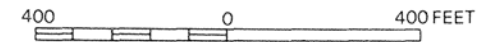
The project will not cause or increase flooding or cause an unreasonable flooding hazard to any structure. The project is not located within the 100 year flood plain. See the attached excerpt from FIRM which shows the 500 year flood plain.



To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND,
MAINE
CUMBERLAND COUNTY

PANEL 7 OF 17
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230051 0007 C

MAP REVISED:
DECEMBER 8, 1998



Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.

Section 20 Blasting

No blasting is anticipated.

Sections 21-25 Not Applicable

Site Design Associates

Consulting Engineering and Land Planning

December 12, 2023

Maya Balassa, Planner
City of Portland
Via email

**RE: University of New England
Major Site Plan Application for:
Connector Drive
PL-002666-2023
83 College Street
Responses to November 1 Staff Comments**

Dear Maya;

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 staff in your November 1, 2023 review memorandum. We have listed each of your “red” comments in the order they were presented followed by our responses.

1. Additional submissions requested:

Comment: *The address on Energov says 716 Stevens Ave. The documents and site plans utilize 83 College Street. Please alter the application materials to have a single address across*

Response: The city GIS mapping and assessor records refer to the majority of the parcel as 83 College Street. For some reason, the city staff set up the EPlan directory with the 716 Stevens Ave address. Please advise on how this will be handled.

2. Access and circulation:

Comment: *Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.*

Response: A striped bike lane will not be included. The pavement markings will include sharrows laid out in accordance with the MUTCD per the attached memo from Diane Morabito, the traffic engineer.

Comment: *To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.*

23 Whitney Way Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *Please clarify who specifically will have gate card access.*

Response: UNE's students, staff, and faculty will have gate access.

Comment: *The Bishop Street driveway is to remain in place and gated. While the city supports a pedestrian/bicycle connection, we would suggest that the curb cut be closed.*

Response: The plans have been revised to show a reduction in the Bishop Street curb cut length to 10 ft, while maintaining access for cyclists and pedestrians. We decided on 10 ft for shared bicycle and pedestrian access. We hope this satisfactorily addresses this comment.

3. Landscape Preservation:

Comment: *Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.*

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *This survey indicates areas with tree canopy cover but not tree locations, size and species information. Per the City's Technical Manual Chapter 4.3.1, the survey should identify location, size and species of all existing trees 10" diameter at breast height (DBH) or greater on the site. Given the predominantly wooded nature of the project site, it is acceptable for the applicant to identify only trees proposed to be removed as part of this project, noting the size (in DBH) and species information for existing trees 10" DBH or greater.*

Response: Existing trees 10" DBH or over to be removed are now shown on the plans.

Comment: *The existing site has some notable patches of Japanese Knotweed. The applicant shall follow the requirements laid out in Technical Manual section 4.7.4 for the containment and removal of invasive plants in the limit of work to prevent*

them spreading into newly disturbed ground.

Response: A note has been added to the plans to address this comment.

Comment: *For existing trees being preserved that are adjacent to the limit of work, the applicant shall follow tree protection requirements described in Technical Manual chapter 4.3 and tree preservation detail IV-2*

Response: A note has been added to the plans to address this requirement.

Comment: *Areas around the carriage road that are being cleared of trees due to grading shall be replanted with native straight species trees and exposed soil shall be covered with undyed wood mulch and/or seeded with native shade-tolerant seed mixes where appropriate.*

Response: A landscape plan has been prepared to address this comment. Areas along the proposed carriage road which are proposed to be cleared of trees and provide a large enough area for replanting will be replanted with Sugar Maple saplings. These areas are primarily on 2:1 and 3:1 slopes. To enable a rootball to be planted on these slopes we are proposing ½" caliper saplings which will have a rootball approximately 12 inches in diameter x 9" deep. A tree planting detail showing a planting on a slope is provided on the Landscape Plan.

The slope areas are called out to be mulched with a 5" layer of erosion control mix as distributed by Casella Organics or approved equivalent. This layer of mulch will stabilize and protect the soil, and allow the saplings to establish themselves prior to competition from other plants.

4. Site Landscaping and Buffers:

Comment: *The area where gravel is being removed is currently proposed to be covered with loam and reseeded with "park mix" grass seed. The area in question is surrounded by woodland and is partly shaded. City staff suggest selecting a seed mix that is composed of native part shade- tolerant forbs that will fit into the woodland setting. The park mix grass seed is more appropriate for maintained lawn areas than forested woodlands.*

Response: A landscape plan has been prepared to address this comment. Open areas and the proposed swales are to be seeded with New England Erosion Control/Restoration Mix for Detention Basins and Wet Sites. This mix contains a selection of native grasses and wildflowers designed to colonize generally moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the soil. The plants in this mix can withstand moist, infrequently inundated sites as well as some shade. These areas will be mowed no more than two times per year to keep woody vegetation out.

Comment: *There are at least three existing footpaths/trails that connect to the carriage road which are not currently represented on the plans. Please locate the existing trails on the site plan and ensure the pathway connections are being maintained or improved as part of the carriage road improvement project. At least one of the trails is heavily used by pedestrians as a connection between Evergreen Cemetery and the UNE campus.*

Response: The existing trails are now shown on the drawings and Portland Trails confirmed the locations are accurate. We have discussed the access with Portland trails, and they have confirmed the locations are accurate. Our discussions with them continue in regards to potential signage.

5. Water Quality, Stormwater management, and Erosion Control:

Comment: *Overall SLOD – Additional clarity is needed on the area that is intended to be covered by the SLOD Application. As was noted on previous application reviews that highlighted the need for the SLOD permit, looking at the entire site as one is advantageous, allowing for treatment to be accounted for across the site to meet the required standards. The Applicant is proposing to do that here, but additional information is needed. The figures provided show the redevelopment evaluation of the Intermodal Transportation Facility and Connector Drive to determine the amount of treatment that will be required per the MaineDEP standards for redevelopment. The ultimate stormwater management scenario includes systems located within this area, but also a system within the Center for Health Sciences. As I understand the analysis, the Center for Health Services project area is not included as part of the SLOD calculations.*

Response: That is correct. The HBACHS project was completed before the campus exceeded the SLODA thresholds. Therefore, the HBACHS portion of the project is not included in the SLODA stormwater treatment calculations. The soil filter in the HBACHS area (SF1) that receives runoff from the new Connector Drive was oversized when it was originally designed/constructed to accommodate this future anticipated runoff from the Connector Drive. Calculations are provided on Table 2 within the stormwater management report showing that SF1 is properly sized to treat the additional runoff from the Connector Drive project. The HBACHS columns in Table 2 are only to indicate proper sizing of SF1. As indicated in the table the HBACHS areas are not included in calculating the general/redevelopment standards.

Comment: *As noted, our understanding of the project intent is that treatment from both the Intermodal Transportation Facility and the Center for Health Sciences is to be counted towards the requirement for the Connector Drive. Detail on the Intermodal Transportation Facility is included, but it is unclear how the Center for Health Sciences site's design fits into the area/treatment calculations.*

Response: As indicated in the report and Table 2, only the ITF and the Connector Drive projects are included in the general/redevelopment calculations for the city and the SLODA requirements for this project.

Comment: *The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended.*

Response: We will draft easement documents to address this comment. We are hopeful this could be considered as a staff recommended condition of approval.

Comment: *The applicant shall submit DEP permits for the proposed stream crossings and wetland impacts for review as part of this site plan review.*

Response: A copy of the NRPA permit for wetland impacts is attached. A NRPA PBR notification was filed with the NRPA application on September 23.

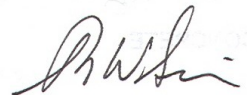
6. Exterior Lighting:

Comment: *The photometric plan shows a maximum foot-candle of 6.3 and an average foot-candle of 2.3 in the stat zone. The maximum foot-candle allowed is 5 for this use, with an average of 1.25. Please adjust the lighting plan to meet this standard.*

Response: A revised photometric plan which demonstrates compliance with this standard is included.

In closing, we would be happy to meet with staff and consultants to discuss any items which may require further clarification if necessary. If you have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

c: Andrew Philippe, Director for Campus Planning

November 14, 2023

Mr. Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086

RE: RECOMMENDATIONS FOR UNE CONNECTOR DRIVE

Dear Tom,

As requested, I have reviewed the comments issued by the City of Portland regarding the proposed connector drive on the UNE campus. This drive will connect the Bishop Street Intermodal Transportation Facility (ITF) to the core campus and College Street Extension. The currently proposed driveway is 24' wide with a 5' raised sidewalk. Some of the City comments and questions regarding this proposed cross section are as follows:

- Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.
- To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.
- Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.

Sewall has reviewed the above City comments and the Connector Drive plans, prepared by Site Design Associates, dated 9/22/2023.

The proposed drive section is to provide for both motor vehicles and bicycles since the 5' sidewalk cannot provide for both pedestrians and bicycles. The generally recommended minimum width for a multiuse path is 10'. A 10' multiuse path and a 22' wide travel way would result in a greater width of 32' with greater environmental impacts. Since 5' is generally considered the minimum sidewalk width, the proposed drive must provide for both bicycles and motor vehicles. For this reason, Sewall recommends that the 24' width be maintained. According to the AASHTO "Guide for the Development of Bicycle Facilities, 2012, Fourth Edition", roadways that have low volumes and low

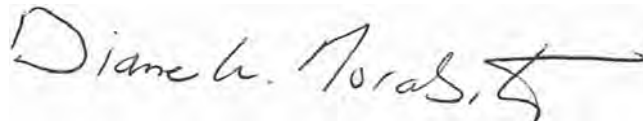
speeds are generally suitable for shared lanes. The guide indicates that roadways with lane widths of 13' or less require that motorists will encroach into the opposing lane to pass a bicyclist. By maintaining a 12' lane width this encroachment will be minimized. Given that motorists and bicyclists will be sharing the same lane, it is recommended that the drive be marked with sharrows, which are used to indicate a shared lane facility. This will alert drivers to the presence of bicyclists and the narrow lanes. Sharrows are typically used on roadways that are too narrow to provide separate marked bike lanes.

I also recommend that a "Bicycles May Use Full Lane" sign be placed on either end of the connector drive to supplement the sharrow markings.

Please don't hesitate to contact me if you or the City of Portland have any questions or need any additional information regarding my recommendations.



Sincerely,



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



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) FRESHWATER WETLAND ALTERATION
CONNECTOR DRIVE	) WATER QUALITY CERTIFICATION
L-30525-TC-A-N (approval)	) FINDINGS OF FACT AND ORDER

Project Description: The applicant proposes to alter 11,187 square feet of forested, emergent and scrub shrub wetlands. The applicant proposes to reconstruct an existing connector drive between the University of New England's Intermodal Transportation Facility and the main campus as shown on a plan titled "Connector Drive," prepared by Site Design Associates, and dated September 2023. The reconstruction project includes an effort to increase the safety of the connector drive by installing sidewalks and call boxes as well as widening the existing drive to two 12-foot travel ways. The applicant has avoided and minimized wetland impacts to the greatest extent practicable by locating the reconstructed connector drive in the same location as the existing connector drive wherever possible. One section of the connector drive will be relocated so that it connects directly to the intermodal transportation facility rather onto a public street as it does currently. The side slopes of the connector drive will be increased from the standard 3H:1V slope to the maximum slope of 2H:1V to minimize wetland impacts. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site. The proposed project is located off College Street in the City of Portland.

Permit for: ☒ Tier 1

DEP Decision: ☒ Approved ☐ Denied (see attached letter)

Please note: A U. S. Army Corps of Engineers permit may also be required for your project. The Corps typically accepts a copy of your Maine DEP NRPA application, but you are responsible for submittal to the Corps. We encourage you to contact them directly at cenae-r-me@usace.army.mil or (207) 623-8367 to discuss their application process. Please note that no regulated work within Corps jurisdiction may be started until you receive a Corps permit.

Standard Conditions:

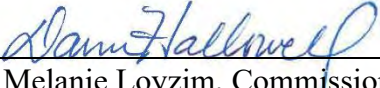
- 1) If construction or operation of the activity is not begun within four (4) years from the date signed, this permit shall lapse and the applicant shall reapply to the Department for a new permit. This permit is transferable only with prior approval from the Department. If the activity is associated with a larger project, starting any aspect of that project constitutes start of construction.
- 2) The project shall be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
- 3) Properly installed erosion control measures shall be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.

- 4) A copy of this approval will be sent to the City of Portland. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 9th DAY OF NOVEMBER, 2023.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

SCarr/L30525AN/ATS#91509

FILED
November 9th, 2023
State of Maine
Board of Environmental Protection

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, that **PIKE INDUSTRIES, INC.**, a Delaware corporation with a place of business and mailing address at 58 Main Street, Westbrook, Maine 04092 ("Grantor"), for consideration paid, hereby grants to **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation with a mailing address of 11 Hills Beach Road, Biddeford, Maine 04005 ("Grantee"), with **WARRANTY COVENANTS**, those certain lots or parcels of land, together with any buildings and improvements thereon, situated in Portland, Cumberland County, Maine, being more particularly described on **Exhibit A** attached hereto and incorporated herein by reference (the "Premises").

The following restrictions shall run with the land, shall inure to the benefit of the Grantor, and its successors and assigns, and shall be binding upon the Grantee, and its successors and assigns:

1. The Grantee covenants and agrees that the Premises shall not be used for excavation of earth materials, crushing of rock and other materials, production of hot-mix asphalt or other similar products (e.g., cement, ready mix concrete, etc.), storage of earth materials and/or hot-mix, cement or ready-mix products or the sale (retail or wholesale) and distribution of such materials from the Premises or the use of such material or existing processed material unless such excavation and/or use of such materials is for the benefit of the Grantee on the Premises or on contiguous land in common ownership of the Grantee.
2. In the event of a violation of any or all of this restrictive covenant, the Grantor, in addition to all other remedies available to it, may obtain an injunction against the Grantee issued by a court of competent jurisdiction enjoining such breach and shall be entitled to recover its costs and expenses, including, but not limited to, reasonable attorney's fees in the enforcement or defense of the restrictions or any of them.

Being parcels 2 and 3 in the deed of Oldcastle Materials, Inc. to Pike Industries, Inc. dated March 20, 2002, and recorded in the Cumberland County Registry of Deeds in Book 17835, Page 301.

IN WITNESS WHEREOF, the Grantor has caused this instrument to be signed and sealed this 28th day of February, 2012.

WITNESS:

PIKE INDUSTRIES, INC.

By: Brian J. Donovan
Print/type name: Brian J. Donovan
Its: Authorized Agent

STATE OF MAINE
CUMBERLAND, ss.

February 28, 2012

Then personally appeared the above named Brian J. Donovan, its Authorized Agent, of Pike Industries, Inc. who acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Pike Industries, Inc.

Before me,

Peter J. Van Hemel
~~Notary Public~~ / Maine Attorney-at-Law
Name Printed: Peter J. Van Hemel
My Commission Expires: _____

H:\DOCS\RATTEY\PIKE\UNE 39662\MSFWDEED3.DOC

EXHIBIT A

TRACT 1

A certain lot or parcel of land in the Morrill's Corner region of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Commencing at a point or stake standing on the old southerly line of the Portland & Rochester Railroad, now the Portland Terminal Company, and at a point where the same intersects with land formerly of Franklin M. Purington,

THENCE South $65\frac{3}{4}^{\circ}$ West 108 Rods 15 Links, more or less, to land now owned by the City of Portland;

THENCE North $24\frac{1}{4}^{\circ}$ West 5 Rods 16 Links, more or less, to a stake;

THENCE South $65\frac{3}{4}^{\circ}$ West 34 Rods 9 Links, more or less, to a stake standing on land owned by said City;

THENCE North 11° West 11 Rods 7 Links, more or less, to a stake, standing on land formerly owned by Hiram Sawyer;

THENCE North $61\frac{1}{2}^{\circ}$ East 107 Rods, more or less, to line of said location of Portland & Rochester Railroad;

THENCE by the line of said Railroad on its southerly side as aforesaid $83\frac{1}{4}^{\circ}$ East 38 $\frac{1}{2}$ Rods, more or less, to the place of beginning.

EXCEPTING from the above described premises, the premises conveyed by Adam W. Wilson to City of Portland by deed dated March 25, 1889, and recorded in the Cumberland County Registry of Deeds in Book 556, Page 132; and the premises conveyed by Adam W. Wilson to Boston & Maine Railroad by deed dated April 4, 1907, and recorded in said Registry in Book 803, Page 232, and by deed dated August 5, 1910, and recorded in said Registry in Book 863, Page 137.

TRACT II

Another certain lot or parcel of land situated near Morrill's Corner in that part of Portland that was formerly Deering, in the County of Cumberland and State of Maine, lying adjacent to and lying northwesterly of the above described premises, being bounded and described as follows:

Beginning at the northwesterly corner of land formerly of one Smith, on the southerly side of land formerly of Portland & Rochester Railroad, now the Portland Terminal Company, and running South 62° West 106 Rods to land of Portland Cemetery;

THENCE northwesterly by said Cemetery lot 30 Rods to the Old Kenney lot;

THENCE North 52 1/2° East by said Kenney's lot 49 Rods 2 Links to the Portland Terminal Company railroad land, formerly of the Portland & Rochester Railroad;

THENCE southeasterly by said Portland Terminal Company location 70 Rods to the first mentioned bounds or place of beginning.

EXCEPTING, however, from the above described premises two certain pieces or parcels of land, that first being 200 feet in length by 28 feet in width and lying parallel with the above-mentioned railroad, said parcel being conveyed by F.O.J. Bodge to Boston & Maine Railroad by warranty deed November 20, 1907, and recorded in the Cumberland County Registry of Deeds in Book 817, Page 29; and the second being a strip along a portion of the southeasterly and southwesterly side thereof, being conveyed by Lewis Lumber Co. to Central Maine Power Company by deed dated November 23, 1951, and recorded in said Registry in Book 2067, Page 107.

Both tracts are conveyed subject to the rights acquired for a sewer by the City of Portland by taking dated May 26, 1944, and recorded in the office of the City Clerk of the City of Portland, Maine, in Vol. 66, Page 263.

Also excepting the land described in the deed from Tilcon Minerals, Inc. to the City of Portland dated November 22, 1996, recorded in the Cumberland County Registry of Deeds in Book 12886, Page 212.

The premises are conveyed subject to the following rights and easements:

1. Rights and easements granted by Warren Bros. Roads Co. to Central Maine Power Company by instrument dated June 19, 1952, and recorded in the Cumberland County Registry of Deeds in Book 2097, Page 221.
2. Rights and easements granted by Warren Brothers Roads Company to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 27, 1967, and recorded in the Cumberland County Registry of Deeds in Book 2996, Page 102.
3. Rights and easements granted by Warren Brothers Co. to Portland Water District by instrument dated December 15, 1977, and recorded in the Cumberland County Registry of Deeds in Book 4150, Page 72.
4. Rights and easements granted by Warren Bros., a Div. of Ashland-Warren Inc. to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 31, 1978, and recorded in the Cumberland County Registry of Deeds in Book 4239, Page 326.
5. Rights and easements granted by Tilcon Minerals, Inc. to the City of Portland by deed dated November 22, 1996, and recorded in the Cumberland County Registry of Deeds in Book 12886, Page 214.

6. Rights and easements granted by Lewis Lumber Company to Central Maine Power Company by instrument dated November 23, 1951, and recorded in the Cumberland County Registry of Deeds in Book 2067, Page 106.
7. Rights, easements, and exceptions set forth in deed from Rosa Lewis to Warren Brothers Roads Company dated May 26, 1962, recorded in said Registry of Deeds in Book 2676, Page 74.

H:\DOCS\RATTEY\Pike\UNE 39662\EXHIBIT A.docx

Received
Recorded Register of Deeds
Mar 02, 2012 11:36:47A
Cumberland County
Pamela E. Lovley

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

Abstract of Title to the following described land:

A certain lot or parcel of land with the building thereon, situated number 374 Stevens Avenue in that part of said Portland formerly Deering, and being bounded and described as follows:

~~Beginning at a stone post standing on the northerly side of College~~
Street, formerly Seminary Street, one hundred and fifty-eight (158) feet more or less from the northwesterly corner of said College Street and Stevens Avenue, and running north, twenty-four and one-fourth ($24 \frac{1}{4}$) degrees east, one hundred and forty-eight and one-half ($148 \frac{1}{2}$) feet to land now or late of Captain Sargent; thence south, seventy (70) degrees east by said Sargent's land one hundred and forty-one and one half ($141 \frac{1}{2}$) feet more or less to said Stevens Avenue; thence southerly by said Stevens Avenue seventy-four (74) feet to land now or late of Arabella W. Roberts; thence westerly by land now or late of said Roberts in a line parallel with said College Street one hundred (100) feet; thence southerly again by land now or late of said Roberts in a line parallel with said Stevens Avenue ninety (90) feet to said College Street; and thence westerly by said College Street to point of beginning; be any or all of said measurements more or less, or however otherwise bounded, measured or described.

Being the same premises conveyed by Lydia J. Snow to Thalia L. Clement, formerly Thalia L. Scamman, by warranty deed dated April 22, 1902, and recorded in Cumberland County Registry of Deeds, Book 716, Page 326.

bounded, measured or described.

Being the same premises conveyed by Lydia J. Snow to Thalia L. Clement, formerly Thalia L. Scamman, by warranty deed dated April 22, 1902, and recorded in Cumberland County Registry of Deeds, Book 716, Page 326.

Excepting that certain lot or parcel of land conveyed by the said Thalia L. Clement to Victor Brewster by warranty deed dated October 19, 1908, and recorded in Cumberland County Registry of Deeds, Book 831, Page 38.

WARRANTY OF TITLE TO THE LOT OR LOTS DESCRIBED FOR:

377-518.

(Elizur)

Eleazer B. Forbes to Joseph C. Snow;

Warranty; July 29, 1870;

Tract embracing lot described.

478-428.

Joseph C. Snow to Lydia J. Snow, wife;

Warranty; December 13, 1880;

Same tract as 377-518.

716-326.

Lydia J. Snow to Thalia L. Scamman;

Warranty, April 22, 1902.

721-20.

Thalia L. Scamman to Portland Savings Bank;

Mortgage; September 30, 1902; Discharged on margin

Mar. 2, 1905.

Thalia L. Clement to Portland Savings Bank, June 10, 1910.
Mortgage;
Discharged on margin September 22, 1914.

At the present time there are no encumbrances of record.

Dated at Portland, Maine, this fifth day of April,

A.D. 1919.

Quicker Quicker

Quit-Claim Deed

CORPORATION — WITH COVENANT

FROM

ALL SOULS UNIVERSALIST CHURCH OF
 PORTLAND, MAINE
 (ALL SOULS CHURCH PARISH)

TO

WESTBROOK SEMINARY AND JUNIOR COLLEGE

Dated February 9, 1940

State of Maine.

Cumberland ME Registry of Deeds

Received FEB 9 1940

at 2 P. M., 26, 27, and

recorded in Book 1599 Page 276

Attest
[Signature]
 REGISTER

FROM THE OFFICE OF

Bradley, Linnell, Nulty & Brown
 192 Middle Street
 Portland, Maine

MARTIN'S, PORTLAND, MAINE — LAW OFFICE SUPPLIES AND EQUIPMENT

MARTIN'S FORM NO. 9

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it, the said Westbrook Seminary and Junior College, its successors

~~Hereby~~ and Assigns forever.

And the said Grantor Corporation does warrant with the said Westbrook Seminary and Junior College, its successors

~~Hereby~~ and Assigns, that it will Warrant and Forever Defend the premises to it, the said Grantee, its successors

~~Hereby~~ and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said All Souls Universalist Church of Portland, Maine (All Souls Church Parish)

has caused this instrument to be sealed with its ~~corporate~~ seal

and signed in its corporate name by *Herbert B. Seal, President of its Board of Trustees,*

thereunto duly authorized, this *9th* day of February

in the year one thousand nine hundred and forty.

Signed, Sealed and Delivered
in presence of

E. F. Perkins

ALL SOULS UNIVERSALIST CHURCH OF
PORTLAND, MAINE
(ALL SOULS CHURCH PARISH)

By *Herbert B. Seal*
Its President of
Board of Trustees.

~~CORPORATE SEAL~~

State of Maine.

CUMBERLAND,

February 9, 1940.

Personally appeared the above named *Herbert B. Seal, President*
of the Board of Trustees of said Grantor Corporation
as aforesaid, and acknowledged the foregoing instrument to be his
free act and deed in his said capacity, and the free act and deed of
said corporation.



Before me,

Elliott P. Perkins
Justice of the Peace

Warrantly Depd

FROM

WALTER G. WHITMAN

TO

WESTBROOK SEMINARY AND JUNIOR COLLEGE

Dated _____, 1940

State of Maine

Cumberland ss. Registry of Deeds

Received MAR 28 1940

at 4 H. 55 M. P M., and

recorded in Book 1603 Page 98

Attest: *Charles C. Carville* Register.

FROM THE OFFICE OF

Bradley, Linnell, Nutty & Brown
192 Middle Street
Portland, Maine

MARTIN'S PORTLAND, MAINE - OFFICE PRINTER AND SPECIALS
TYPESETTERS - ADDRESS MACHINES - FILING CABINETS - ETC.
MARTIN'S FORM NO. 1 - STANDARD REGISTRY FORM

Ende

Know all Men by these Presents

That ALL SOULS UNIVERSALIST CHURCH OF PORTLAND, MAINE, a religious society duly organized under the laws of the State of Maine and located at Portland, in the County of Cumberland and State of Maine, formerly known as and called ALL SOULS CHURCH PARISH,
~~a corporation organized and existing under the laws of the State~~

~~of~~

~~xxxxxxxxxxxx~~

~~xxxxxxxxxxxx~~

~~xxxxxxxxxxxx~~

in consideration of one dollar and other valuable consideration

paid by WESTBROOK SEMINARY AND JUNIOR COLLEGE, a corporation organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof it does hereby acknowledge, does hereby remise,
 release, bargain, sell and convey, and forever quit-claim unto the said

Westbrook Seminary and Junior College, its successors

~~back~~ and assigns forever,

the following described premises situated in said Portland:

1. A certain lot or parcel of land situated in said Portland and bounded and described as follows: Beginning at an iron stake at the northwesterly corner of the lot of land conveyed by Ella Louise Fernald to Susie Whitman by deed dated May 11, 1908 and recorded in Cumberland County Registry of Deeds in Book 826, Page 72; thence by land conveyed to said Whitman as aforesaid and by land conveyed to said Whitman by Cordelia S. Pierce by deed dated August 3, 1892 and recorded in said Registry of Deeds, Book 593, Page 236, on a course of South sixty-four degrees forty-two minutes East (S. 64° 42' E.) two hundred thirty-three (233) feet to an iron stake; thence by other land of said Grantor on a course of North twenty-one degrees fifty-six minutes East (N. 21° 56' E.) sixty-eight and fifty-five hundredths (68.55) feet to the Southeasterly corner of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to other land of said Grantee; thence by land of said Grantee on a course of South thirty-one degrees forty-five minutes West (S. 31° 45' W.) sixty-eight and one tenth (68.1) feet to the point of beginning.

Said above described lot is subject to the life lease to Ella L. Perry as granted to her by All Souls Church Parish by lease dated October 17, 1924 and recorded in said Registry in Book 1204, Page 65.

2. A certain other lot or parcel of land in said Portland was devised and conveyed to said land which Cordelia S. Pierce devised to All Souls Universalist Church of Portland, Maine under the name of Society of All Souls Church by her last will and testament.

Westbrook Seminary and Junior College, its successors

hereby and assigns forever,

the following described premises situated in said Portland:

1. A certain lot or parcel of land situated in said Portland and bounded and described as follows: Beginning at an iron stake at the northwesterly corner of the lot of land conveyed by Ella Louise Fernald to Susie Whitman by deed dated May 11, 1908 and recorded in Cumberland County Registry of Deeds in Book 826, Page 72; thence by land conveyed to said Whitman as aforesaid and by land conveyed to said Whitman by Cordelia S. Pierce by deed dated August 3, 1892 and recorded in said Registry of Deeds, Book 593, Page 236, on a course of South sixty-four degrees forty-two minutes East (S. 64° 42' E.) two hundred thirty-three (233) feet to an iron stake; thence by other land of said Grantor on a course of North twenty-one degrees fifty-six minutes East (N. 21° 56' E.) sixty-eight and fifty-five hundredths (68.55) feet to the Southeasterly corner of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to other land of said Grantee; thence by land of said Grantee on a course of South thirty-one degrees forty-five minutes West (S. 31° 45' W.) sixty-eight and one tenth (68.1) feet to the point of beginning.

Said above described lot is subject to the life lease to Ella L. Perry as granted to her by All Souls Church Parish by lease dated October 17, 1924 and recorded in said Registry in Book 1204, Page 86.

2. A certain other lot or parcel of land in said Portland and bounded and described as follows: Beginning at a stake on the northerly line of the lot of land which Cordelia S. Pierce devised to All Souls Universalist Church of Portland, Maine under the name of Society of All Souls Church by her last will and testament, an abstract of which is recorded in Cumberland County Registry of Deeds in Book 757, Page 136, said stake being distant one hundred forty-five (145) feet westerly of the westerly line of Stevens Avenue as established by deed from Westbrook Seminary to the City of Portland dated May 29, 1917 and recorded in said Registry in Book 1086, Page 449; thence by other land of said Grantor on a course of South twenty-one degrees fifty-six minutes West (S. 21° 56' W.) sixty-eight and fifty-five hundredths (68.55) feet to the northeasterly corner of the lot of land next hereinafter described and conveyed; thence by said lot of land next hereinafter described and conveyed on a course of North sixty-four degrees fifty-five minutes West (N. 64° 55' W.) two hundred twenty-one and three tenths (221.3) feet to land of said Grantee; thence by land of said Grantee on a course of North thirty-one degrees forty-five minutes East (N. 31° 45' E.) sixty-eight and one tenth (68.1) feet to a stake; thence by land of said Grantee on a course of South sixty-five degrees eight minutes East (S. 65° 08' E.) two hundred nine and sixty-four hundredths (209.64) feet to the point of beginning.

Said aforementioned courses are magnetic and of the date of 1935.

Being a part of the property devised to All Souls Universalist Church of Portland, Maine under the name of Society of All Souls Church by the last will and testament of Cordelia S. Pierce, an abstract thereof being recorded in said Registry of Deeds in Book 757, Page 136.

On ~~Now~~ and in ~~Full~~ the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Westbrook Seminary and Junior College, its successors ~~heirs~~ and assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its ^{successors} ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances; except as aforesaid;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will ~~Warrant and defend~~ the same to the said Grantee, its ^{successors} ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons except as aforesaid.

In ~~Witness Whereof~~. I, the said Walter G. Whitman,

and I, Grace B. Whitman,

wife of the said

Walter G. Whitman,

Joining in this deed as Grantor, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hands and seals this 26th day of March in the year of our Lord one thousand nine hundred and forty.

Signed, Sealed and Delivered
in presence of

Sumner Y. Wheeler



Walter G. Whitman
Grace B. Whitman

premises, have not

day of March

in the year of our Lord one thousand nine

hundred and forty.

Signed, Sealed and Delivered
in presence ofSumner Y. WheelerWalter S. WhitmanGrace B. WhitmanCOMMONWEALTH OF MASSACHUSETTS,
~~Essex, ss.~~

Essex,

ss.

March 26, 1940.

Personally appeared the above named

Walter G. Whitman

and acknowledged

the foregoing instrument to be his

free act and deed.

Before me,

Charles A. Metcalf

Justice of the Peace

Notary Public

My commission expires Apr. 28, 1949

00000

KNOW ALL MEN BY THESE PRESENTS, That the CITY OF PORTLAND, a body politic and corporate located in the County of Cumberland and State of Maine, in consideration of One Dollar (\$1.00) and other good and valuable considerations, paid by Westbrook College, a corporation organized and existing under the laws of the State of Maine and located at 716 Stevens Avenue in said Portland in said County and State, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said Westbrook College, its successors and assigns forever, certain real estate located in said Portland, lying Westerly of College Street and Southerly of Bishop Street, bounded and described as follows:

Beginning at a point on the Northerly line of the land of Portland Railroad Company where the same intersects with land hereby conveyed and land formerly of George H. Smardon, commonly known as the Smardon Gravel Pit, formerly Read's Gravel Pit; thence from said point North $19^{\circ} 30'$ East 28.68 rods; thence North 60° West Seven and thirty-two hundredths (7.32) rods to a point; thence South $74^{\circ} 45'$ West Thirty-six and sixty-four hundredths (36.64) rods to a point; thence North 5° West Two and fifty-six hundredths (2.56) rods; thence North 30° West Twenty-four and four tenths (24.4) rods; thence South 65° West Forty-seven and twelve hundredths (47.12) rods to center of ditch; thence up the center of said ditch towards what is known as pasture Two Hundred Ninety-eight (298) feet; thence in a straight line to a point in line of Evergreen Cemetery indicated by a spruce stump, said stump being at the intersection between land of said Cemetery and land conveyed by Luther B. Roberts to the said City of Portland; thence from said stump North $80^{\circ} 21'$ East Three Hundred Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North $76^{\circ} 8'$ East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South $12^{\circ} 52'$ East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North $76^{\circ} 8'$ East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch

Two Hundred Ninety-eight (298) feet; thence in a straight line to a point in line of Evergreen Cemetery indicated by a bridge stump; said stump being at the intersection of the land of said Cemetery and land conveyed by Luther B. Roberts to the said City of Portland; thence from said stump North $80^{\circ} 21'$ East Three Hundred Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North $76^{\circ} 8'$ East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South $12^{\circ} 52'$ East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North $76^{\circ} 8'$ East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch between the hereinabove described premises and the land hereby conveyed and in line of land now or formerly owned by Adam Wilson and running Southerly by land of said Wilson to the Westerly corner of land of Evergreen Cemetery; thence South Twenty-four (24°) degrees East by land of said Cemetery One hundred and seventy-five (175) feet to a point; thence by land formerly of Dennis F. Gulliver, and being the premises hereinabove described, in a straight line to a point in the center of said ditch; said point being Two Hundred Ninety-eight (298) feet from the point of beginning; thence down the center of said ditch to the point of beginning.

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- 2 -

Excepting and reserving from the above described premises that portion thereof conveyed by the Grantor to Central Maine Power Company by deed dated February 26, 1967, recorded in said Registry of Deeds in Book 2989, Page 13.

This conveyance is made subject to the right-of-way or easement granted by the Grantor to Central Maine Power Company by deed dated December 13, 1951, recorded in said Registry of Deeds in Book 2055, Page 463.

Reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon a strip of land fifty (50) feet in width lying equally on either side of the storm drain and upon a strip of land fifty (50) feet in width lying equally on either side of the brook presently located on the premises herein conveyed and the right perpetually to maintain, repair, rebuild, relocate, or remove said storm drain and brook with all necessary fixtures and appurtenances within said strips of land, granting to the Grantee, its successors and assigns, the use and enjoyment of said strips of land for such purposes only as will in no way interfere with the perpetual use thereof by the Grantor, its successors and assigns, for the purposes above mentioned, except that no buildings or structures may be erected within said strips of land. Also reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon the premises herein conveyed for the purpose of access and egress by itself, its servants and/or agents to and from said strips of land.

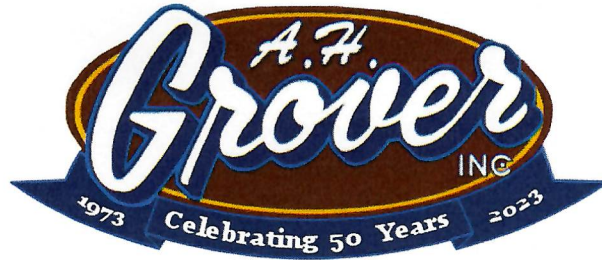
Being the same premises conveyed to the Grantor by deed of James Gulliver, Administrator, d.b.n.c.t.a., of the Estate of Stephen Gulliver by deed dated August 23, 1935, recorded in said Registry of Deeds in Book 1476, Page 441.

Also a certain lot of land lying in the rear of College Street, in the City of Portland, bounded and described as follows, to wit:

Beginning at a point on the Northerly side line of College Street and at the Westerly corner of land belonging to Francis L. Stone; thence North 25° 22' east by land of said Stone eighty-seven and nineteen one hundredths (87.19) feet to land of the Portland Railroad Company; thence North 62° 26' west by land of said Portland Railroad Company four hundred and thirty-one and ninety three one hundredths (431.93) feet

Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North $76^{\circ} 8'$ East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South $12^{\circ} 52'$ East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North $76^{\circ} 8'$ East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch between the hereinabove described premises and the land hereby conveyed and in line of land now or formerly owned by Adam Wilson and running Southerly by land of said Wilson to the Westerly corner of land of Evergreen Cemetery; thence South Twenty-four (24°) degrees East by land of said Cemetery One hundred and seventy-five (175) feet to a point; thence by land formerly of Dennis F. Gulliver, and being the premises hereinabove described, in a straight line to a point in the center of said ditch; said point being Two Hundred Ninety-eight (298) feet from the point of beginning; thence down the center of said ditch to the point of beginning.



Project Location: UNE Connector Road

RE: Dewatering Plan

September 18, 2023

Plan:

The existing site is currently sloped to the sides of the roadway. An erosion control berm will be placed on either side of the work area. No pumping of water is planned for rainwater as the area already drains efficiently. During a rain event, no open trenches or holes will be present.

Based on the current conditions and the test pits completed on site, groundwater levels are below most working levels. If water must be pumped from excavation areas, we will use a two-inch pump equipped with a discharge hose and a filter bag. The discharge will be placed on a bed of crushed stone surrounded by crushed stone to filter further sediment and reduce the impact on existing ground.

DEP Erosion Control Specialists will be on site during all operations and maintain a log of all dewatering operations.

All BPMs for erosion control will be inspected daily and maintained as necessary to the design specifications. Any Silt and or spent filter media will be removed from the site and disposed of at one of our offsite locations.

A handwritten signature in black ink, appearing to read 'Lee H. Ruby', with a stylized flourish at the end.

Lee H. Ruby

Project Manager

Mailing Address | P.O. Box 307, Cumberland, ME 04021
Location Address | 82 Doughty Road, North Yarmouth, Maine

Telephone [207] 829-3373
Fax [207] 829-5502



Ultra-Dewatering Bags® Specifications

Material Specifications

Properties	ASTM Test	Value
Material: Non-Woven, Polyethylene Geotextile	-	-
Grab Tensile	D 4632	205 lbs
Elongation at break	D 4632	50%
Trapezoid Tear	D 4533	80 lbs
Puncture	D 4833	525 lbs
Mullen Burst	D 3786	420 psi
Permittivity	D 4491	1.5 sec ⁻¹
A.O.S. (U.S. sieve no.)/ mm	D 4781	80/0.18
UV Stability (strength retained %) 500 Hours	D 4355	70%
Fabric Weight (oz./yd²)(typical)	D 5261	8 oz/yd ²
Flow Rate	D 4491	90 gpm/ft ²

Install the Ultra-Dewatering Bag® on a slope so incoming water flows downhill through the Ultra-Dewatering Bag® without creating more erosion. Strap the neck of the Ultra-Dewatering Bag® tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or hay bale bed to maximize water flow through the surface area of the bag.

The Ultra-Dewatering Bag® is full when it no longer can efficiently filter sediment or pass water at a reasonable rate. Flow rates will vary depending on the size of the Ultra-Dewatering Bag®, the type and amount of sediment discharged into the Ultra-Dewatering Bag®, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. Under most circumstances Ultra-Dewatering Bag® will accommodate flow rates of 1500 gallons per minute. Use of excessive flow rates or overfilling Ultra-Dewatering Bag® with sediment will cause ruptures of the bags or failure of the hose attachment straps.

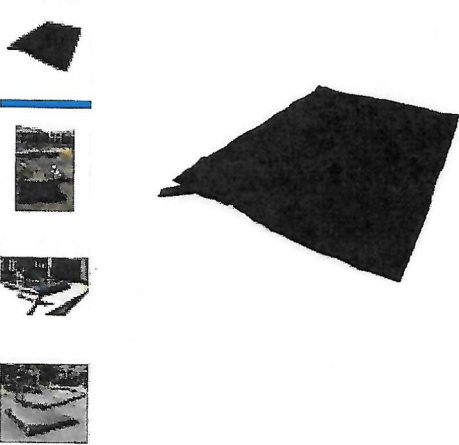
Dispose of the Ultra-Dewatering Bag® as directed by the site engineer. If allowed, the Ultra-Dewatering Bag® may be cut open and the contents seeded after removing visible fabric.

The facts stated and the recommendations made herein are offered free of charge and are accurate to the best of our knowledge. UltraTech International, Inc. assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. UltraTech disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, material, or information furnished herewith. Final determination of the use of any information or material, or how it is useful, and whether the use infringes any patents is the sole responsibility of the user.

Unit Specifications

Model	Fabric QTY	Max Flow Rate (GPM)	Sediment Capacity (Cu Ft)	Sediment Capacity (lbs.)	Oil Capacity
Oil & Sediment 3'x4' Part # 9729-O/S	24 sq ft	500	6	720	1.2 gal
Oil & Sediment 6'x6' Part # 9724-O/S	74 sq ft	500	36	4320	3.7 gal
Oil & Sediment 10'x15' Part # 9725-O/S	302 sq ft	1500	150	18000	15.1 gal
Oil & Sediment 15'x15' Part # 9727-O/S	452 sq ft	1500	225	27000	22.6 gal

Interstate Products Inc. 6561 Palmer Park Circle Sarasota, Florida 34238 USA
1-800-474-7294 1-941-377-8610 · store.interstateproducts.com



ULTRATECH Dewatering Bag: 4 ft L x 3 ft W, 500 gpm Max Flow Rate, 1.2 gal Oil Capacity

Item 3EWY6 Mfr. Model 9729-OS

Web Price 
\$45.67 / each

Qty

1

Add to Cart

☒ Ship

☐ Pickup

Expected to arrive
Wed. Aug 02.

Ship to 04021 | [Change](#)

Shipping Weight 1.65 lbs
[Ship Availability Terms](#)

☐ Compare

Product Details Catalog Page [1867](#)

- Color **Black**
- Diameter **4 in**
- For Use With **4 in Discharge Hose**
- Incinerable **No**
- Length **4 ft**
- Material **Polypropylene**
- Maximum Discharge Hose Size **4 in**
- Maximum Flow Rate **500 gpm**
- Micron Rating **100**
- Oil Capacity **1.2 gal**
- Recycled Content (%) **No Recycled Content**
- Reusable **No**
- Sediment Capacity **12 cu ft; 720 lb**
- Sediment Capacity (Volume) **12 cu ft**
- Sediment Capacity (Weight) **720 lb**
- Size **4 ft L x 3 ft W**
- Standards **40 CFR 122.26**
- Substances Filtered **Oil; Sediment**
- Width **3 ft**

[Add to List](#)

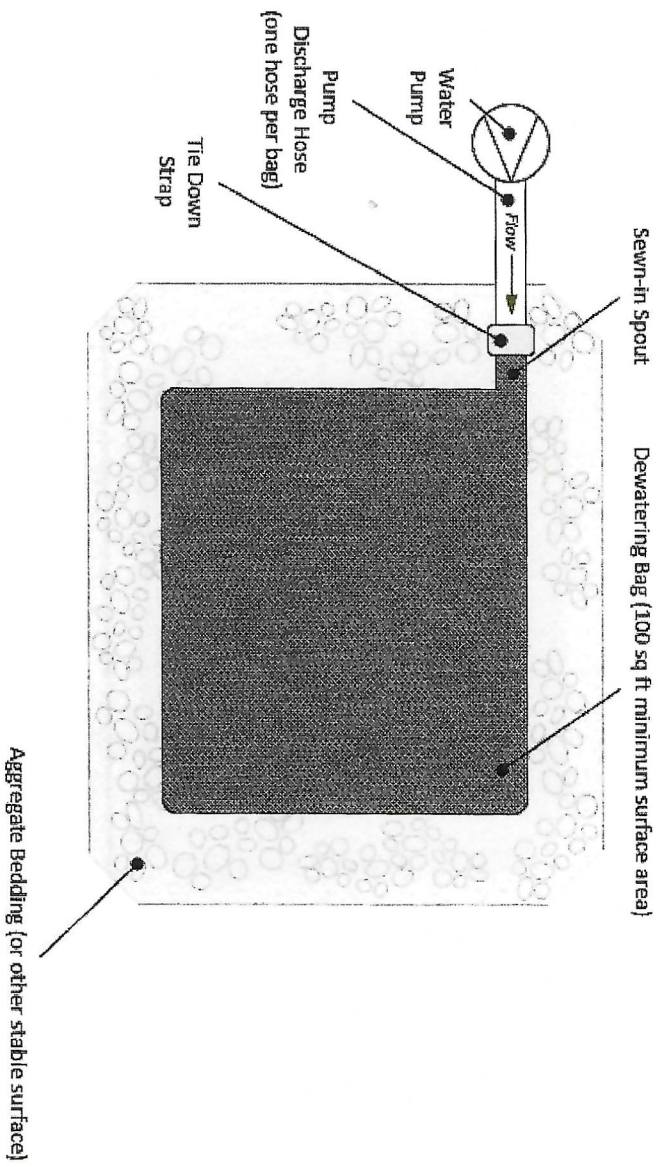
Documents

 [Ultratech Dewatering Bag Spec Sheet](#)

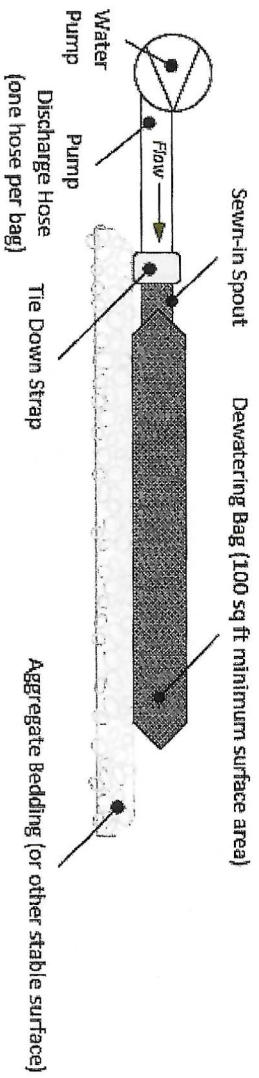
 [Chat with an Agent](#)

Figure 1:
Geotextile Filter Bag

PLAN VIEW



SIDE VIEW



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

September 14, 2023

City of Portland
Planning Board
389 Congress St.
Portland, ME 04101

Dear Planning Board Members,

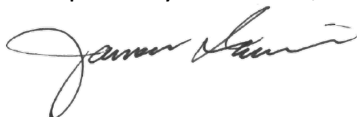
Please accept this letter as assurance that the University of New England (UNE) has the financial capacity to construct, equip, and operate the proposed Harold and Bibby Alfond Center for Health Sciences as well as the Bishop Street Connector Road.

From 2018 to 2023, UNE has experienced a total positive change in net assets of \$197.2 million. These surpluses have improved upon the University's liquidity position and overall financial capacity. Total net assets during the same period increased from \$320.5 million to \$517.7 million. This demonstrates UNE's continued commitment to sound management practices and financial sustainability.

To date, UNE has raised over \$39.4 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 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 and cash flow projections provide further confirmation that the University can readily afford the construction and future direct and indirect operating costs of the proposed project.

Taking into consideration the funds raised, \$50 million of debt financing secured, and financial strength of the University, management is confident it has sufficient resources to complete the project.

Respectfully submitted,



Jim Irwin
Senior Vice President for Finance and Administration
University of New England



UNIVERSITY OF
NEW ENGLAND

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207) 283-0171 T

Portland Campus
716 Stevens Avenue
Portland, ME 04103
(207) 797-7261 T

September 20, 2023

Mr. Tom Saucier
Site Design Associates
23 Whitney Way
Topsham, ME 04086

TO WHOM IT MAY CONCERN:

This letter authorizes Tom Saucier to serve as an Agent and Owner's Representative for University of New England for the purpose of permitting the reconstruction of a drive connecting the campus with the Intermodal Transportation Facility.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Thibeault", with a stylized flourish above the name.

Alan Thibeault
Vice President for University Operations



Record Lighting Submittal Package

Project: UNE Alford Cener Site Lighting (22-63667-16)

Prepared For: Wesco – Portland, ME.

Prepared By: Kelly Beck

September 19, 2023

Submitted by:	Job Name:	Catalog Number:	Type:
 VISIBLE LIGHT MANUFACTURERS' REPRESENTATIVE	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT



RSX2 LED Area Luminaire

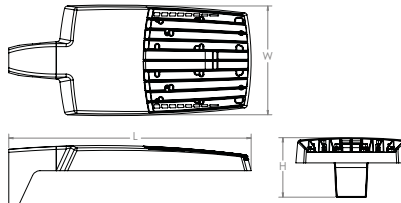


Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA (ft ² @0°):	0.69 ft ² (0.06 m ²)
Length:	29.3" (74.4 cm) (SPA mount)
Width:	13.4" (34.0 cm)
Height:	3.0" (7.6 cm) Main Body 7.2" (18.3 cm) Arm
Weight: (SPA mount)	30.0 lbs (13.6 kg)



Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX2 delivers 11,000 to 31,000 lumens allowing it to replace 250W to 1000W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This "no-drill" solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.



Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details



Ordering Information

EXAMPLE: RSX2 LED P6 40K R3 MVOLT SPA DDBXD

RSX2 LED	P1	40K	R2	MVOLT	SPA
Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX2 LED	P1	30K 3000K 40K 4000K 50K 5000K	R2 Type 2 Wide R3 Type 3 Wide R3S Type 3 Short R4 Type 4 Wide R4S Type 4 Short R5 Type 5 Wide ¹ R5S Type 5 Short ¹ AFR Automotive Front Row AFRR90 Automotive Front Row Right Rotated AFRL90 Automotive Front Row Left Rotated	MVOLT (120V-277V) ² HVOLT (347V-480V) ³ XVOLT (277V-480V) ⁴ (use specific voltage for options as noted) 120 ³ 277 ⁵ 208 ³ 347 ⁵ 240 ³ 480 ⁵	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°) RPA Round pole mounting (3.2" min. dia. RND pole for 2, 3, 4 at 90°, 3.0" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°) MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon) IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁶ WBA Wall bracket ¹ WBASC Wall bracket with surface conduit box AASP Adjustable tilt arm square pole mounting ⁶ AARP Adjustable tilt arm round pole mounting ⁶ AAWB Adjustable tilt arm with wall bracket ⁶ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁶

NLTAIR2 PIRHN

DBLXD

Options

Finish

Shipped Installed

HS	House-side shield ⁷
PE	Photocontrol, button style ^{8,9}
PER7	Seven-wire twist-lock receptacle only (no controls) ^{9,10,11}
SF	Single fuse (120, 277, 347) ⁵
DF	Double fuse (208, 240, 480) ⁵
SPD20KV	20KV Surge pack (10KV standard)
FAO	Field adjustable output ⁹
DMG	0-10V dimming extend out back of housing for external control (control ordered separately) ⁹
DS	Dual switching ^{9,12}

Shipped Installed

*Standalone and Networked Sensors/Controls (factory default settings, see table page 9)

NLTAIR2 PIRHN nLight AIR generation 2, with Networked, Bi-Level motion/ambient sensor^{9,13,14,15}

BAA	Buy America(n) Act Compliant
CCE	Coastal Construction ¹⁶

*Note: NLTAIR2 PIRHN with nLight Air can be used as a standalone dimming sensor with out-of-box settings or as a wireless networked solution. See factory default settings table. Sensor coverage pattern is affected when luminaire is tilted.

Shipped Separately (requires some field assembly)

EGS	External glare shield ⁷
EGFV	External glare full visor (360° around light aperture) ⁷
BS	Bird spikes ¹⁷

DDBXD	Dark Bronze
DBLXD	Black
DNAXD	Natural Aluminum
DWHXD	White
DDBTXD	Textured Dark Bronze
DBLTXD	Textured Black
DNATXD	Textured Natural Aluminum
DWHGXD	Textured White



One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-705-SERV (7378) • www.acuitybrands.com
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Lithonia RSX2 Area LED
Rev. 04/20/23
Page 1 of 9

COMMERCIAL OUTDOOR

Ordering Information

Accessories

Ordered and shipped separately.

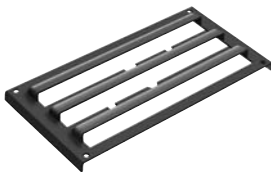
RSX2HS	RSX2 House side shield (includes 2 shields)
RSX2EGS (FINISH) U	External glare shield (specify finish)
RSX2HSAFR (FINISH) U	RSX2 House side shields for AFR rotated optics (includes 2 shields)
RSX2EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) ¹
RSXSCB (FINISH) U	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DL1127F 1.5 JU	Photocell -SSL twist-lock (120-277V) ¹⁸
DL1347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) ¹⁸
DL1480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) ¹⁸
DSHOT SBK U	Shorting cap ¹⁸

NOTES

- Any Type 5 distribution, is not available with WBA.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
- XVOLT driver not available with P1. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE.
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Maximum tilt is 90° above horizontal.
- It may be ordered as an accessory.
- Requires MVOLT or 347V.
- Two or more of the following options cannot be combined including PE, DMG, PER7, FAO, DS and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
- Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped

- as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
- For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
 - DS requires (2) separately switched circuits. DS provides 50/50 fixture operation via (2) different sets of leads using (2) drivers. DS only available with packages P5 and P6.
 - Must be ordered with PIRHN.
 - Requires MVOLT or HVOLT.
 - Must be ordered with NLTAIR2. For additional information on PIRHN visit [here](#).
 - CCE option not available with WBA, WBASC, AASP, AARP, AAWB, AAWBSC, EGS, EGVV and BS.
 - Must be ordered with fixture for factory pre-drilling.
 - Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



House Side Shield



External Glare Shield

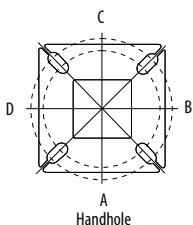


External 360 Full Visor

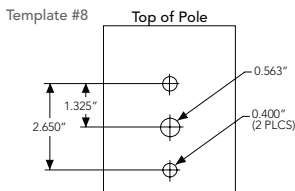
Pole/Mounting Information

Accessories including bullhorns, cross arms and other adapters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit [Accessories](#).

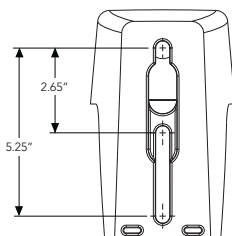
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSX STANDARD ARM & ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2 - 3/8"	RPA, AARP	AS3-5190	AS3-5280	AS3-5290	AS3-5320	AS3-5390	AS3-5490
2 - 7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX2 - Luminaire EPA

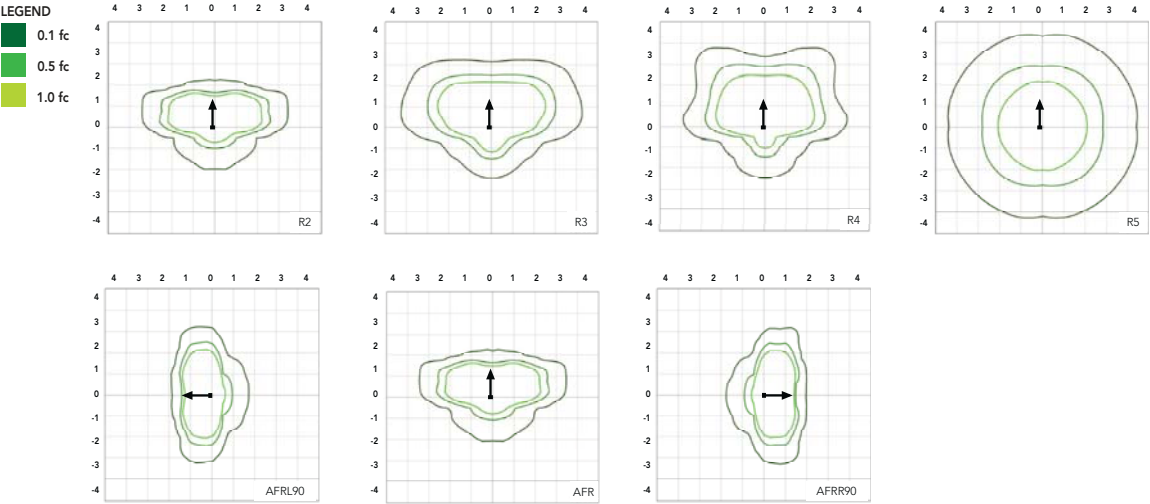
*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
Mounting Type	Tilt									
SPA - Square Pole Adaptor	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
RPA - Round Pole Adaptor		0.74	1.27	1.37	1.9	1.71	2.49	1.42	2.16	2.84
MA - Mast Arm Adaptor		0.61	1.14	1.11	1.64	1.45	2.23	1.29	1.9	2.58
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
	10°	0.53	1.06	1.05	1.58	1.37	2.08	1.06	1.59	2.12
	20°	0.52	1.02	1.03	1.52	1.33	2.02	1.03	1.55	2.07
	30°	0.64	1.11	1.18	1.63	1.45	2.21	1.27	1.91	2.54
	40°	0.81	1.21	1.35	1.74	1.65	2.39	1.62	2.43	3.23
	45°	0.91	1.25	1.5	1.81	1.75	2.48	1.82	2.73	3.64
	50°	1.34	1.83	2.17	2.61	2.56	3.62	2.68	4.02	5.36
	60°	2.2	2.97	3.57	4.24	4.17	5.89	4.41	6.61	8.82
	70°	2.86	4.13	4.7	5.89	5.71	8.21	5.71	8.57	11.42
	80°	3.4	5.13	5.67	7.34	7.09	10.21	6.79	10.19	13.59
	90°	3.85	5.96	6.55	8.58	8.31	11.88	7.70	11.56	15.41

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's RSX Area homepage.

Isofootcandle plots for the RSX2 LED P6 40K. Distances are in units of mounting height (30').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

Performance Package	System Watts (W)	Current (A)					
		120V	208V	240V	277V	347V	480V
P1	71W	0.59	0.34	0.30	0.26	0.20	0.15
P2	111W	0.93	0.53	0.46	0.40	0.32	0.23
P3	147W	1.23	0.70	0.61	0.53	0.42	0.31
P4	187W	1.55	0.90	0.78	0.68	0.53	0.38
P5	210W	1.75	1.01	0.87	0.76	0.60	0.44
P6	244W	2.03	1.17	1.01	0.88	0.70	0.51

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

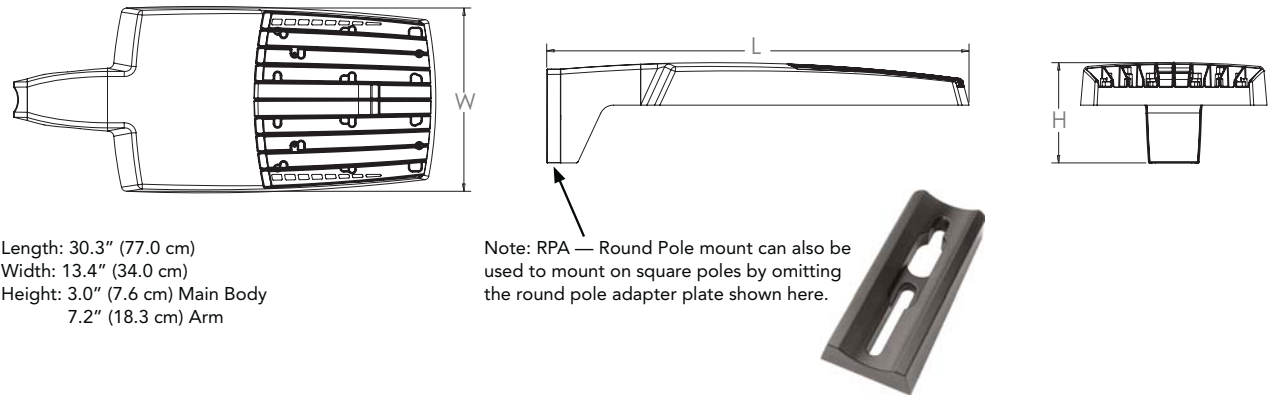
Performance Package	System Watts	Distribution Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	71W	R2	10,040	2	0	1	139	11,031	2	0	1	153	11,031	2	0	1	153
		R3	10,005	2	0	2	141	10,992	2	0	2	155	10,992	2	0	2	155
		R3S	10,271	2	0	2	143	11,285	2	0	2	157	11,285	2	0	2	157
		R4	10,136	2	0	2	143	11,136	2	0	2	157	11,136	2	0	2	157
		R4S	9,779	2	0	2	138	10,744	2	0	2	151	10,744	2	0	2	151
		R5	10,271	4	0	2	145	11,285	4	0	2	159	11,285	4	0	2	159
		R5S	10,544	3	0	1	149	11,585	3	0	2	163	11,585	3	0	2	163
		AFR	10,026	2	0	1	141	11,016	2	0	1	155	11,016	2	0	1	155
		AFRR90	10,122	3	0	2	140	11,121	3	0	2	154	11,121	3	0	2	154
		AFRL90	10,164	3	0	2	141	11,167	3	0	2	155	11,167	3	0	2	155
P2	111W	R2	15,712	2	0	2	138	17,263	2	0	2	151	17,263	2	0	2	151
		R3	15,657	2	0	3	141	17,202	3	0	3	155	17,202	3	0	3	155
		R3S	16,075	2	0	2	141	17,661	2	0	2	155	17,661	2	0	2	155
		R4	15,862	2	0	3	143	17,427	2	0	3	157	17,427	2	0	3	157
		R4S	15,304	2	0	2	138	16,815	2	0	2	151	16,815	2	0	2	151
		R5	16,075	4	0	2	145	17,661	5	0	3	159	17,661	5	0	3	159
		R5S	16,502	4	0	2	149	18,130	4	0	2	163	18,130	4	0	2	163
		AFR	15,691	2	0	2	141	17,240	2	0	2	155	17,240	2	0	2	155
		AFRR90	15,841	3	0	3	139	17,404	4	0	3	153	17,404	4	0	3	153
		AFRL90	15,907	3	0	3	139	17,477	4	0	3	153	17,477	4	0	3	153
P3	147W	R2	19,855	3	0	2	132	21,814	3	0	2	145	21,814	3	0	2	145
		R3	19,785	3	0	3	135	21,737	3	0	4	148	21,737	3	0	4	148
		R3S	20,312	3	0	3	135	22,317	3	0	3	149	22,317	3	0	3	149
		R4	20,044	3	0	3	136	22,022	3	0	4	150	22,022	3	0	4	150
		R4S	19,339	3	0	3	132	21,247	3	0	3	145	21,247	3	0	3	145
		R5	20,313	5	0	3	138	22,317	5	0	3	152	22,317	5	0	3	152
		R5S	20,852	4	0	2	142	22,910	4	0	2	156	22,910	4	0	2	156
		AFR	19,828	3	0	2	135	21,785	3	0	2	148	21,785	3	0	2	148
		AFRR90	20,017	4	0	3	133	21,992	4	0	3	147	21,992	4	0	3	147
		AFRL90	20,101	4	0	3	134	22,084	4	0	3	147	22,084	4	0	3	147
P4	187W	R2	22,836	3	0	2	120	25,090	3	0	2	132	25,090	3	0	2	132
		R3	22,756	3	0	4	122	25,002	3	0	4	134	25,002	3	0	4	134
		R3S	23,363	3	0	3	123	25,668	3	0	3	135	25,668	3	0	3	135
		R4	23,054	3	0	4	123	25,329	3	0	4	135	25,329	3	0	4	135
		R4S	22,243	3	0	3	119	25,059	3	0	3	134	25,059	3	0	3	134
		R5	23,363	5	0	3	125	25,669	5	0	4	137	25,669	5	0	4	137
		R5S	23,983	4	0	2	128	26,350	4	0	2	141	26,350	4	0	2	141
		AFR	22,806	3	0	2	122	25,056	3	0	2	134	25,056	3	0	2	134
		AFRR90	23,023	4	0	3	121	25,295	4	0	3	133	25,295	4	0	3	133
		AFRL90	23,120	4	0	3	122	25,401	4	0	3	134	25,401	4	0	3	134
P5	210W	R2	26,141	3	0	2	122	28,721	3	0	2	135	28,721	3	0	2	135
		R3	26,049	3	0	4	124	28,620	3	0	4	136	28,620	3	0	4	136
		R3S	26,744	3	0	3	125	29,383	3	0	4	138	29,383	3	0	4	138
		R4	26,390	3	0	4	126	28,994	3	0	4	138	28,994	3	0	4	138
		R4S	25,462	3	0	3	121	27,974	3	0	3	133	27,974	3	0	3	133
		R5	26,744	5	0	4	127	29,383	5	0	4	140	29,383	5	0	4	140
		R5S	27,454	4	0	2	131	30,163	4	0	2	144	30,163	4	0	2	144
		AFR	26,106	3	0	2	124	28,682	3	0	2	137	28,682	3	0	2	137
		AFRR90	26,354	4	0	3	123	28,955	5	0	3	136	28,955	5	0	3	136
		AFRL90	26,465	4	0	3	124	29,077	5	0	3	136	29,077	5	0	3	136
P6	244W	R2	27,646	3	0	2	112	30,374	3	0	2	123	30,374	3	0	2	123
		R3	27,549	3	0	4	113	30,267	3	0	4	124	30,267	3	0	4	124
		R3S	28,283	3	0	3	115	31,075	3	0	4	126	31,075	3	0	4	126
		R4	27,909	3	0	4	114	30,663	3	0	4	126	30,663	3	0	4	126
		R4S	26,928	3	0	3	110	29,585	3	0	3	121	29,585	3	0	3	121
		R5	28,284	5	0	4	116	31,075	5	0	4	127	31,075	5	0	4	127
		R5S	29,035	4	0	2	119	31,900	5	0	3	131	31,900	5	0	3	131
		AFR	27,608	3	0	2	112	30,332	3	0	2	123	30,332	3	0	2	123
		AFRR90	27,872	4	0	3	113	30,622	5	0	3	124	30,622	5	0	3	124
		AFRL90	27,989	4	0	3	113	30,751	5	0	3	125	30,751	5	0	3	125

Dimensions & Weights

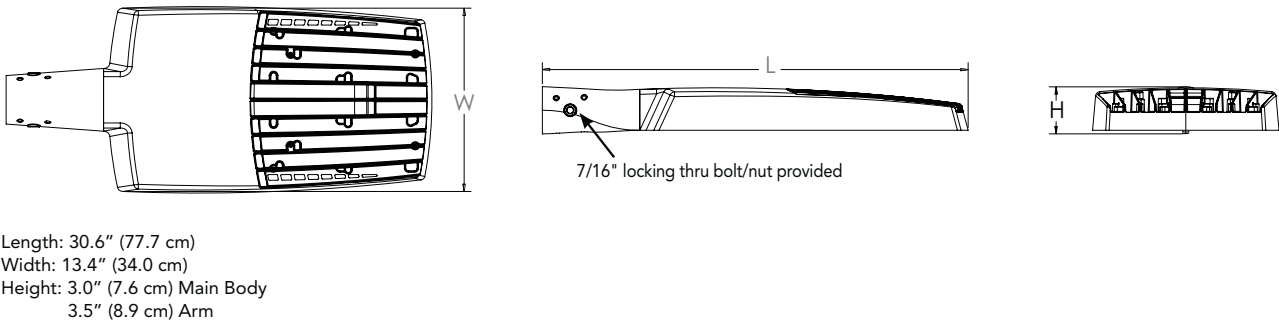
Luminaire Weight by Mounting Type

Mounting Configuration	Total Luminaire Weight
SPA	30 lbs
RPA	32 lbs
MA	30 lbs
WBA	33 lbs
WBASC	36 lbs
IS	33 lbs
AASP	33 lbs
AARP	35 lbs
AAWB	36 lbs
AAWSC	39 lbs

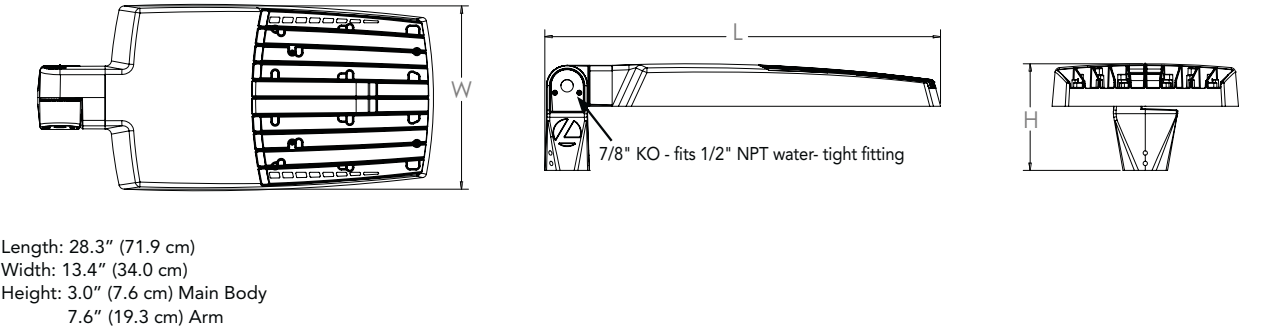
RSX2 with Round Pole Adapter (RPA)



RSX2 with Mast Arm Adapter (MA)



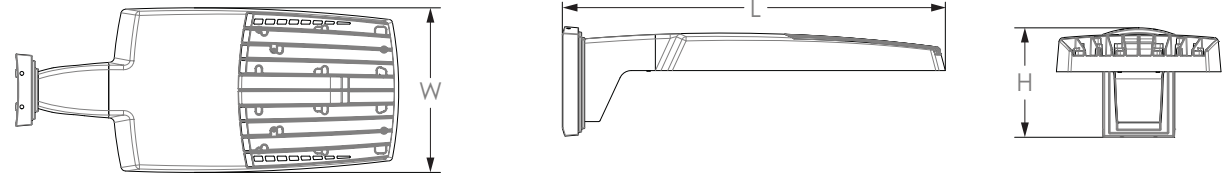
RSX2 with Adjustable Slipfitter (IS)



Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

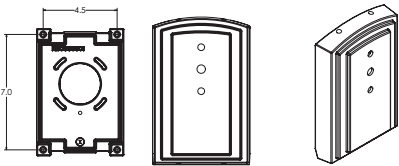
Dimensions

RSX2 with Wall Bracket (WBA)

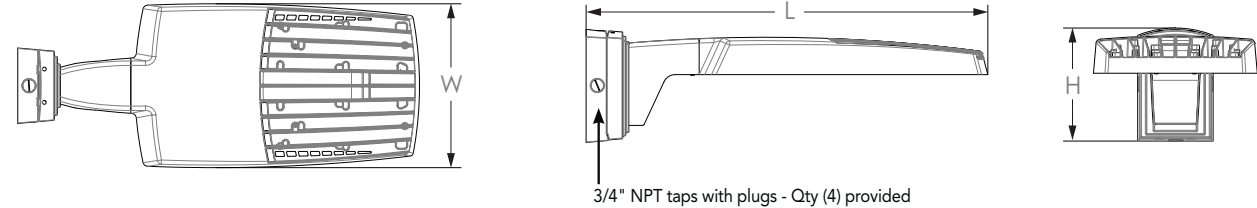


Length: 31.2" (79.2 cm)
 Width: 13.4" (41.7 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

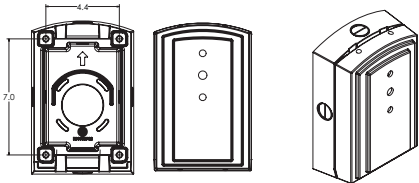


RSX2 with Wall Bracket with Surface Conduit Box (WBASC)



Length: 32.8" (83.3 cm)
 Width: 13.4" (41.7 cm)
 Height: 3.0" (7.6 cm) Main Body
 9.2" (23.4 cm) Arm

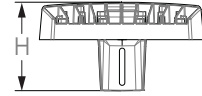
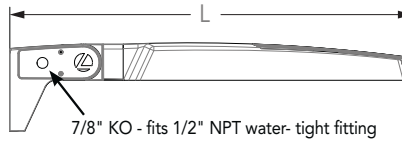
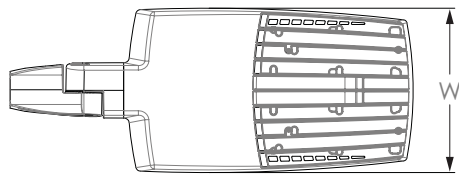
Surface Conduit Box (SCB) Mounting Detail



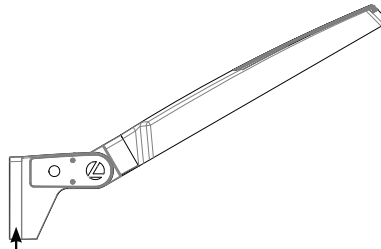
Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

Dimensions

RSX2 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)



Length: 32.8" (83.3 cm) AASP
 33.8" (85.9 cm) AARP
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.2" (18.2 cm) Arm



NOTE:
 RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

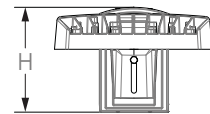
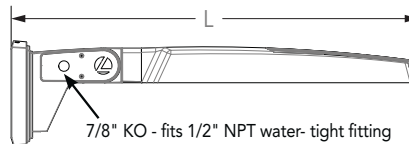
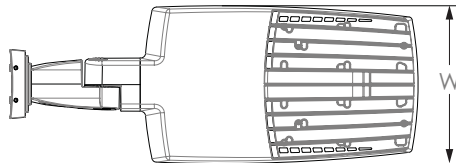


Notes

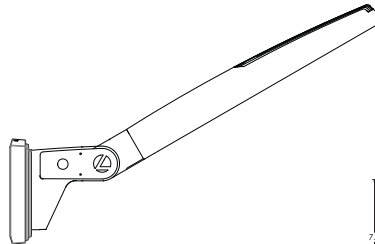
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

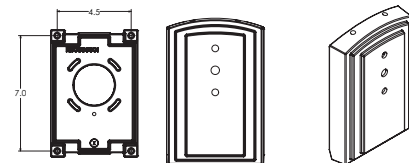
RSX2 with Adjustable Tilt Arm with Wall Bracket (AAWB)



Length: 34.7" (88.0 cm)
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm



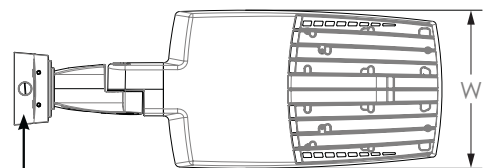
Wall Bracket (WBA) Mounting Detail



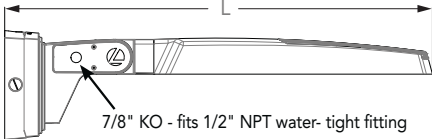
Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

Dimensions

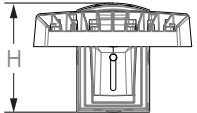
RSX2 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)

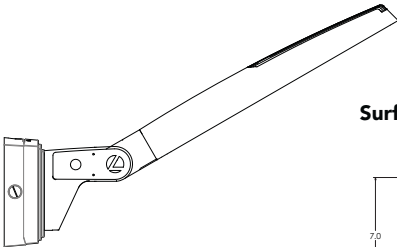


3/4" NPT taps with plugs - Qty (4) provided



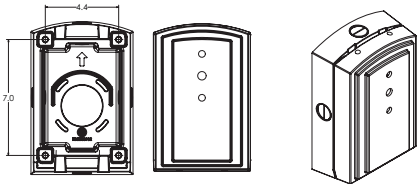
7/8" KO - fits 1/2" NPT water- tight fitting



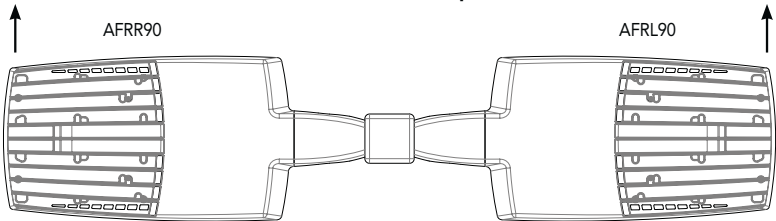


Length: 36.2" (91.9 cm)
Width: 13.4" (40.0 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

Surface Conduit Box (SCB) Mounting Detail



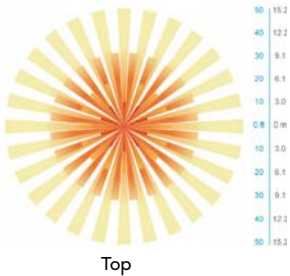
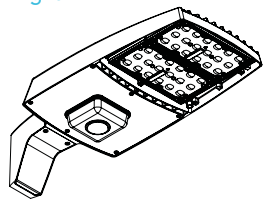
Automotive Front Row - Rotated Optics (AFRL90/R90)



(Example: 2@180 - arrows indicate direction of light exiting the luminaire)

nLight Control - Sensor Coverage and Settings

NLTAIR2 PIRHN nLight
Sensor Coverage Pattern
nLight PIRHN



Motion Sensor Default Settings - Option PIRHN					
Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)
NLTAIR2 PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds

*Note: NLTAIR2 PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clarity Pro App. Sensor coverage pattern shown with luminaire at 0°. Sensor coverage pattern is affected when luminaire is tilted.

FEATURES & SPECIFICATIONS

INTENDED USE
The RSX LED area family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSX2 delivers 11,000 to 31,000 lumens and is ideal for replacing 250W to 1000W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION AND DESIGN
The RSX LED area luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral "no drill" mounting arm allows the luminaire to be mounted on existing pole drillings, greatly reducing installation labor. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI C136.31: 3G Mountings: Include SPA, RPA, MA, IS, AASP, AARP rated for 3G vibration. 1.5G Mountings: Include WBA, WBASC, AAWB and AAWSC rated for 1.5G vibration.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warranted not to crack or peel.

OPTICS
Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Type 2, Type 3, Type 3S, Type 4, Type 4S, Type 5, Type 5S, AFR (Automotive Front Row) and AFR rotated AFRR90 and ARFL90.

COASTAL CONSTRUCTION (CCE)
Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times apply.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Fixtures ship standard with 0-10v dimming driver. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS
The RSX LED area luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS
The RSX LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLARITY app. nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found [here](#).

INSTALLATION
Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note, the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select the "MA" option to attach the luminaire to a 2 3/8" horizontal mast arm or the "IS" option for an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation. Can be tilted up to 90° above horizontal. Additional mountings are available including a wall bracket, adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications.

LISTINGS
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only. US Patent No. D882, 146S

BUY AMERICAN ACT
Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT regulations. Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

SSP Square Non-Tapered Steel Poles

PROJECT NAME

GENERATION DATE 11/4/2022

COMMENTS

CATALOG NUMBER SSP17 - 5 - 11 - F - DM10 - BC

LAB - Less Anchor Bolts

A — POLE SHAFT The pole shaft is single piece construction, being fabricated from a weldable grade carbon steel structural tubing and shall conform to ASTM A500 Grade C with a minimum yield strength of 50,000 psi. The pole shaft has a full-length longitudinal resistance weld and is uniformly square in cross-section with flat sides, small corner radii and excellent torsional properties. HEIGHT BASE OD GAUGE WEIGHT 17' 5" 11 191 lbs EPA MAX LOAD 90 MPH AASHTO 18.5			B — MOUNTING DESIGNATION Drilled for 1 Luminaire 			C — FINISH Standard - The standard finish is a polyester thermosetting powder coating applied to the surface of the substrate to a minimum of 3 mils for all color finishes. FINISH TYPE Standard COLOR Finish To Be Determined		
D — HAND HOLE An oval reinforced gasketed handhole is located 1'-6" above base with a grounding provision located inside the ring. WIDTH 3" LENGTH 5" 			E — BASE PLATE The anchor base is fabricated from structural quality hot rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. All welds are performed in accordance with AWS D1.1, latest edition. BOLT CIRCLE 11" 			F — ANCHOR BOLTS Anchor bolts are of commercial quality hot rolled carbon steel that meets or exceeds yield strength of 55,000 psi. Four properly sized anchor bolts come with all poles unless otherwise specified. Anchor bolts have the threaded end galvanized a minimum of 8 inches per ASTM A153. WIDTH 1" LENGTH 36" HOOK 4" 		
OPTIONS Base Cover								

Submitted by:	 VISIBLE LIGHT MANUFACTURERS' REPRESENTATIVE	Job Name:	UNE Alford Center Site Lighting	Catalog Number:	SSP17-5,0-11-BLK-DM10-BC-LAB	Type: D-ALT SSP Terms and Conditions  TERMS Net 30 days from the date of Company's invoice unless otherwise specified. A 1-1/2% per month late charge will be added to accounts past due PRICES Published prices are subject to change without notice. Possession of price sheets in no way obligates Company to sell to the Purchaser possessing such price sheet. All orders are subject to final approval and acceptance by the Company. Once accepted and approved, orders will be billed at prices currently in effect at the time of invoicing, or at prices quoted by the Company and accepted by the Purchaser if the order involves an item or items covered by special quotation. THE MINIMUM INVOICE CHARGE SHALL BE \$50.00 NET DELIVERY All goods sold are deliverable F.O.B. KW Industries, Inc., Sugar Land, Texas 77478 FREIGHT All of the Company's products are priced and sold F.O.B. KW Industries, Inc., Sugar Land, Texas 77478. Transportation charges will be prepaid by the Company and added to the net sales price unless specified by the Purchaser. ROUTING The Company will specify the method and routing of all products to ensure the most efficient and economical shipment in behalf of the Purchaser. The Purchaser will assume charges for special services such as cartage, air freight, express or multiple deliveries on one order. CANCELLATION The written consent of the Company shall be obtained prior to a cancellation of any order. Cancellation of an order may subject the Purchaser to a cancellation charge based upon expenses already incurred and commitments made by the Company. RETURNED GOODS Specific written request and arrangements must be made in advance for Purchaser to obtain credit or replacement on material returned. On material accepted for return, Purchaser must prepay return shipment and pay minimum restocking charge of 40% plus any charge necessary to rework goods to a resaleable condition. Custom fabricated products by special order are not subject to return. DELAYS, DAMAGE OR LOSS The Company is not and shall not be liable for delays in shipment or delivery of its products when caused by strikes, riots, hurricanes, civil disorder, fires, material shortage, breakdown in manufacturing facilities or any other cause beyond its reasonable control. Any claims for damages, loss or shortage in transit must be made by the Purchaser to the delivering carrier. The risk of loss passes to the Purchaser upon delivery to the carrier. LIMITED WARRANTY The Company warrants to Purchaser that its products will be free from defects in material and workmanship for a period of one year from the date of shipment by the Company (the "Warranty Period"). This Warranty specifically excludes fatigue failure or similar phenomena resulting from induced vibration, harmonic oscillation or resonance associated with the movement of air currents around the product. If during the Warranty period, the product proves defective in material or workmanship, the Company shall correct any defect, at its option, either by repairing any defective parts or by making available at the Company's plant a repaired or replacement part at no charge to the Purchaser, if the Purchaser promptly notifies the Company and furnishes proof of Purchase. The liability of the Company under this Warranty, or for any loss or damage arising out of, or connected with, the design, manufacturing, sale or use of its products, whether the claim is based on contract or negligence, shall not exceed the price allocable to the value of the product or part which gives rise to the claim and upon expiration of the Warranty Period all such liability shall terminate. The Company shall not be liable for special or consequential damages including, but not limited to, loss of profits or revenue, loss of use of the product, cost of substitute products or labor charges to remove or reinstall the defective product, nor any product transportation expenses to and from the Company's plant if factory repair or replacement is necessary. No warranty is made with respect to parts or auxiliary equipment not manufactured by the Company. The foregoing Warranty is exclusive and in lieu of all other warranties whether written, oral, express or implied and shall constitute the sole and exclusive remedy of the Purchaser and liability of the Company. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. The Company's products are not sold as a "consumer product" under 15 U.S.C. 62301. GENERAL KW Industries, Inc. reserves the right to change any feature of its published specifications without notice to promote product improvement and/or allow for material availability. The contract for the sale of goods by KW shall be performable in Fort Bend County, Texas. Prices subject to change without notice.  AREA LIGHTING KW INDUSTRIES, INC. 909 INDUSTRIAL BLVD, SUGAR LAND, TEXAS 77478 1-800-275-5944 KWINDUSTRIES.COM SSP Square Non-Tapered Steel Poles PAGE 2 OF 2
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Waiver Request

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 three recent UNE projects.

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

☒	NA	Project Description Cover letter with detailed project description
☒	NA	Completed Checklist (this document)
☒	NA	Evidence of Right, Title, and Interest Deeds, leases, or purchase and sales agreements
☒	NA	Evidence of State or Federal Approvals Permits or letters of non-jurisdiction, if applicable
☒	NA	Zoning Assessment (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
☒	NA	Site Plan Standards Assessment (see Section 14.6 of the land use code) Summary of project compliance with site plan standards of the land use code
☒	NA	Summary of Existing and/or Proposed Easements or Covenants, applicable. Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
☒	NA	Waiver Requests (see Waiver Table) Written request for waiver describing request and compliance with applicable waiver standards
☒	NA	Financial Capability Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
☒	NA	Technical Capability Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

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

TRANSPORTATION

Yes NA	Impact on Surrounding Street Systems (14-14.6.1(A)) Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes NA	Access and Circulation (14-14.6.1(B)) Identify and describe the following: - Site access and internal circulation, including ADA access - Drive-up features, if applicable - Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes NA	Public Transit (14-14.6.1(C)), if applicable Identify and describe the following: Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes NA	Off-Street Parking (14-14.6.1(D)), if applicable Identify and describe the following: - Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code - Curb cut separation and parking layout (Technical Manual, Section 1) - Construction details for bicycle racks - Management plan for snow storage and removal
Yes NA	Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL		
Yes	NA	Preservation of Significant Natural Features (14-14.6.2(A)), if applicable Identify and describe the following: • High and moderate value waterfowl and wading habitat • Aquifers (for Casco Bay Islands) • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes	NA	Landscape Preservation (14-14.6.2(B)) Identify and describe the following: • Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) • Measures to protect existing vegetation during construction
Yes	NA	Site Landscaping and Buffers (14-14.6.2(C)) Identify and describe the following: • Overall landscaping approach and consistency with standards • The use of screening and buffering of service areas and between non-residential and residential uses • Existing Heritage or Feature Trees on site and measures to preserve • Compliance with street tree requirements
Yes	NA	Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D)) Identify and describe the following: • Erosion and sedimentation control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable • Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY		
Yes	NA	Consistency with City Master Plans (14-14.6.3(A)) Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes	NA	Public Safety and Fire Prevention (14-14.6.3(B)) Identify and describe the following: - Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) - Emergency vehicle access - Consistency with public safety standards (Technical Manual, Section 3)
Yes	NA	Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9) Identify and describe the following: - Electrical services, including providing underground services - Existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections
SITE DESIGN		
Yes	NA	Massing, Ventilations and Wind Impact (14-14.6.4(A)) Identify and describe the following: - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable - Bulk, location, or height impacts on adjoining structures
Yes	NA	Shadows (14-14.6.4(B)), if applicable Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes	NA	Snow and Ice Loading (14-14.6.4(C)) Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes	NA	View Corridors (14-14.6.4(D)), if applicable Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes	NA	Historic Resources (14-14.6.4(E)), if applicable Identify and describe the following: - The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district - Compliance with standards for preservation and documentation of archaeological resources

Yes	NA	Exterior Lighting (14-14.6.4(F)) Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes	NA	Noise and Vibration (14-14.6.4(G)) Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes	NA	Signage and Wayfinding (14-14.6.4(H)), if applicable - Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs - Provide drawings of all commercial and directional signage on site
Yes	NA	Zone-Related Design Standards (14-14.6.4(I)) Address any applicable design review standards by zone, including compliance with Design Manual

Project Description

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to submit a major Site Plan Application the reconstruction of the existing connector drive between the Intermodal Transportation Facility (ITF) and the main campus. We understand the site plan application fee for a project of this size will be invoiced.

The project was reviewed with staff at a pre-application meeting on August 30, 2023. Based on feedback from staff at the meeting, the concept remains as discussed then.

The existing ITF provides parking for students, faculty, and guests, with a regular shuttle service to the main campus along the connector drive. The goals of the reconstruction project include increase safety through the installation of sidewalks, call boxes and cameras, widening of the existing drive to enhance circulation and improve safety, and installation of modern and ordinance compliant lighting.

The proposed drive will connect the Intermodal Transportation Facility (ITF) and the campus on Stevens Avenue. This new access drive will allow student, faculty, and staff vehicles, bicyclists and pedestrians, to travel between the core campus on Stevens Avenue and the ITF and on to Warren Avenue if so desired. This access drive 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 proximate 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.

While the Morrill's Corner intersection is operating acceptably overall, there are some constraints for northbound left-turn movements off Forest Avenue. The plan to provide an internal campus connector road from the primary campus to the ITF will provide for reduced volumes at Morrill's Corner by allowing direct access to Warren Avenue, thus removing those campus trips from Morrill's Corner. The planned connector drive will remove trips from the arterials where the only capacity concerns have been identified. Additionally, the UNE service vehicles and the shuttle currently travel on Bishop Street from the existing connector drive to the ITF. The proposed drive will eliminate trips on Bishop Street.

The connector drive will be gated and access will only be for vehicles driven by UNE, faculty, and staff. Additionally, this connector could be utilized by non-UNE community pedestrians and bicyclists to commute between Stevens Avenue and Warren Avenue without navigating the congested Morrill's Corner, resulting in a significantly safer travel route. The existing access directly to Bishop Street will remain for bicycle and pedestrian use. The University has discussed allowing Portland Trails to utilize this reconstructed access road to connect their existing trail network proximate to the Evergreen Cemetery to the Warren Ave area as well.

One waiver is necessary for the proposed lighting, consistent with the waiver granted for the MEARNG, College of Osteopathic Medicine, and Bishop Street Intermodal facility projects.

Technical Ability

UNE has completed numerous projects on the campus in recent years, including:

- College of Osteopathic Medicine
- Bishop Street Parking Improvements
- Repair Facility

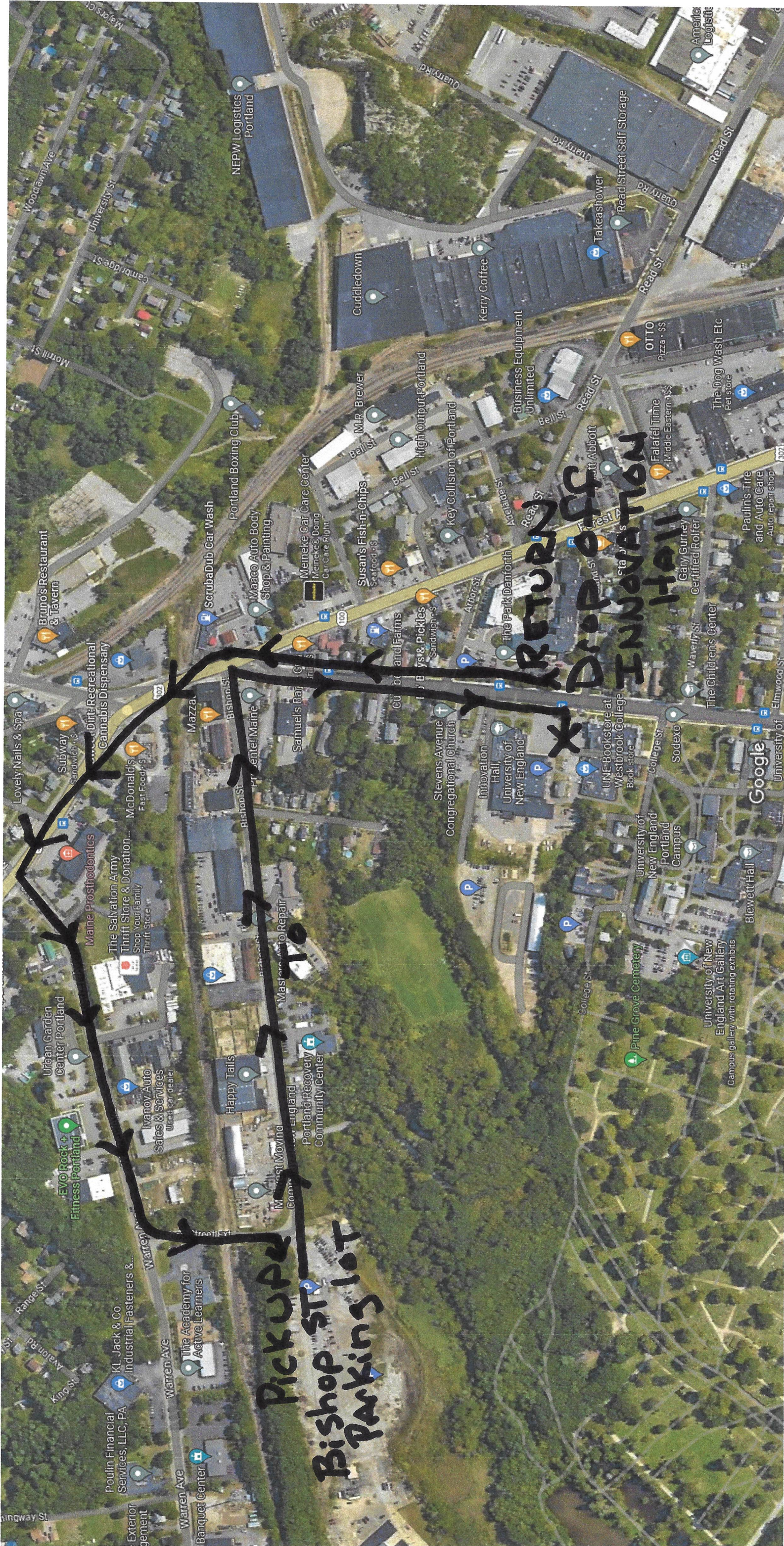
UNE has retained a qualified team to permit, design, and construct the project, including:

Civil Engineer, Permitting & Survey

Site Design Associates
23 Whitney Way
Topsham, Maine 04086

Construction Manager

Ledgewood
27 Main St
South Portland, ME 04106





ZONING ANALYSIS Relevant Zone(s) R3, R5

All Projects:

	Required	Proposed
Lot Size	2 acres	28.1 acres
Area Per Dwelling Unit	NA	NA
Minimum Street Frontage	50 ft	509 ft
Front Yard Minimum	NA	NA
Front Yard Maximum	NA	NA
Rear Yard	NA	NA
Yard Right	NA	NA
Yard Left	NA	NA
Side Street Setback	NA	NA
Step Back	NA	NA
Maximum Lot Coverage	35%	4.7%
Minimum Lot Coverage	NA	NA
Maximum Height	35 ft	NA
Open Space	NA	NA
Maximum Impervious Area	NA	NA
Pavement Setback	NA	NA
Floor Area Ratio	NA	NA
Off Street Parking Spaces	NA	NA
Loading Bays	NA	NA
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

Applicable Site Plan Standards

University of New England (UNE) is planning on the reconstruction of the existing connector drive between the Intermodal Transportation Facility (ITF) and the main campus. The existing ITF provides parking for students, faculty, and guests, with a regular shuttle service to the main campus along the connector drive. The goals of the reconstruction project include increase safety through the installation of sidewalks, call boxes and cameras, widening of the existing drive to enhance circulation and improve safety, and installation of modern and ordinance compliant lighting.

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The connector drive will be gated and access will only be for vehicles driven by UNE, faculty, and staff. Additionally, this connector could be utilized by non-UNE community pedestrians and bicyclists to commute between Stevens Avenue and Warren Avenue without navigating the congested Morrill's Corner, resulting in a significantly safer travel route. The University has discussed allowing Portland Trails to utilize this reconstructed access road to connect their existing trail network proximate to the Evergreen Cemetery to the Warren Ave area as well.

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. – No negative impact anticipated since there is no increase in enrollment associated with this project. As noted above, it is expected that the project will actually remove trips from the very busy Morrill's corner area.

14.6.1.B. Access and Circulation.

A goal of the project is to enhance the infrastructure to provide safe and reasonable access for all users. A curbed walkway will be constructed along the drive.

14.6.1.C. Public Transit Access – By its very nature, the connector drive connects the campus to the ITF and will be utilized by UNE students, faculty, and guests. There are currently public transit facilities on the main campus.

14.6.1.D. Parking – Parking is provided at the ITF and on campus. Snow storage will be along the drive as is typical for a project of this nature.

14.6.1.E. Transportation Demand Management – This was addressed in the previous application for the College of Osteopathic Medicine and the conclusions will not be impacted by the proposed reconstruction of the connector drive.

14.6.2.A. Preservation of Significant Natural Features – The project is generally located along an existing alignment. There will be minor wetlands impacts requiring a Tier 1 NRPA permit from MDEP.

14.6.2.B. Landscape Preservation – No significant trees will be removed to construct the project. An erosion and sedimentation control plan has been developed which will minimize both sedimentation and runoff.

14.6.2.C. Site Landscaping and Buffers – Given the nature of the reconstruction project, this section is not applicable.

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 – 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 – There will be no public utilities impacted by the reconstruction of the connector drive.

14.6.4.A. Massing, Ventilation and Wind Impact – Not applicable.

14.6.4.B. Shadow – Not applicable.

14.6.4.C. Snow and Ice Loading – Not applicable.

14.6.4.D. View Corridors – Not applicable.

14.6.4.E. Historic Resources – Not applicable. Proposed work is not within 100 feet of a City of Portland identified 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 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 two recent UNE projects.

14.6.4.G. Noise and Vibration – Not applicable.

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.

14.6.4.I. Design Standards – Not applicable.

Neighborhood Meeting Invitation

Dear Neighbor,

Please join us for a neighborhood meeting to discuss the University of New England's (UNE) plan to facilitate the expansion of the existing carriage road and sidewalk connecting the University's Portland Campus with its intermodal transportation facility at Bishop Street. Expansion of the carriage road will permit students, staff, and faculty to drive, cycle, or walk between the University's primary parking facility and campus without using public street facilities. This will also aid in reducing university-related traffic through Morrill's Corner.

This meeting will be held in-person and via Zoom on our Portland Campus. The in-person meeting will be held in the CHP Lecture Hall (Room 118), located in Proctor Hall (Building 10). There will also be a Zoom option for those who cannot attend in person. You can join the meeting at the scheduled time with the information listed below. If possible, please enter your full name and email address when signing into Zoom for this meeting. If you do not have access to a computer, and or prefer not to use Zoom, you can join the meeting by dialing in with a telephone using the dial-in phone number provided below and entering the meeting ID as prompted.

Meeting Date: Tuesday, November 7, 2023
Meeting Location: Proctor Hall – CHP Lecture Hall and Zoom
Meeting Dial-In Phone Number: 1-929-205-6099

Meeting Time: 6:00 p.m.
Meeting Link: <https://une.zoom.us/j/99364783436>
Meeting ID: 993 6478 3436

Minutes from the meeting and a list of attendees will be submitted to the City.

If you have any questions, please contact Andrew Philippe, Director of Campus Planning for UNE at 207-602-2365 or by email at aphilippe@une.edu.

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Those in Attendance:

Contact Information

[illegible]

Site Design Associates

Consulting Engineering and Land Planning

December 12, 2023

Maya Balassa, Planner
City of Portland
Via email

**RE: University of New England
Major Site Plan Application for:
Connector Drive
PL-002666-2023
83 College Street
Responses to November 1 Staff Comments**

Dear Maya;

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 staff in your November 1, 2023 review memorandum. We have listed each of your “red” comments in the order they were presented followed by our responses.

1. Additional submissions requested:

Comment: *The address on Energov says 716 Stevens Ave. The documents and site plans utilize 83 College Street. Please alter the application materials to have a single address across*

Response: The city GIS mapping and assessor records refer to the majority of the parcel as 83 College Street. For some reason, the city staff set up the EPlan directory with the 716 Stevens Ave address. Please advise on how this will be handled.

2. Access and circulation:

Comment: *Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.*

Response: A striped bike lane will not be included. The pavement markings will include sharrows laid out in accordance with the MUTCD per the attached memo from Diane Morabito, the traffic engineer.

Comment: *To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.*

23 Whitney Way Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *Please clarify who specifically will have gate card access.*

Response: UNE's students, staff, and faculty will have gate access.

Comment: *The Bishop Street driveway is to remain in place and gated. While the city supports a pedestrian/bicycle connection, we would suggest that the curb cut be closed.*

Response: The plans have been revised to show a reduction in the Bishop Street curb cut length to 10 ft, while maintaining access for cyclists and pedestrians. We decided on 10 ft for shared bicycle and pedestrian access. We hope this satisfactorily addresses this comment.

3. Landscape Preservation:

Comment: *Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.*

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *This survey indicates areas with tree canopy cover but not tree locations, size and species information. Per the City's Technical Manual Chapter 4.3.1, the survey should identify location, size and species of all existing trees 10" diameter at breast height (DBH) or greater on the site. Given the predominantly wooded nature of the project site, it is acceptable for the applicant to identify only trees proposed to be removed as part of this project, noting the size (in DBH) and species information for existing trees 10" DBH or greater.*

Response: Existing trees 10" DBH or over to be removed are now shown on the plans.

Comment: *The existing site has some notable patches of Japanese Knotweed. The applicant shall follow the requirements laid out in Technical Manual section 4.7.4 for the containment and removal of invasive plants in the limit of work to prevent*

them spreading into newly disturbed ground.

Response: A note has been added to the plans to address this comment.

Comment: *For existing trees being preserved that are adjacent to the limit of work, the applicant shall follow tree protection requirements described in Technical Manual chapter 4.3 and tree preservation detail IV-2*

Response: A note has been added to the plans to address this requirement.

Comment: *Areas around the carriage road that are being cleared of trees due to grading shall be replanted with native straight species trees and exposed soil shall be covered with undyed wood mulch and/or seeded with native shade-tolerant seed mixes where appropriate.*

Response: A landscape plan has been prepared to address this comment. Areas along the proposed carriage road which are proposed to be cleared of trees and provide a large enough area for replanting will be replanted with Sugar Maple saplings. These areas are primarily on 2:1 and 3:1 slopes. To enable a rootball to be planted on these slopes we are proposing ½" caliper saplings which will have a rootball approximately 12 inches in diameter x 9" deep. A tree planting detail showing a planting on a slope is provided on the Landscape Plan.

The slope areas are called out to be mulched with a 5" layer of erosion control mix as distributed by Casella Organics or approved equivalent. This layer of mulch will stabilize and protect the soil, and allow the saplings to establish themselves prior to competition from other plants.

4. Site Landscaping and Buffers:

Comment: *The area where gravel is being removed is currently proposed to be covered with loam and reseeded with "park mix" grass seed. The area in question is surrounded by woodland and is partly shaded. City staff suggest selecting a seed mix that is composed of native part shade- tolerant forbs that will fit into the woodland setting. The park mix grass seed is more appropriate for maintained lawn areas than forested woodlands.*

Response: A landscape plan has been prepared to address this comment. Open areas and the proposed swales are to be seeded with New England Erosion Control/Restoration Mix for Detention Basins and Wet Sites. This mix contains a selection of native grasses and wildflowers designed to colonize generally moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the soil. The plants in this mix can withstand moist, infrequently inundated sites as well as some shade. These areas will be mowed no more than two times per year to keep woody vegetation out.

Comment: *There are at least three existing footpaths/trails that connect to the carriage road which are not currently represented on the plans. Please locate the existing trails on the site plan and ensure the pathway connections are being maintained or improved as part of the carriage road improvement project. At least one of the trails is heavily used by pedestrians as a connection between Evergreen Cemetery and the UNE campus.*

Response: The existing trails are now shown on the drawings and Portland Trails confirmed the locations are accurate. We have discussed the access with Portland trails, and they have confirmed the locations are accurate. Our discussions with them continue in regards to potential signage.

5. Water Quality, Stormwater management, and Erosion Control:

Comment: *Overall SLOD – Additional clarity is needed on the area that is intended to be covered by the SLOD Application. As was noted on previous application reviews that highlighted the need for the SLOD permit, looking at the entire site as one is advantageous, allowing for treatment to be accounted for across the site to meet the required standards. The Applicant is proposing to do that here, but additional information is needed. The figures provided show the redevelopment evaluation of the Intermodal Transportation Facility and Connector Drive to determine the amount of treatment that will be required per the MaineDEP standards for redevelopment. The ultimate stormwater management scenario includes systems located within this area, but also a system within the Center for Health Sciences. As I understand the analysis, the Center for Health Services project area is not included as part of the SLOD calculations.*

Response: That is correct. The HBACHS project was completed before the campus exceeded the SLODA thresholds. Therefore, the HBACHS portion of the project is not included in the SLODA stormwater treatment calculations. The soil filter in the HBACHS area (SF1) that receives runoff from the new Connector Drive was oversized when it was originally designed/constructed to accommodate this future anticipated runoff from the Connector Drive. Calculations are provided on Table 2 within the stormwater management report showing that SF1 is properly sized to treat the additional runoff from the Connector Drive project. The HBACHS columns in Table 2 are only to indicate proper sizing of SF1. As indicated in the table the HBACHS areas are not included in calculating the general/redevelopment standards.

Comment: *As noted, our understanding of the project intent is that treatment from both the Intermodal Transportation Facility and the Center for Health Sciences is to be counted towards the requirement for the Connector Drive. Detail on the Intermodal Transportation Facility is included, but it is unclear how the Center for Health Sciences site's design fits into the area/treatment calculations.*

Response: As indicated in the report and Table 2, only the ITF and the Connector Drive projects are included in the general/redevelopment calculations for the city and the SLODA requirements for this project.

Comment: *The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended.*

Response: We will draft easement documents to address this comment. We are hopeful this could be considered as a staff recommended condition of approval.

Comment: *The applicant shall submit DEP permits for the proposed stream crossings and wetland impacts for review as part of this site plan review.*

Response: A copy of the NRPA permit for wetland impacts is attached. A NRPA PBR notification was filed with the NRPA application on September 23.

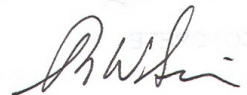
6. Exterior Lighting:

Comment: *The photometric plan shows a maximum foot-candle of 6.3 and an average foot-candle of 2.3 in the stat zone. The maximum foot-candle allowed is 5 for this use, with an average of 1.25. Please adjust the lighting plan to meet this standard.*

Response: A revised photometric plan which demonstrates compliance with this standard is included.

In closing, we would be happy to meet with staff and consultants to discuss any items which may require further clarification if necessary. If you have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

c: Andrew Philippe, Director for Campus Planning

November 14, 2023

Mr. Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086

RE: RECOMMENDATIONS FOR UNE CONNECTOR DRIVE

Dear Tom,

As requested, I have reviewed the comments issued by the City of Portland regarding the proposed connector drive on the UNE campus. This drive will connect the Bishop Street Intermodal Transportation Facility (ITF) to the core campus and College Street Extension. The currently proposed driveway is 24' wide with a 5' raised sidewalk. Some of the City comments and questions regarding this proposed cross section are as follows:

- Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.
- To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.
- Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.

Sewall has reviewed the above City comments and the Connector Drive plans, prepared by Site Design Associates, dated 9/22/2023.

The proposed drive section is to provide for both motor vehicles and bicycles since the 5' sidewalk cannot provide for both pedestrians and bicycles. The generally recommended minimum width for a multiuse path is 10'. A 10' multiuse path and a 22' wide travel way would result in a greater width of 32' with greater environmental impacts. Since 5' is generally considered the minimum sidewalk width, the proposed drive must provide for both bicycles and motor vehicles. For this reason, Sewall recommends that the 24' width be maintained. According to the AASHTO "Guide for the Development of Bicycle Facilities, 2012, Fourth Edition", roadways that have low volumes and low

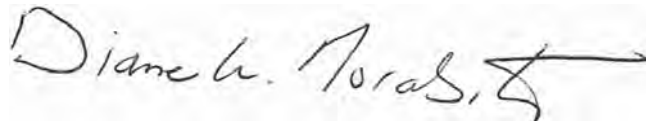
speeds are generally suitable for shared lanes. The guide indicates that roadways with lane widths of 13' or less require that motorists will encroach into the opposing lane to pass a bicyclist. By maintaining a 12' lane width this encroachment will be minimized. Given that motorists and bicyclists will be sharing the same lane, it is recommended that the drive be marked with sharrows, which are used to indicate a shared lane facility. This will alert drivers to the presence of bicyclists and the narrow lanes. Sharrows are typically used on roadways that are too narrow to provide separate marked bike lanes.

I also recommend that a "Bicycles May Use Full Lane" sign be placed on either end of the connector drive to supplement the sharrow markings.

Please don't hesitate to contact me if you or the City of Portland have any questions or need any additional information regarding my recommendations.



Sincerely,

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



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) FRESHWATER WETLAND ALTERATION
CONNECTOR DRIVE	) WATER QUALITY CERTIFICATION
L-30525-TC-A-N (approval)	) FINDINGS OF FACT AND ORDER

Project Description: The applicant proposes to alter 11,187 square feet of forested, emergent and scrub shrub wetlands. The applicant proposes to reconstruct an existing connector drive between the University of New England's Intermodal Transportation Facility and the main campus as shown on a plan titled "Connector Drive," prepared by Site Design Associates, and dated September 2023. The reconstruction project includes an effort to increase the safety of the connector drive by installing sidewalks and call boxes as well as widening the existing drive to two 12-foot travel ways. The applicant has avoided and minimized wetland impacts to the greatest extent practicable by locating the reconstructed connector drive in the same location as the existing connector drive wherever possible. One section of the connector drive will be relocated so that it connects directly to the intermodal transportation facility rather onto a public street as it does currently. The side slopes of the connector drive will be increased from the standard 3H:1V slope to the maximum slope of 2H:1V to minimize wetland impacts. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site. The proposed project is located off College Street in the City of Portland.

Permit for: ☒ Tier 1
DEP Decision: ☒ Approved ☐ Denied (see attached letter)

Please note: A U. S. Army Corps of Engineers permit may also be required for your project. The Corps typically accepts a copy of your Maine DEP NRPA application, but you are responsible for submittal to the Corps. We encourage you to contact them directly at cenae-r-me@usace.army.mil or (207) 623-8367 to discuss their application process. Please note that no regulated work within Corps jurisdiction may be started until you receive a Corps permit.

Standard Conditions:

- 1) If construction or operation of the activity is not begun within four (4) years from the date signed, this permit shall lapse and the applicant shall reapply to the Department for a new permit. This permit is transferable only with prior approval from the Department. If the activity is associated with a larger project, starting any aspect of that project constitutes start of construction.
- 2) The project shall be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
- 3) Properly installed erosion control measures shall be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.

- 4) A copy of this approval will be sent to the City of Portland. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 9th DAY OF NOVEMBER, 2023.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

SCarr/L30525AN/ATS#91509

FILED
November 9th, 2023
State of Maine
Board of Environmental Protection

ZONING INFORMATION

ZONING STANDARDS FROM CITY OF PORTLAND LAND
USE ORDINANCE, AMENDED FEBRUARY 6, 2023
R3 & R5 - RESIDENTIAL ZONES
LITERARY & SCIENTIFIC (GRANDFATHERED)

R3 RESIDENTIAL ZONE STANDARDS*

1. MIN. LOT SIZE: 6,500 SQUARE FEET
EXISTING = 1,139,872 SQUARE FEET
PROPOSED = NO CHANGE
2. MIN. STREET FRONTAGE: 50 FEET
EXISTING = 75 FEET
PROPOSED = NO CHANGE

*STRUCTURE SETBACKS NOT SHOWN BECAUSE NO NEW BUILDINGS ARE PROPOSED.

R5 RESIDENTIAL ZONE STANDARDS*

1. MIN. LOT SIZE: 6,000 SQUARE FEET
EXISTING = 1,139,872 SQUARE FEET
PROPOSED = NO CHANGE
2. MIN. STREET FRONTAGE: 50 FEET
EXISTING = 285 FEET
PROPOSED = NO CHANGE

*STRUCTURE SETBACKS NOT SHOWN BECAUSE NO NEW BUILDINGS ARE PROPOSED.

PARCEL INFORMATION:

1. OWNER OF RECORD: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, MAINE 04005
CCRD BOOK 3481, PAGE 255
CCRD BOOK 2796, PAGE 397
CCRD BOOK 1876, PAGE 271
CCRD BOOK 3450, PAGE 69
2. STREET ADDRESS: 83 COLLEGE STREET, PORTLAND, MAINE
3. PARCELS: CITY OF PORTLAND TAX MAPS
MAP 145 BLOCK B LOT 14
MAP 290 BLOCK A LOT 3
MAP 291 BLOCK A LOT 1
MAP 291 BLOCK A LOT 5

4. TOTAL AREA OF PARCEL: 1,139,872 SF (26.16 AC.)

SITE BENCHMARK: PROJECT BENCHMARK IS A MANHOLE RIM IN BISHOP STREET.

PLAN REFERENCES

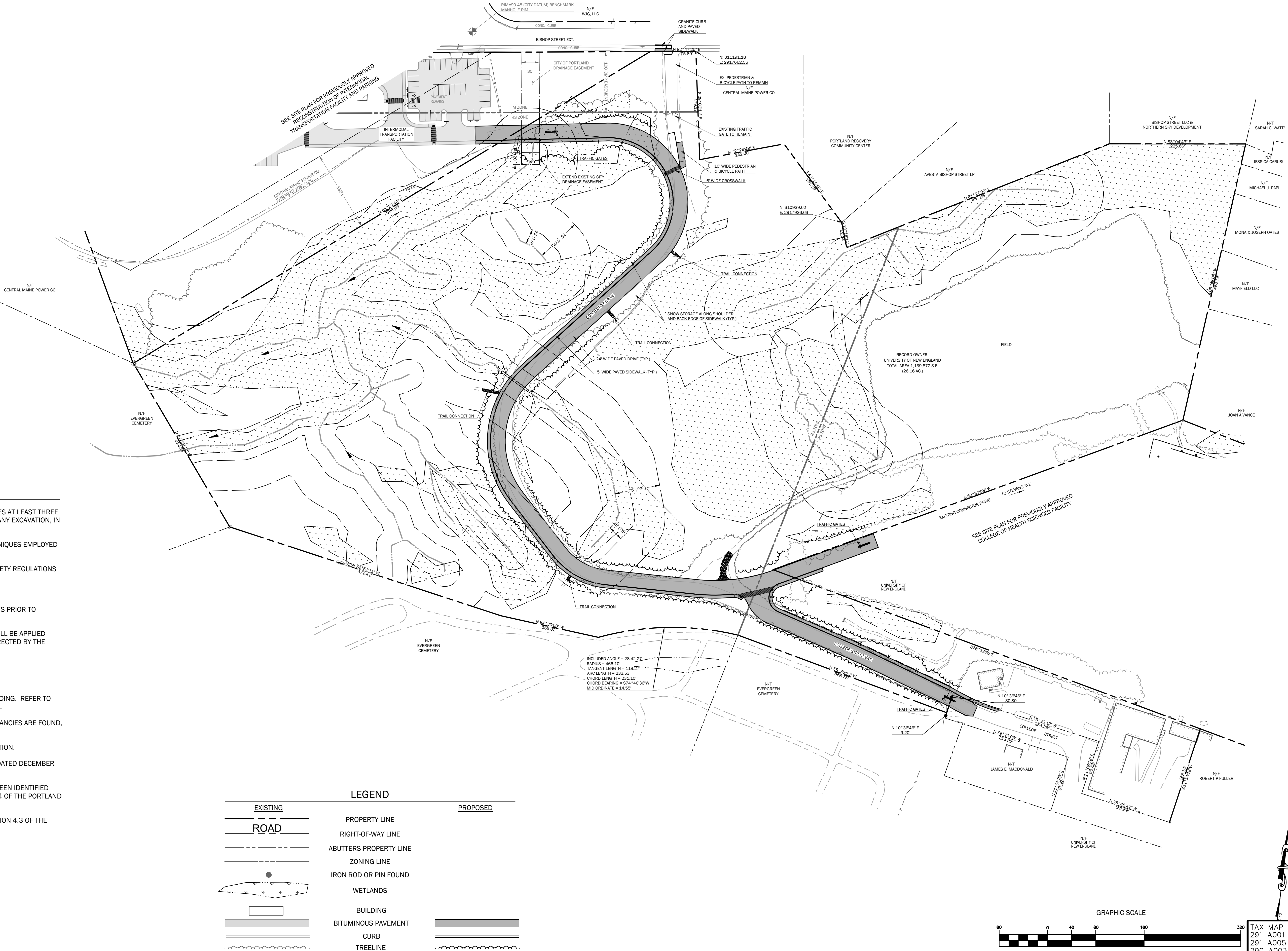
1. TOPOGRAPHIC INFORMATION OBTAINED BY GROUND SURVEY
CONDUCTED IN WINTER 2022 BY COLLIER'S ENGINEERING & DESIGN
OF BRUNSWICK, MAINE.
2. ELEVATIONS SHOWN ON THIS PLAN ARE ON THE CITY OF PORTLAND
VERTICAL DATUM (NGVD29). PROJECT BENCHMARK IS A MANHOLE
RIM IN BISHOP STREET.
3. HORIZONTAL DATUM IS BASED ON NAD83 STATE PLANE GRID WEST
ZONE IN FEET.
4. UNDERGROUND UTILITIES WERE OBTAINED FROM SURFACE
OBSERVATIONS AND TAKEN FROM PLANS OF SEVERAL SOURCES. SEE
SURVEY PLAN REFERENCES.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "DIG SAFE" AND LOCAL UTILITY COMPANIES AT LEAST THREE (3) BUSINESS DAYS, BUT NOT MORE THAN 30 CALENDAR DAYS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, IN ACCORDANCE WITH MAINE STATE LAW. "DIG SAFE" TELEPHONE NUMBER IS 1-888-344-7233.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL AND ANY MEANS, METHODS, AND TECHNIQUES EMPLOYED TO PERFORM THE WORK SHOWN ON THE PLANS.
3. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING ALL SAFETY REGULATIONS (OSHA).
4. ALL WORK SHALL BE IN CONFORMANCE ALL UTILITY COMPANIES STANDARDS.
5. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THE WORK SHOWN ON THESE PLANS PRIOR TO CONSTRUCTION.
6. ALL PAVEMENT/CONCRETE CUTS SHALL BE SAW CUT TO RESULT IN CLEAN EDGES. A TACK COAT SHALL BE APPLIED ALONG THE PAVEMENT CUT EDGES AND THE NEW PAVEMENT BUTTED TO IT, UNLESS OTHERWISE DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
7. ALL WORK SHALL COMPLY WITH THE CITY OF PORTLAND STREET OPENING PERMIT REQUIREMENTS.
8. ALL WORK SHALL COMPLY WITH THE CITY OF PORTLAND TECHNICAL MANUAL.
9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. REFER TO THE EROSION CONTROL PLAN NOTSE AND DRAWINGS FOR FURTHER EROSION CONTROL GUIDELINES.
10. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN ON THE DRAWINGS. IF ANY DISCREPANCIES ARE FOUND, THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.
11. CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO MDOT SPECIFICATIONS, LATEST EDITION.
12. A GEOTECHNICAL REPORT HAS BEEN PREPARED FOR THIS PROJECT BY SUMMIT GEOENGINEERING, DATED DECEMBER 2021.
13. THE CONTRACTOR SHALL BE AWARE THAT INVASIVE SPECIES SUCH AS JAPANESE KNOTWEED HAVE BEEN IDENTIFIED WITHIN THE PROJECT AREA. THESE AREAS SHALL BE MANAGED IN ACCORDANCE WITH SECTION 4.7.4 OF THE PORTLAND TECHNICAL MANUAL AND APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
14. TREES TO BE PRESERVED AT THE EDGE OF WORK SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL.
15. MARK THE CONNECTOR DRIVE WITH SHARROWS LAID OUT PER THE MUTCD.

SNOW STORAGE:

1. SNOW WILL BE PLOWED INTO THE DRIVE SHOULDER/DITCH AND BEYOND THE BACK EDGE OF THE SIDEWALK.



C:\Users\Site\Documents\Drawings\21-216-00 Connector Road\Drawings\21-216-00 Connector Road.dwg (Plot Date / Time: Dec 6, 23 / 2:54 PM)

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
B	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
A	9/22/2023	FOR DEVELOPMENT REVIEW									



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: DEC. 2022

SCALE: 1" = 80'

PROJECT: CONNECTOR DRIVE

83 COLLEGE STREET, PORTLAND, MAINE

SITE PLAN

PROJ. NO.

DWG. NO.

21-216-00

S-100

REV.

B



LEGEND	
	EXISTING ROAD
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	WETLANDS
	INTERMITTENT STREAM
	STORM DRAIN MANHOLE
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	UTILITY POLE
	BUILDING
	EDGE OF PAVEMENT
	CURB
	INDEX CONTOUR
	INTERMEDIATE CONTOUR

GENERAL NOTES:

1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.
2. LOCATION OF INDIVIDUAL TREES EQUAL TO OR GREATER THAN 10-INCH DBH WITHIN CLEARING AREA ARE APPROXIMATE.

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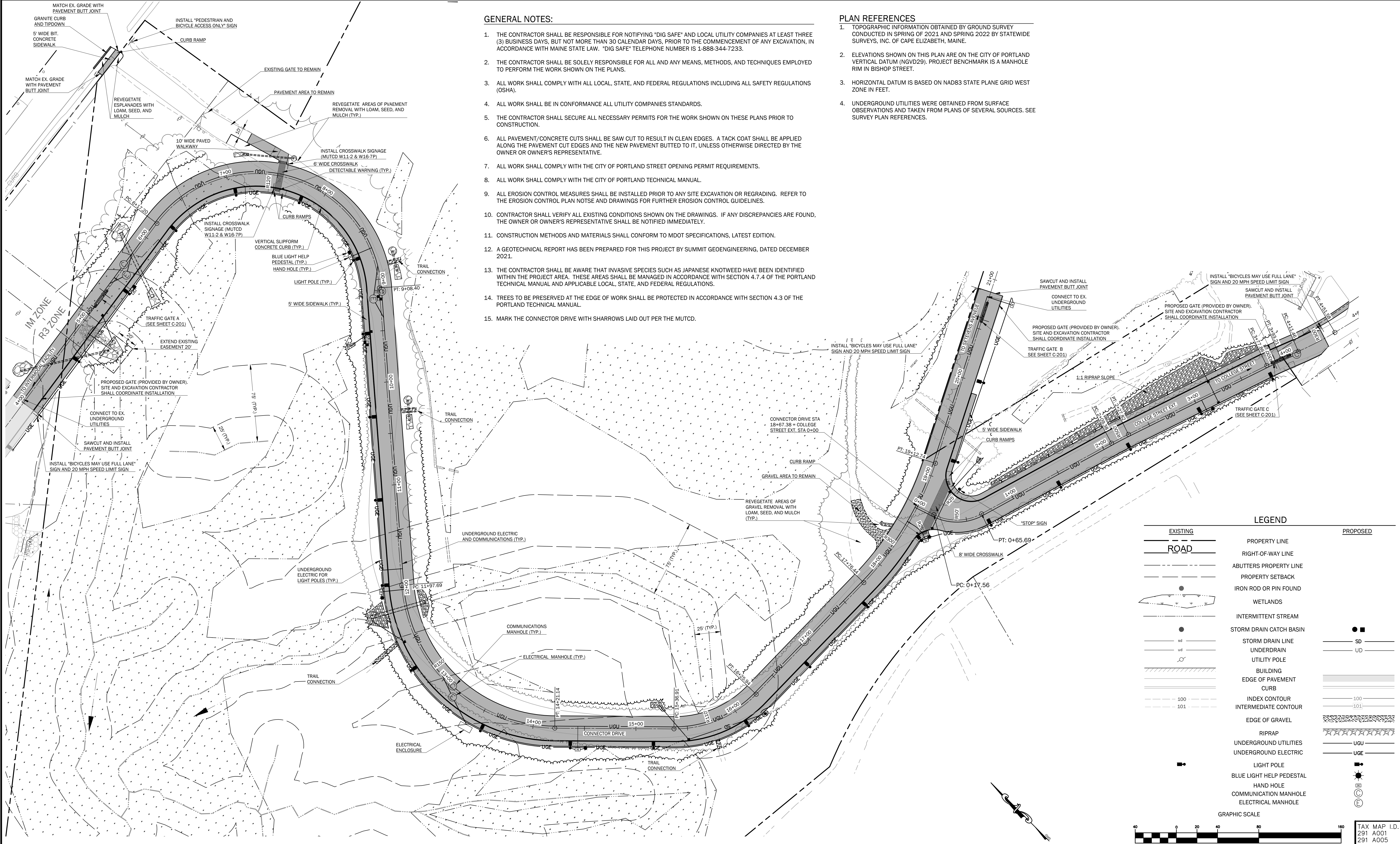
REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
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Site Design Associates
Consulting Engineering & Land Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: **UNIVERSITY OF NEW ENGLAND**
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	EXISTING CONDITIONS AND REMOVALS PLAN
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40'	DWG. NO. C-100

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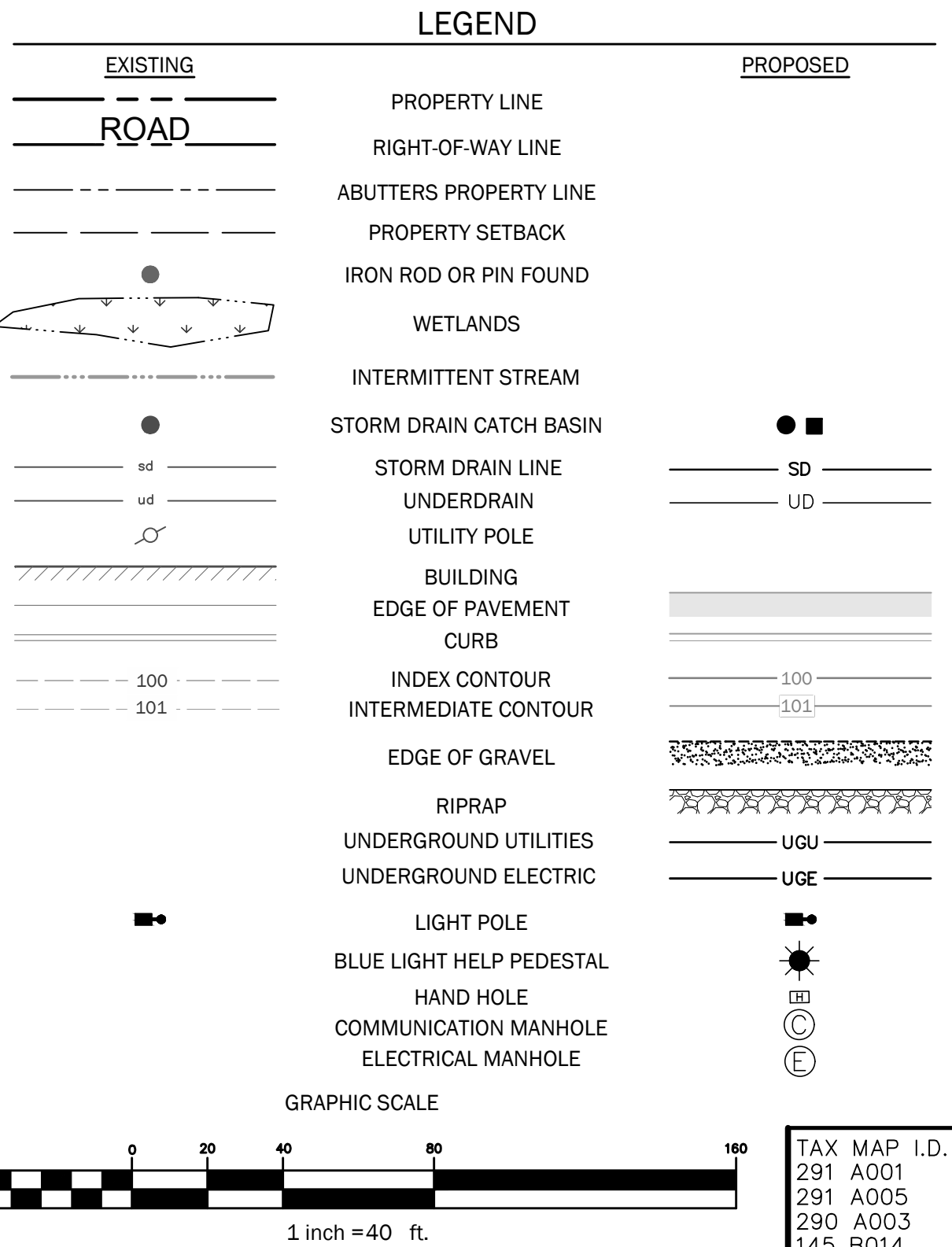


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14. TREES TO BE PRESERVED AT THE EDGE OF WORK SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL.
15. MARK THE CONNECTOR DRIVE WITH SHARROWS LAID OUT PER THE MUTCD.

PLAN REFERENCES

1. TOPOGRAPHIC INFORMATION OBTAINED BY GROUND SURVEY CONDUCTED IN SPRING OF 2021 AND SPRING 2022 BY STATEWIDE SURVEYS, INC. OF CAPE ELIZABETH, MAINE.
2. ELEVATIONS SHOWN ON THIS PLAN ARE ON THE CITY OF PORTLAND VERTICAL DATUM (NGVD29). PROJECT BENCHMARK IS A MANHOLE RIM IN BISHOP STREET.
3. HORIZONTAL DATUM IS BASED ON NAD83 STATE PLANE GRID WEST ZONE IN FEET.
4. UNDERGROUND UTILITIES WERE OBTAINED FROM SURFACE OBSERVATIONS AND TAKEN FROM PLANS OF SEVERAL SOURCES. SEE SURVEY PLAN REFERENCES.



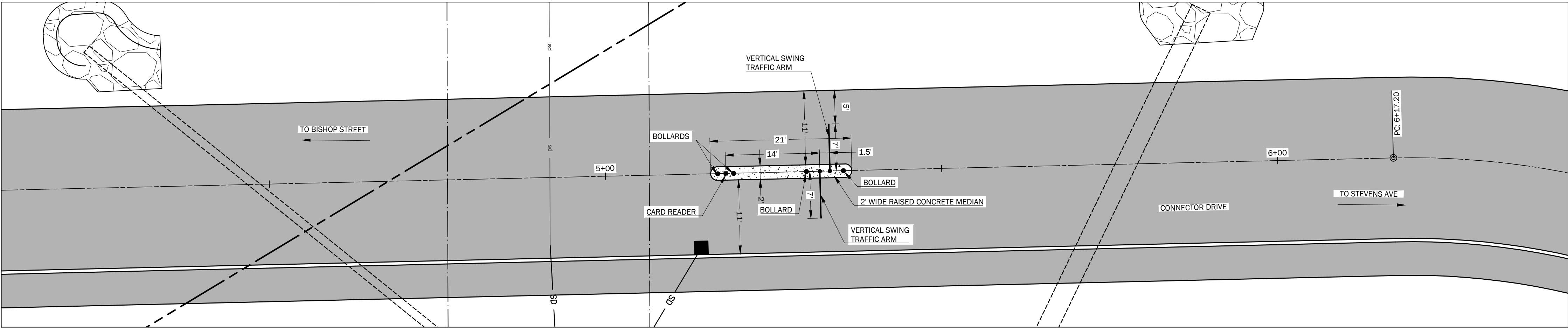
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REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
B	9/22/2023	FOR DEVELOPMENT REVIEW	DEPT.	TWS	TWS						
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						

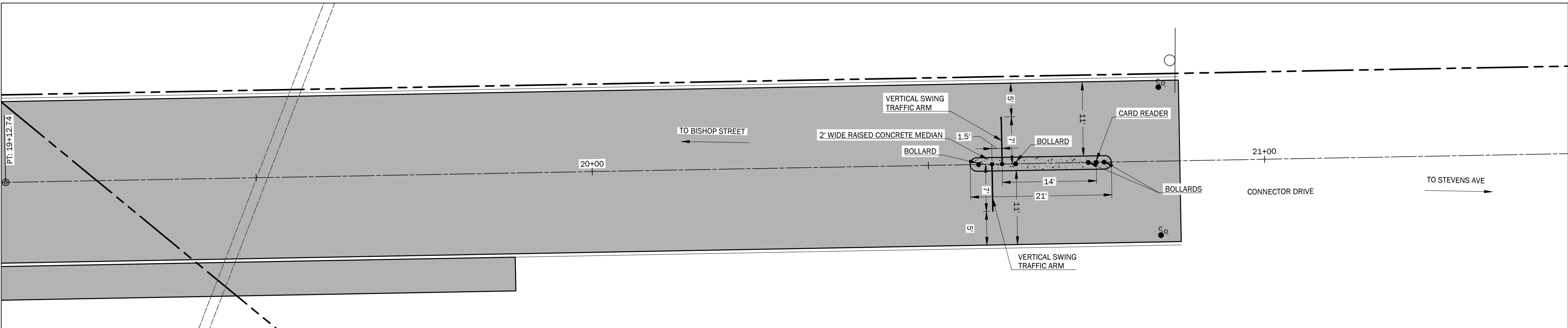


Site Design Associates
Consulting Engineering & Land Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

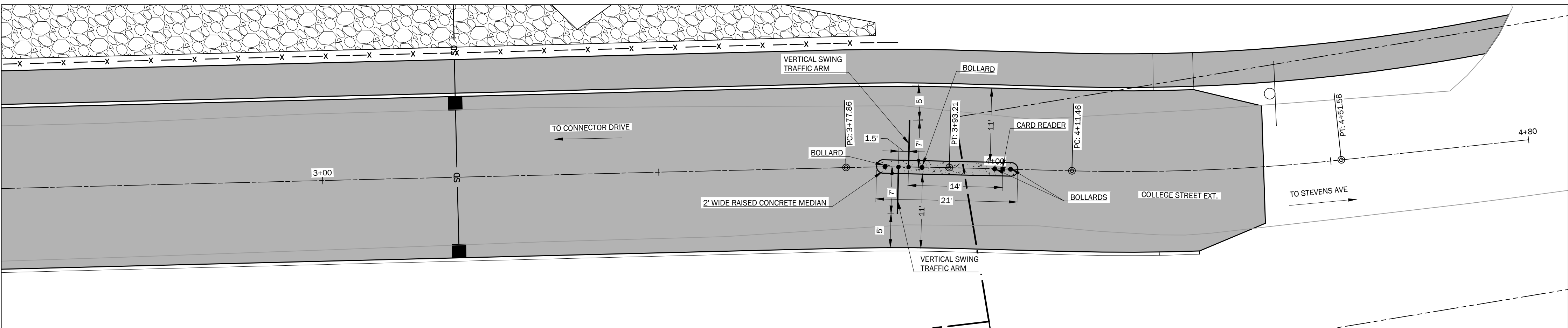
DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE AND UTILITY PLAN
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40'	DWG. NO. C-200



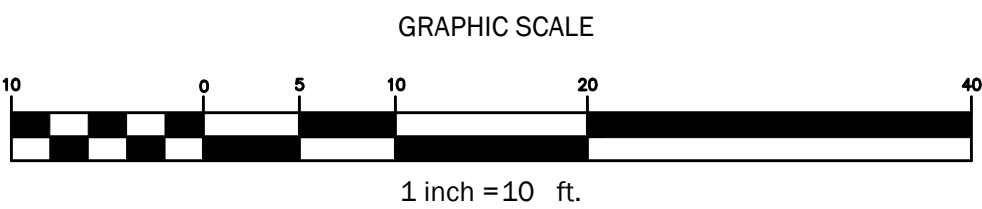
GATE A - (BISHOP STREET END)



GATE B - (CFHS BUILDING END)

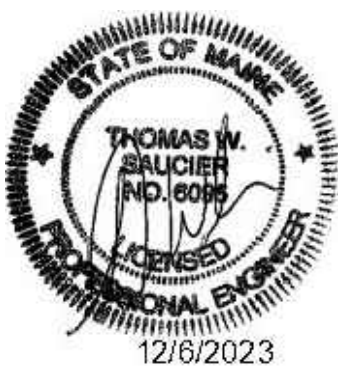


GATE C - (COLLEGE STREET)



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C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
B	9/22/2023	FOR DEVELOPMENT REVIEW									
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION									



Site Design Associates
Consulting Engineering & Land Planning

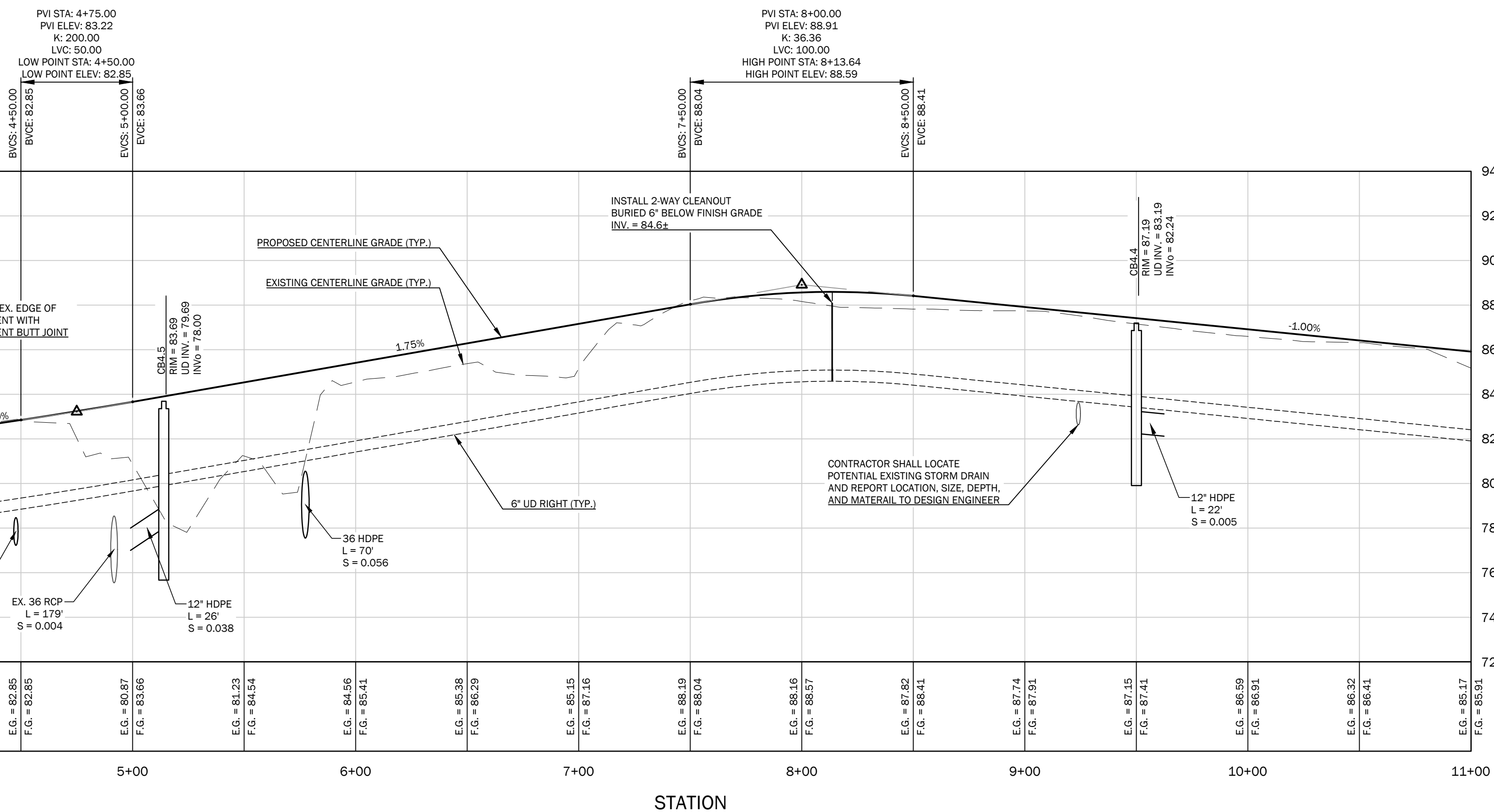
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275

CLIENT: UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	CONNECTOR DRIVE TRAFFIC GATE PLAN
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 10 FT	DWG. NO. C-201

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



1 inch = 4 ft. VERT.
1 inch = 40 ft. HORIZ.

6. VERIFY EXISTING GRADE ELEVATIONS AT STREAM CROSSING CULVERT INLET AND OUTLET PRIOR TO INSTALLATION OF NEW CULVERT. CULVERT INVERTS SHALL BE SET 1 FOOT BELOW EXISTING GRADE AT INLET AND OUTLET LOCATIONS.

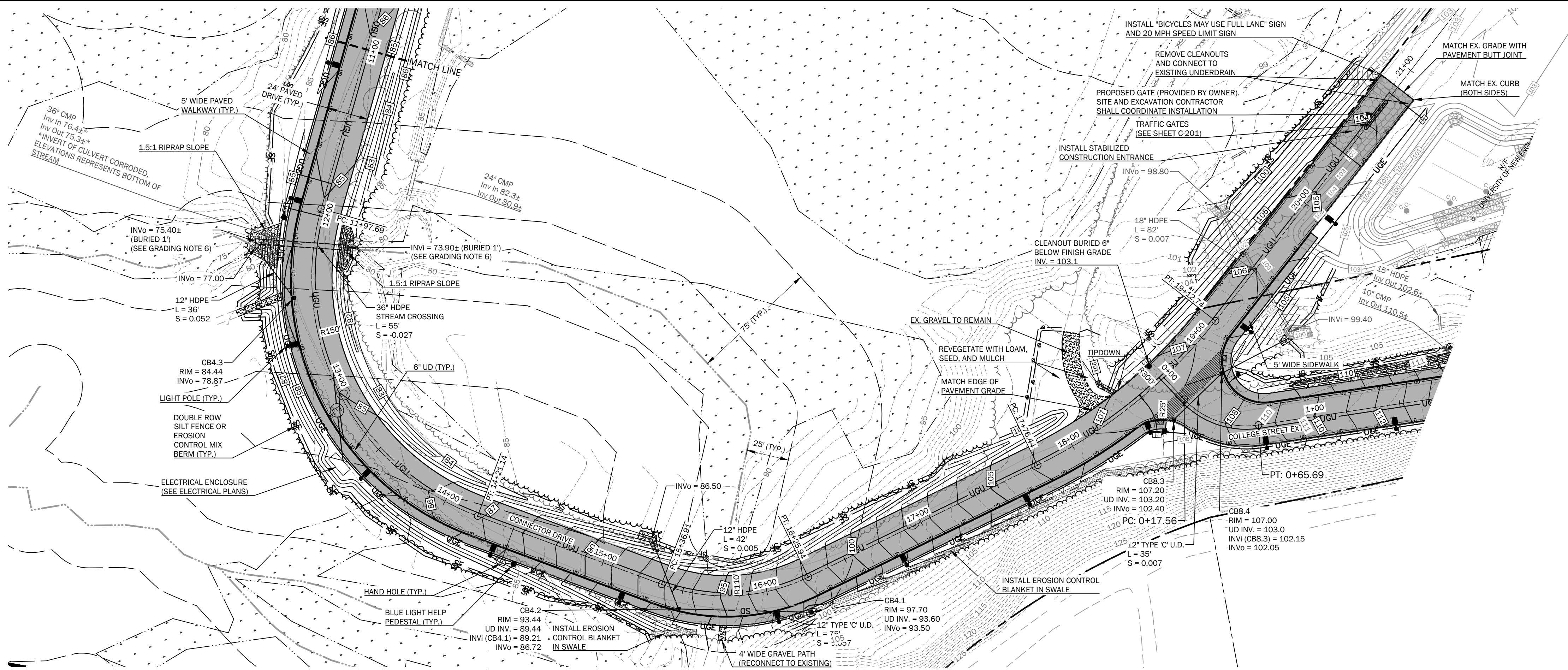
EROSION CONTROL LEGEND

PROPOSED
SILT FENCE OR EROSION CONTROL MIX BERM SF
STABILIZED CONSTRUCTION ENTRANCE

[illegible]

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	CONNECTOR DRIVE PLAN & PROFILE (STA 4+00 TO 11+00)		
DATE: SEP. 2023	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 40 FT	DWG. NO.	C-301	C

Drawing Name: C:\Users\Site\Documents\Drawings\21-216-00 Connector Drive\Drawings\21-216-00 Connector Drive.dwg Plot Date / Time: Dec. 6, 23 / 2:55 PM



GENERAL NOTES:

1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.

GRADING AND DRAINAGE NOTES:

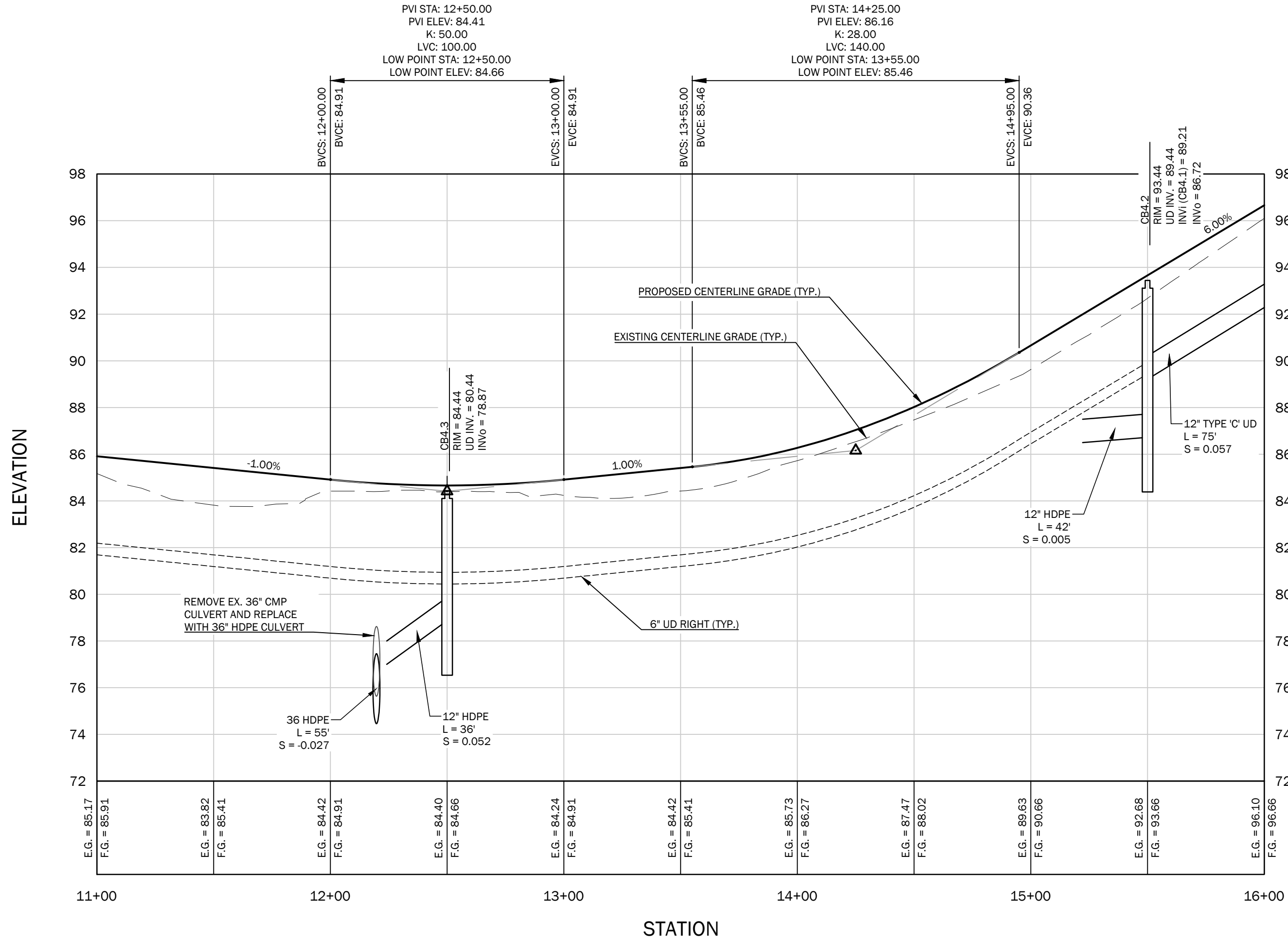
- REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.
- PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
- ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
- GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
- INSTALL RIPRAP APRONS AT ALL STORM DRAIN INLETS AND OUTLETS.
- VERIFY EXISTING GRADE ELEVATIONS AT STREAM CROSSING CULVERT INLET AND OUTLET PRIOR TO INSTALLATION OF NEW CULVERT. CULVERT INVERTS SHALL BE SET 1 FOOT BELOW EXISTING GRADE AT INLET AND OUTLET LOCATIONS.

LEGEND

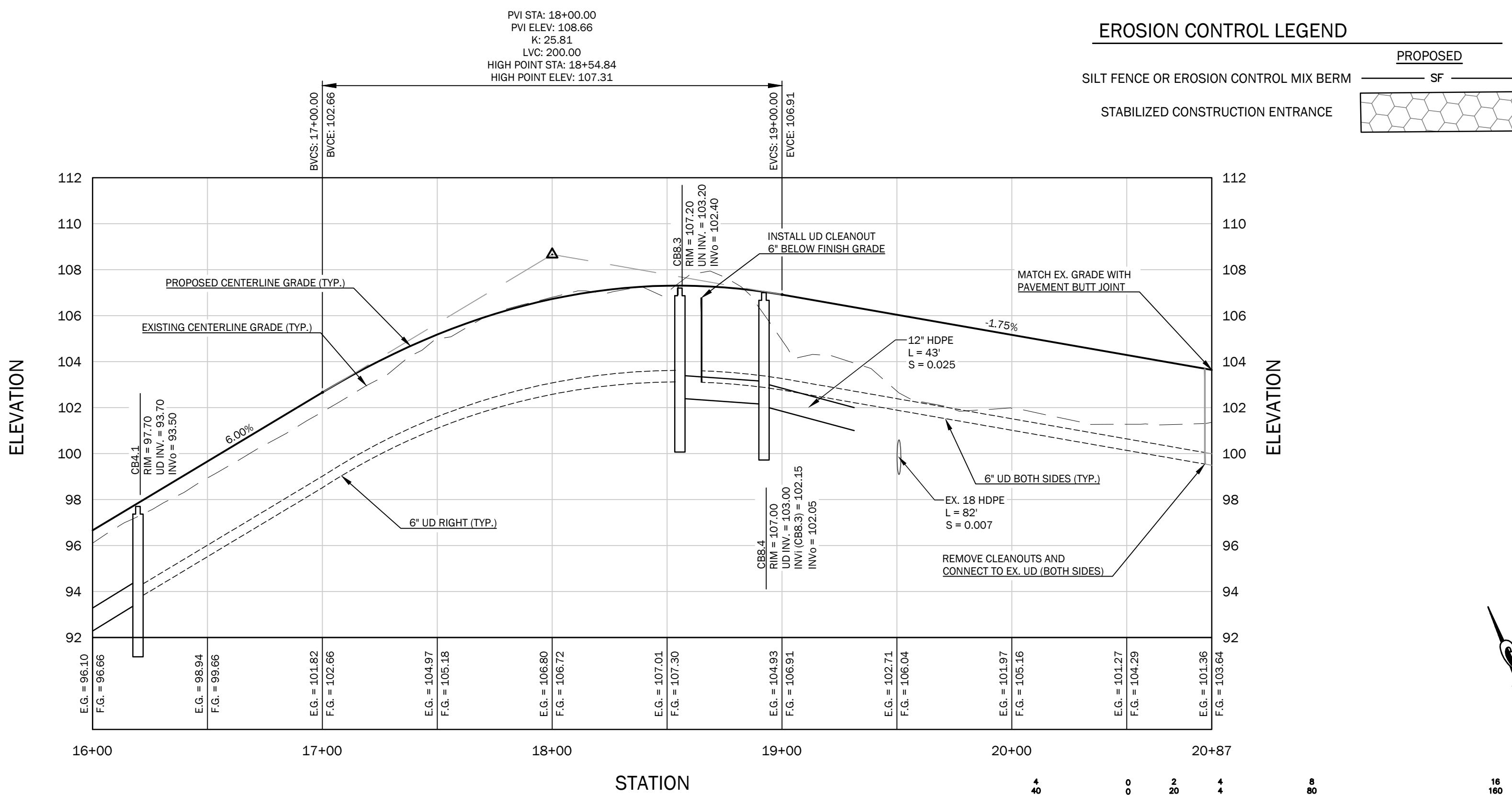
EXISTING	PROPOSED
ROAD	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	WETLANDS
	INTERMITTENT STREAM
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	UNDERDRAIN
	UTILITY POLE
	BUILDING
	EDGE OF PAVEMENT
	CURB
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	EDGE OF GRAVEL
	RIPRAP
	UNDERGROUND UTILITIES
	UNDERGROUND ELECTRIC
	LIGHT POLE
	BLUE LIGHT HELP PEDESTAL
	HAND HOLE
	COMMUNICATION MANHOLE
	ELECTRICAL MANHOLE

EROSION CONTROL LEGEND

PROPOSED
SILT FENCE OR EROSION CONTROL MIX BERM
STABILIZED CONSTRUCTION ENTRANCE



CONNECTOR DRIVE PROFILE



CONNECTOR DRIVE PROFILE

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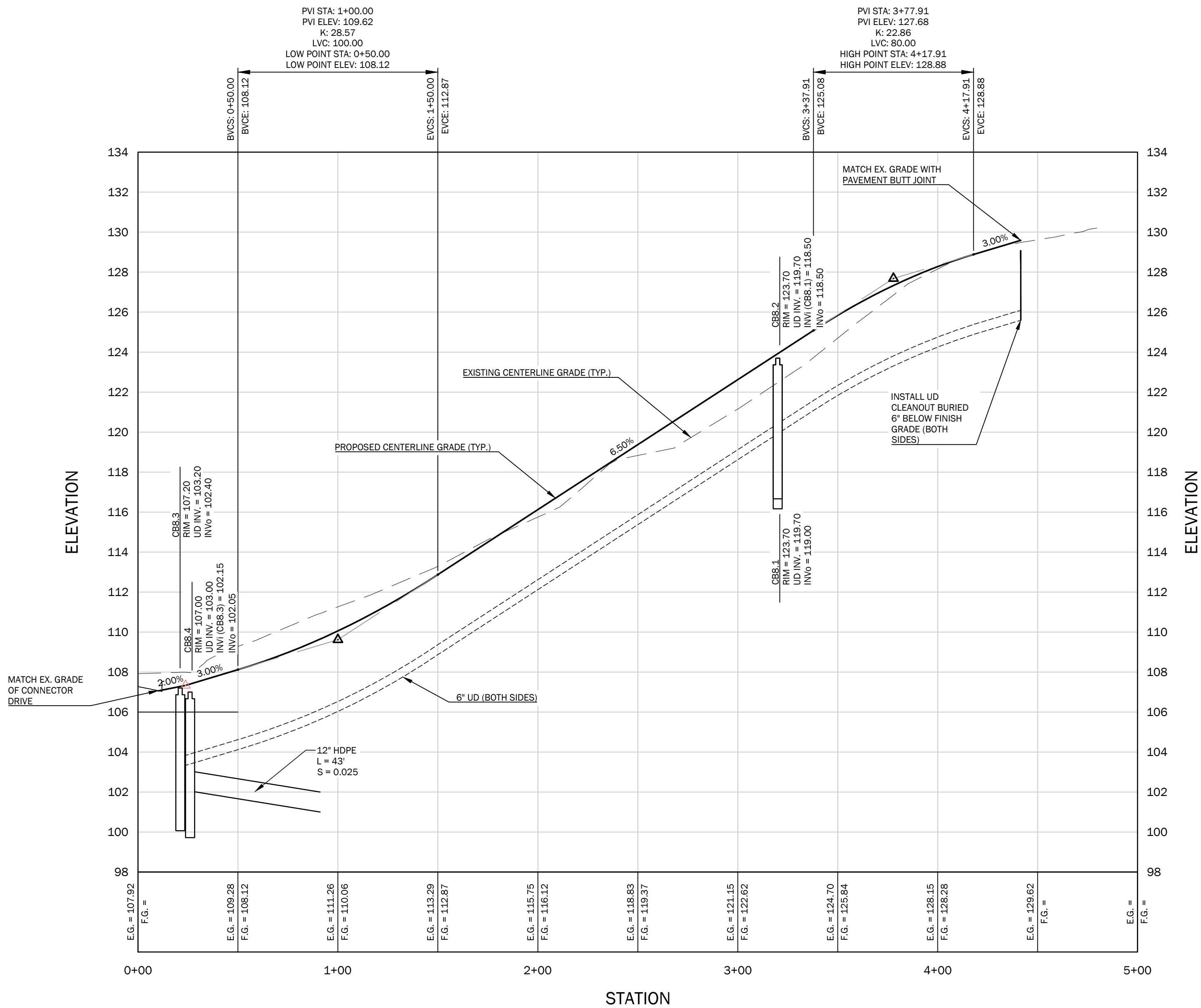
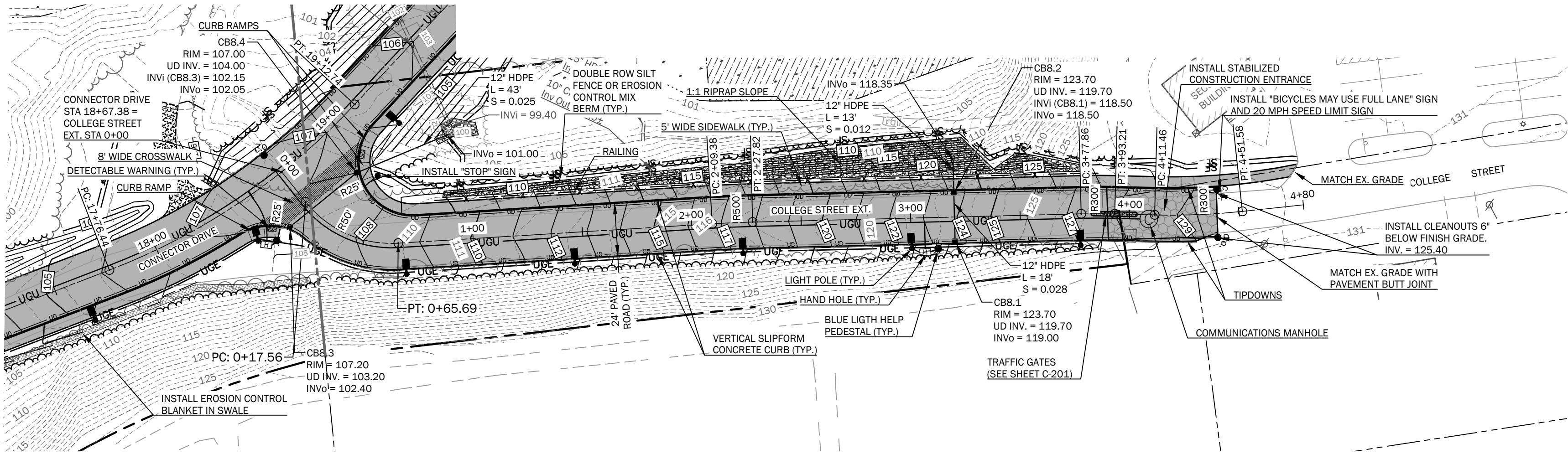
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CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	CONNECTOR DRIVE PLAN & PROFILE (STA 11+00 TO 20+87)
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40 FT	DWG. NO. C-302

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



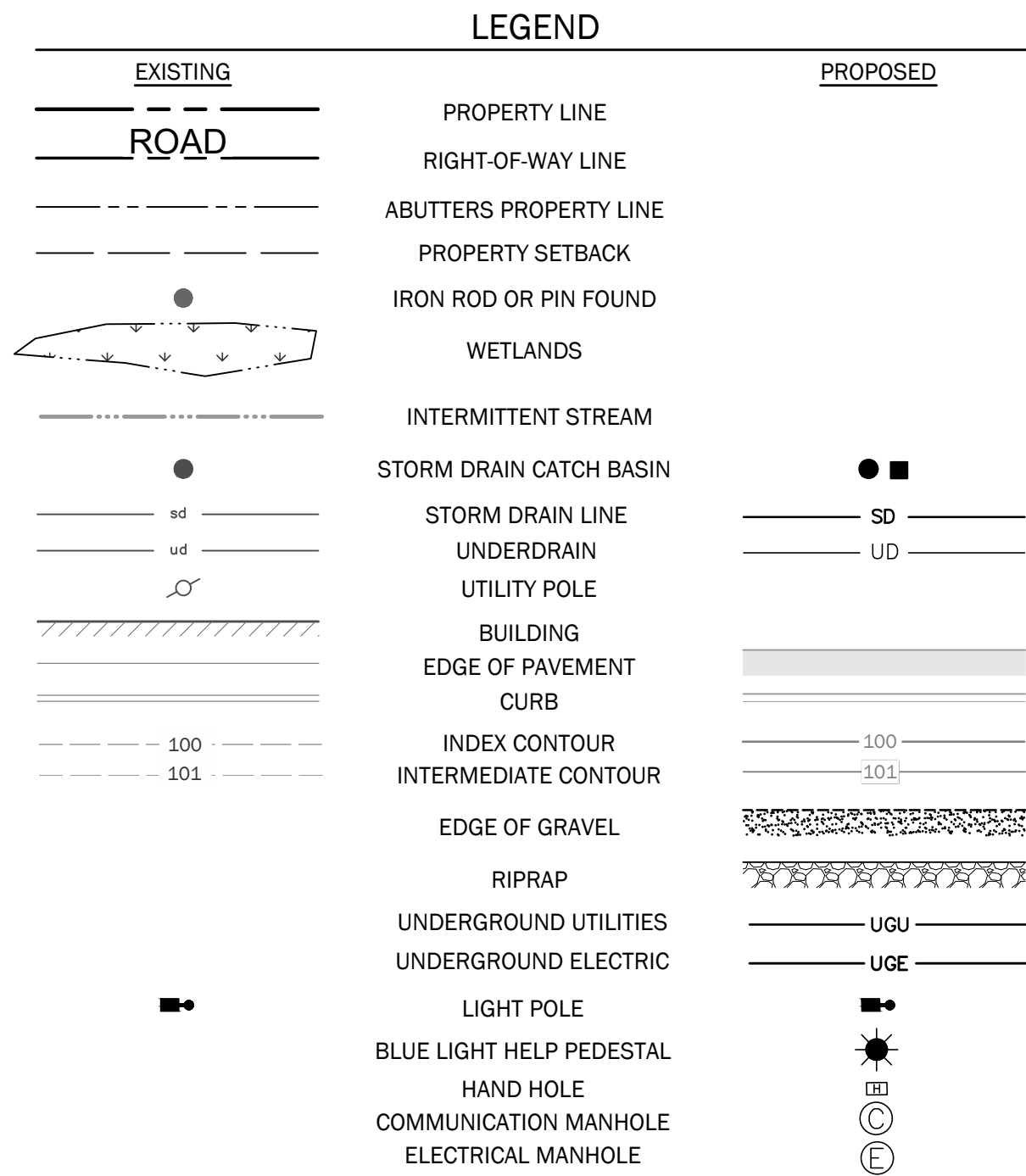
COLLEGE STREET EXT. PROFILE

GENERAL NOTES:

1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.

GRADING AND DRAINAGE NOTES:

1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.
2. PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
3. ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
4. GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
5. INSTALL RIPRAP APRONS AT ALL STORM DRAIN INLETS AND OUTLETS.



EROSION CONTROL LEGEND



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.

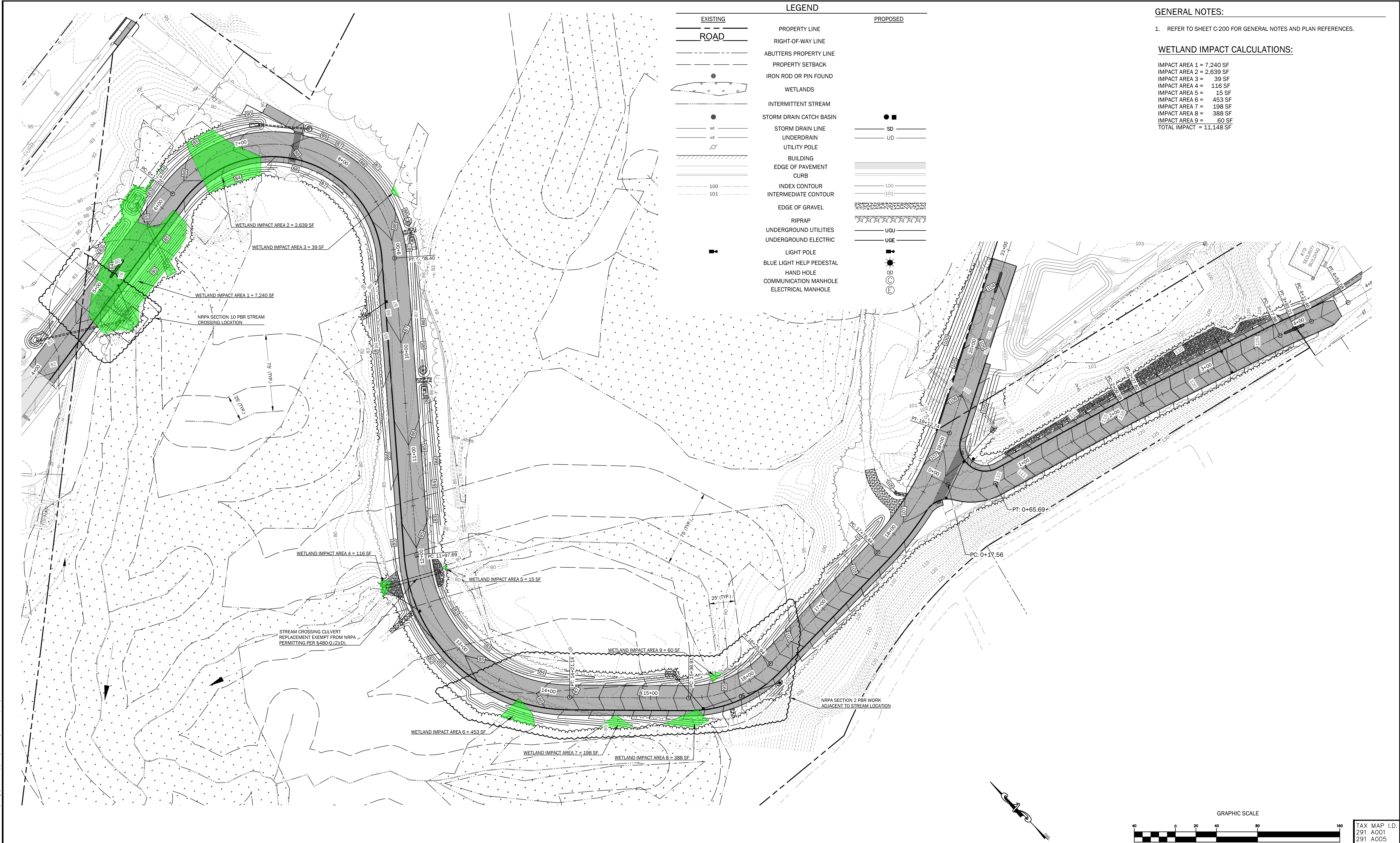
REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
B	9/22/2023	FOR DEVELOPMENT REVIEW	DEPT.	TWS	TWS						
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						



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.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	COLLEGE STREET EXT. PLAN & PROFILE (STA 0+00 TO END)
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40 FT	DWG. NO. C-303

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
B	9/22/2023	FOR DEVELOPMENT REVIEW	DEPT.	TWS	TWS						
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						



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23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	WETLAND IMPACT PLAN
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40'	DWG. NO. C-304

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EROSION AND SEDIMENTATION CONTROL NOTES:

INTRODUCTION

THE FOLLOWING PLAN FOR CONTROLLING SEDIMENTATION AND EROSION IN THIS PROJECT IS BASED ON CONSERVATION PRACTICES FOUND IN THE MAINE EROSION & SEDIMENT CONTROL BMPs MANUAL, OCTOBER 2016, AND MAINE EROSION AND SEDIMENT CONTROL PRACTICE FIELD GUIDE FOR CONTRACTORS, REVISED 2014, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE CONTRACTOR WHO IMPLEMENTS THIS PLAN SHALL BE FAMILIAR WITH THESE PUBLICATIONS AND ADHERE TO THEM AND THE PRACTICES PRESENTED HEREIN

REFERENCE IS MADE TO THE GRADING AND DRAINAGE PLANS (C-301 AND C-302) WITHIN THE PLAN SET, SHOWING THE LOCATIONS AND TYPES OF PROPOSED MEASURES TO BE IMPLEMENTED.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

THE FOLLOWING IS A LIST OF GENERAL EROSION CONTROL PRACTICES THAT WILL BE USED TO PREVENT EROSION AND SEDIMENTATION BEFORE, DURING AND AFTER THE CONSTRUCTION OF THIS PROJECT. IN ADDITION, SPECIAL CARE SHALL BE USED AT ALL TIMES TO:

- 1) CORRECT ANY EROSION PROBLEMS IMMEDIATELY
- 2) REGULARLY MONITOR THE IMPLEMENTED PRACTICES, ESPECIALLY AFTER EVERY RAINFALL
- 3) REVEGETATE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION
- 4) CONFORM TO ALL REQUIREMENTS/STANDARDS OF THE SITE'S MAINE DEP EROSION & SEDIMENT CONTROL BMP MANUAL.

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS WILL BE INSTALLED ALONG THE DOWN GRADIENT SIDE OF THE PROPOSED GROUND DISTURBANCE AREAS PRIOR TO ANY CONSTRUCTION ACTIVITIES WHERE SLOPES EXCEED 8% OR THERE IS FLOWING WATER BOTH SILT FENCE AND EROSION CONTROL MATTING BERMS SHALL BE USED.

CATCH BASIN PROTECTION

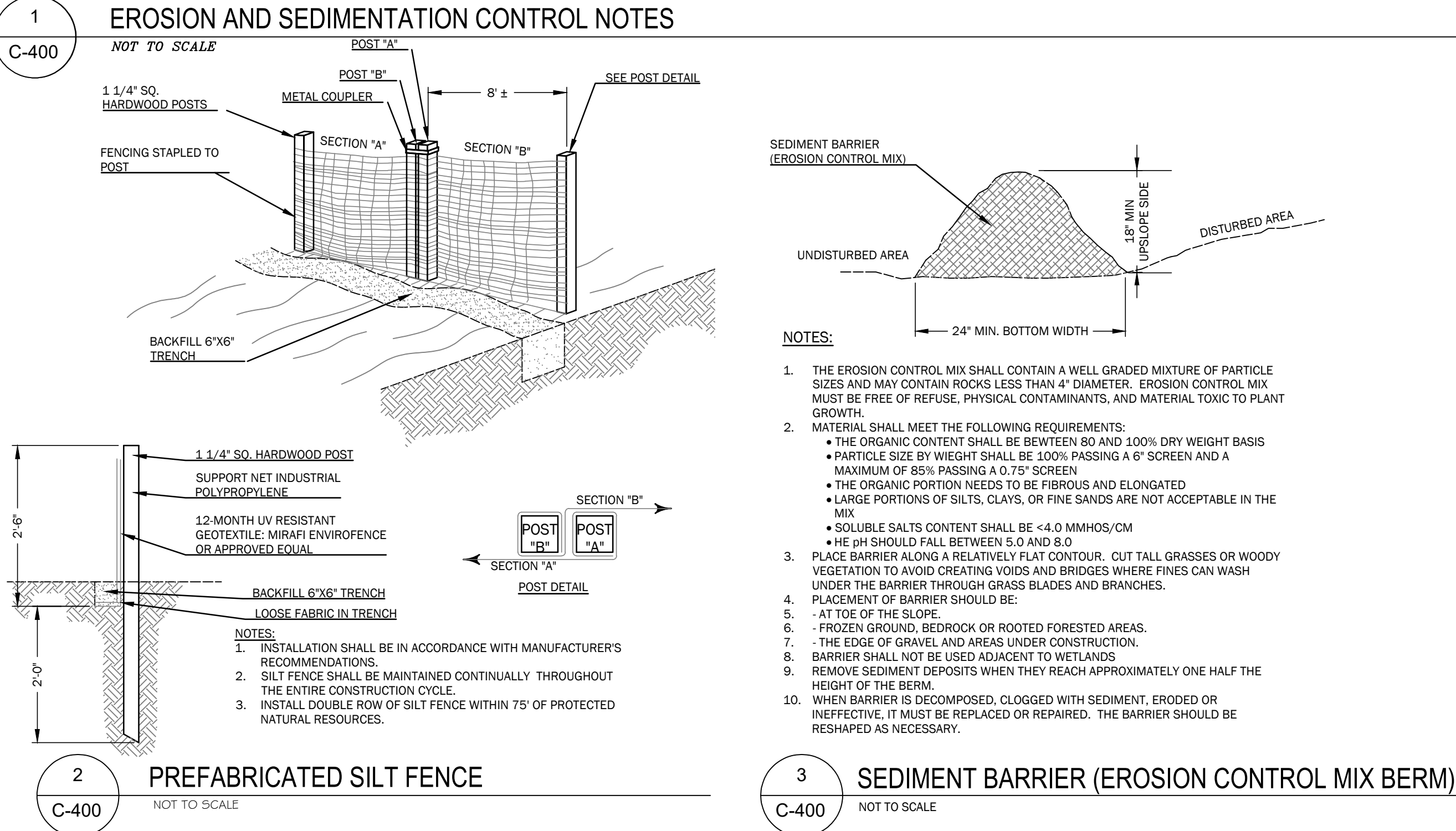
CATCH BASIN PROTECTION WILL BE INSTALLED AT THE FIRST DOWNGRADE CATCH BASIN IN STREET ADJACENT TO ANY CONSTRUCTION ACTIVITIES AND IN ALL ONSITE CATCH BASINS UNTIL SITE HAS BEEN COMPLETELY STABILIZED.

CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION DURING CONSTRUCTION ON THIS PROJECT:

1. EROSION AND SEDIMENTATION CONTROL BMPs SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF EARTHWORK ACTIVITIES.
2. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. AN AREA NO LARGER THAN WHAT CAN BE MULCHED IN ONE DAY MAY BE OPEN AT ONCE. ONCE CONSTRUCTION OF AN AREA IS COMPLETE, FINAL GRADING, LOAMING AND SEEDING SHALL OCCUR IMMEDIATELY (REFER TO "POST CONSTRUCTION REVEGETATION" SECTION). IF DURING FINAL GRADING, LOAMING AND SEEDING CAN NOT OCCUR IMMEDIATELY, IT SHALL BE DONE PRIOR TO ANY STORM EVENT AND WITHIN 15 DAYS OF COMPLETING CONSTRUCTION IN THE AREA. IF FINAL GRADING, LOAMING AND SEEDING CANNOT OCCUR WITHIN 7 DAYS, OR IF THE AREA IS NOT UNDER ACTIVE CONSTRUCTION FOR A PERIOD LONGER THAN 7 DAYS, SEE ITEM NO. 4 BELOW.
3. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING SHALL BE INSTALLED ON DOWNGRADE PORTIONS OF THE SITE AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION.
4. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM EXISTING DRAINAGE AREAS AND WETLANDS. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
 - B. SEEDDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
 - C. STOCKPILES SHALL BE EITHER PLACED UPHILL OF AN EXISTING SEDIMENT BARRIER ON THE SITE OR ENCIRCLED BY A HAY BALE OR SILT FENCE BARRIER THE FIRST DAY THAT STOCKPILING COMMENCES.
5. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH STRAW AT A RATE OF 70-90 LBS. PER 1000 SQUARE FEET FROM 4/16 TO 10/1, OR AT A RATE OF 150-200 LBS. PER 1000 SQUARE FEET FROM 10/1 TO 4/15.
 - B. SEEDDED WITH CONSERVATION MIX OF PERENNIAL RYE GRASS (1.0 LBS./1000 SQ.FT.) AND MULCHED IMMEDIATELY. FROM 10/1 TO 4/15, FOLLOW THE SEEDING RATES AS OUTLINED BELOW IN SUB-SECTION 4.D. OF THE "POST CONSTRUCTION REVEGETATION" SECTION.
 - C. MONITORED EVERY TWO WEEKS UNTIL SEEDING CAN OCCUR AND REMULCHED AS NEEDED TO PROTECT SLOPES.
6. ALL GRADING WILL BE HELD TO A MAXIMUM 3:1 SLOPE WHERE PRACTICAL. GREATER SLOPES MAY BE USED WHERE THE BANKS ARE PROTECTED WITH SOFT ARMOUR MATTING, EROSION CONTROL MATTING, OR RIPRAP. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY AFTER FINAL GRADING IS COMPLETE. (IT IS UNDERSTOOD THAT IMMEDIATELY MEANS WITHIN 5 DAYS OF THE COMPLETION OF WORK. SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION).
7. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
8. CONSTRUCTION TRAFFIC WILL BE DIRECTED OVER THE EXISTING SITE ENTRANCE. THE ROAD SHALL BE SWEEPED AND VACUUMED DAILY SHOULD SEDIMENT BE TRACKED ONTO IT.
9. ALL AREAS DRAINING TO A STORMWATER FILTER OR BMP SHALL BE STABILIZED PRIOR TO CONSTRUCTION OF FILTER MEDIA TO PREVENT SEDIMENT FROM CLOGGING MEDIA.
10. THE UNDERDRAINED SOIL FILTERS WILL BE CONSTRUCTED SIMULTANEOUSLY WITH YOUNG'S LANE. THE FILTERS WILL BE USED AS TEMPORARY SEDIMENT TRAPS UNTIL THEIR DRAINAGE AREA IS PERMANENTLY STABILIZED.
11. THE AREAS ASSOCIATED WITH THE BUILDINGS AND THEIR DRIVEWAYS CAN BE DISTURBED BY GRUBBING NO EARLIER THAN TWO WEEKS BEFORE THE STARTING DATE OF THEIR CONSTRUCTION.

EROSION AND SEDIMENTATION CONTROL NOTES



12. IN AREAS SLOPED 8% OR MORE, TEMPORARY ROCK CHECK DAMS AND WATER BARS WILL BE USED IN THE ROADSIDE SWALES AND THE ROAD, RESPECTIVELY, UNTIL THE SWALES AND THE ROAD ARE STABILIZED.

DEWATERING

1. ALL DEWATERING DISCHARGE LOCATIONS SHALL BE LOCATED ON RELATIVELY FLAT GROUND AT LEAST 75' FROM STREAMS AND 25' FROM WETLANDS. THE CONTRACTOR SHALL UTILIZE DIRTBAES, EROSION CONTROL MIX BERMS, OR SIMILAR METHODS FOR FILTRATION OF DEWATERING AND SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BMPs G-1, G-2, AND G-3.

POST CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING:

1. A MINIMUM OF 6" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE.
2. LAWN AREAS: SEE LANDSCAPE PLAN FOR SEED MIX.
3. MULCH SHALL BE HAY OR STRAW MULCHES THAT ARE DRY AND FREE FROM UNDESIRABLE SEEDS AND COARSE MATERIALS.
 - A. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE.
 - B. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
 - C. BLANKET WITH TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING ON GRADES GREATER THAN 5%.
4. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF ASPHALT, WOOD FIBRE OR PAPER FIBRE AND WATER, WHICH IS SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 10/1 AND 4/15.
5. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN OCTOBER 1ST AND APRIL 15TH. SHOULD SEEDING BE NECESSARY BETWEEN THESE DATES, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
 - A. ONLY UNFROZEN LOAM SHALL BE USED.
 - B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
 - C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS./1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.5 LBS./1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - E. FERTILIZING, SEEDING AND MULCHING SHALL BE DONE ON LOAM THE DAY THE LOAM IS SPREAD.
 - F. HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE. WINTER MULCHING RATES, SHALL BE DOUBLE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION, SHOULD BE APPLIED DURING THIS PERIOD.
6. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 90% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE DESIGN PROFESSIONAL THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL, AND AT LEAST ONCE A WEEK, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. SILT FENCE SHALL BE INSPECTED AND REPAIRED. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING.
2. CONSTRUCTION ENTRANCE SHALL BE VISUALLY INSPECTED AND REPAIRED AS NEEDED. ANY AREAS SUBJECT TO RUTTING SHALL BE STABILIZED IMMEDIATELY. IF THE VOIDS OF THE CONSTRUCTION ENTRANCE BECOME FILLED WITH MUD, MORE CRUSHED STONE SHALL BE ADDED AS NEEDED. THE PUBLIC ROADWAY SHALL BE SWEEPED AND VACUUMED SHOULD MUD BE DEPOSITED/TRAPPED ONTO THEM.

STANDARDS FOR STABILIZING SITES FOR THE WINTER

THE FOLLOWING STANDARDS AND METHODOLOGIES SHALL BE USED FOR STABILIZING THE SITE DURING THE WINTER CONSTRUCTION PERIOD:

1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES (ANY AREA HAVING A GRADE GREATER THAN 25%): THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15TH. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15TH, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
 - A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS: BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED HAY MULCH OVER THE SEEDING AT TWICE THE RATE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS.
 - B. STABILIZE THE SLOPE WITH WOOD-WASTE COMPOST: THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD-WASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. THE CONTRACTOR WILL NOT USE WOOD-WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
 - C. STABILIZE THE SLOPE WITH STONE RIPRAP: THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER

15TH. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS - BY SEPTEMBER 15TH THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON THE SITE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

- A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION: BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET. LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER, 1. THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.
- B. STABILIZE THE SOIL WITH SOD: THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR INSTALLING THE SOD ON TOP OF THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- C. STABILIZE THE SOIL WITH MULCH: BY NOVEMBER 15TH THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH NETTING OR OTHER METHOD TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

EROSION CONTROL REMOVAL

AN AREA IS CONSIDERED STABLE IF IT IS PAVED OR IF 90% GROWTH OF PLANTED SEEDS IS ESTABLISHED. ONCE AN AREA IS CONSIDERED STABLE, THE EROSION CONTROL MEASURES CAN BE REMOVED AS FOLLOWS:

1. SILT FENCE: SILT FENCE SHALL BE DISPOSED OF LEGALLY AND PROPERLY OFF-SITE. ALL SEDIMENT TRAPPED BEHIND THESE CONTROLS SHALL BE DISTRIBUTED TO AN AREA UNDERGOING FINAL GRADING OR REMOVED AND RELOCATED OFF-SITE.
2. STABILIZED CONSTRUCTION ENTRANCE: THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE REMOVED ONCE THE COMPACTED ROADWAY BASE IS IN PLACE. STONE AND SEDIMENT FROM THE CONSTRUCTION ENTRANCE SHALL BE REDISTRIBUTED TO AN AREA UNDERGOING GRADING OR REMOVED AND RELOCATED OFF-SITE.
3. MISCELLANEOUS: ONCE ALL THE TRAPPED SEDIMENTS HAVE BEEN REMOVED FROM THE TEMPORARY SEDIMENTATION DEVICES THE DISTURBED AREAS MUST BE REGRADED IN AN AESTHETIC MANNER TO CONFORM TO THE SURROUNDING TOPOGRAPHY. ONCE GRADED THESE DISTURBED AREAS MUST BE LOAMED IF NECESSARY, FERTILIZED, SEEDDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.

THE ABOVE EROSION CONTROLS MUST BE REMOVED WITHIN 30 DAYS OF FINAL STABILIZATION OF THE SITE. CONFORMANCE WITH THIS PLAN AND FOLLOWING THESE PRACTICES WILL RESULT IN A PROJECT THAT COMPLIES WITH THE STATE REGULATIONS AND THE STANDARDS OF THE NATURAL RESOURCES PROTECTION ACT, AND WILL PROTECT WATER QUALITY IN AREAS DOWNSTREAM FROM THE PROJECT.

MAINE CONSTRUCTION GENERAL PERMIT REQUIRED

SUBMISSION OF A MAINE CONSTRUCTION GENERAL PERMIT (MCGP) IS REQUIRED PRIOR TO COMMENCEMENT OF ANY EXCAVATION ACTIVITIES.

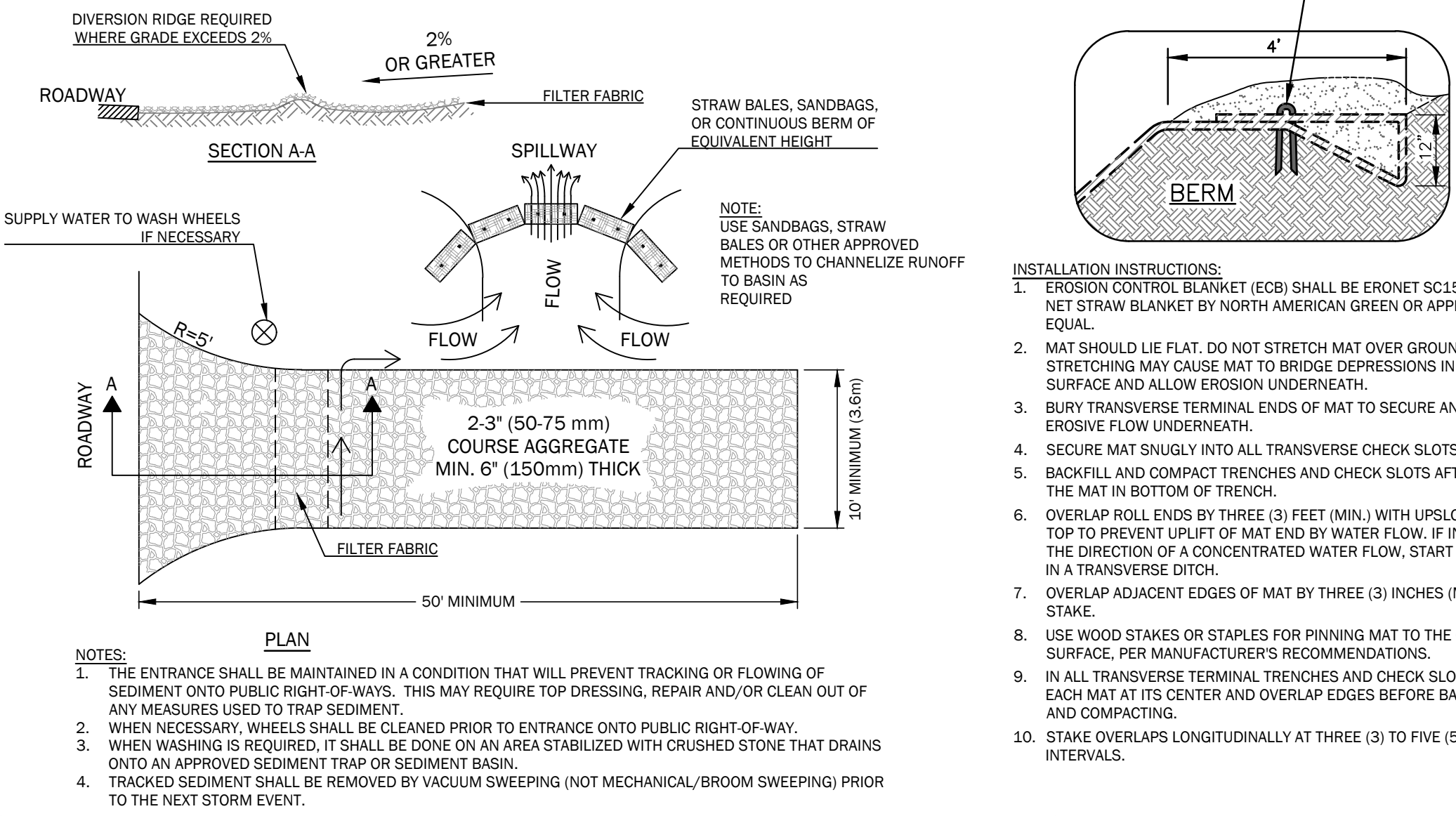
INSPECTION AND MAINTENANCE (APPENDIX B)

1. INSPECTION AND MAINTENANCE REQUIREMENTS: INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND AFTER A SIGNIFICANT STORM EVENT (0.5 INCHES OF RAINFALL IN A 24-HOUR PERIOD) AND PRIOR TO COMPLETION OF PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS IN THE MCGP AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THE MCGP, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY, IMPLEMENTATION MUST BE STARTED BY THE END OF THE NEXT WORKDAY AND COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS AREA PERMANENTLY STABILIZED. DOCUMENTATION OF CORRECTION ACTIONS SHALL BE MAINTAINED WITH THE INSPECTION FORMS.
2. INSPECTION LOG (REPORT): A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED, FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs. NOTE IN THE INSPECTION LOG THE CORRECT ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO THE DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF THE PERMANENT STABILIZATION.

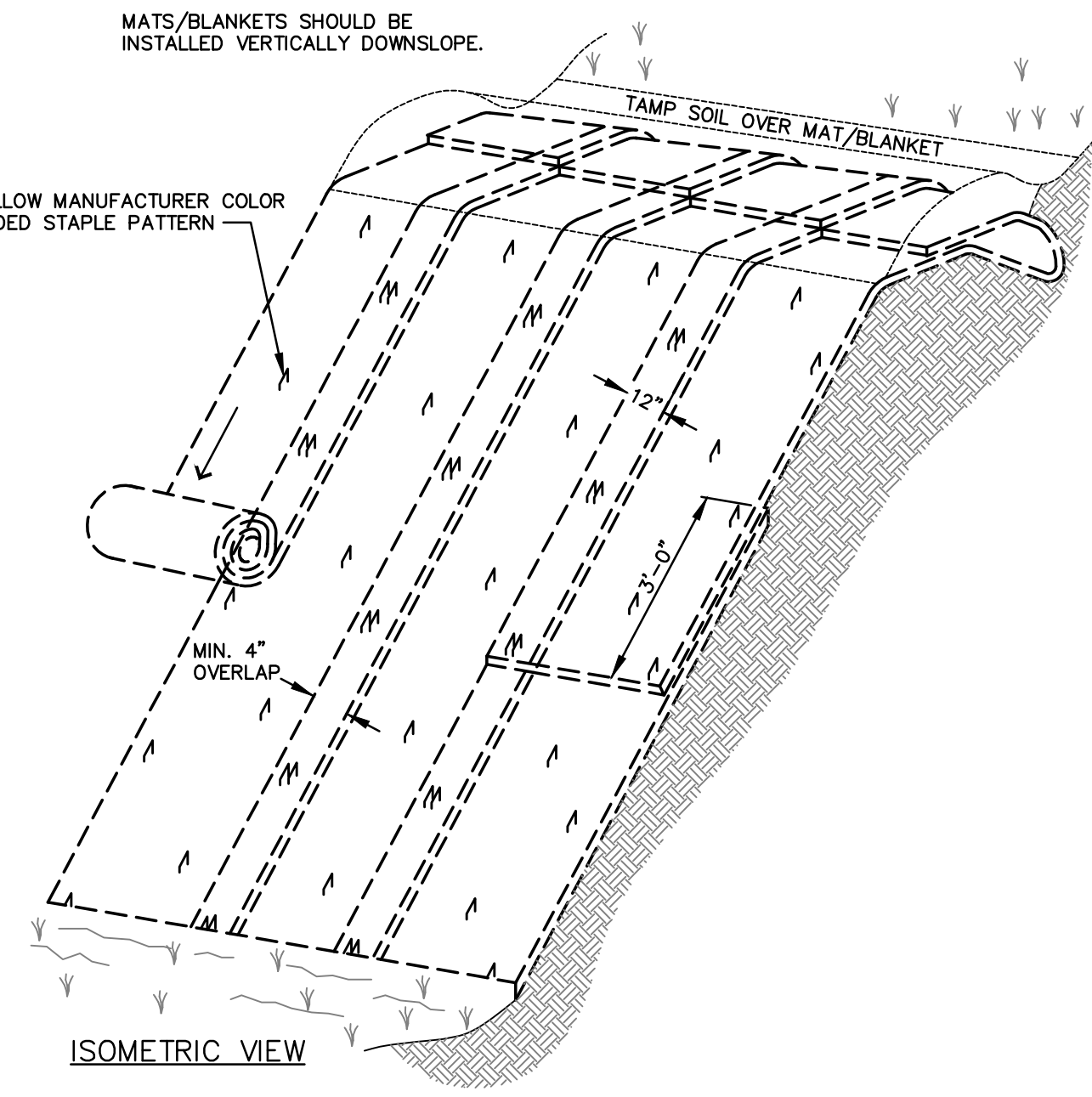
HOUSEKEEPING (APPENDIX C)

1. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1-800-482-0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT: [HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLSRES/](http://www.maine.gov/dep/spills/emergspillsres/)



2. GROUNDWATER PROTECTION: DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SLUMPS, AND OTHER FORMS OF SECONDARY CONTAMINANT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.
- NOTE: LACK OF APPROPRIATE POLLUTANT REMOVAL BEST MANAGEMENT PRACTICES (BMPs) MAY RESULT IN VIOLATIONS OF THE GROUNDWATER QUALITY STANDARD ESTABLISHED BY 38 M.R.S.A. §465-C(1).
3. FUGITIVE SEDIMENT AND DUST: ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEEP IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.
- NOTE: DEWATERING A STREAM WITHOUT A PERMIT FROM THE DEPARTMENT MAY VIOLATE STATE WATER QUALITY STANDARDS AND THE NATURAL RESOURCES PROTECTION ACT.
4. DEBRIS AND OTHER MATERIALS: MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
- NOTE: TO PREVENT THESE MATERIALS FROM BECOMING A SOURCE OF POLLUTANTS, CONSTRUCTION AND POST-CONSTRUCTION ACTIVITIES RELATED TO A PROJECT MAY BE REQUIRED TO COMPLY WITH APPLICABLE PROVISIONS OF RULES RELATED TO SOIL, UNIVERSAL, AND HAZARDOUS WASTE, INCLUDING, BUT NOT LIMITED TO, THE MAINE SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT RULES; MAINE HAZARDOUS WASTE MANAGEMENT RULES; MAINE OIL CONVEYANCE AND STORAGE RULES; AND MAINE PESTICIDE REQUIREMENTS.
5. EXCAVATION DEWATERING: EXCAVATION DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SiltED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE. LIKE A COFFERDAM SEDIMENTATION BASIN, AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.
- NOTE: DEWATERING CONTROLS ARE DISCUSSED IN THE "MAINE EROSION AND SEDIMENT CONTROL BMPs, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION."
6. AUTHORIZED NON-STORMWATER DISCHARGES: IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
 - DISCHARGES FROM FIREFIGHTING ACTIVITY;
 - FIRE HYDRANT FLUSHINGS;
 - VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE, AND TRANSMISSION WASHING IS PROHIBITED);
 - DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX C(3);
 - ROUTINE EXTERIOR WASHING OF VEHICLES FOR PAINT REMOVAL. THIS DOES NOT INVOLVE DETERGENTS;
 - PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
 - UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
 - UNCONTAMINATED GROUNDWATER OR SPRING WATER;
 - FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
 - UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
 - POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
 - LANDSCAPE IRRIGATION
7. UNAUTHORIZED NON-STORMWATER DISCHARGES: THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
 - WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
 - FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
 - SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
 - TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.
8. ADDITIONAL REQUIREMENTS: ADDITIONAL REQUIREMENTS MAY BE APPLIED ON A SITE-SPECIFIC BASIS.



Drawing Name: C:\Users\Stacy\Documents\Drawings\2023-2024\Maine Connector Road\Drawings\2023-2024\Details\Detail 0001.dwg / Title: Rev. 6, 23 / 2:49 PM

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
B	9/22/2023	FOR DEVELOPMENT REVIEW									
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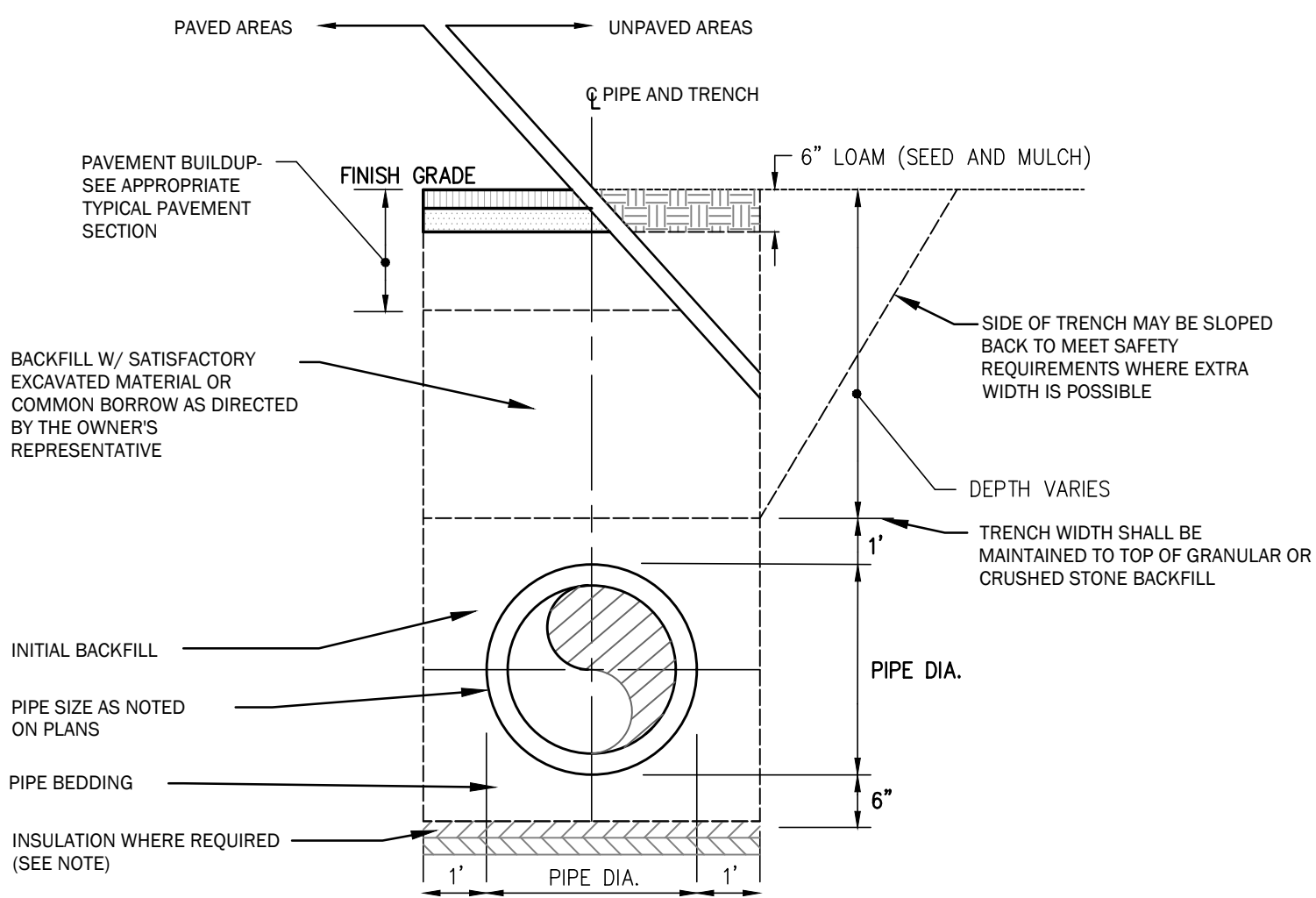
Site Design Associates
Consulting Engineering & Land
Planning

23 Whitney Way
Topsham, Maine 04086
Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	EROSION AND SEDIEMENTATION CONTROL NOTES AND DETAILS
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-400

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

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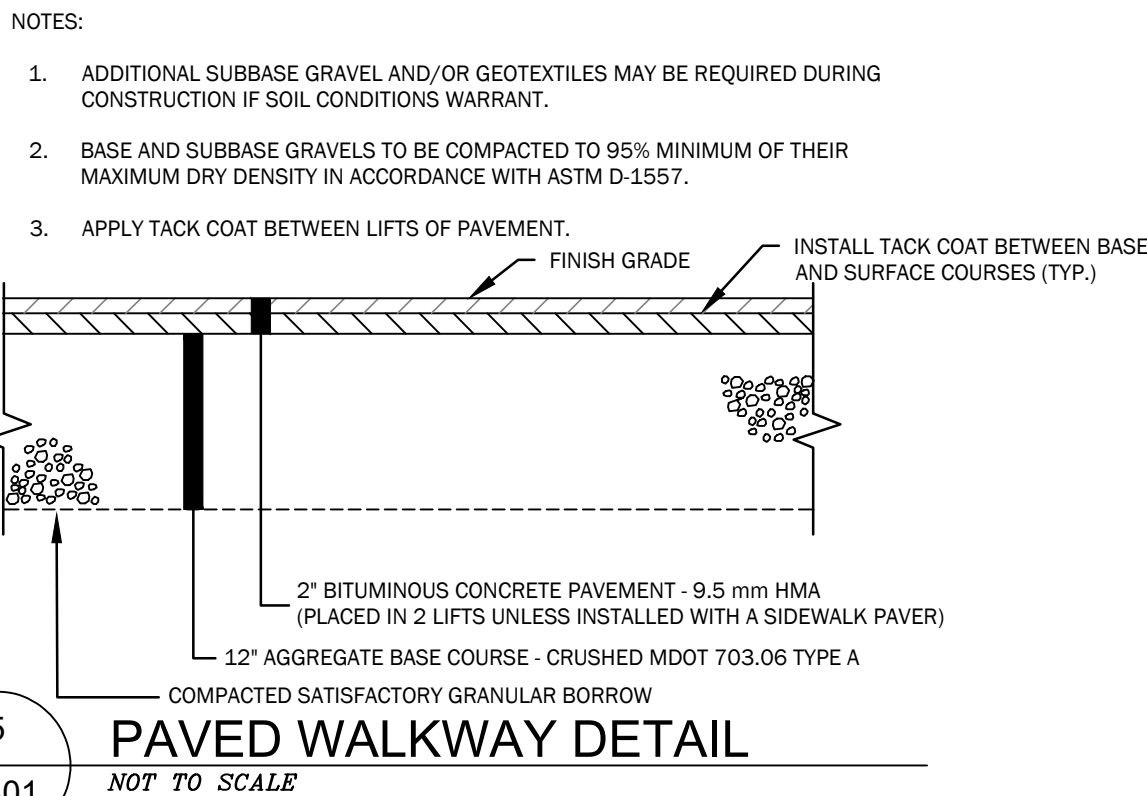
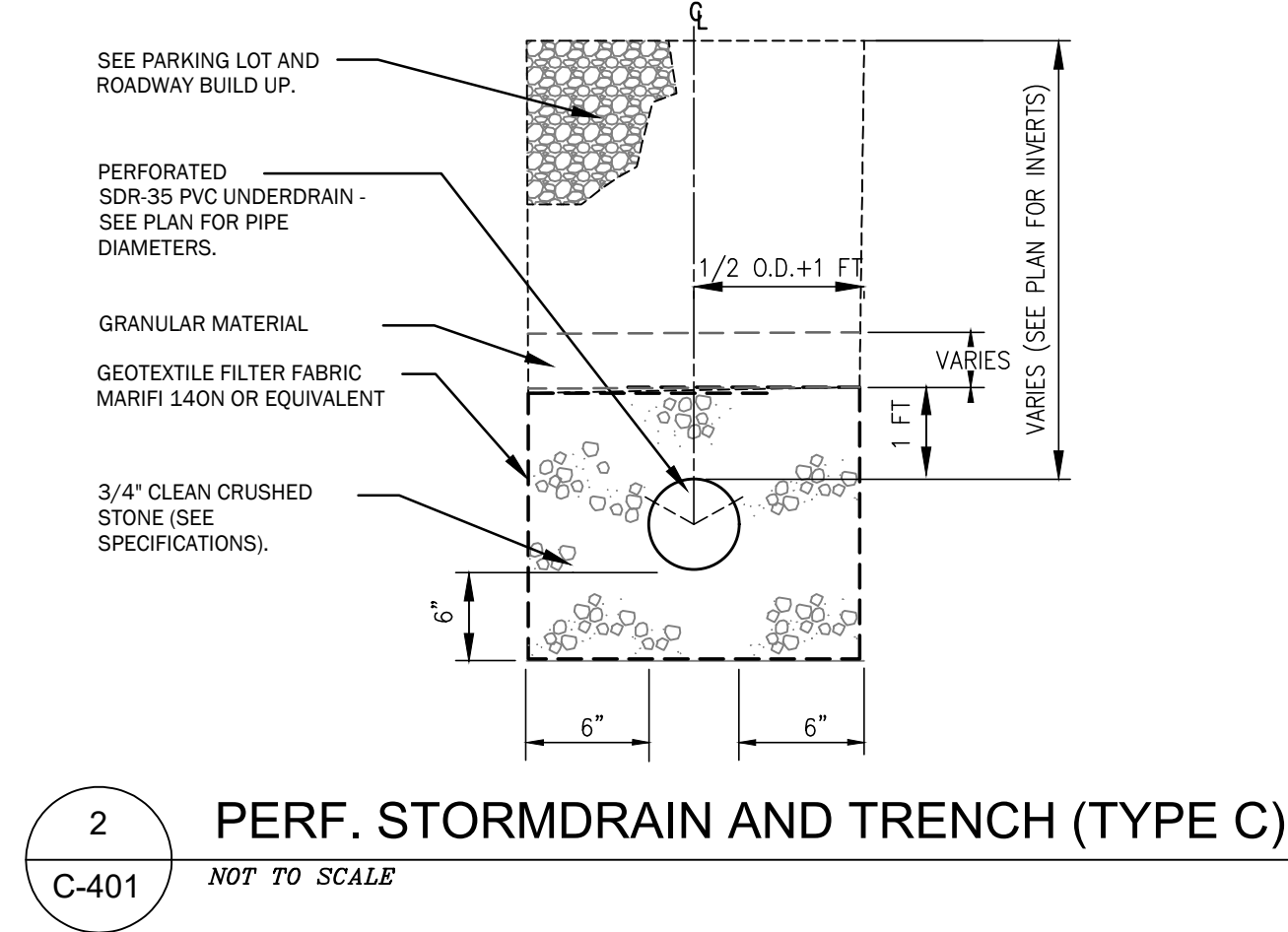
TRENCH BACKFILL SCHEDULE

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

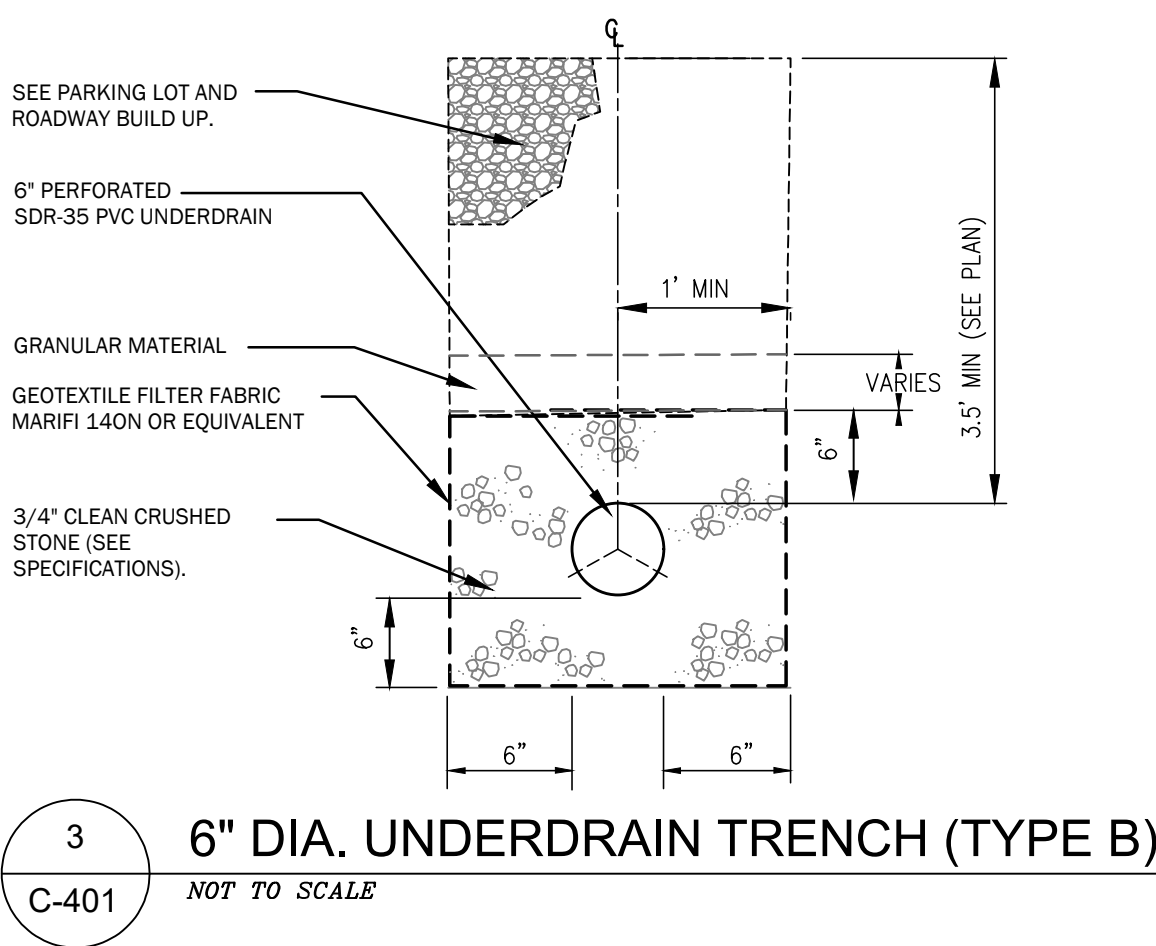
** EXCAVATED MATERIAL MUST BE REVIEWED AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

GRANULAR MATERIAL TO BE SAND OR GRAVEL.

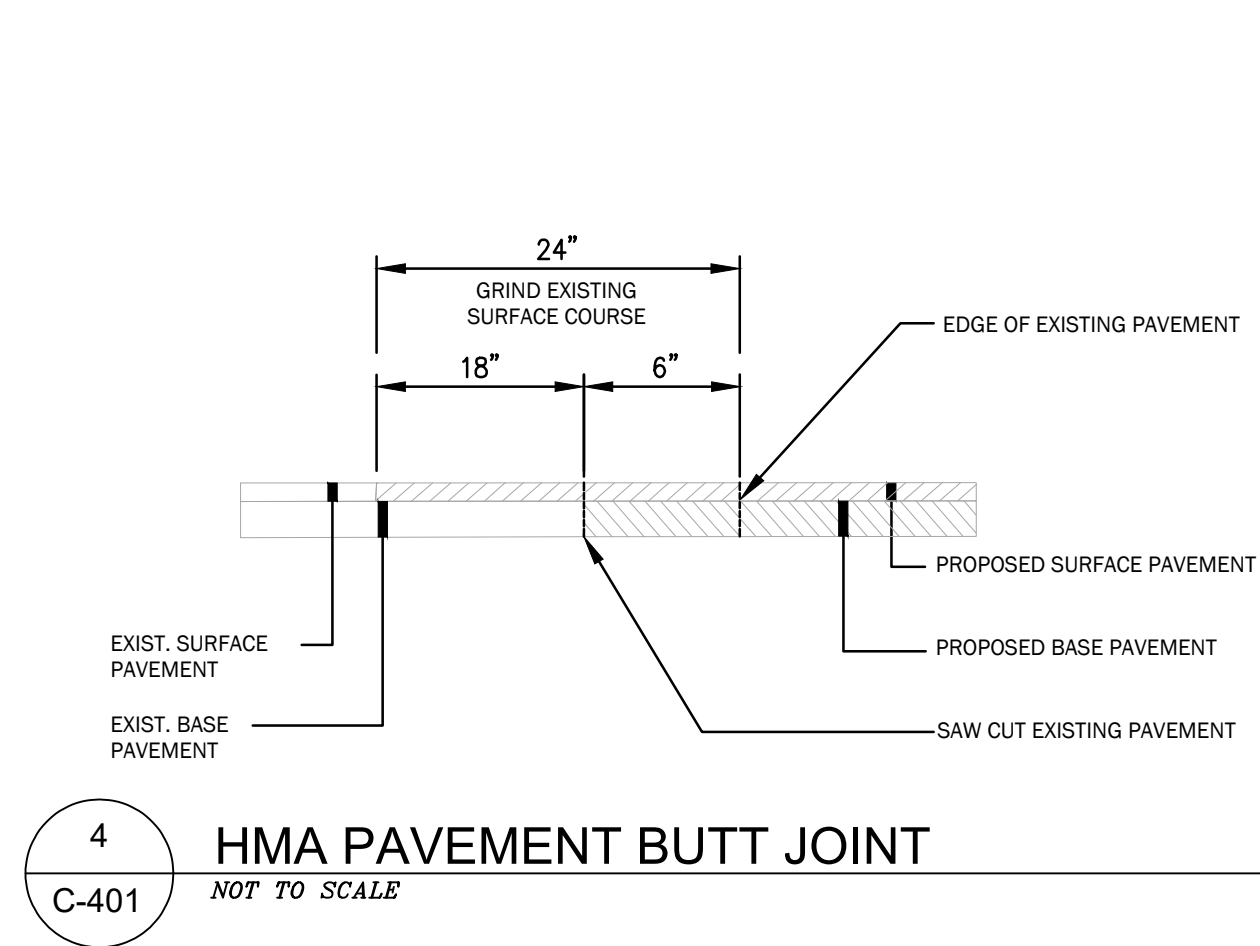
1 TYPICAL TRENCH SECTION
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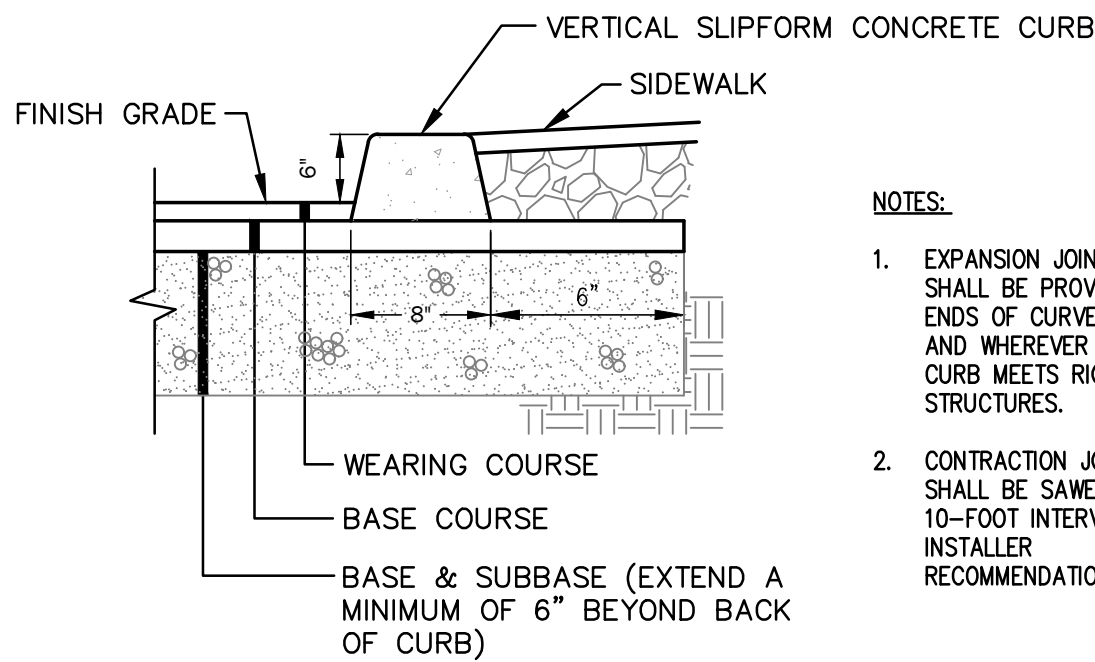
5 PAVED WALKWAY DETAIL
C-401 NOT TO SCALE



3 6" DIA. UNDERDRAIN TRENCH (TYPE B)
C-401 NOT TO SCALE



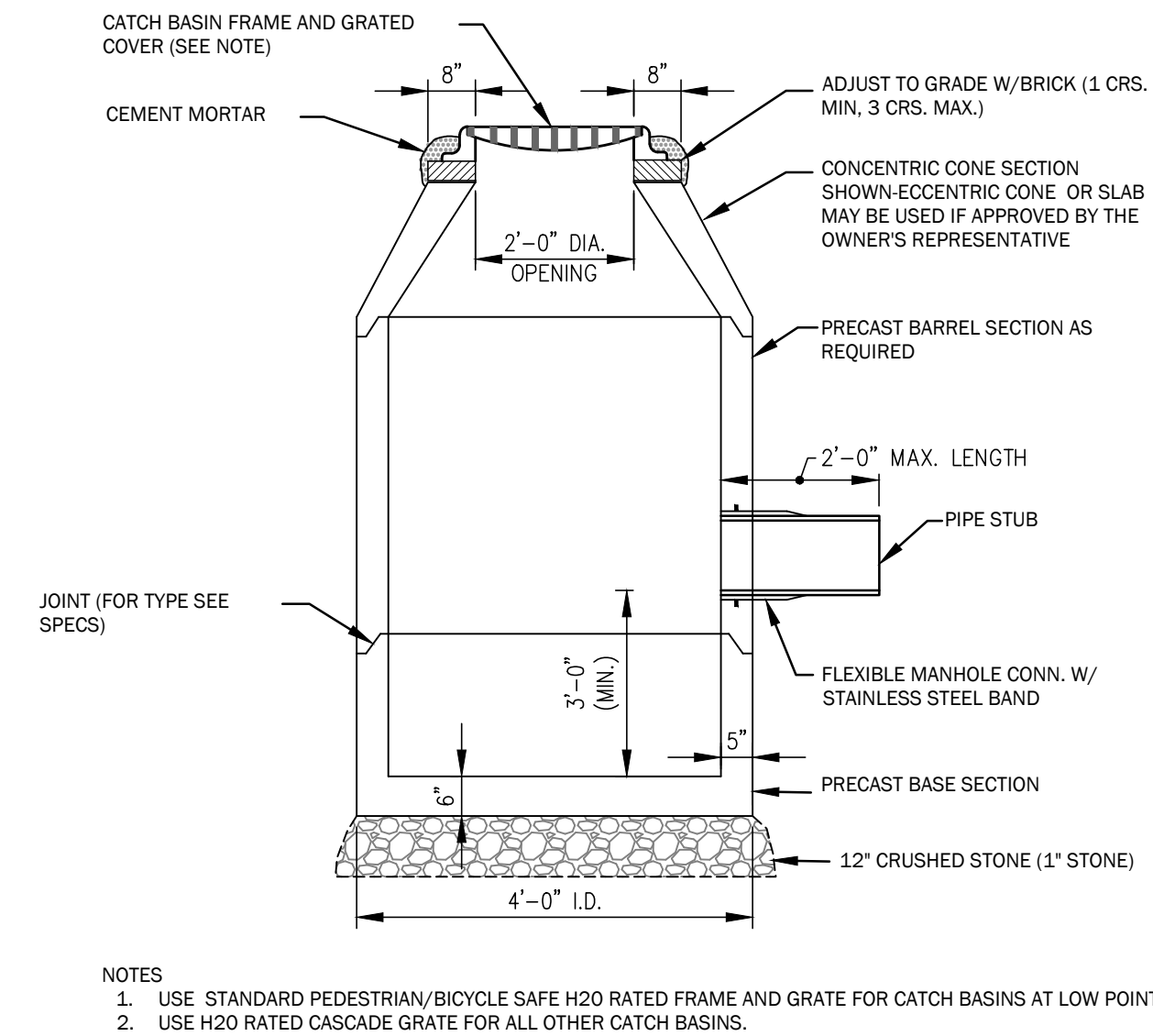
4 HMA PAVEMENT BUTT JOINT
C-401 NOT TO SCALE



NOTES:

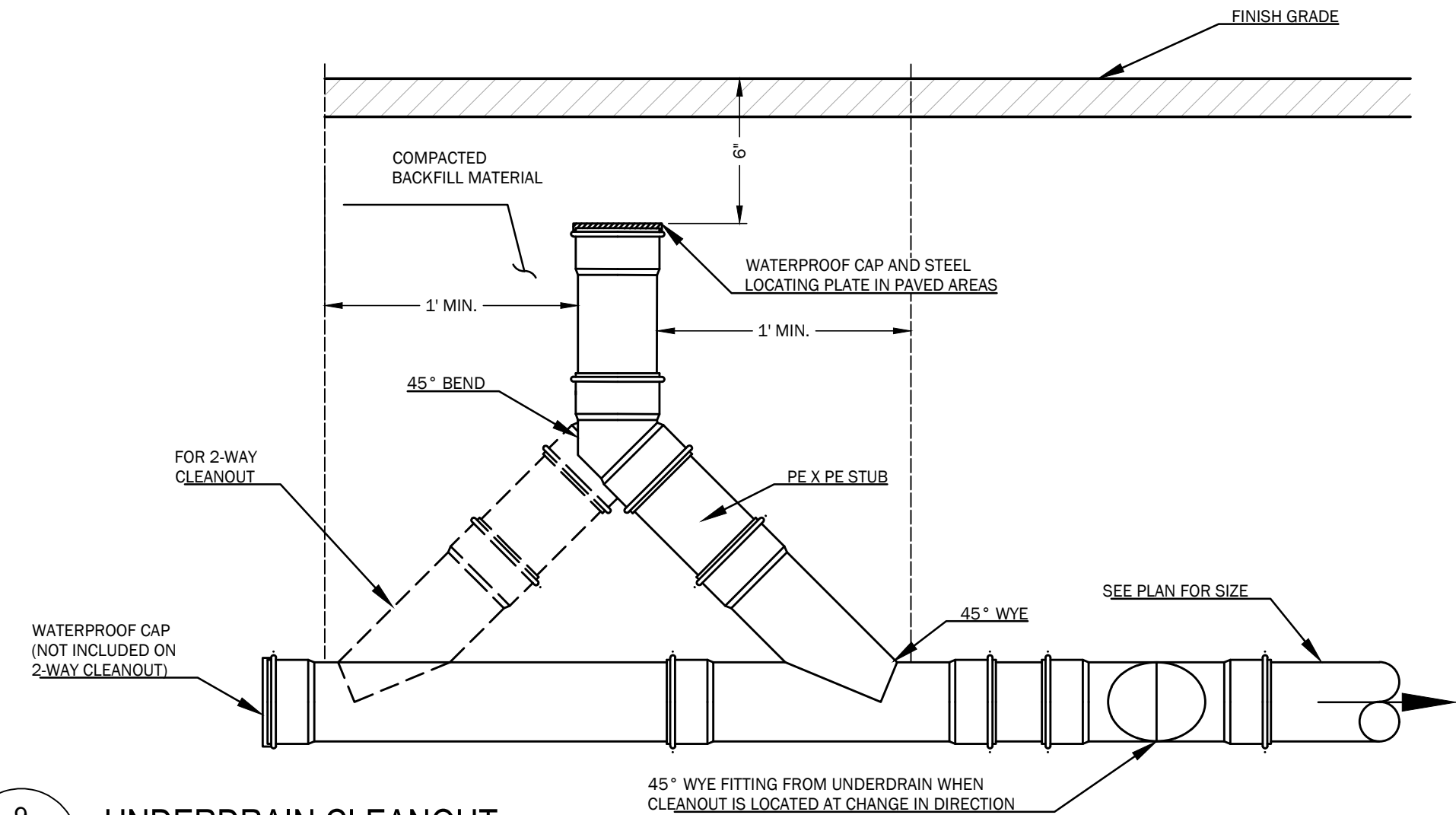
- EXPANSION JOINTS SHALL BE PROVIDED AT ENDS OF CURB RADI AND WHEREVER THE CURB MEETS RIGD STRUCTURES.
- CONTRACTION JOINTS SHALL BE SAIED AT 10-FOOT INTERVALS PER INSTALLER RECOMMENDATIONS.

7 SLIPFORM CONCRETE CURB
C-401 NOT TO SCALE

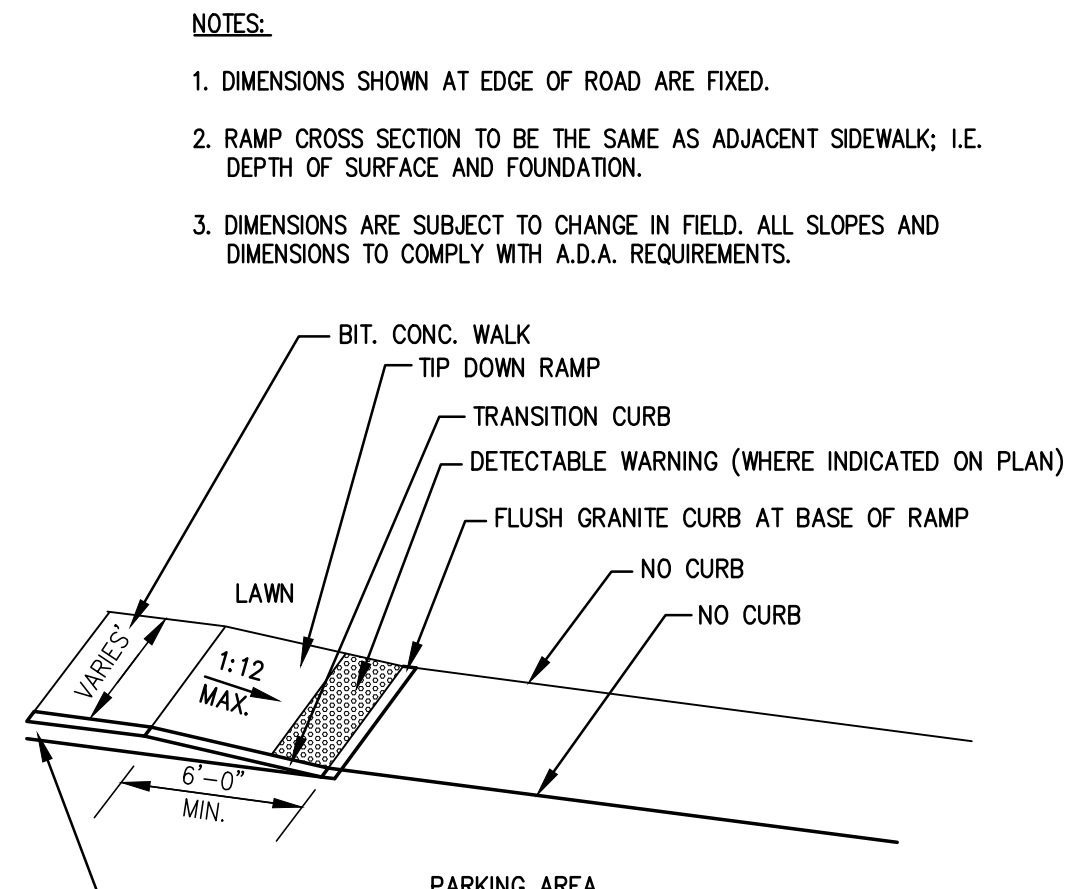


- NOTES:
- USE STANDARD PEDESTRIAN/BICYCLE SAFE H20 RATED FRAME AND GRATE FOR CATCH BASINS AT LOW POINTS
 - USE H20 RATED CASCADE GRATE FOR ALL OTHER CATCH BASINS.

8 CATCH BASIN DETAIL
C-401 NOT TO SCALE



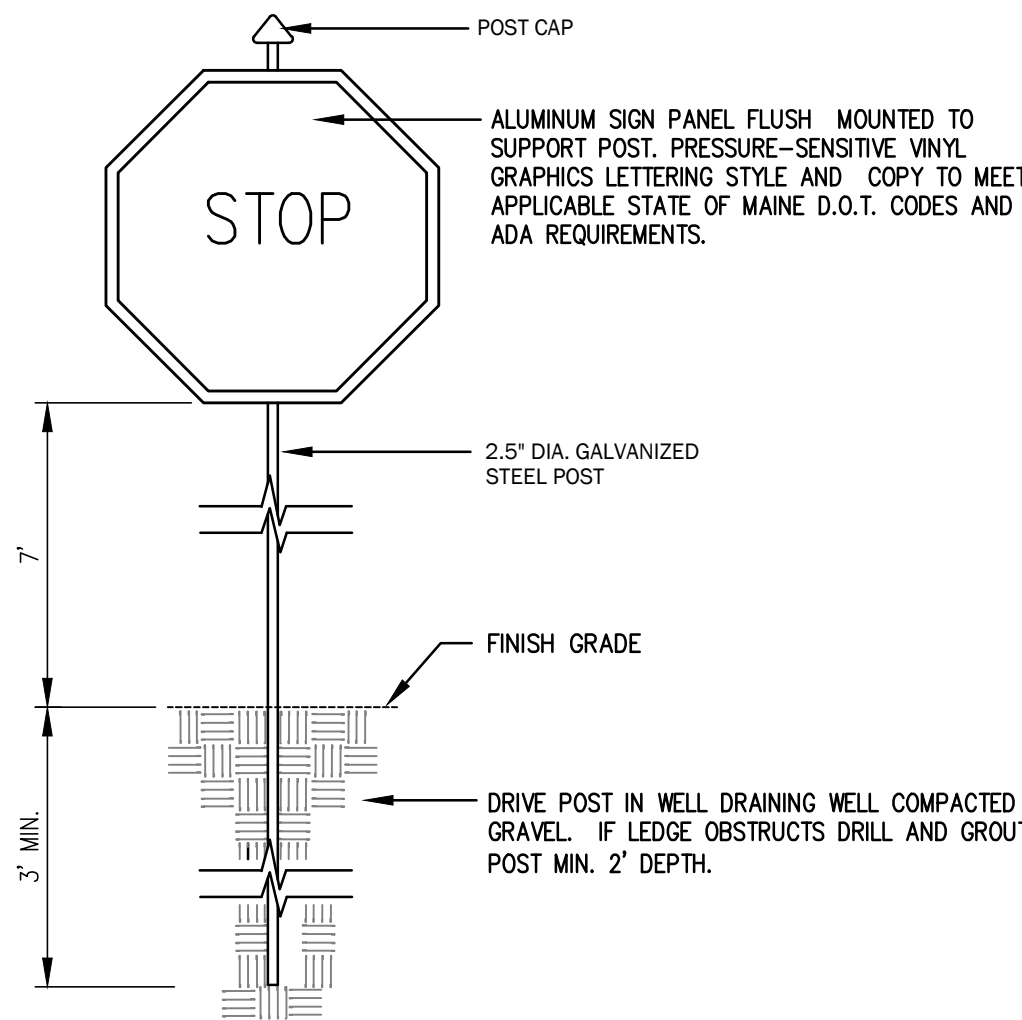
9 UNDERDRAIN CLEANOUT
C-401 NOT TO SCALE



NOTES:

- DIMENSIONS SHOWN AT EDGE OF ROAD ARE FIXED.
- RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK; I.E. DEPTH OF SURFACE AND FOUNDATION.
- DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. REQUIREMENTS.

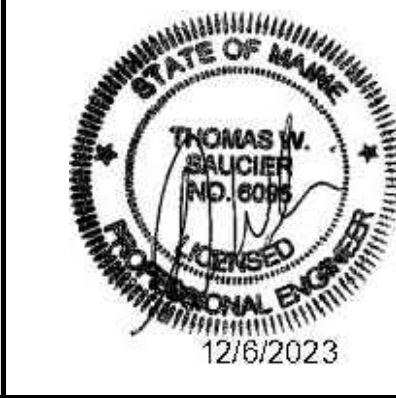
10 PEDESTRIAN CURB RAMP
C-401 NOT TO SCALE



11 STOP SIGN DETAIL
C-401 NOT TO SCALE

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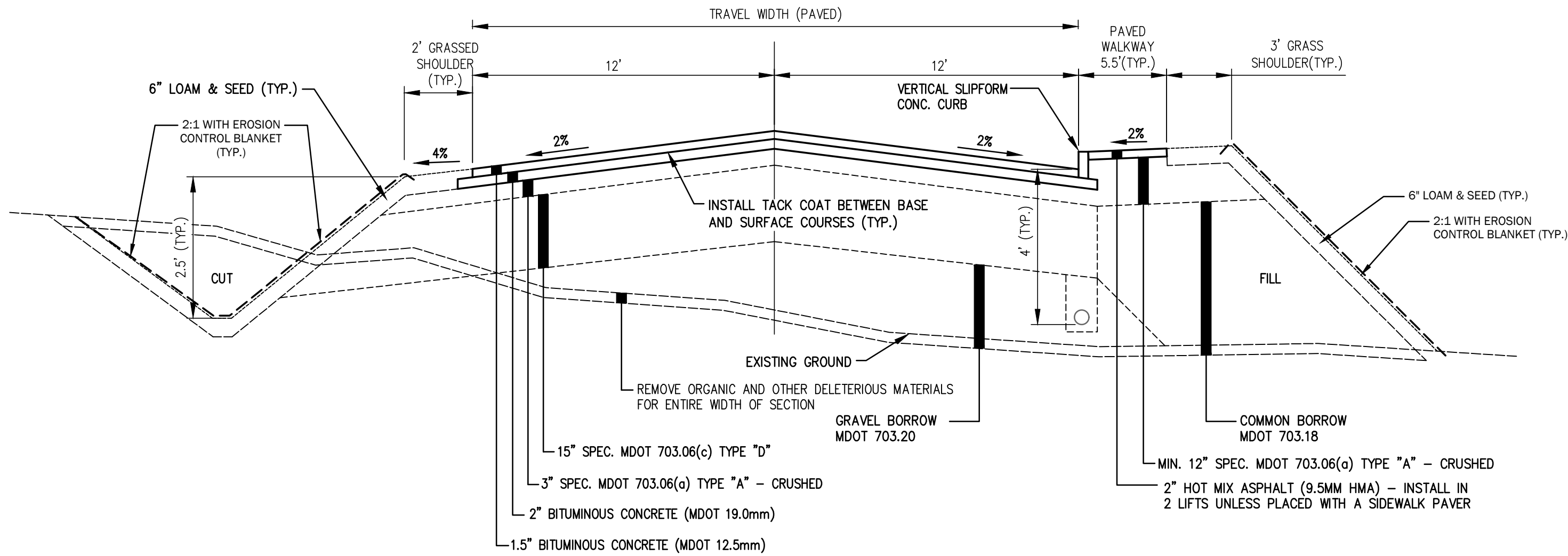


Site Design Associates
Consulting Engineering & Land Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

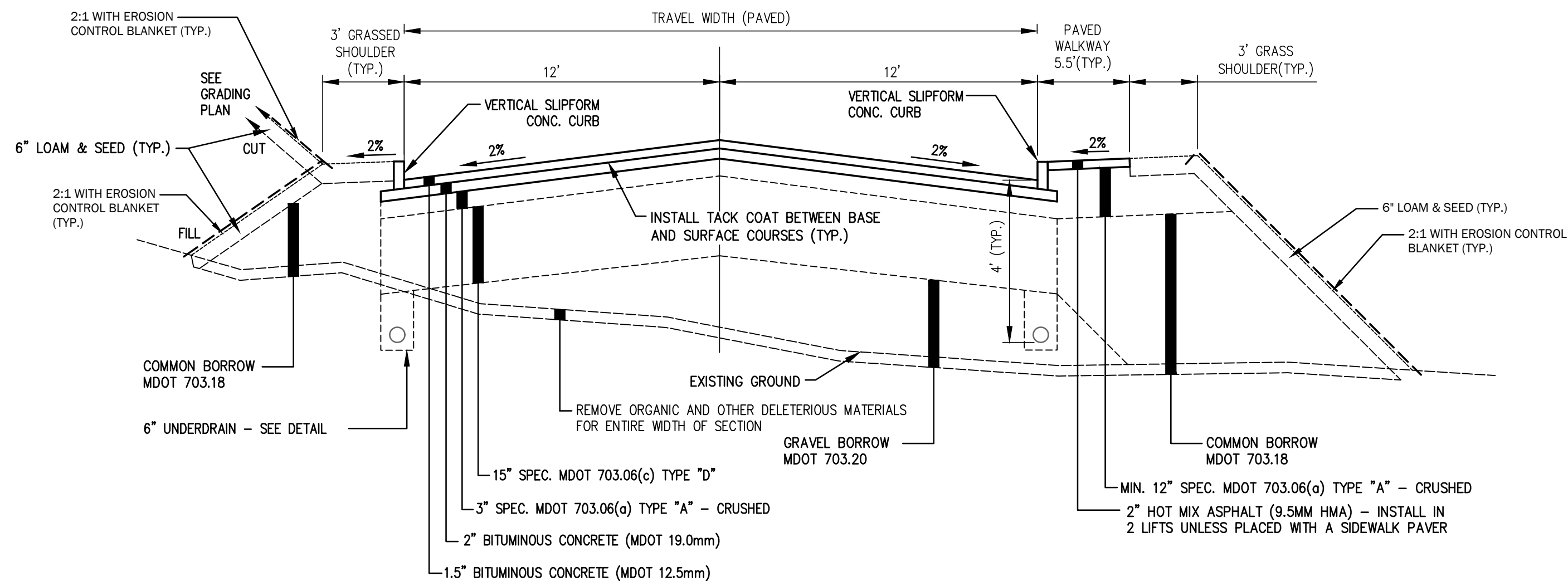
DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE DETAILS
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-401

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

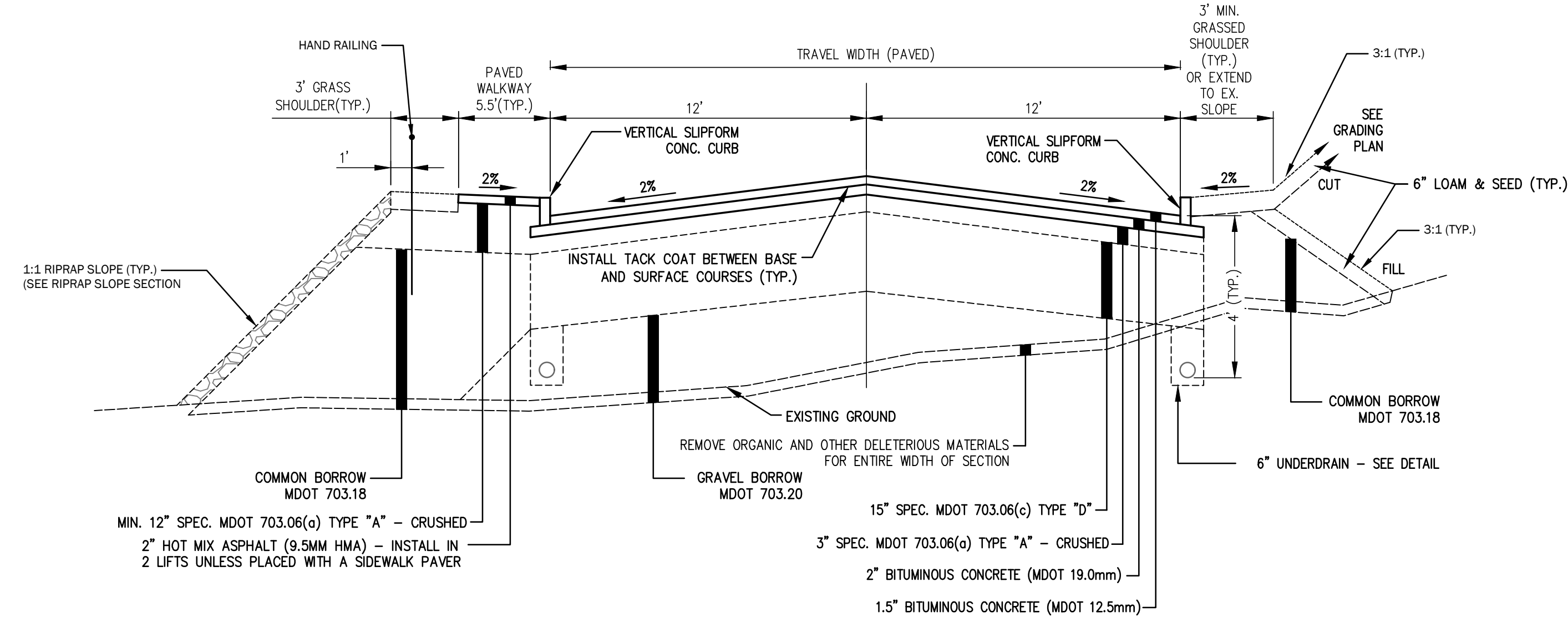
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1
C-402
CONNECTOR DRIVE SECTION (STA 4+00 TO 18+40)
NOT TO SCALE



2
C-402
CONNECTOR DRIVE SECTION (STA 18+40 TO 20+87)
NOT TO SCALE

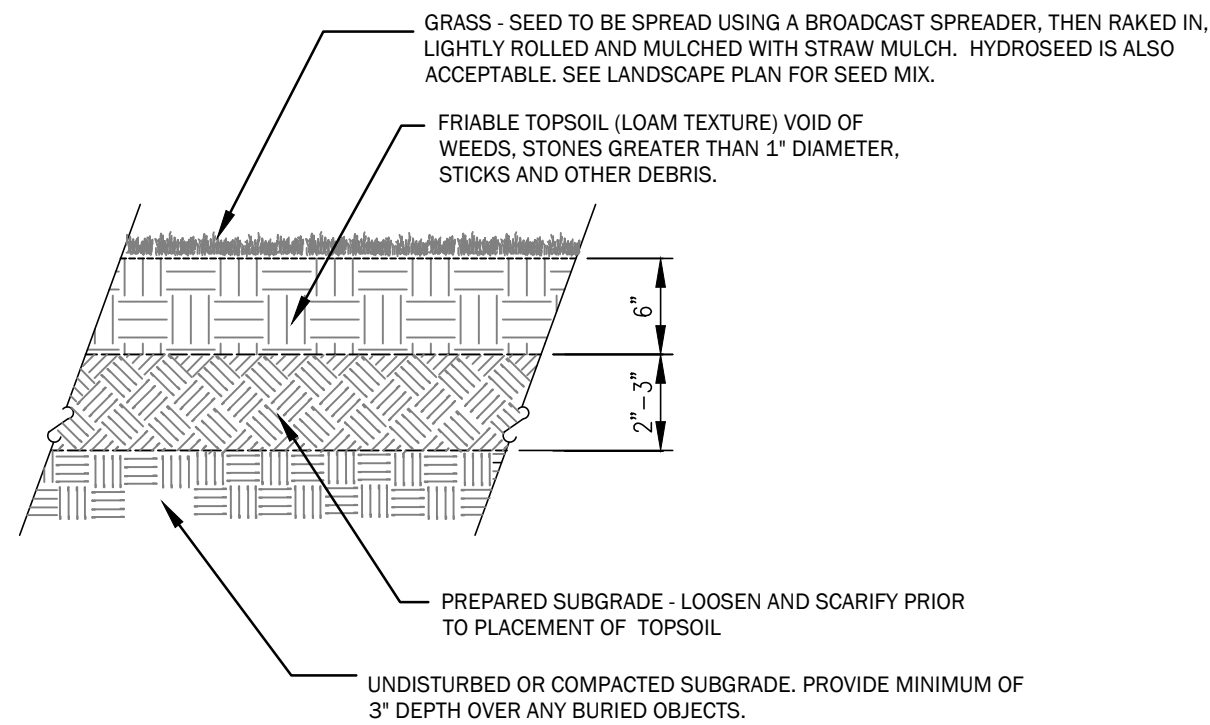


3
C-402
COLLEGE STREET EXT. SECTION
NOT TO SCALE

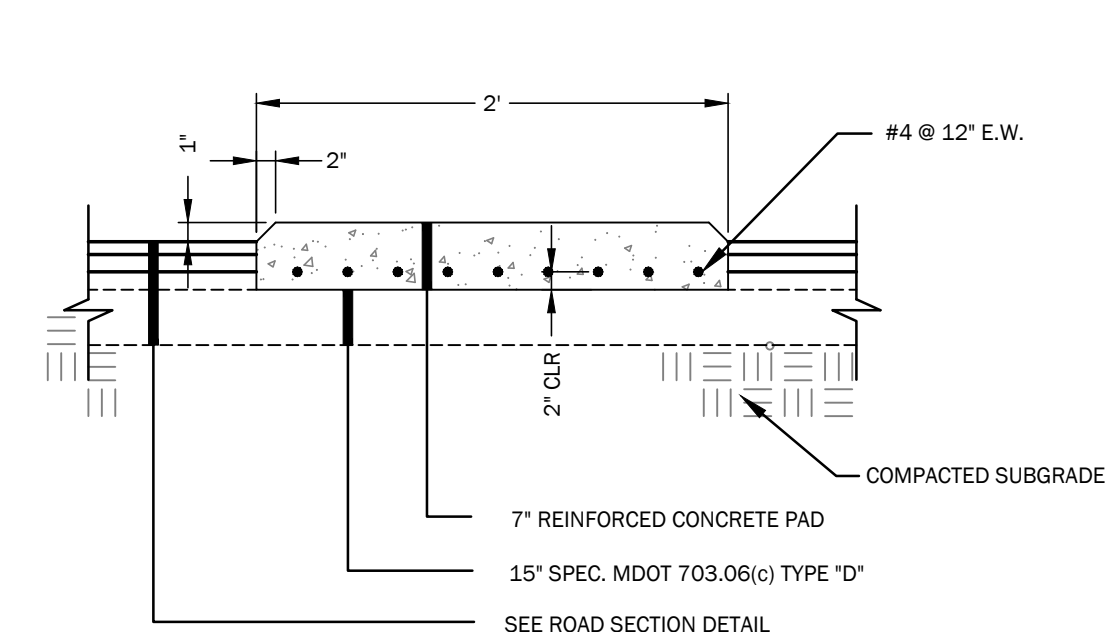
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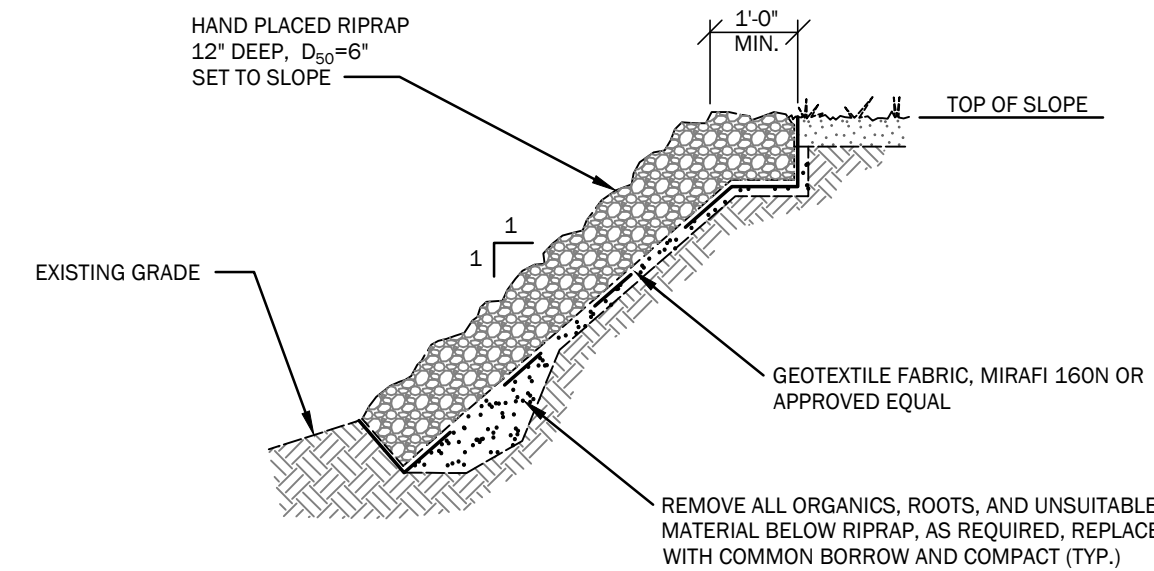
- NOTES:
- THE CONTRACTOR SHALL PROVIDE TOPSOIL (LOAM) MEETING THE FOLLOWING SPECIFICATIONS.
 - NATURAL, FERTILE LOAM TYPICAL OF CULTIVATED TOPSOIL OF THE LOCALITY, CONTAINING NOT LESS THAN 3.5 PERCENT OR MORE THAN 8 PERCENT BY WEIGHT, OF DECAHED-ORGANIC MATTER (HUMUS) AS DETERMINED BY ASTM F1547.
 - OBTAIN FROM A WELL DRAINABLE SITE, FREE OF SUBSOIL, EARTH CLODS, LARGE STONES, STICKS, STUMPS, CLAY LUMPS, ROOTS, OR OTHER OBJECTIONABLE, EXTRANEOUS MATTER OR DEBRIS, SCREEN TOPSOIL TO A MAXIMUM STONE SIZE OF ONE INCH.
 - TOPSOIL SHALL BE FREE OF QUACK-GRASS RHIZOMES, AGROPYRON REPEMS, AND THE NUT-LIKE TUBERS OF NUTGRASS, CYPERUS ESCULENTUS, AND ALL OTHER PRIMARY NOXIOUS WEEDS.
 - TOPSOIL SHALL HAVE A PH OF NOT LESS THAN 6.0 OR GREATER THAN 6.8. AMEND WITH LIME AS REQUIRED.
 - TOPSOIL SHALL HAVE A LOAM TEXTURE CLASSIFICATION. TOPSOIL (LOAM) SHALL CONFORM TO THE FOLLOWING PARTICLE SIZE DISTRIBUTION, AS DETERMINED BY PIPETTE METHOD IN COMPLIANCE WITH ASTM F1632.
 - SAND: 40-60 PERCENT.
 - SILT: 30-40 PERCENT.
 - CLAY: 5-20 PERCENT.
 - DO NOT DELIVER OR USE TOPSOIL WHILE IN A FROZEN OR MUDDY CONDITION.
- IN LIEU OF PROVIDING AND FOLLOWING THE SOIL ANALYSIS REQUIRED IN NOTE 1 ABOVE THE CONTRACTOR CAN INSTEAD ELECT TO INCORPORATE THE FOLLOWING INTO THE TOP 6 INCHES OF TOPSOIL: 20 LBS. OF 10-20-10 FERTILIZER PER 1,000 S.F., 70 LBS. OF MAGNESIUM LIME PER 1,000 S.F., AND 3 CUBIC YARDS OF COMPOST PER 1,000 S.F.



4
C-402
LAWN INSTALLATION DETAIL
NOT TO SCALE

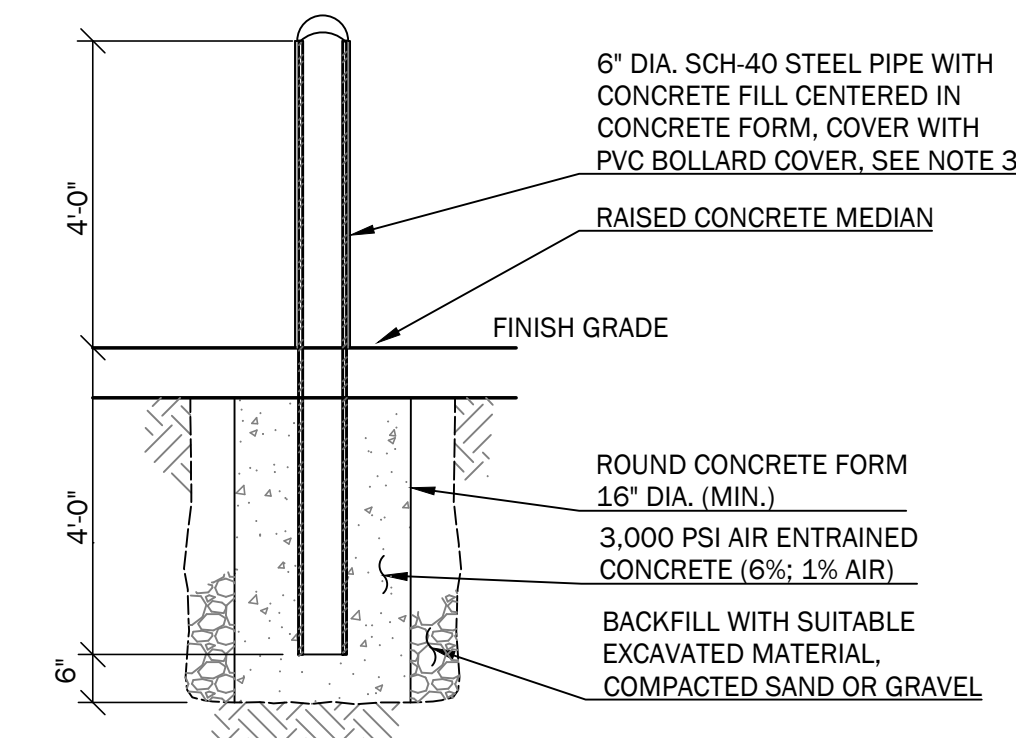


5
C-402
RAISED CONCRETE MEDIAN
NOT TO SCALE



6
C-402
RIPRAP SLOPE SECTION
NOT TO SCALE

- NOTES:
- PRIOR TO PLACING BOLLARD IN FORM, PAINT BOLLARD WITH A "RUST INHIBITIVE" STEEL PRIMER EQUAL TO RUSTOLEUM 7769 RUSTY METAL PRIMER OR 7780 CLEAN METAL PRIMER AS APPROPRIATE AND 1 COAT OF RUSTOLEUM TOP COAT OR SHERWIN WILLIAMS "RUST TOUGH" PRIMER, AND 1 TOP COAT OF SHERWIN WILLIAMS "SUPER PAINT".
 - SUPPORT BOLLARD FROM ABOVE GROUND PRIOR TO PLACING CONCRETE IN THE ROUND CONCRETE FORM. DO NOT SUPPORT VERTICALLY WITH AN OBJECT PLACED IN THE FORM.
 - ONCE INSTALLED, COVER WITH A POLYETHYLENE SLEEVE EQUAL TO THAT MANUFACTURED BY EAGLE, TRIMMED TO FIT BOLLARD HEIGHT SPECIFIED. COLOR TO BE SELECTED BY OWNER. SUBMIT COLOR SAMPLES.



7
C-402
STEEL BOLLARD DETAIL
NOT TO SCALE



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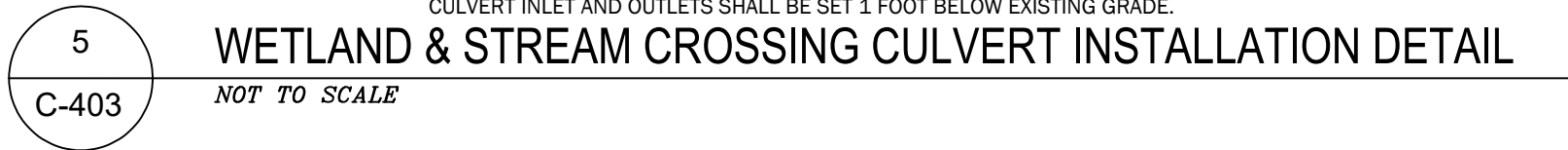
Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275

CLIENT: UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE DETAILS
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-402

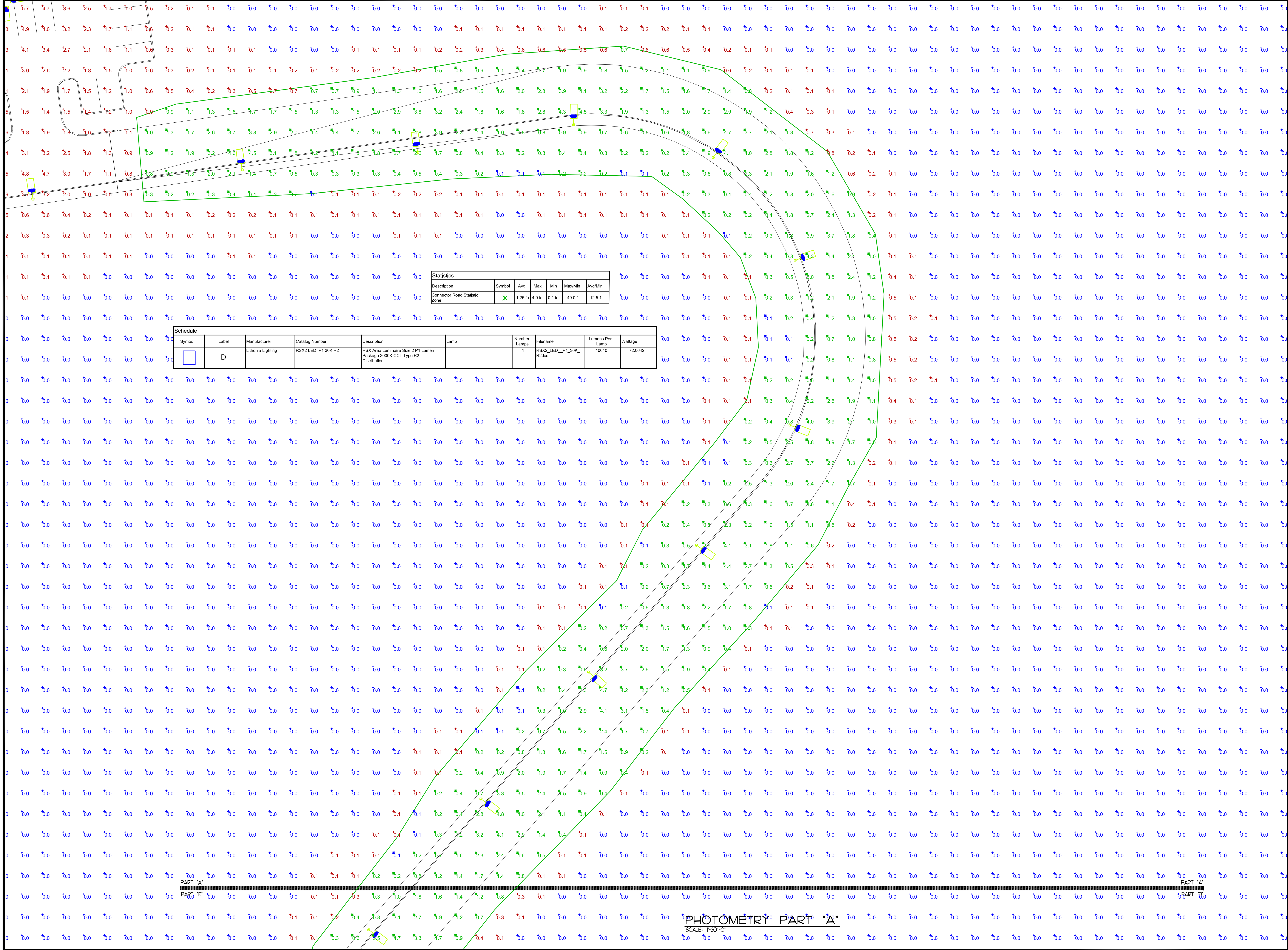
TAX MAP I.D.
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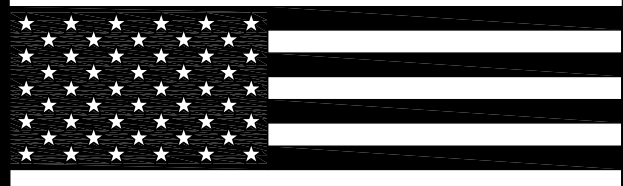


Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Connector Road Statistic Zone	✖	1.25 fc	4.9 fc	0.1 fc	49.0:1	12.5:1

Schedule						
Symbol	Label	Manufacturer	Catalog Number	Description	Lamp	
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					Number Lamps	1
					Filename	RSX2_LED_P1_30K_R2.lvs
					Lumens Per Lamp	10040
					Wattage	72.0542



VINCENT A. DIORIO, INC.
CONSULTING ENGINEERS
89 Access Rd. Suite 18
Norwood, MA 02062
(781)255-9754 | vadjr@vadeng.com
www.vadeng.com



REVISIONS:

REV. DATE DESCRIPTION

REV.	DATE	DESCRIPTION



37 Jordan Avenue, Brunswick, ME 04011 • PH: 207-725-2005

CLIENT:

UNIVERSITY OF
NEW ENGLAND

PROJECT:

Intermodal Transportation,
Facility, Parking Lot
Improvements

DRAWING TITLE

CONNECTOR ROAD
PHOTOMETRY PART "A"

DRAWN:

CWQ

CHECKED:

VAD Jr

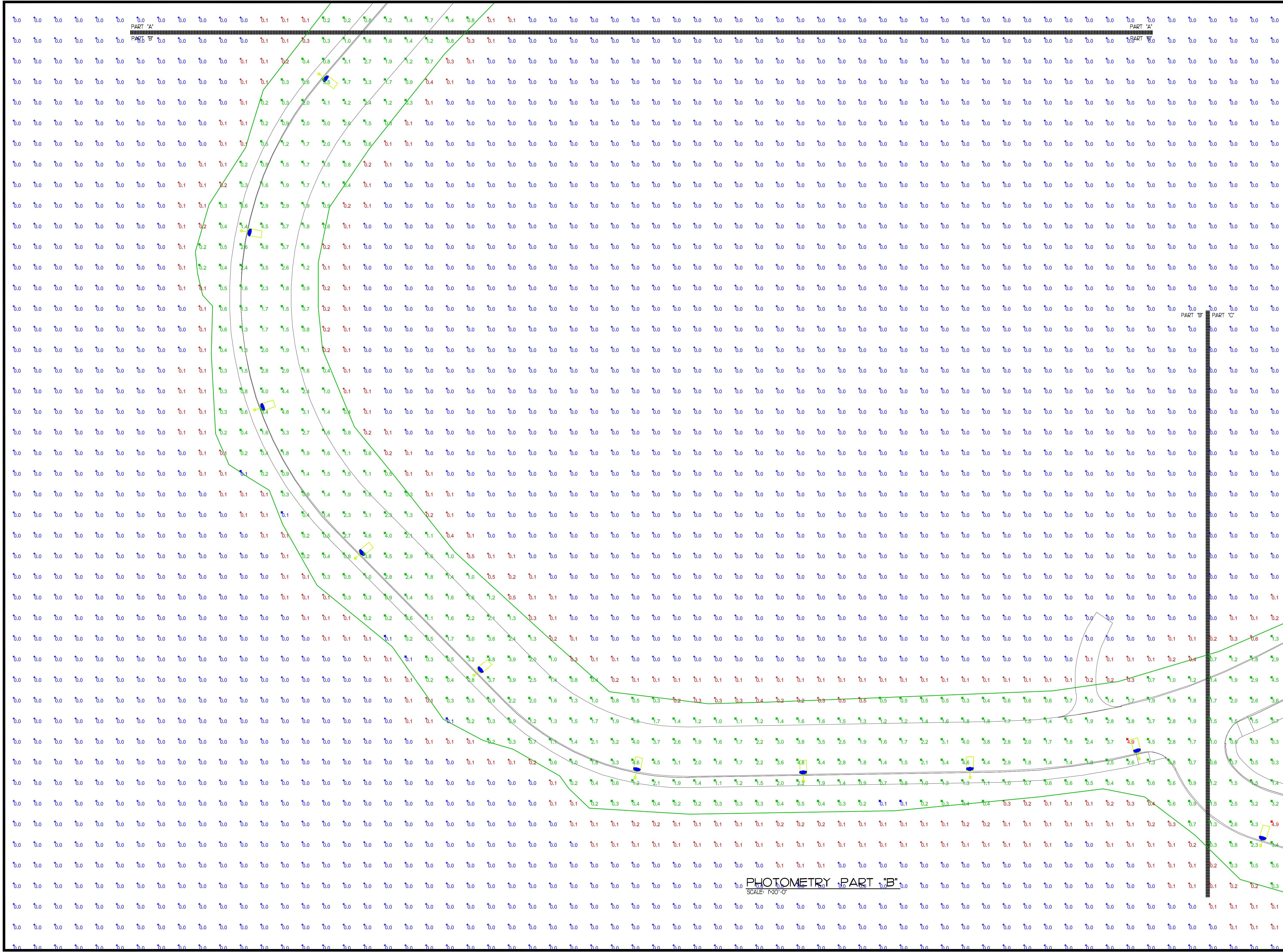
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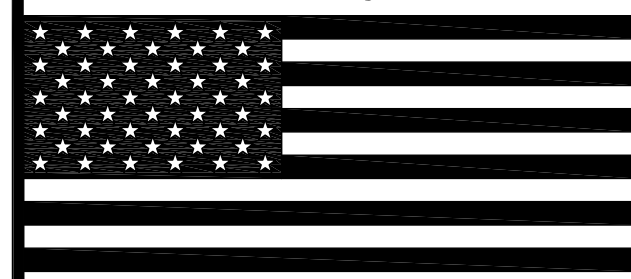
DATE:

NOVEMBER 13, 2023

PH2.1A



PHOTOMETRY PART "B"
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REVISIONS:		
REV.	DATE	DESCRIPTION

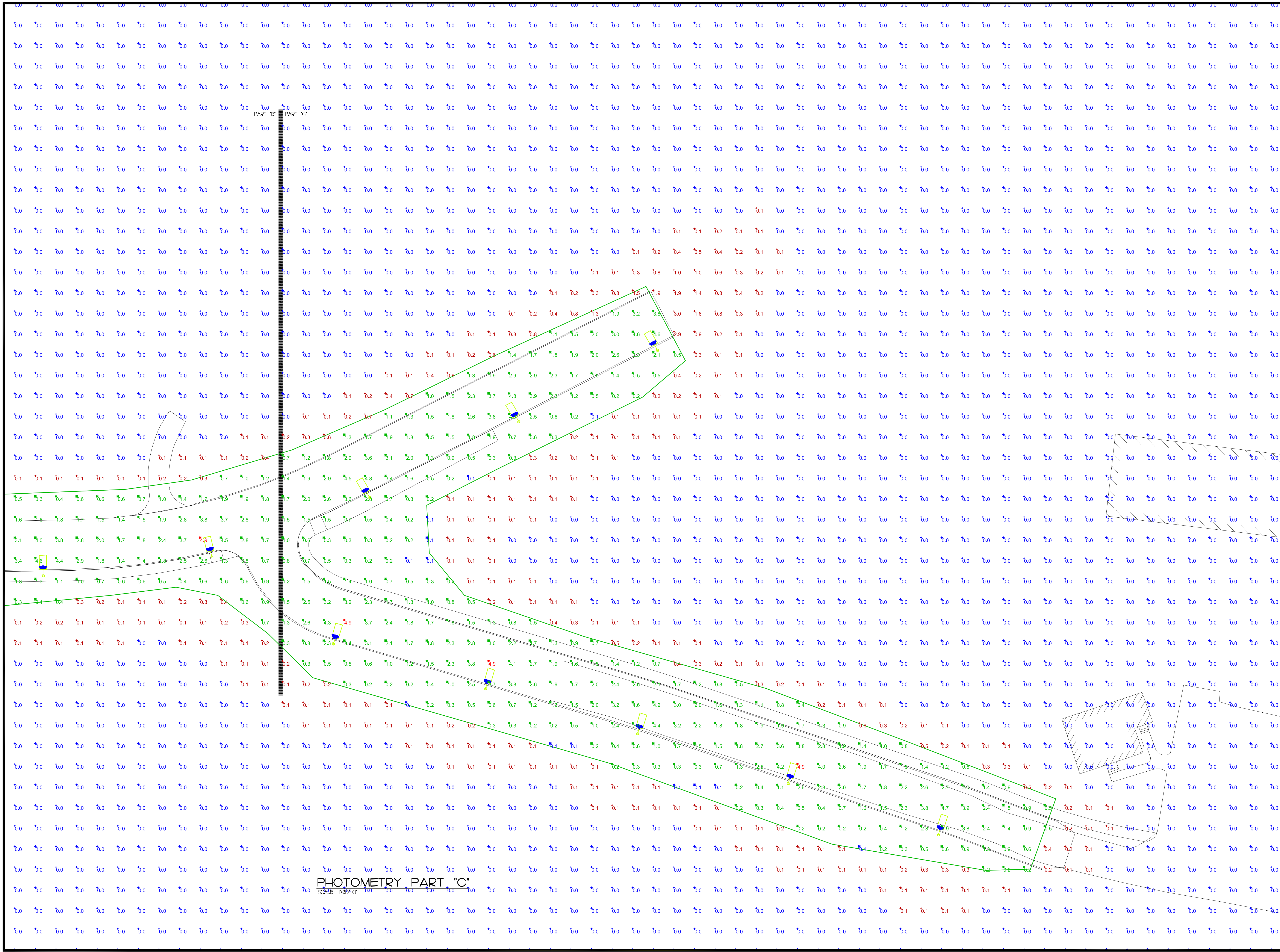
CLIENT:
**UNIVERSITY OF
NEW ENGLAND**

PROJECT:
**Intermodal Transportation,
Facility, Parking Lot
Improvements**

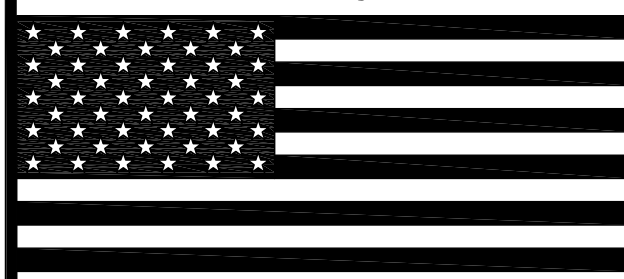
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**CONNECTOR ROAD
PHOTOMETRY PART "B"**

DRAWN: CWQ
CHECKED: VAD Jr
SCALE: 1"=20'=0"
DATE: NOVEMBER 13, 2023

PH2.1B



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REVISIONS:		
REV.	DATE	DESCRIPTION



CLIENT:
**UNIVERSITY OF
NEW ENGLAND**

PROJECT:
**Intermodal Transportation,
Facility, Parking Lot
Improvements**

DRAWING TITLE
**CONNECTOR ROAD
PHOTOMETRY PART "C"**

DRAWN: CWQ
CHECKED: VAD Jr
SCALE: 1"=20'-0"
DATE: NOVEMBER 13, 2023

PH2.1C

Site Design Associates

Consulting Engineering and Land Planning

January 16, 2024

Maya Balassa, Planner
City of Portland
Via email

**RE: University of New England
Major Site Plan Application for:
Connector Drive
PL-002666-2023
83 College Street
Response to January 9, 2024 Planning Board Memo**

Dear Maya;

On behalf of University of New England (UNE), Site Design Associates (SDA) is pleased to provide this response to comments in the planning board memo dated January 9, 2024, and the technical review follow up comments received on January 10, 2024. We have listed each of the comments in the order they were presented followed by our responses.

A. Memo to Planning Board from Maya Balassa dated January 5, 2024, received January 9, 2024

1. Transportation Standards (Section 14.6.1)

Comment: *The City's third-party traffic engineer has attested that 11-foot-wide lanes will function safely as a shared lane with cyclists, while decreasing impervious surface, decreasing wetland impact, and decreasing the number of trees that need to be removed.*

Response: The previous comments related to this issue suggested city staff would like a reduced width to “reduce site disturbance, wetland impacts, vegetation impacts, and stormwater impacts.” As we discussed at the planning board workshop, we do not believe that narrowing the driveway is a safe alternative, nor will it result in any significant reduction in disturbance, wetland impacts, vegetation impacts, or stormwater impacts. We also presented to the planning board an Autoturn analysis that showed UNE’s shuttle would encroach over the center of the drive in several locations with a 22 ft wide travel way. We presented the following justification for not narrowing the drive to the planning board and staff on January 9:

23 Whitney Way Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

- 1) Per the November 14th memo from traffic engineer Diane Morabito, P.E., she endorses the width, based upon the dual use by cyclists and vehicular traffic.
- 2) The 24 ft width is compliant with the city technical standards for drives.
- 3) A shuttle simulation with a 22 ft wide drive shows encroachment over the centerline in several locations in each direction. The 24 ft wide drive analysis shows encroachment over the centerline in one location in each direction. We consulted with our traffic engineer who believes the encroachment is a valid reason that a 24 ft wide travel way is needed, and states, almost all design is driven to minimize encroachment across the centerline.
- 4) Two shuttles will likely be operating in the future.
- 5) DEP has granted a NRPA permit and ACOE permit is pending, with no concerns of environmental impact on their part.
- 6) Narrowing the drive by 2 ft would result in a minimal reduction in wetland impacts; less than 400 sf out of 11,200 sf total.
- 7) Narrowing the drive by 2 ft would result in minimal and/or no reduction in tree clearing and soil disturbance.
- 8) The reduction in impervious area is about 2,900 sf for a 22 ft wide drive compared with the current design, which is very minor when compared with the total reduction in impervious area in the watershed of 160,000 sf for the three most recent UNE projects.
- 9) Staff suggested that because College Street is 18 ft wide at its narrowest point, that is justification for a reduced drive width. The width of College Street at Stevens Ave is 25 ft. At some point we assume the city will reconstruct College Street and the city standard for the new street would be 28 ft or wider.

If UNE believed the drive could be constructed narrower at a lower cost, we certainly would consider that if it made sense.

Comment: *One crosswalk is proposed for pedestrians and cyclists entering the road from the reduced curb cut along Bishop Street at the northern bend. Staff have concerns around the safety of this crosswalk, given how short sightlines are. Staff request either additional signaling or signage for vehicles to increase safety, or the relocation of the sidewalk.*

Response: Advanced warning signage is now shown on the drawings in accordance with MUTCD guidelines. The drive will be posted with a 20 mph speed limit as noted on the drawings. The drive profile and clearing of vegetation necessary for slope construction results in adequate sight lines. MDOT guidelines for crosswalks require 155 ft for stopping sight distance for a 20 mph speed limit. Sight distance will meet or exceed that requirement. Further, given the access from Bishop Street, it is likely that most people would cross there anyway, and this will provide a safer means of crossing at that location.

Comment *During the site plan review of the Intermodal Transportation Facility, the applicant and staff discussed opportunities for connecting existing nearby bicycle and pedestrian facilities through the project site, and agreed to coordinate*

further around this when the Connector Road application was submitted. Improvements here would provide new trail connections for the trails in Evergreen Cemetery, and would fill a portion of an existing gap in the City's Neighborhood Byway network. Trail connections that would serve as neighborhood byway connections from the Connector Road are recommended to be a minimum of 6 feet in width to meet byway standards. City staff are encouraging the applicant to add bicycle parking near the Bishop Street curb cut for public access.

Response: The trail connections are shown as 10 ft wide on the drawings. A bike rack will be added near the existing Bishop Street gate.

2. Environmental Quality Standards (Section 14.6.2):

Comment: *The applicant must also demonstrate that they are preserving significant natural features, which includes freshwater wetlands, to the greatest extent practicable. As mentioned above, Staff are recommending that the applicant reduce the width of the proposed roadway to further reduce the amount of wetland impact.*

Response: A DEP NRPA permit was issued for the project. As DEP noted in the permit, "the applicant has avoided and minimized wetland impacts to the **greatest extent practicable** by locating the reconstructed connector drive in the same location as the existing connector drive wherever possible. One section of the connector drive will be relocated so that it connects directly to the intermodal transportation facility rather onto a public street as it does currently. The side slopes of the connector drive will be increased from the standard 3H:1V slope to the maximum slope of 2H:1V to minimize wetland impacts. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site."

We believe this demonstrates compliance with this standard, and for the reasons previously outlined, prefer not to narrow the travel way.

Comment: *Staff are requesting the applicant select a different species of tree due to the high percentage of maples currently in the city and their susceptibility to the Asian Long-Horned Beetle.*

Response: We will work with city staff to identify a suitable alternative for the maple trees. Our landscape architect has suggested Amelanchier Canadensis (Native Shadbush or Serviceberry). Please advise whether that is suitable.

3. Public Infrastructure and Community Safety Standards (Section 14.6.3)

Comment: *The Fire Department recently provided comments requiring that roadway gates utilize a Knox Box system. The applicant will need to confirm that they are proposing this system.*

Response: Knox Boxes will be provided at the gates.

4. Site Design Standards (Section 14.6.4)

Comment: *The City is still waiting on ability to serve confirmation from CMP for the proposed lighting.*

Response: The service load for the Intermodal Transportation Facility (ITF) included the lighting for the connector drive and was approved by CMP. The connector drive lighting will be connected to the transformer installed for the ITF project. No new service is required.

Comment: *The information that is provided on the lighting cut sheet related to the proposed roadway lighting does not align with the information provided on the photometric plan. The cut sheet lighting details show lights with a file name RSX2 LED P6 40K R3 while the photometric site plan proposing lighting with the file name RSX2 LED P1 30K R2. The applicant has been asked to clarify what is being proposed for further review.*

Response: Attached is the updated photometric plan with the 40K lighting.

5. Site Location of Development

Comment: *The only utility for the Connector Road is power for the overhead lighting, for which staff is seeking confirmation from CMP that they have capacity to serve this improvement.*

Response: The service load for the Intermodal Transportation Facility (ITF) included the lighting for the connector drive and was approved by CMP. The connector drive lighting will be connected to the transformer installed for the ITF project. No new service is required.

B. Staff Review Memo received January 10, 2024

1. Access and Circulation

Comment: *Please clarify if bicycles will be able to maneuver around the gate on either end without having to ride into the gravel or the sidewalk.*

Response: There will be a 5 ft wide opening in both lanes at each gate.

Comment: *DPW is very concerned with regards to the proposed shared bicycle use*

within the roadway due to the unrestricted travel ways that encourage high speeds of vehicular activity combined with the roadway curvature and sight lines associated with the proposed alignment.

Response: It is unclear what the concern is, and how the design encourages high speeds. Sharrows and signage will be provided as noted on the drawings. With shared lanes cyclists have a right to use the full width and vehicles will need to stay behind them. The horizontal and vertical alignments meet city design guidelines and standard engineering practice for local drives, which are shared by cyclists and motor vehicles. We believe that the horizontal alignment will actually discourage high speeds. As noted on the drawings, pavement markings will include sharrows and a double yellow centerline. Signage at each end of the project will include “Bicycles May Use Full Lane”, and the speed limit will be posted at 20 mph. The speed limit will be enforced by campus security.

Comment: *In addition, given the heading associated with the proposed cross-sections, the installation of guardrail is likely necessary in locations.*

Response: Guardrail is now shown adjacent to the travel way above 2H:1V slopes greater than 6 ft in height in accordance with the AASHTO Roadside Design Guide Figure entitled Comparative Barrier Consideration for Embankments per design guidance from MDOT.

Comment: *The proposed crossing near station 7+50 is not safe due to restricted sight lines for drivers and pedestrians. Please consider relocating the crossing or installing significant advance warning equipment to make the crossing safer.*

Response: Advanced warning signage is now shown on the drawings in accordance with MUTCD guidelines. The drive will be posted with a 20 mph speed limit as noted on the drawings. The drive profile and clearing of vegetation necessary for slope construction results in adequate sight lines. MDOT guidelines for crosswalks require 155 ft for stopping sight distance for a 20 mph speed limit. Sight distance will meet or exceed that requirement. Further, given the access from Bishop Street, it is likely that most people would cross there anyway, and this will provide a safer means of crossing at that location.

Comment: *Please provide dimensions for the reduced curb opening on Bishop Street.*

Response: The opening will be 10 ft. The plans have been updated to show the dimension.

2. Parking

Comment: *Please clarify where and how many bike parking spots are proposed.*

Response: UNE will install a bike rack southerly of the existing gate for five bikes. There is an existing rack at the ITF with 10 spaces.

3. Site Landscaping and Buffers

Comment: *Please replace the proposed maple trees with another native tree- due to the high percentage of maple trees in the city and an invasive beetle moving north that is a looming threat to maple trees*

Response: We will work with city staff to identify a suitable alternative for the maple trees. Our landscape architect has suggested Amelanchier Canadensis (Native Shadbush or Serviceberry). Please advise whether this is suitable.

4. Water Quality, Stormwater management, and Erosion Control:

Comment: *The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended. – We can draft this as a condition of approval for the hearing.*

Response: We would appreciate a condition of approval.

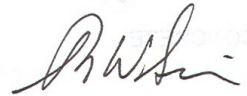
5. Public Safety and Fire Prevention

Comment: *Please confirm that you are using Knox Box gate access to meet Fire Safety*

Response: Knox Boxes will be provided at the gates.

In closing, we would be happy to meet with staff and consultants to discuss any items which may require further clarification if necessary. If you have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

c: Andrew Philippe, Director for Campus Planning

Winston Lumpkins <winston.lumpkins@gmail.com>

Jan 8, 2024, 9:18:48 PM (13 hours ago)



to cc: Planning and Urban Development, Planning Board

Dear Chair Mazer, Members of the Portland Planning Board,

I want to urge you to ensure bicycle and pedestrian access is allowed and encouraged on the carriage road between the campus at 716 Stevens Ave & Bishop Street.

It's an important connection for bicycles attempting to avoid the death trap that is Morrill's corner; until such a time that Morrill's corner is improved, we must allow cyclists through the Carriage road, as recommended in the attached report.

Perhaps it's a good place for an edge lane road?

Thanks for heeding the recommendations of the Portland Bicycle and Pedestrian Advisory Committee,

Sincerely,

~Winston

Winston Lumpkins IV (he/him/his)



www.portlandbikeped.org

Autumn Community Ride Report

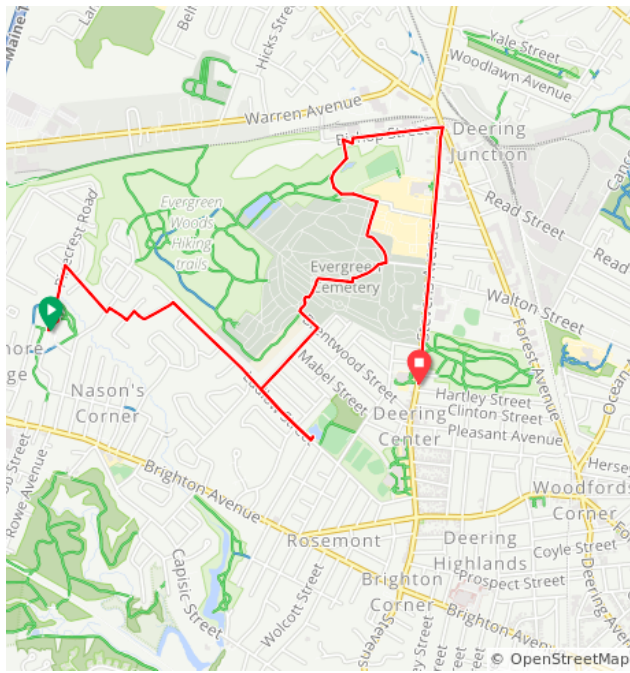
Sunday, September 25, 2022

Attendees



- District 3 Portland City Council candidate Nathaniel Ferguson
- District 3 Portland City Council candidate Regina Philips
- State Representative Sam Zager
- 15 total attendees, including members of the public and PBPAC

The Route



A 6 mile ride around Districts 3, 4, and 5, starting at the Amanda C. Rowe School, with stops on Ludlow Street in Deering Center, Evergreen Cemetery, and Lincoln Middle School.

[“Ride with GPS” route.](#)

Summary

We gathered on the grounds of the Amanda C. Rowe School on a Sunday morning. While there we discussed the surrounding neighborhood and access to the school by foot and bike. From there we set off for Evergreen Cemetery via Ludlow Street. Below you’ll find observations and recommendations based on the conversations that took place on the ride.

Recommendations and Observations for City Council, School Board, Planning Board and City Staff

Rowe School:

- **Allow** Bicycle and pedestrian access via the bus lane/driveway to prioritize direct access by pedestrians. Currently, bikes and pedestrians are forced to use a winding, roundabout access road vs. more direct access.
- **Discourage** Drop-off at the dead end of Purchas Street, which is a walking route for Sagamore Village students.
- **Study** what happened to the “walking school bus” and other Safe Routes to School efforts and what could be done to get it going again.
- **Shift** the design priorities for future school projects to prioritize direct bicycle and pedestrian access.
- **Implement** PBPA’s [Sidewalk Snow clearance proposal](#) to ensure Safe Routes to School year-round.

Ludlow Street/Neighborhood Byways:

Ludlow Street was recently painted with a new-to-Portland traffic pattern, referred to by both the terms “edge lanes” and “advisory bike lanes.”

- **Provide** a method for gathering community feedback on the advisory bike lane pilot. (For instance, most feel as though the advisory lanes should be the same width, and parking shouldn’t be allowed in them.) If Portland had a [Bicycle and Pedestrian Coordinator](#), that person could facilitate gathering feedback about projects like this, or run them by PBPAAC, which could act as a kind of focus group before implementation.
- **Discourage** parking in the advisory bike lane, which has been observed particularly when events take place at the Ludlow Little League field.
- **Install** a raised crosswalk or other traffic calming treatment in place of current traffic island to mitigate observed driver behavior of passing moving cyclists on the wrong side.
- **Replace** neighborhood byway signs with larger signs, more easily read from a moving bicycle.
- **Develop** and post an accessible map of all the neighborhood byways - both a print and online version.

Evergreen Cemetery:

If you don’t get lost within its roads, Evergreen Cemetery provides a more protected connection from Brentwood Street to Bishop Street and from there to Warren Ave., via trails through the cemetery and UNE’s access road. Bypassing Morrill’s Corner is, regrettably, desirable.

- **Encourage** UNE to formally allow cyclists and pedestrians to use their access road, perhaps as part of their Institutional Overlay Zone approval.
- **Incorporate** the route from Brentwood Street to the UNE access road and Bishop Street into the Neighborhood Byway system, or otherwise make it easier to navigate.

Morrill’s Corner:

Lacks any consideration for cyclists, most cyclists prefer to avoid it if at all possible.

For a detailed look at Morrill’s Corner, see our recent report of a walk audit conducted there this past spring 2022: [Morrill’s Corner Walk Audit](#)

Lincoln Middle School/Stevens Avenue:

Recent re-paving efforts have improved cycling conditions on Stevens Avenue between Forest Ave. and Pleasant Ave., though Stevens Ave. still terminates at Morrill’s Corner, a car-centric intersection extremely unfriendly to cyclists and pedestrians.

- **Provide** guidance for raised crosswalks in the city’s Technical Manual. Several attendees remarked that the new raised crosswalks are lower than previous speed bumps were before re-paving, and so are perhaps less effective at reducing speeds. If standards were included in the Technical Manual, we could compare them to those standards. At present, we can only share our observations that they seem less

effective now.

- **Include** door zone buffers in the bike lane striping on Stevens Ave. These are now recommended by the Technical Manual. While traffic was light and many of the parking spaces empty on the Sunday morning of our ride, it's safe to assume a higher volume of car traffic and more cars parked along Stevens are typical most other days of the week.

What's Awesome

- **Neighborhood byways!** These represent really good alternatives to some arterials (once you figure them out) and are used daily by some of the attendees. Others might use them more often now that they know about them.
- **Trying new bicycling infrastructure:** We appreciate having a group of city staff willing to try piloting new infrastructure, such as advisory bike lanes and bicycle boulevards, as opposed to sticking with the traditional "sharrows" and door-zone bike lanes of the past.

Further discussion

The group discussed improving conditions on other arterials as well, such as Brighton Avenue, which should have public hearings about its design soon (although the public process around the Brighton Ave. redesign appears delayed at present). The status of the "Better Bikeways" project was also discussed. It appears to have stalled due to staffing challenges at City Hall. We discussed some frustration that bike/ped projects are often very slow to move ahead. Those present on this ride would support restoring the [Bicycle and Pedestrian Coordinator](#) position to help these projects move forward more quickly, as PBPAC has advocated for in the past.



LEGEND	
	EXISTING ROAD
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	WETLANDS
	INTERMITTENT STREAM
	STORM DRAIN MANHOLE
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	UTILITY POLE
	BUILDING
	EDGE OF PAVEMENT
	CURB
	INDEX CONTOUR
	INTERMEDIATE CONTOUR

GENERAL NOTES:

- REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.
- LOCATION OF INDIVIDUAL TREES EQUAL TO OR GREATER THAN 10-INCH DBH WITHIN CLEARING AREA ARE APPROXIMATE.

RETAINING WALL PROTECTION NOTES:

- CONTRACTOR SHALL PROPOSE MEANS AND METHODS TO PROTECT THE EXISTING RETAINING WALL DURING CONSTRUCTION.
- A PRECONSTRUCTION MEETING WITH UNE, SITE DESIGN ASSOCIATES, SUMMIT GEOENGINEERING, AND THE SITE CONTRACTOR WILL BE REQUIRED PRIOR TO ANY WORK WITHIN THE VICINITY OF THE WALL.

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS									
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION									
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
B	9/22/2023	FOR DEVELOPMENT REVIEW									
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION									



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.		CONNECTOR DRIVE	
DRAWN: DEPT.		83 COLLEGE STREET, PORTLAND, MAINE	
CHKD: TWS		EXISTING CONDITIONS AND REMOVALS PLAN	
DATE: SEP. 2023	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 40'	DWG. NO.	C-100	E

Drawing Name: C:\Users\Site\Drawings\Desktop Drawings\21-216-00 UNE Connector Road\Drawings\21-216-00 UNE Connector Road.dwg Plot Date / Time: Jan. 12, 24 / 4:08 PM

ZONING INFORMATION

ZONING STANDARDS FROM CITY OF PORTLAND LAND USE ORDINANCE, AMENDED FEBRUARY 6, 2023

1. CLASSIFICATION: R3 & R5 - RESIDENTIAL ZONES
PERMITTED USES: LITERARY & SCIENTIFIC (GRANDFATHERED)

R3 RESIDENTIAL ZONE STANDARDS*

1. MIN. LOT SIZE: 6,500 SQUARE FEET
EXISTING = 1,139,872 SQUARE FEET
PROPOSED = NO CHANGE
2. MIN. STREET FRONTAGE: 50 FEET
EXISTING = 75 FEET
PROPOSED = NO CHANGE

*STRUCTURE SETBACKS NOT SHOWN BECAUSE NO NEW BUILDINGS ARE PROPOSED.

R5 RESIDENTIAL ZONE STANDARDS*

1. MIN. LOT SIZE: 6,000 SQUARE FEET
EXISTING = 1,139,872 SQUARE FEET
PROPOSED = NO CHANGE
2. MIN. STREET FRONTAGE: 50 FEET
EXISTING = 285 FEET
PROPOSED = NO CHANGE

*STRUCTURE SETBACKS NOT SHOWN BECAUSE NO NEW BUILDINGS ARE PROPOSED.

PARCEL INFORMATION:

1. OWNER OF RECORD: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, MAINE 04005
CCRD BOOK 3481, PAGE 255
CCRD BOOK 2796, PAGE 397
CCRD BOOK 1876, PAGE 271
CCRD BOOK 3450, PAGE 69
2. STREET ADDRESS: 83 COLLEGE STREET, PORTLAND, MAINE
3. PARCELS: CITY OF PORTLAND TAX MAPS
MAP 145 BLOCK B LOT 14
MAP 290 BLOCK A LOT 3
MAP 291 BLOCK A LOT 1
MAP 291 BLOCK A LOT 5
4. TOTAL AREA OF PARCEL: 1,139,872 SF (26.16 AC.)

SITE BENCHMARK: PROJECT BENCHMARK IS A MANHOLE RIM IN BISHOP STREET.

PLAN REFERENCES

1. TOPOGRAPHIC INFORMATION OBTAINED BY GROUND SURVEY CONDUCTED IN WINTER 2022 BY COLLIER'S ENGINEERING & DESIGN OF BRUNSWICK, MAINE.
2. ELEVATIONS SHOWN ON THIS PLAN ARE ON THE CITY OF PORTLAND VERTICAL DATUM (NGVD29). PROJECT BENCHMARK IS A MANHOLE RIM IN BISHOP STREET.
3. HORIZONTAL DATUM IS BASED ON NAD83 STATE PLANE GRID WEST ZONE IN FEET.
4. UNDERGROUND UTILITIES WERE OBTAINED FROM SURFACE OBSERVATIONS AND TAKEN FROM PLANS OF SEVERAL SOURCES. SEE SURVEY PLAN REFERENCES.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "DIG SAFE" AND LOCAL UTILITY COMPANIES AT LEAST THREE (3) BUSINESS DAYS, BUT NOT MORE THAN 30 CALENDAR DAYS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, IN ACCORDANCE WITH MAINE STATE LAW. "DIG SAFE" TELEPHONE NUMBER IS 1-888-344-7233.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL AND ANY MEANS, METHODS, AND TECHNIQUES EMPLOYED TO PERFORM THE WORK SHOWN ON THE PLANS.
3. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING ALL SAFETY REGULATIONS (OSHA).
4. ALL WORK SHALL BE IN CONFORMANCE ALL UTILITY COMPANIES STANDARDS.
5. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THE WORK SHOWN ON THESE PLANS PRIOR TO CONSTRUCTION.
6. ALL PAVEMENT/CONCRETE CUTS SHALL BE SAW CUT TO RESULT IN CLEAN EDGES. A TACK COAT SHALL BE APPLIED ALONG THE PAVEMENT CUT EDGES AND THE NEW PAVEMENT BUTTED TO IT, UNLESS OTHERWISE DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
7. ALL WORK SHALL COMPLY WITH THE CITY OF PORTLAND STREET OPENING PERMIT REQUIREMENTS.
8. ALL WORK SHALL COMPLY WITH THE CITY OF PORTLAND TECHNICAL MANUAL.
9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. REFER TO THE EROSION CONTROL PLAN NOTSE AND DRAWINGS FOR FURTHER EROSION CONTROL GUIDELINES.
10. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN ON THE DRAWINGS. IF ANY DISCREPANCIES ARE FOUND, THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.
11. CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO MDOT SPECIFICATIONS, LATEST EDITION.
12. A GEOTECHNICAL REPORT HAS BEEN PREPARED FOR THIS PROJECT BY SUMMIT GEOENGINEERING, DATED DECEMBER 2021.
13. THE CONTRACTOR SHALL BE AWARE THAT INVASIVE SPECIES SUCH AS JAPANESE KNOTWEED HAVE BEEN IDENTIFIED WITHIN THE PROJECT AREA. THESE AREAS SHALL BE MANAGED IN ACCORDANCE WITH SECTION 4.7.4 OF THE PORTLAND TECHNICAL MANUAL AND APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
14. TREES TO BE PRESERVED AT THE EDGE OF WORK SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 4.3 OF THE PORTLAND TECHNICAL MANUAL.
15. MARK THE CONNECTOR DRIVE WITH SHARROWS LAID OUT PER THE MUTCD.
16. KNOX BOXES SHALL BE PROVIDED AT ALL GATES FOR EMERGENCY VEHICLE ACCESS PER CITY OF PORTLAND STANDARDS.
17. DOUBLE YELLOW SOLID LINES (2YSL) SHALL BE PAINTED ALONG THE CENTERLINE OF THE ROAD WHERE INDICATED AND SHALL CONFORM THE MAINE DOT TRAFFIC ENGINEERING STRIPING AND STENCILING HANDBOOK (2019 OR CURRENT REVISION).

SNOW STORAGE:

1. SNOW WILL BE PLOWED INTO THE DRIVE SHOULDER/DITCH AND BEYOND THE BACK EDGE OF THE SIDEWALK.

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
D	1/12/2024	REVISED PER CITY COMMENTS									
C	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION									
B	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
A	9/22/2023	FOR DEVELOPMENT REVIEW									

RETAINING WALL PROTECTION NOTES:

1. CONTRACTOR SHALL PROPOSE MEANS AND METHODS TO PROTECT THE EXISTING RETAINING WALL DURING CONSTRUCTION.
2. A PRECONSTRUCTION MEETING WITH UNE, SITE DESIGN ASSOCIATES, SUMMIT GEOENGINEERING, AND THE SITE CONTRACTOR WILL BE REQUIRED PRIOR TO ANY WORK WITHIN THE VICINITY OF THE WALL.

LEGEND

EXISTING	PROPOSED
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	ZONING LINE
	IRON ROD OR PIN FOUND
	WETLANDS
	BUILDING
	BITUMINOUS PAVEMENT
	CURB
	TREELINE



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: DEC. 2022

SCALE: 1" = 80'

PROJECT:

CONNECTOR DRIVE

83 COLLEGE STREET, PORTLAND, MAINE

SITE PLAN

PROJ. NO.

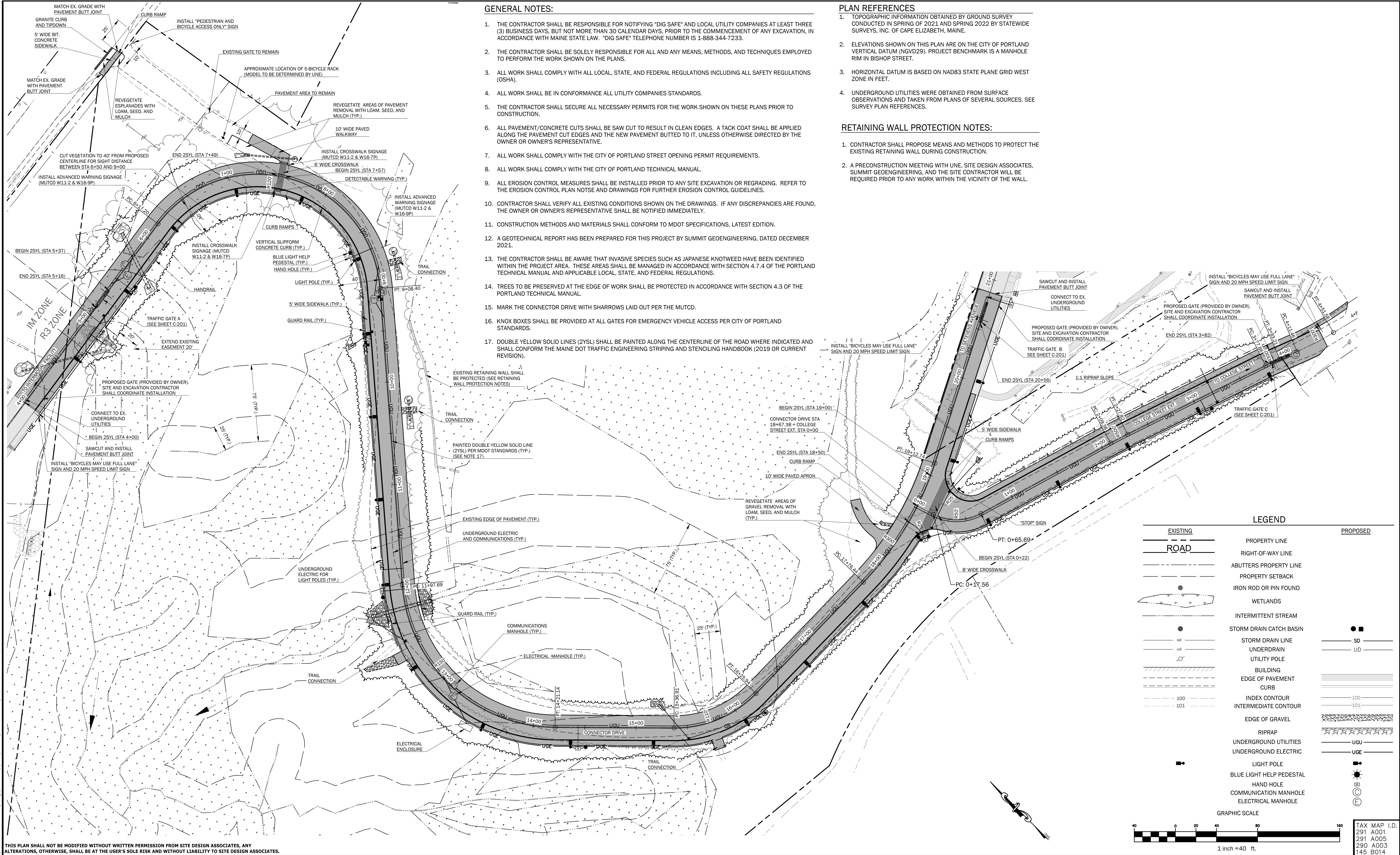
21-216-00

DWG. NO.

S-100

REV.

D



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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS				DEPT.	TWS	TWS			
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			
B	9/22/2023	FOR DEVELOPMENT REVIEW				DEPT.	TWS	TWS			
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			

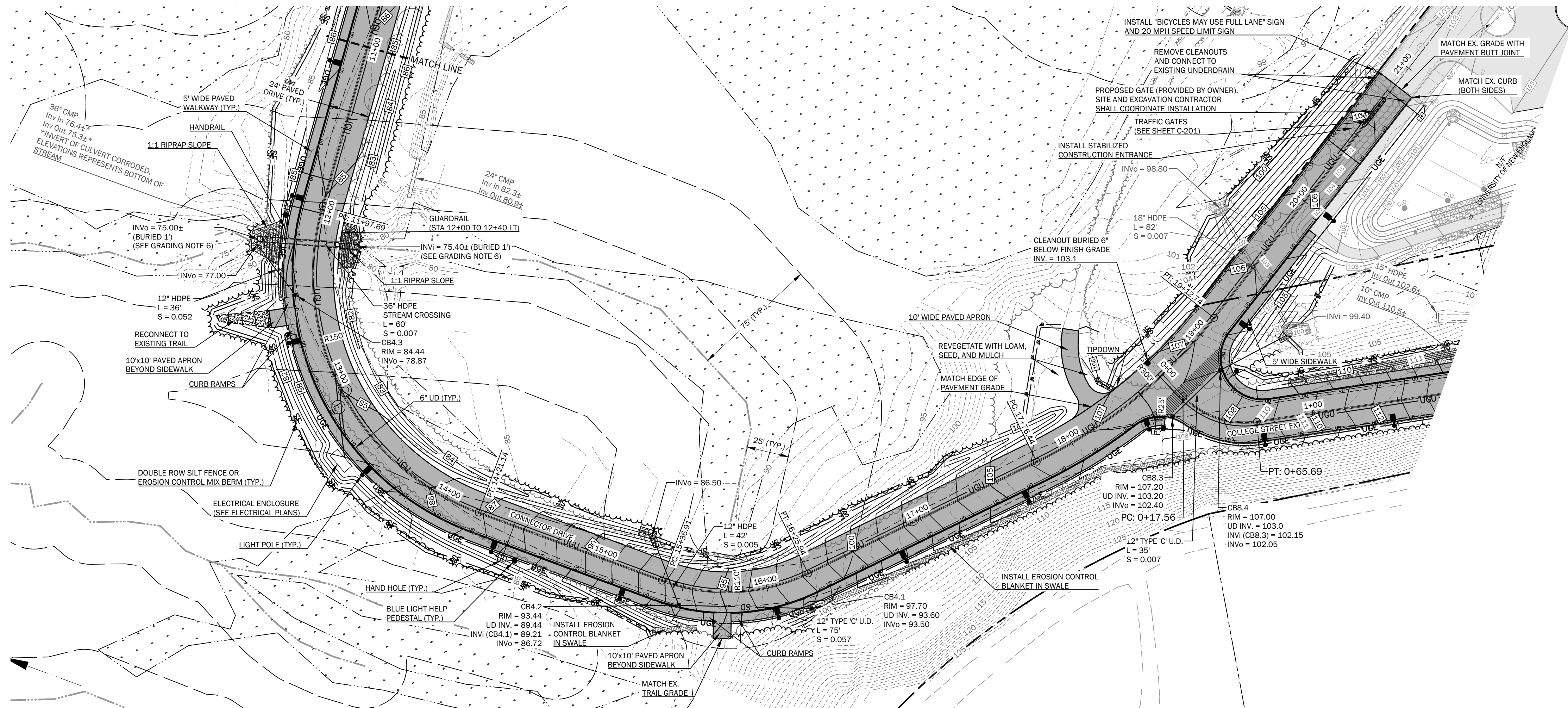


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23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE AND UTILITY PLAN
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40'	DWG. NO. C-200
	REV. E

Drawing Name: C:\Users\SiteDesign\Desktop\Drawings\21-216-00 Connector Road\Drawings\21-216-00 Connector Road.dwg Plot Date / Time: Jan. 12, 24 / 4:08 PM

Drawing Name: C:\Users\Site\Documents\Drawings\21-216-00 Connector Drive\Drawings\21-216-00 Connector Drive.dwg Plot Date / Time: 09/12/24 / 4:08 PM



GENERAL NOTES:

1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.

GRADING AND DRAINAGE NOTES:

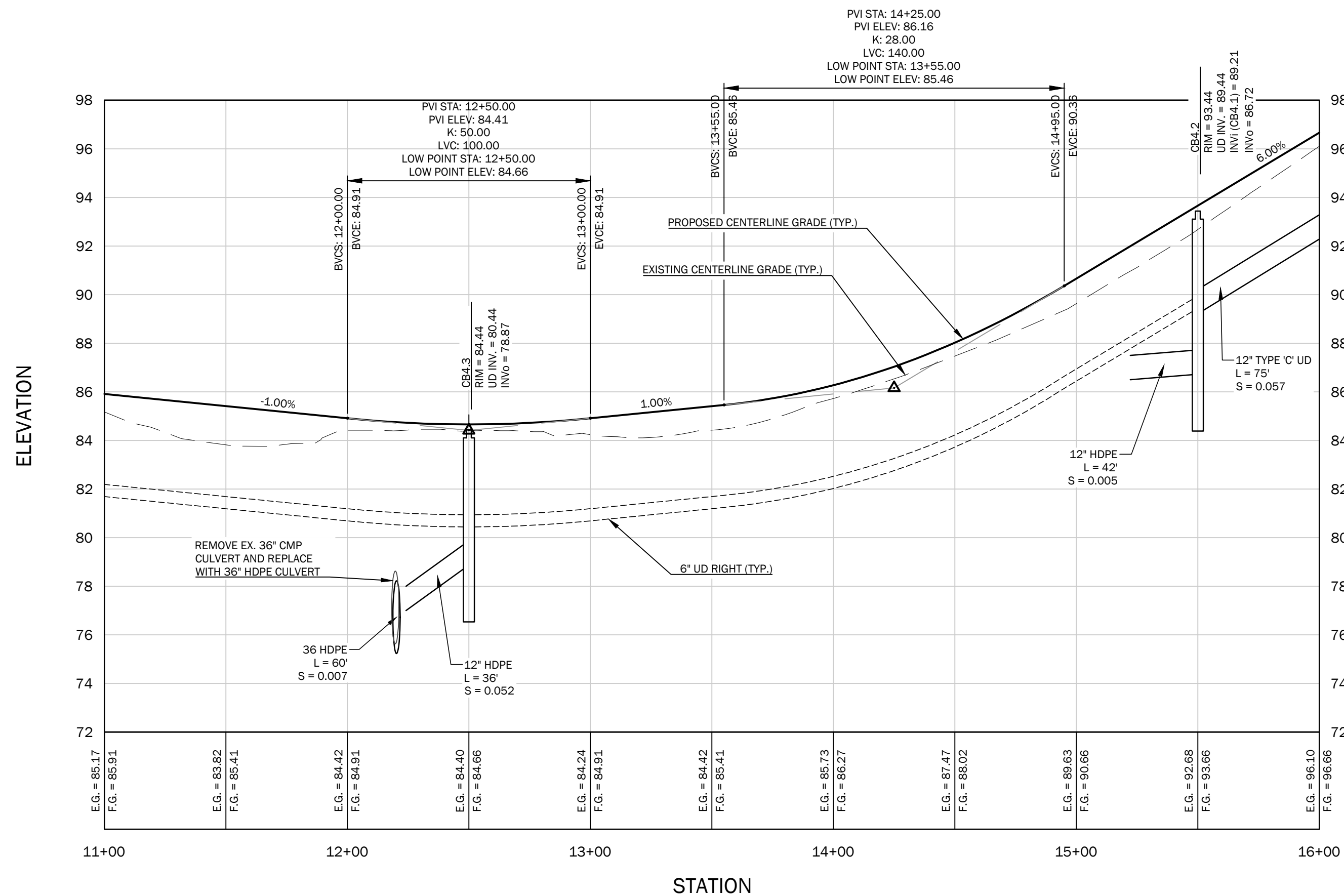
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- ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
- GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
- INSTALL RIPRAP APRONS AT ALL STORM DRAIN INLETS AND OUTLETS.
- VERIFY EXISTING GRADE ELEVATIONS AT STREAM CROSSING CULVERT INLET AND OUTLET PRIOR TO INSTALLATION OF NEW CULVERT. CULVERT INVERTS SHALL BE SET 1 FOOT BELOW EXISTING GRADE AT INLET AND OUTLET LOCATIONS.

LEGEND

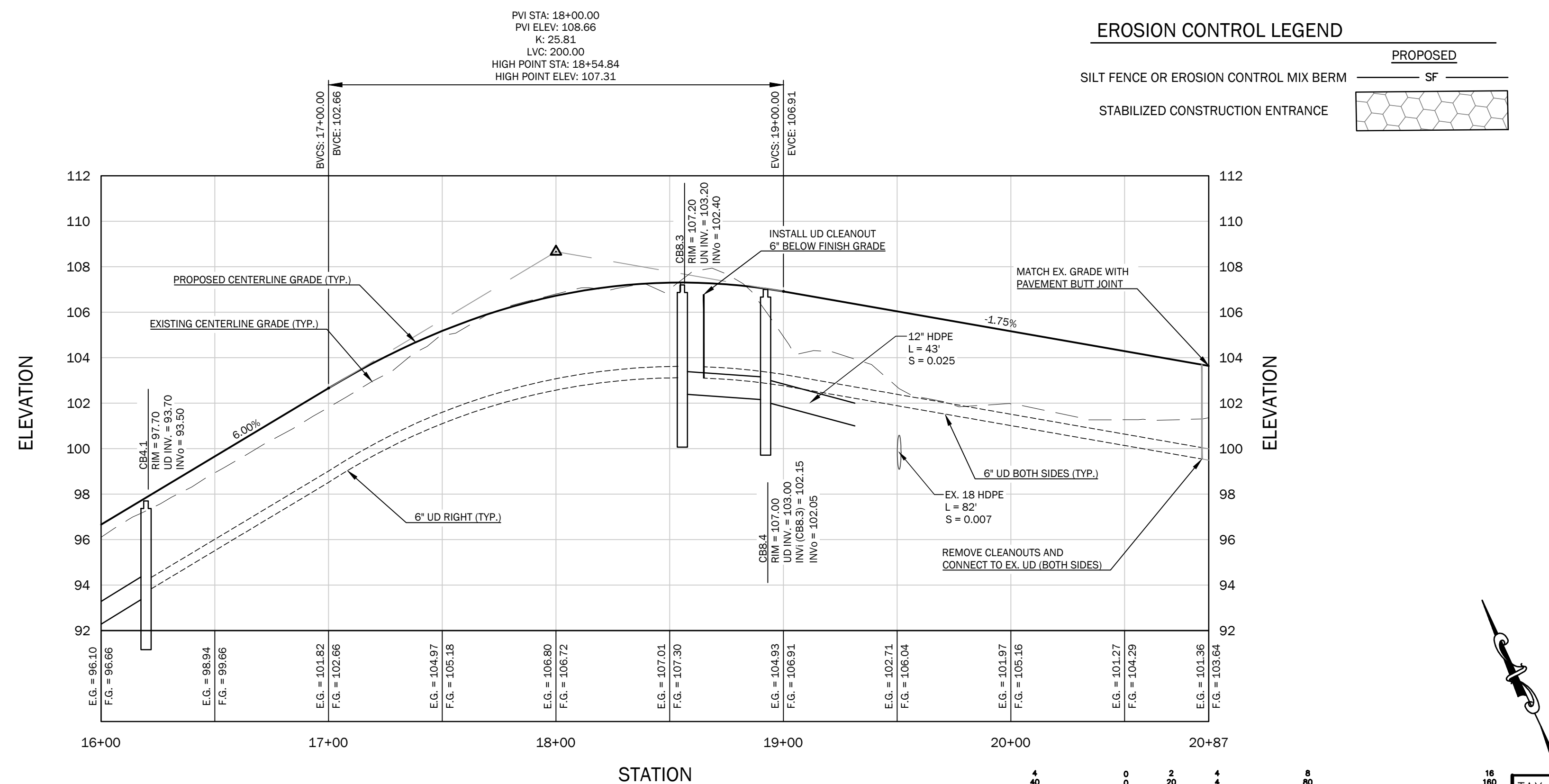
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	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	WETLANDS
	INTERMITTENT STREAM
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	UNDERDRAIN
	UTILITY POLE
	BUILDING
	EDGE OF PAVEMENT
	CURB
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	EDGE OF GRAVEL
	RIPRAP
	UNDERGROUND UTILITIES
	UNDERGROUND ELECTRIC
	LIGHT POLE
	BLUE LIGHT HELP PEDESTAL
	HAND HOLE
	COMMUNICATION MANHOLE
	ELECTRICAL MANHOLE

EROSION CONTROL LEGEND

EXISTING	PROPOSED
	SILT FENCE OR EROSION CONTROL MIX BERM
	STABILIZED CONSTRUCTION ENTRANCE



CONNECTOR DRIVE PROFILE



CONNECTOR DRIVE PROFILE

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS									
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION									
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
B	9/22/2023	FOR DEVELOPMENT REVIEW									
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION									



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: SEP. 2023
SCALE: 1" = 40 FT

PROJECT:
CONNECTOR DRIVE
83 COLLEGE STREET, PORTLAND, MAINE

CONNECTOR DRIVE PLAN & PROFILE
(STA 11+00 TO 20+87)

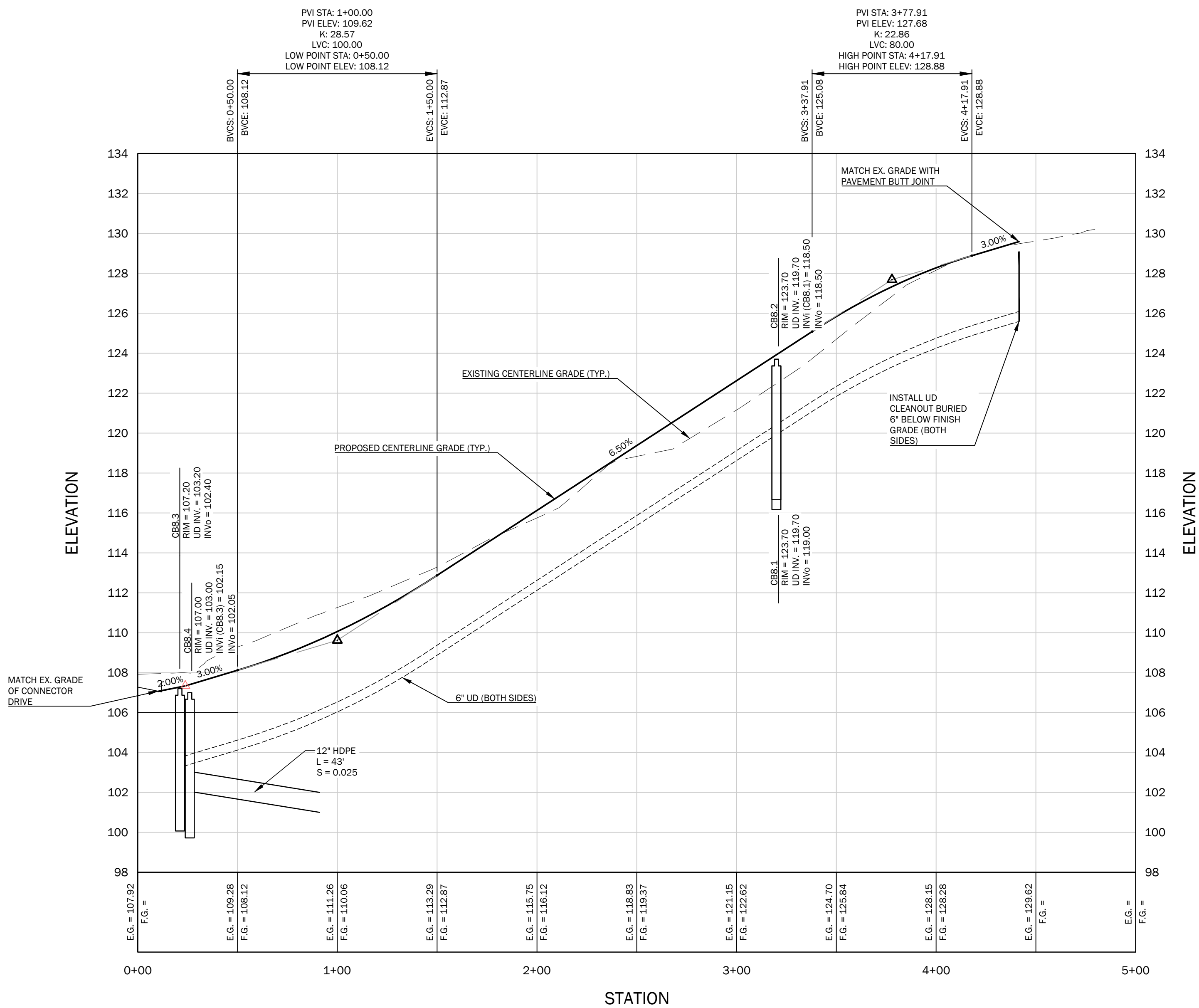
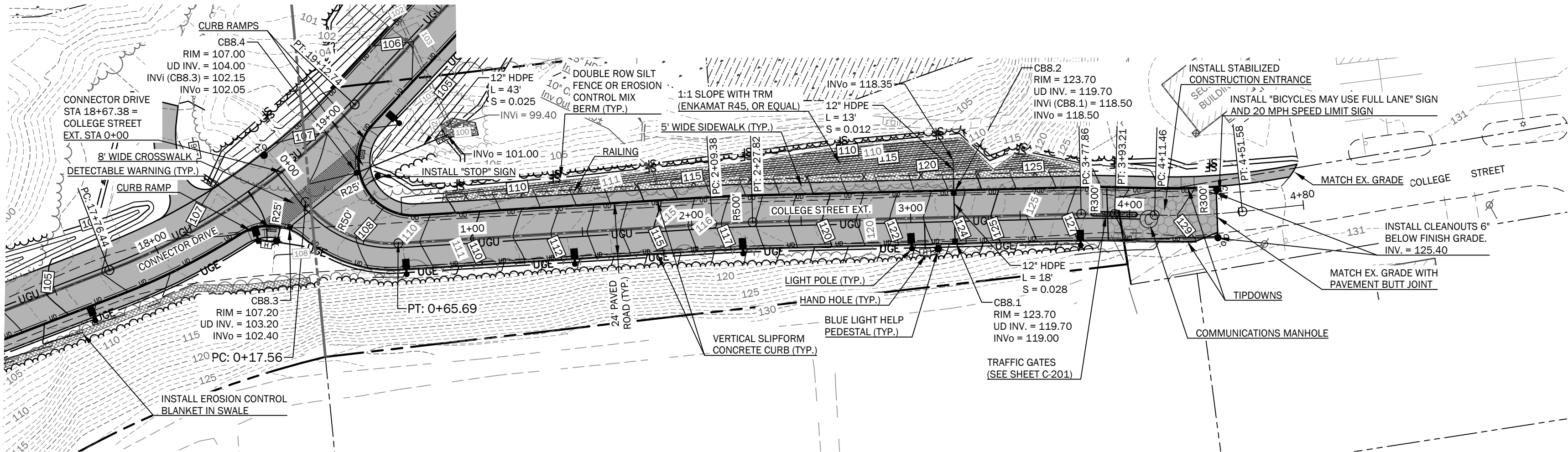
21-216-00

C-302

REV.

E

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COLLEGE STREET EXT. PROFILE

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E	1/12/2024	REVISED PER CITY COMMENTS									
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C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
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CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	COLLEGE STREET EXT. PLAN & PROFILE (STA 0+00 TO END)
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: 1" = 40 FT	DWG. NO. C-303
	REV. E

GENERAL NOTES:

- REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.

GRADING AND DRAINAGE NOTES:

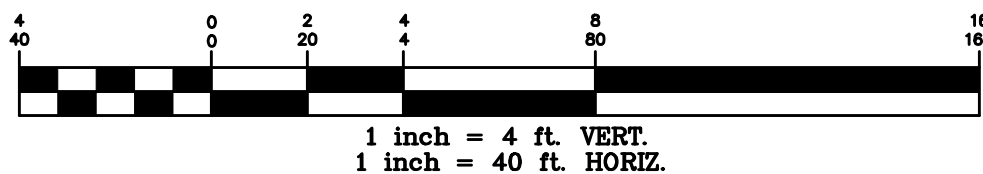
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LEGEND

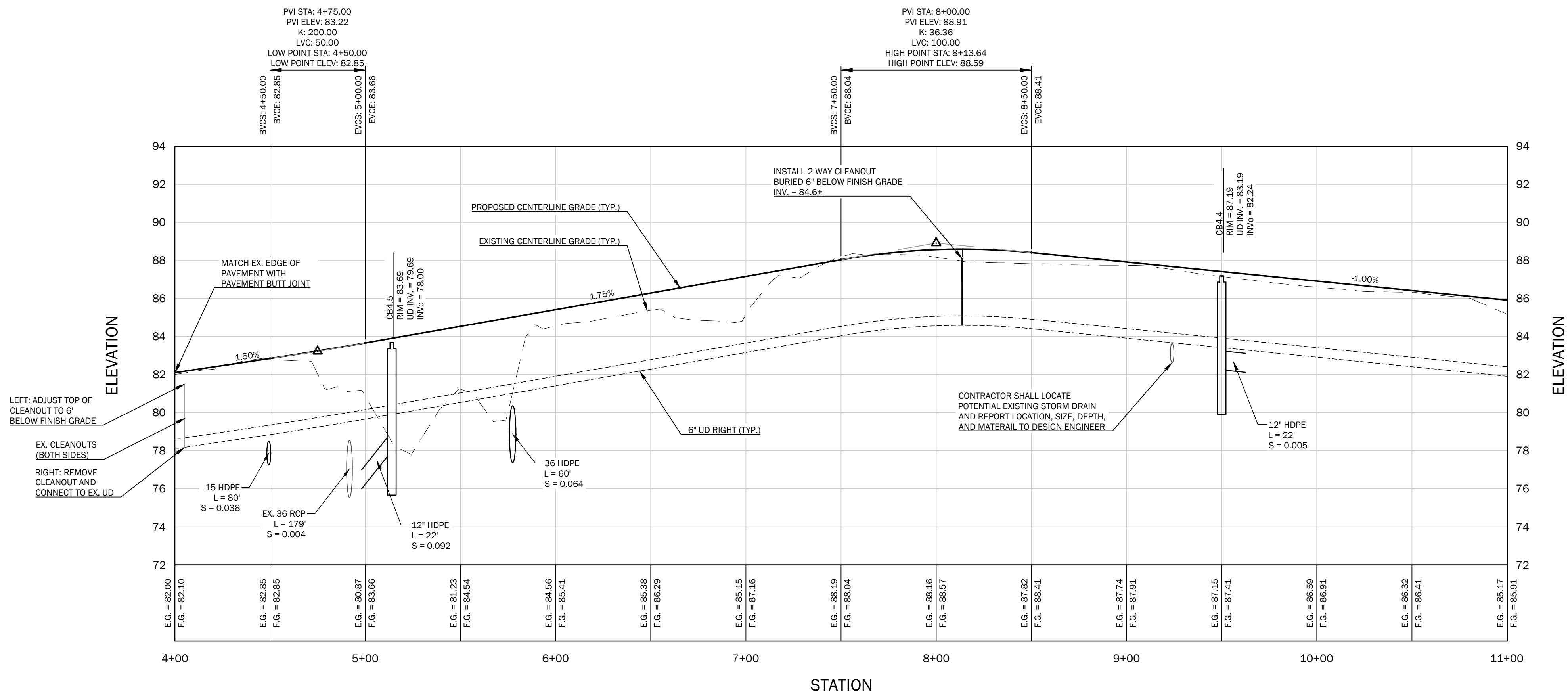
EXISTING	PROPOSED
ROAD	PROPERTY LINE
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EROSION CONTROL LEGEND

EXISTING	PROPOSED
	SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE



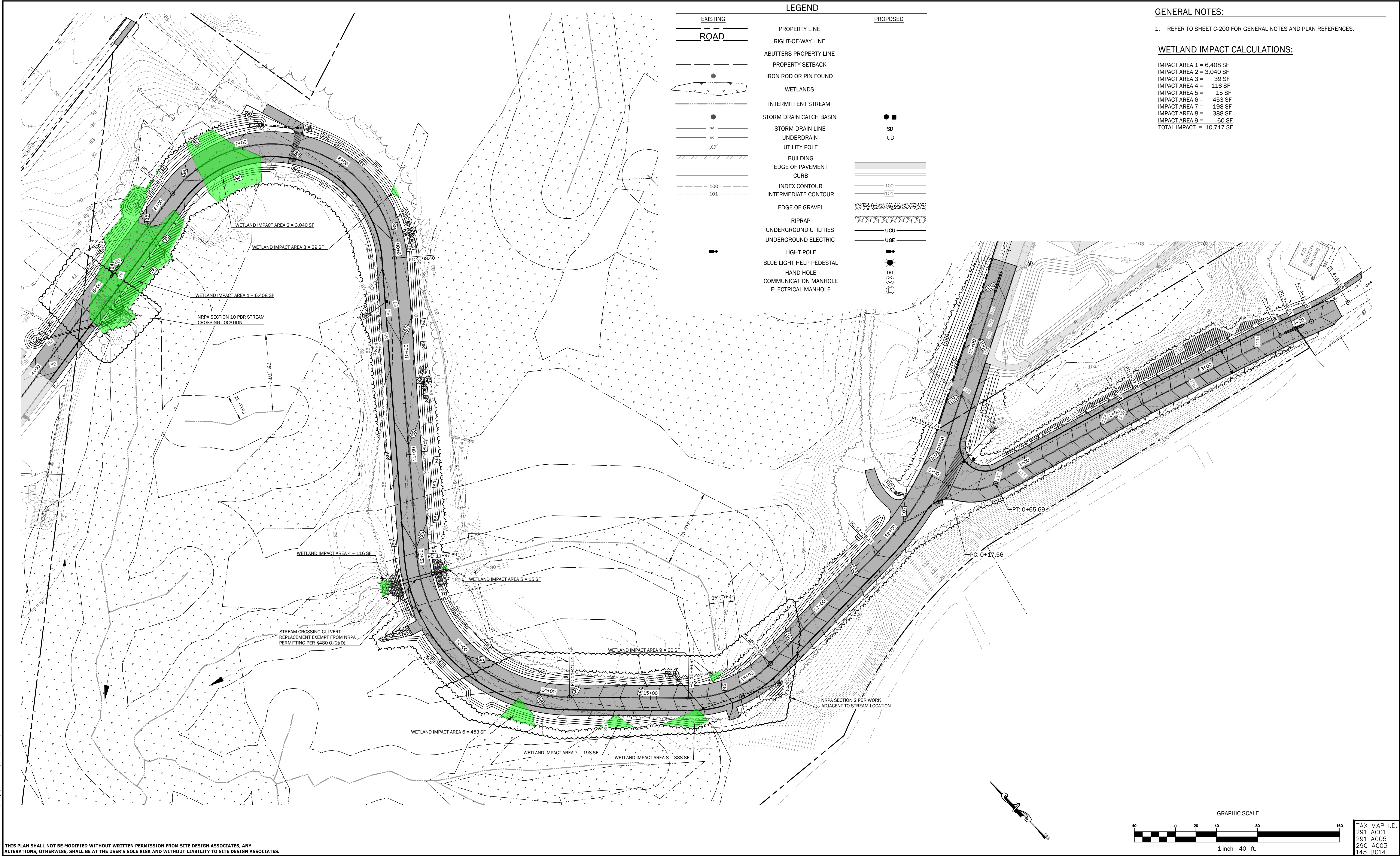
TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



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DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		REV. E
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	CONNECTOR DRIVE PLAN & PROFILE (STA 4+00 TO 11+00)		
DATE: SEP. 2023	PROJ. NO.	21-216-00	
SCALE: 1" = 40 FT	DWG. NO.	C-301	



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DESIGN: DEPT.
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DATE: SEP. 2023
SCALE: 1" = 40'

PROJECT: **CONNECTOR DRIVE**
83 COLLEGE STREET, PORTLAND, MAINE
WETLAND IMPACT PLAN
PROJ. NO. **21-216-00**
DWG. NO. **C-304**
REV. **E**

Drawing Name: C:\Users\Site\Drawings\Desktop\Drawings\21-216-00\21-216-00-03 Wetland Impact Plan.dwg / Print Date / Time: Jan. 12, 24 / 4:09 PM

EROSION AND SEDIMENTATION CONTROL NOTES:

INTRODUCTION

THE FOLLOWING PLAN FOR CONTROLLING SEDIMENTATION AND EROSION IN THIS PROJECT IS BASED ON CONSERVATION PRACTICES FOUND IN THE MAINE EROSION & SEDIMENT CONTROL BMPs MANUAL, OCTOBER 2016, AND MAINE EROSION AND SEDIMENT CONTROL PRACTICE FIELD GUIDE FOR CONTRACTORS, REVISED 2014, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE CONTRACTOR WHO IMPLEMENTS THIS PLAN SHALL BE FAMILIAR WITH THESE PUBLICATIONS AND ADHERE TO THEM AND THE PRACTICES PRESENTED HEREIN

REFERENCE IS MADE TO THE GRADING AND DRAINAGE PLANS (C-301 AND C-302) WITHIN THE PLAN SET, SHOWING THE LOCATIONS AND TYPES OF PROPOSED MEASURES TO BE IMPLEMENTED.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

THE FOLLOWING IS A LIST OF GENERAL EROSION CONTROL PRACTICES THAT WILL BE USED TO PREVENT EROSION AND SEDIMENTATION BEFORE, DURING AND AFTER THE CONSTRUCTION OF THIS PROJECT. IN ADDITION, SPECIAL CARE SHALL BE USED AT ALL TIMES TO:

- 1) CORRECT ANY EROSION PROBLEMS IMMEDIATELY
- 2) REGULARLY MONITOR THE IMPLEMENTED PRACTICES, ESPECIALLY AFTER EVERY RAINFALL
- 3) REVEGETATE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION
- 4) CONFORM TO ALL REQUIREMENTS/STANDARDS OF THE SITE'S MAINE DEP EROSION & SEDIMENT CONTROL BMP MANUAL.

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS WILL BE INSTALLED ALONG THE DOWN GRADIENT SIDE OF THE PROPOSED GROUND DISTURBANCE AREAS PRIOR TO ANY CONSTRUCTION ACTIVITIES WHERE SLOPES EXCEED 8% OR THERE IS FLOWING WATER BOTH SILT FENCE AND EROSION CONTROL MATTING BERMS SHALL BE USED.

CATCH BASIN PROTECTION

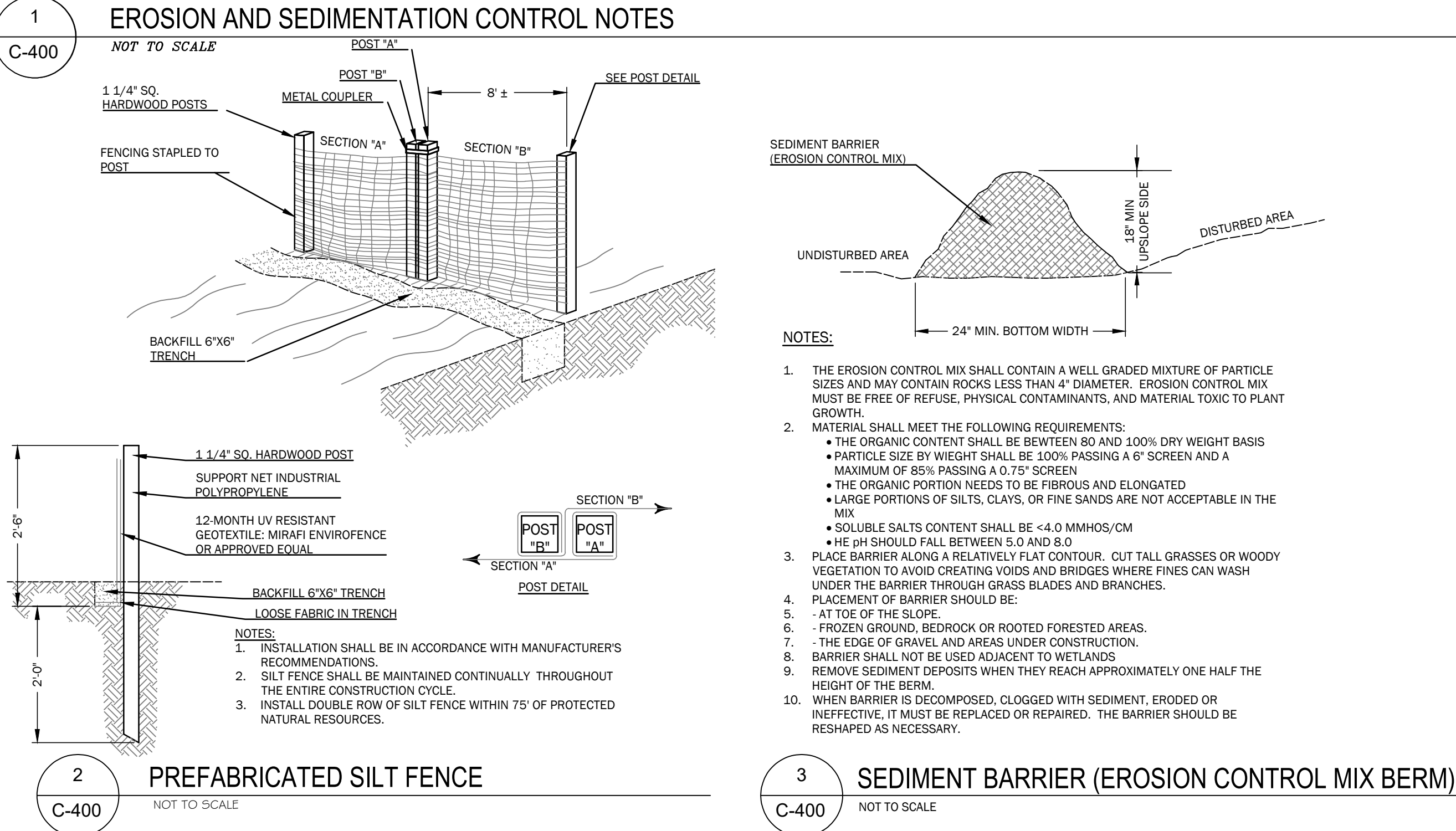
CATCH BASIN PROTECTION WILL BE INSTALLED AT THE FIRST DOWNGRADIENT CATCH BASIN IN STREET ADJACENT TO ANY CONSTRUCTION ACTIVITIES AND IN ALL ONSITE CATCH BASINS UNTIL SITE HAS BEEN COMPLETELY STABILIZED.

CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION DURING CONSTRUCTION ON THIS PROJECT:

1. EROSION AND SEDIMENTATION CONTROL BMPs SHALL BE INTALLED PRIOR TO THE COMMENCEMENT OF EARTHWORK ACTIVITIES.
2. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. AN AREA NO LARGER THAN WHAT CAN BE MULCHED IN ONE DAY MAY BE OPEN AT ONCE. ONCE CONSTRUCTION OF AN AREA IS COMPLETE, FINAL GRADING, LOAMING AND SEEDING SHALL OCCUR IMMEDIATELY (REFER TO "POST CONSTRUCTION REVEGETATION" SECTION). IF DURING FINAL GRADING, LOAMING AND SEEDING CAN NOT OCCUR IMMEDIATELY, IT SHALL BE DONE PRIOR TO ANY STORM EVENT AND WITHIN 15 DAYS OF COMPLETING CONSTRUCTION IN THE AREA. IF FINAL GRADING, LOAMING AND SEEDING CANNOT OCCUR WITHIN 7 DAYS, OR IF THE AREA IS NOT UNDER ACTIVE CONSTRUCTION FOR A PERIOD LONGER THAN 7 DAYS, SEE ITEM NO. 4. BELOW.
3. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING SHALL BE INSTALLED ON DOWNGRADE PORTIONS OF THE SITE AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION.
4. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM EXISTING DRAINAGE AREAS AND WETLANDS. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
 - B. SEEDDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
 - C. STOCKPILES SHALL BE EITHER PLACED UPHILL OF AN EXISTING SEDIMENT BARRIER ON THE SITE OR ENCIRCLED BY A HAY BALE OR SILT FENCE BARRIER THE FIRST DAY THAT STOCKPILING COMMENCES.
5. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH STRAW AT A RATE OF 70-90 LBS. PER 1000 SQUARE FEET FROM 4/16 TO 10/1, OR AT A RATE OF 150-200 LBS. PER 1000 SQUARE FEET FROM 10/1 TO 4/15.
 - B. SEEDDED WITH CONSERVATION MIX OF PERENNIAL RYE GRASS (1.0 LBS/1000 SQ.FT.) AND MULCHED IMMEDIATELY. FROM 10/1 TO 4/15, FOLLOW THE SEEDING RATES AS OUTLINED BELOW IN SUB-SECTION 4.D. OF THE "POST CONSTRUCTION REVEGETATION" SECTION.
 - C. MONITORED EVERY TWO WEEKS UNTIL SEEDING CAN OCCUR AND REMULCHED AS NEEDED TO PROTECT SLOPES.
6. ALL GRADING WILL BE HELD TO A MAXIMUM 3:1 SLOPE WHERE PRACTICAL. GREATER SLOPES MAY BE USED WHERE THE BANKS ARE PROTECTED WITH SOFT ARMOUR MATTING, EROSION CONTROL MATTING, OR RIPRAP. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY AFTER FINAL GRADING IS COMPLETE. (IT IS UNDERSTOOD THAT IMMEDIATELY MEANS WITHIN 5 DAYS OF THE COMPLETION OF WORK. SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION).
7. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
8. CONSTRUCTION TRAFFIC WILL BE DIRECTED OVER THE EXISTING SITE ENTRANCE. THE ROAD SHALL BE SWEEPED AND VACUUMED DAILY SHOULD SEDIMENT BE TRACKED ONTO IT.
9. ALL AREAS DRAINING TO A STORMWATER FILTER OR BMP SHALL BE STABILIZED PRIOR TO CONSTRUCTION OF FILTER MEDIA TO PREVENT SEDIMENT FROM CLOGGING MEDIA.
10. THE UNDERDRAINED SOIL FILTERS WILL BE CONSTRUCTED SIMULTANEOUSLY WITH YOUNG'S LANE. THE FILTERS WILL BE USED AS TEMPORARY SEDIMENT TRAPS UNTIL THEIR DRAINAGE AREA IS PERMANENTLY STABILIZED.
11. THE AREAS ASSOCIATED WITH THE BUILDINGS AND THEIR DRIVEWAYS CAN BE DISTURBED BY GRUBBING NO EARLIER THAN TWO WEEKS BEFORE THE STARTING DATE OF THEIR CONSTRUCTION.

EROSION AND SEDIMENTATION CONTROL NOTES



12. IN AREAS SLOPED 8% OR MORE, TEMPORARY ROCK CHECK DAMS AND WATER BARS WILL BE USED IN THE ROADSIDE SWALES AND THE ROAD, RESPECTIVELY, UNTIL THE SWALES AND THE ROAD ARE STABILIZED.

DEWATERING

1. ALL DEWATERING DISCHARGE LOCATIONS SHALL BE LOCATED ON RELATIVELY FLAT GROUND AT LEAST 75' FROM STREAMS AND 25' FROM WETLANDS. THE CONTRACTOR SHALL UTILIZE DIRTBAES, EROSION CONTROL MIX BERMS, OR SIMILAR METHODS FOR FILTRATION OF DEWATERING AND SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BMPs G-1, G-2, AND G-3.

POST CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING:

1. A MINIMUM OF 6" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE.
2. LAWN AREAS: SEE LANDSCAPE PLAN FOR SEED MIX.
3. MULCH SHALL BE HAY OR STRAW MULCHES THAT ARE DRY AND FREE FROM UNDESIRABLE SEEDS AND COARSE MATERIALS.
 - A. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE.
 - B. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
 - C. BLANKET WITH TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING ON GRADES GREATER THAN 5%.
4. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF ASPHALT, WOOD FIBRE OR PAPER FIBRE AND WATER, WHICH IS SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 10/1 AND 4/15.
5. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN OCTOBER 1ST AND APRIL 15TH. SHOULD SEEDING BE NECESSARY BETWEEN THESE DATES, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
 - A. ONLY UNFROZEN LOAM SHALL BE USED.
 - B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
 - C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS./1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.5 LBS./1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - E. FERTILIZING, SEEDING AND MULCHING SHALL BE DONE ON LOAM THE DAY THE LOAM IS SPREAD.
 - F. HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE. WINTER MULCHING RATES, SHALL BE DOUBLE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION, SHOULD BE APPLIED DURING THIS PERIOD.
6. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 90% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE DESIGN PROFESSIONAL THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL, AND AT LEAST ONCE A WEEK, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. SILT FENCE SHALL BE INSPECTED AND REPAIRED. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING.
2. CONSTRUCTION ENTRANCE SHALL BE VISUALLY INSPECTED AND REPAIRED AS NEEDED. ANY AREAS SUBJECT TO RUTTING SHALL BE STABILIZED IMMEDIATELY. IF THE VOIDS OF THE CONSTRUCTION ENTRANCE BECOME FILLED WITH MUD, MORE CRUSHED STONE SHALL BE ADDED AS NEEDED. THE PUBLIC ROADWAY SHALL BE SWEEPED AND VACUUMED SHOULD MUD BE DEPOSITED/TRACKED ONTO THEM.

STANDARDS FOR STABILIZING SITES FOR THE WINTER

THE FOLLOWING STANDARDS AND METHODOLOGIES SHALL BE USED FOR STABILIZING THE SITE DURING THE WINTER CONSTRUCTION PERIOD:

1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES (ANY AREA HAVING A GRADE GREATER THAN 25%): THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15TH. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15TH, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
 - A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS: BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED HAY MULCH OVER THE SEEDING AT TWICE THE RATE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS.
 - B. STABILIZE THE SLOPE WITH WOOD-WASTE COMPOST: THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD-WASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. THE CONTRACTOR WILL NOT USE WOOD-WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
 - C. STABILIZE THE SLOPE WITH STONE RIPRAP: THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER

15TH. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS - BY SEPTEMBER 15TH THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON THE SITE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ON OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

- A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION: BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET. LIGHTLY MULCH THE SEED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER, 1. THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.
- B. STABILIZE THE SOIL WITH SOD: THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR NAILING THE SOD ONTO THE GROUND, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- C. STABILIZE THE SOIL WITH MULCH: BY NOVEMBER 15TH THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH NETTING OR OTHER METHOD TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

EROSION CONTROL REMOVAL

AN AREA IS CONSIDERED STABLE IF IT IS PAVED OR IF 90% GROWTH OF PLANTED SEEDS IS ESTABLISHED. ONCE AN AREA IS CONSIDERED STABLE, THE EROSION CONTROL MEASURES CAN BE REMOVED AS FOLLOWS:

1. SILT FENCE: SILT FENCE SHALL BE DISPOSED OF LEGALLY AND PROPERLY OFF-SITE. ALL SEDIMENT TRAPPED BEHIND THESE CONTROLS SHALL BE DISTRIBUTED TO AN AREA UNDERGOING FINAL GRADING OR REMOVED AND RELOCATED OFF-SITE.
2. STABILIZED CONSTRUCTION ENTRANCE: THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE REMOVED ONCE THE COMPACTED ROADWAY BASE IS IN PLACE. STONE AND SEDIMENT FROM THE CONSTRUCTION ENTRANCE SHALL BE REDISTRIBUTED TO AN AREA UNDERGOING GRADING OR REMOVED AND RELOCATED OFFSITE.
3. MISCELLANEOUS: ONCE ALL THE TRAPPED SEDIMENTS HAVE BEEN REMOVED FROM THE TEMPORARY SEDIMENTATION DEVICES THE DISTURBED AREAS MUST BE REGRADED IN AN AESTHETIC MANNER TO CONFORM TO THE SURROUNDING TOPOGRAPHY. ONCE GRADED THESE DISTURBED AREAS MUST BE LOAMED IF NECESSARY, FERTILIZED, SEEDDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.

THE ABOVE EROSION CONTROLS MUST BE REMOVED WITHIN 30 DAYS OF FINAL STABILIZATION OF THE SITE. CONFORMANCE WITH THIS PLAN AND FOLLOWING THESE PRACTICES WILL RESULT IN A PROJECT THAT COMPLIES WITH THE STATE REGULATIONS AND THE STANDARDS OF THE NATURAL RESOURCES PROTECTION ACT, AND WILL PROTECT WATER QUALITY IN AREAS DOWNSTREAM FROM THE PROJECT.

MAINE CONSTRUCTION GENERAL PERMIT REQUIRED

SUBMISSION OF A MAINE CONSTRUCTION GENERAL PERMIT (MCGP) IS REQUIRED PRIOR TO COMMENCEMENT OF ANY EXCAVATION ACTIVITIES.

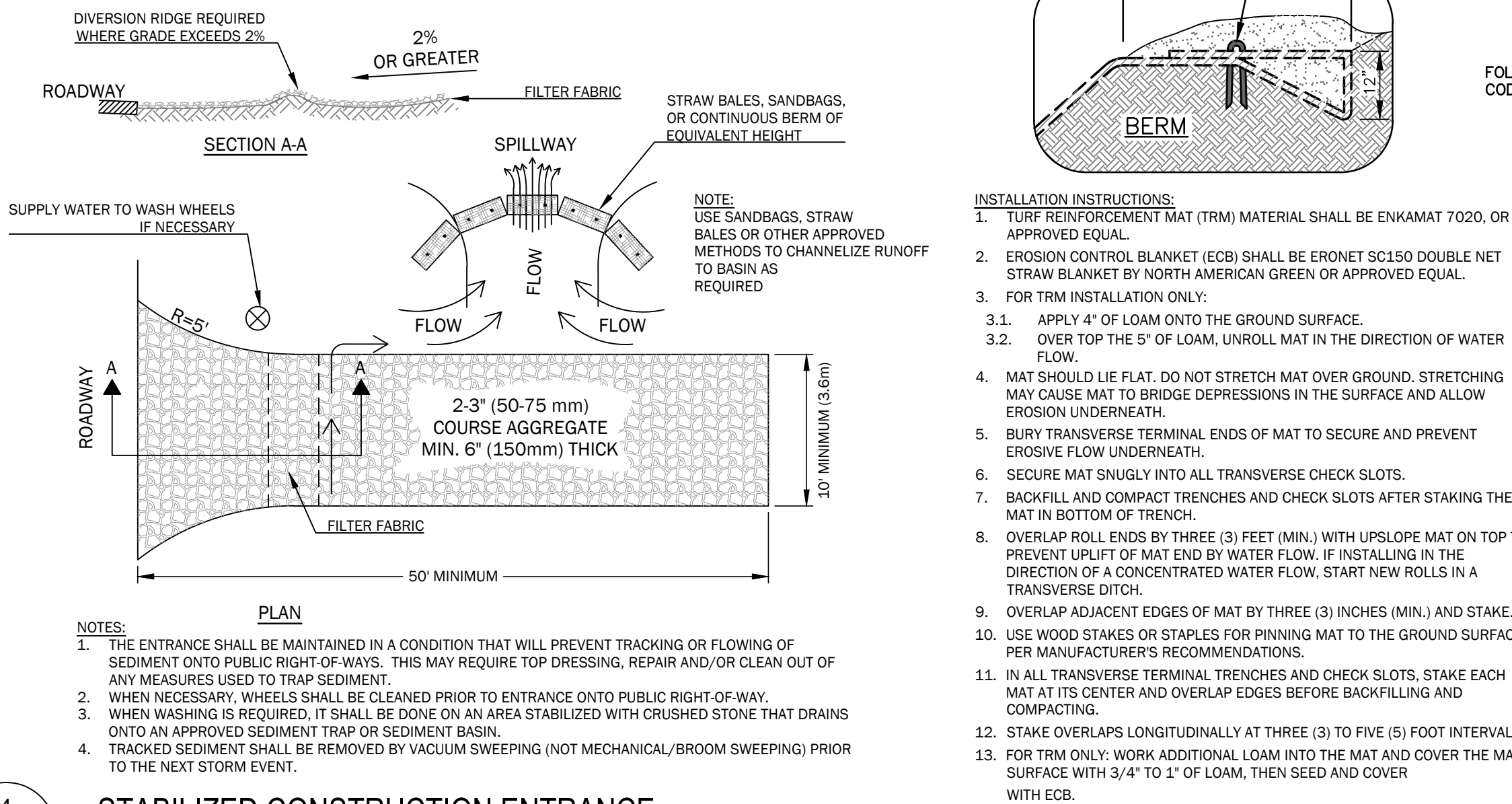
INSPECTION AND MAINTENANCE (APPENDIX B)

1. INSPECTION AND MAINTENANCE REQUIREMENTS: INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND AFTER A SIGNIFICANT STORM EVENT (0.5 INCHES OF RAINFALL IN A 24-HOUR PERIOD) AND PRIOR TO COMPLETION OF PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS IN THE MCGP AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THE MCGP, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY, IMPLEMENTATION MUST BE STARTED BY THE END OF THE NEXT WORKIN DAY AND COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED. DOCUMENTATION OF CORRECTION ACTIONS SHALL BE MAINTAINED WITH THE INSPECTION FORMS.
2. INSPECTION LOG (REPORT): A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs, NOTE IN THE INSPECTION LOG THE CORRECT ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO THE DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF THE PERMANENT STABILIZATION.

HOUSEKEEPING (APPENDIX C)

1. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1-800-482-0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT: HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGENCIES/



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

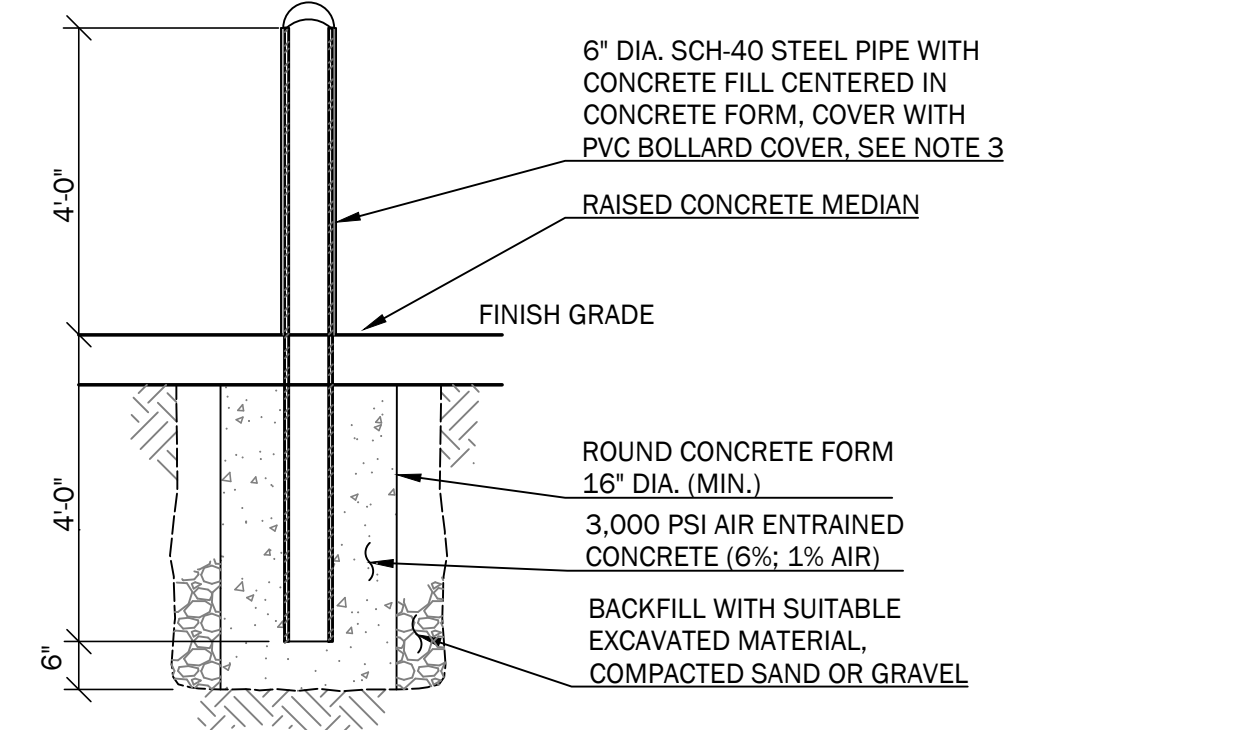
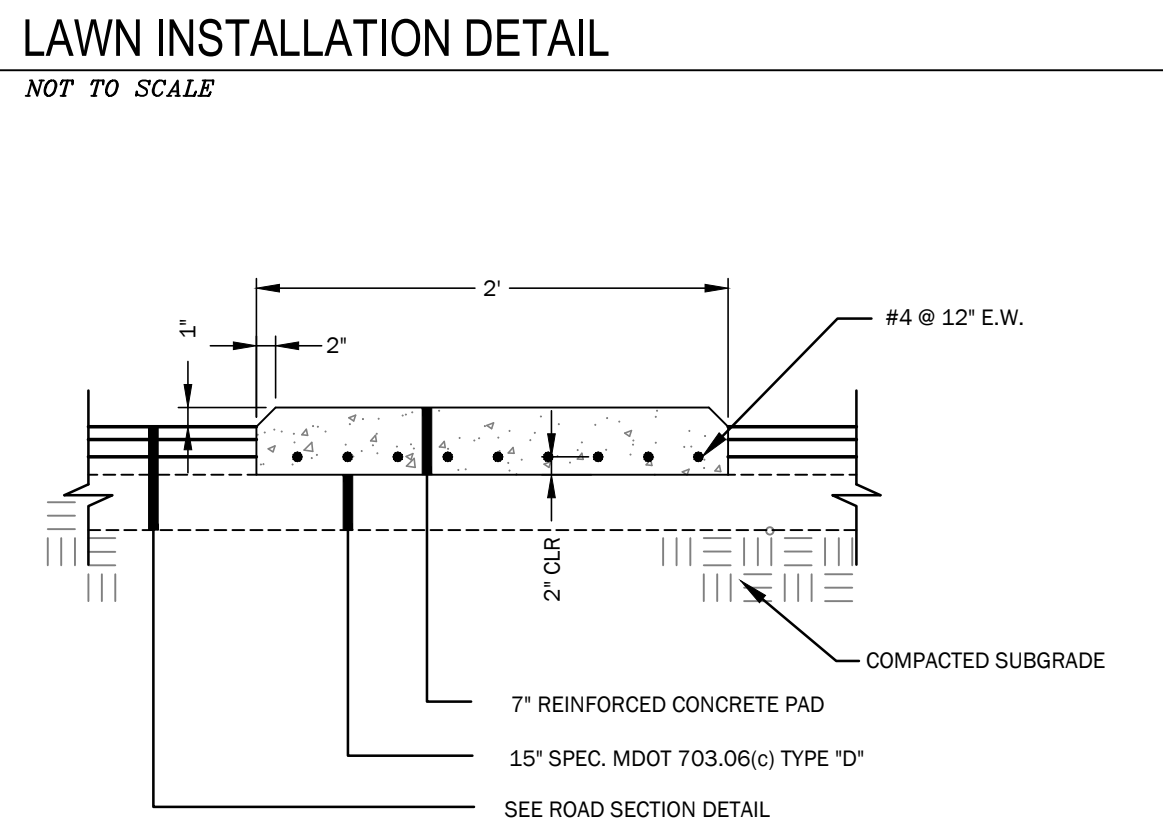
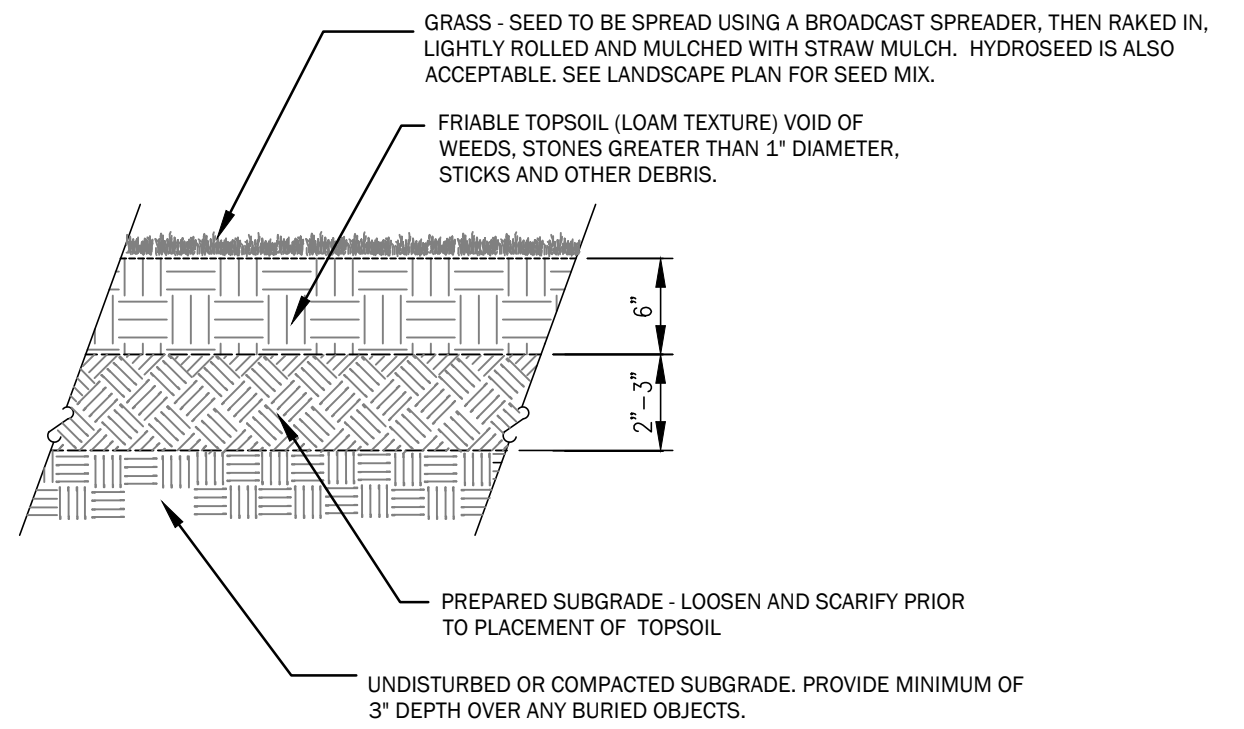
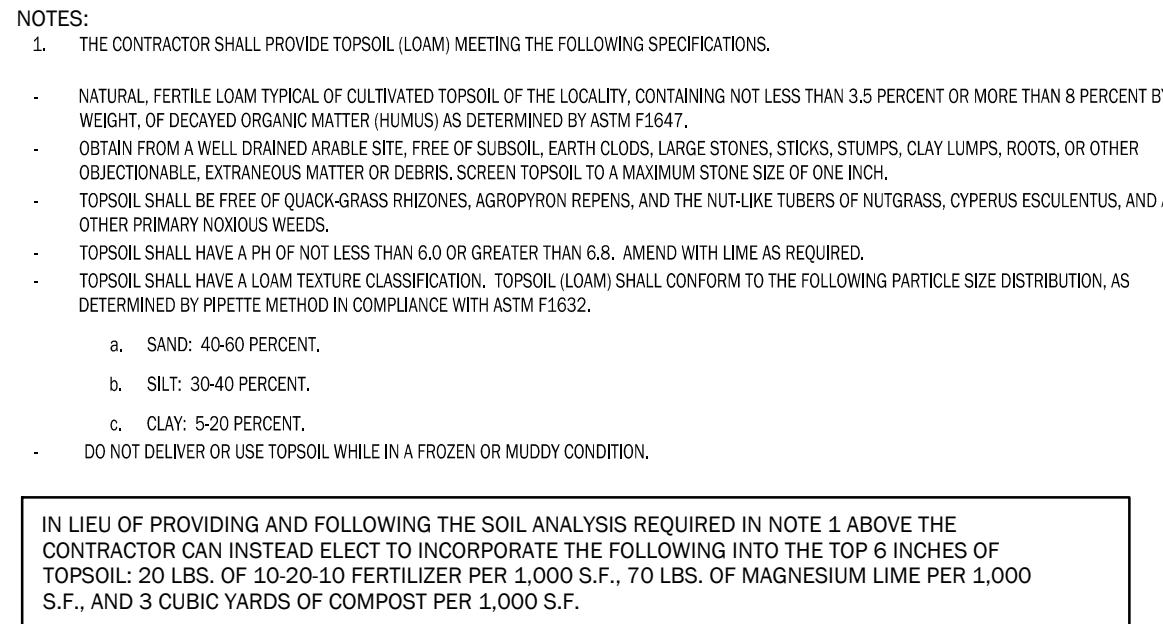
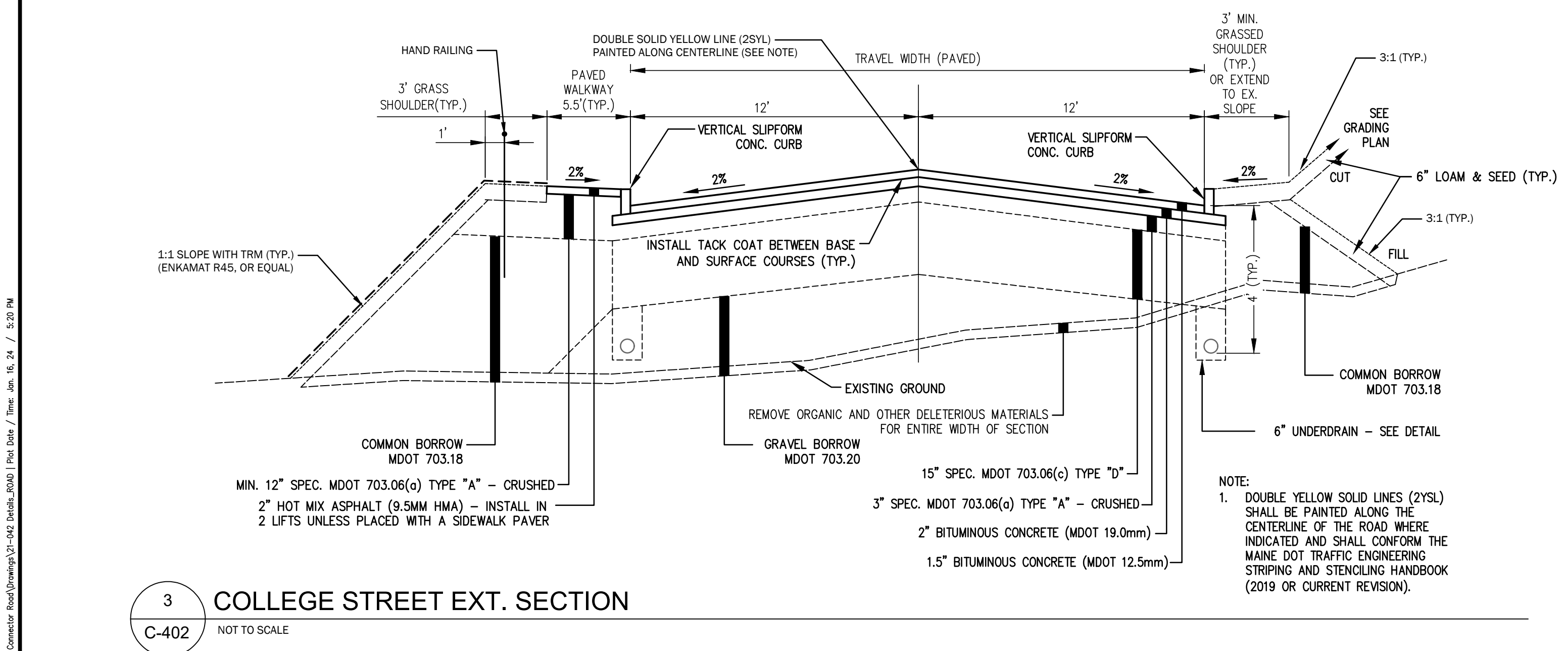
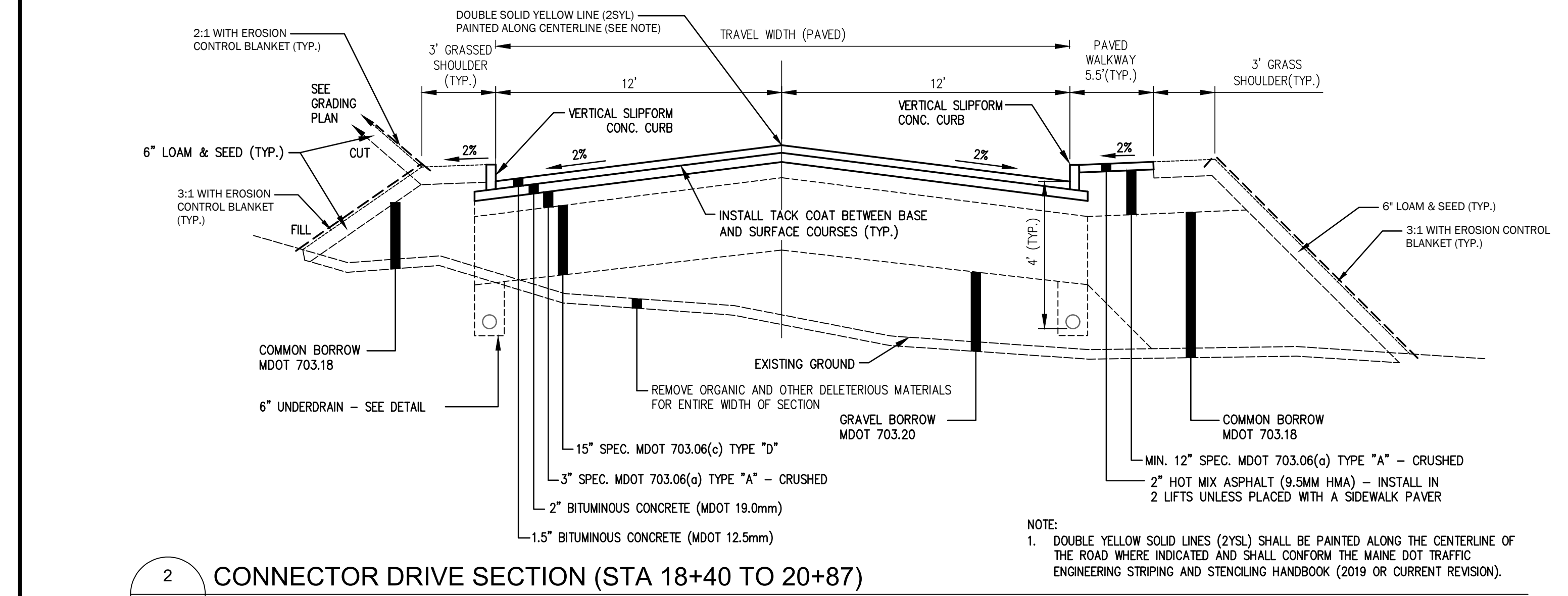
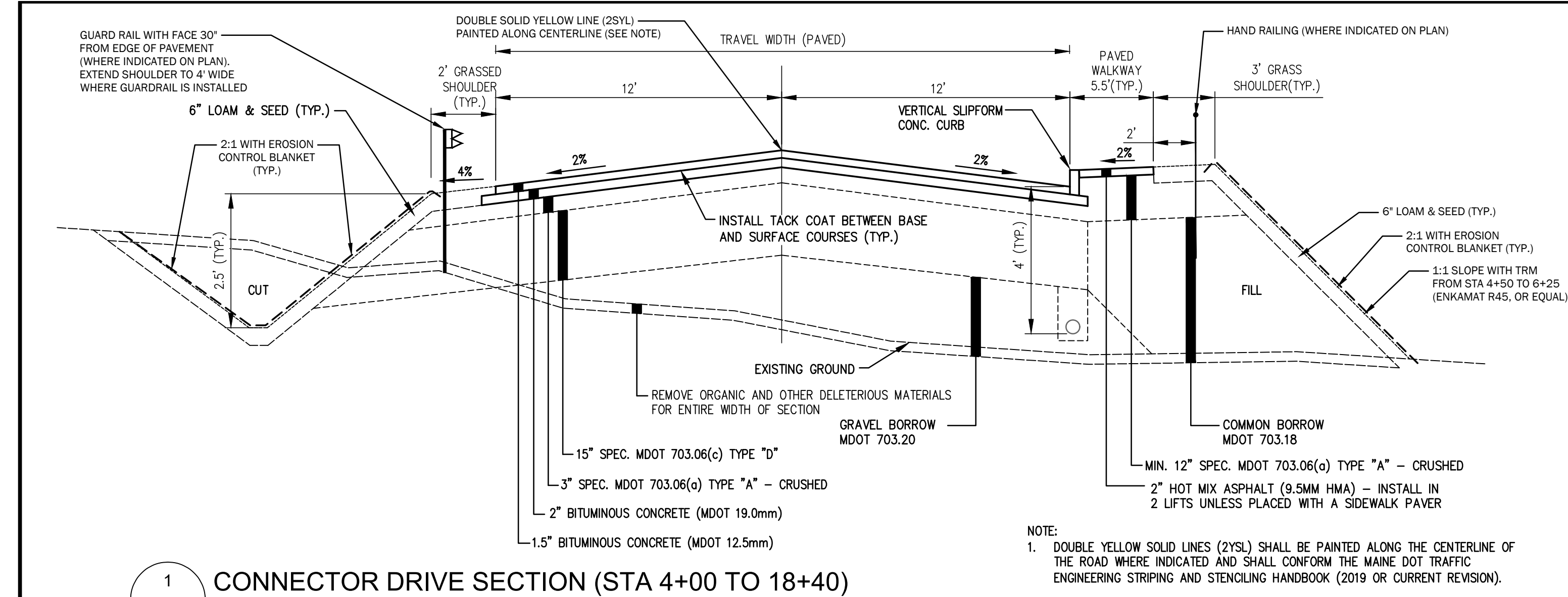
DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	EROSION AND SEDIEMENTATION CONTROL NOTES AND DETAILS
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-400

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS									
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						
B	9/22/2023	FOR DEVELOPMENT REVIEW	DEPT.	TWS	TWS						
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION	DEPT.	TWS	TWS						



1/12/2024



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.

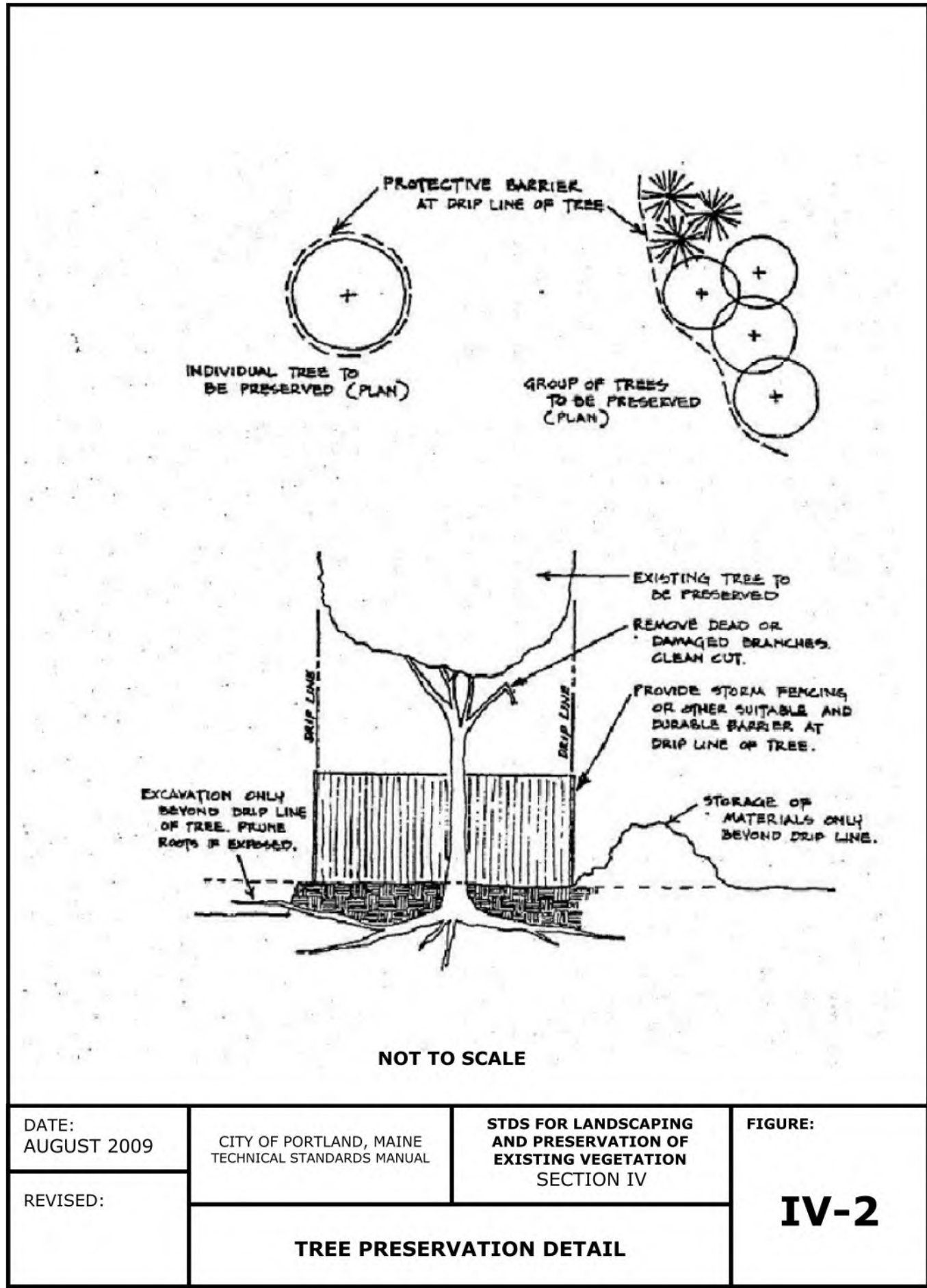
REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS				DEPT.	TWS	TWS			
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			
B	9/22/2023	FOR DEVELOPMENT REVIEW				DEPT.	TWS	TWS			
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION				DEPT.	TWS	TWS			



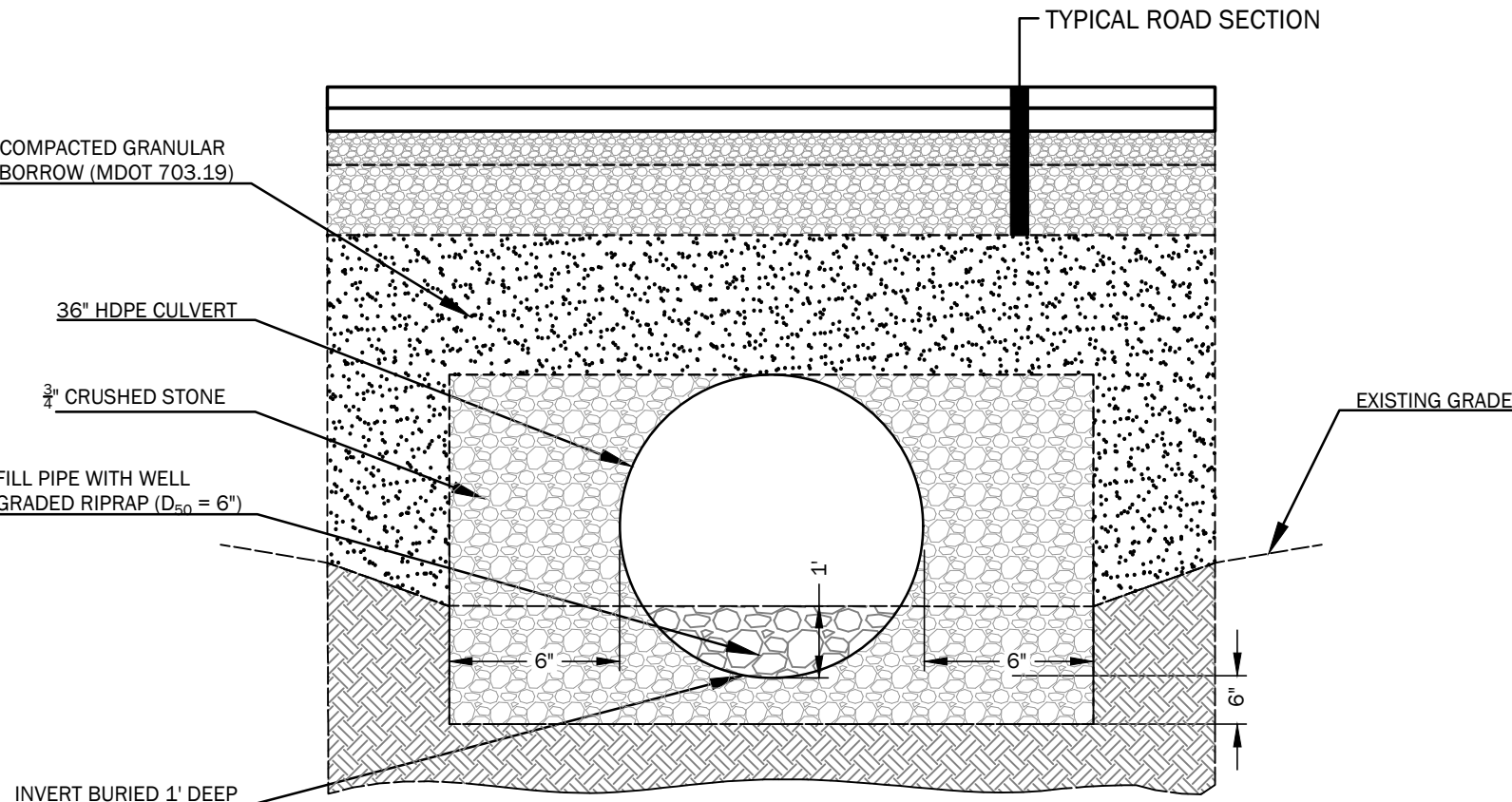
Site Design Associates
Consulting Engineering & Land Planning
23 Whitney Way Topsham, Maine 04086 Tel: (207) 449-4275
CLIENT: UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE DETAILS
DATE: SEP. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-402
	REV. E

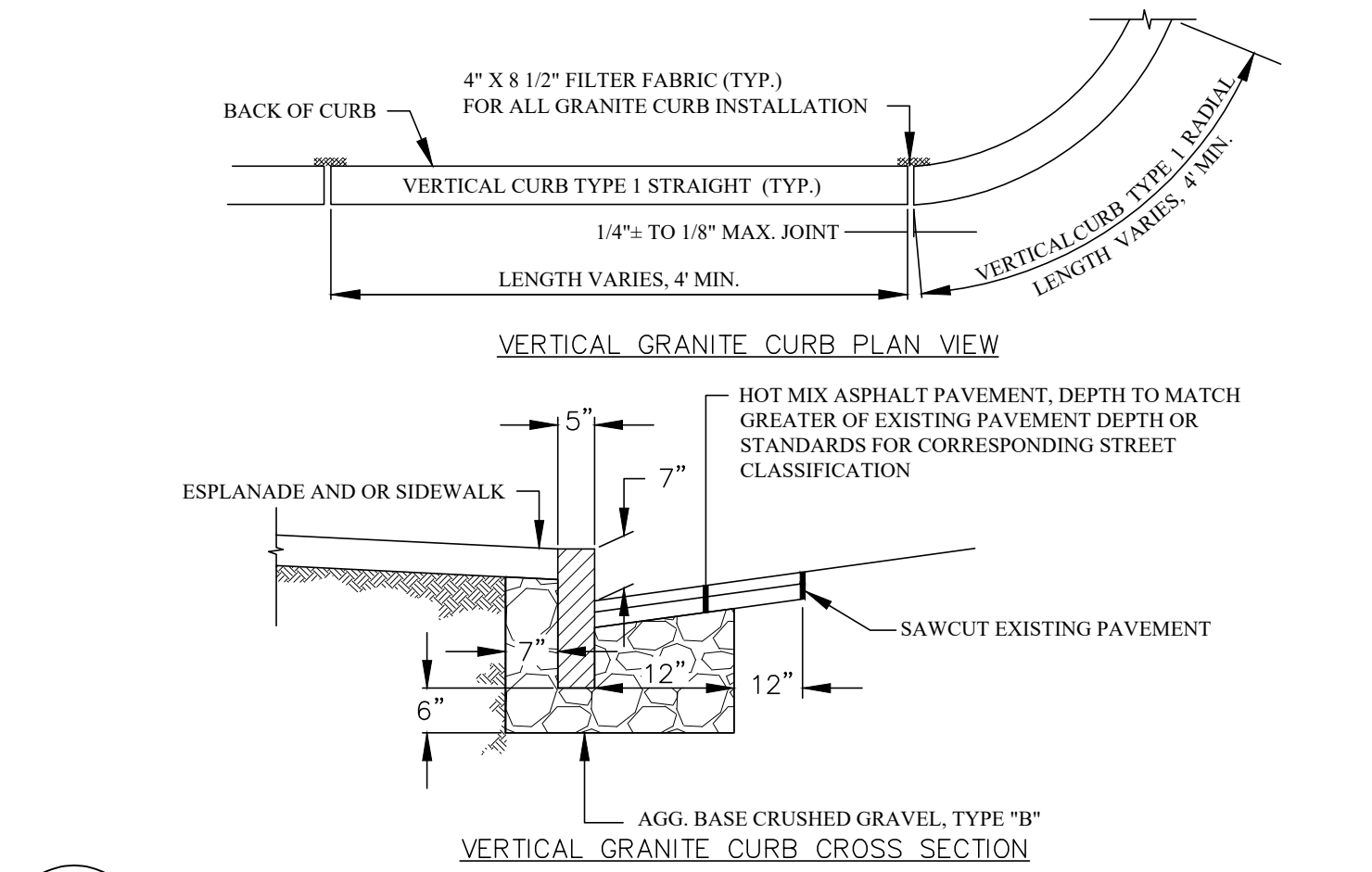
TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



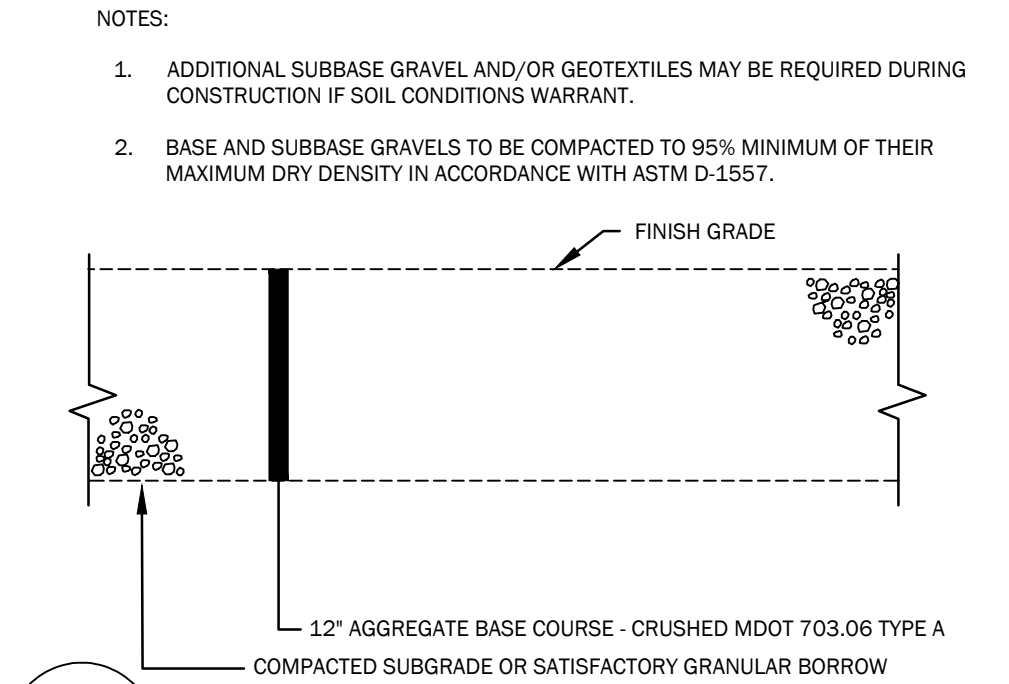
1
C-403
TREE PRESERVATION DETAIL
NOT TO SCALE



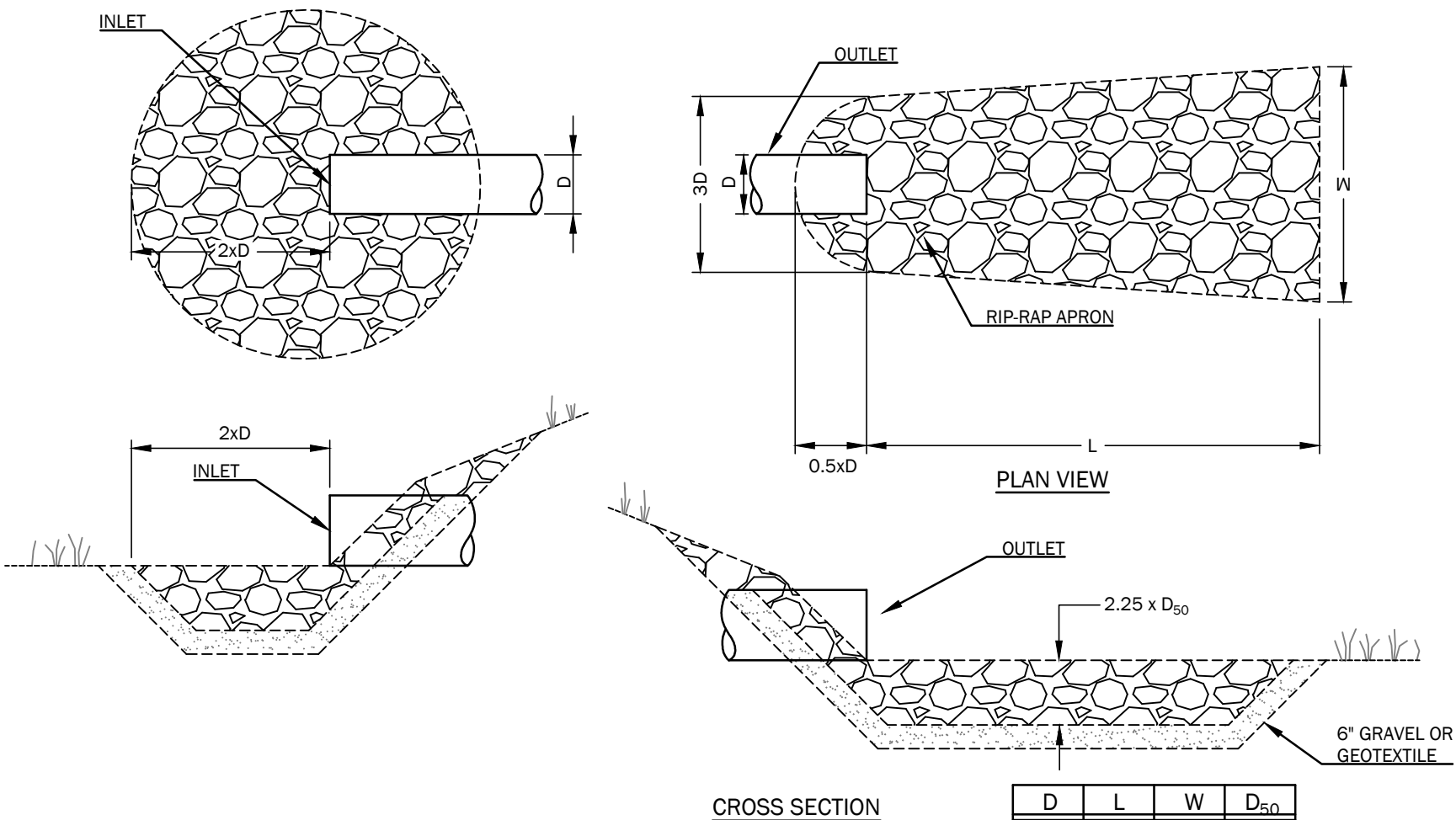
5
C-403
WETLAND & STREAM CROSSING CULVERT INSTALLATION DETAIL
NOT TO SCALE



2
C-403
VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE

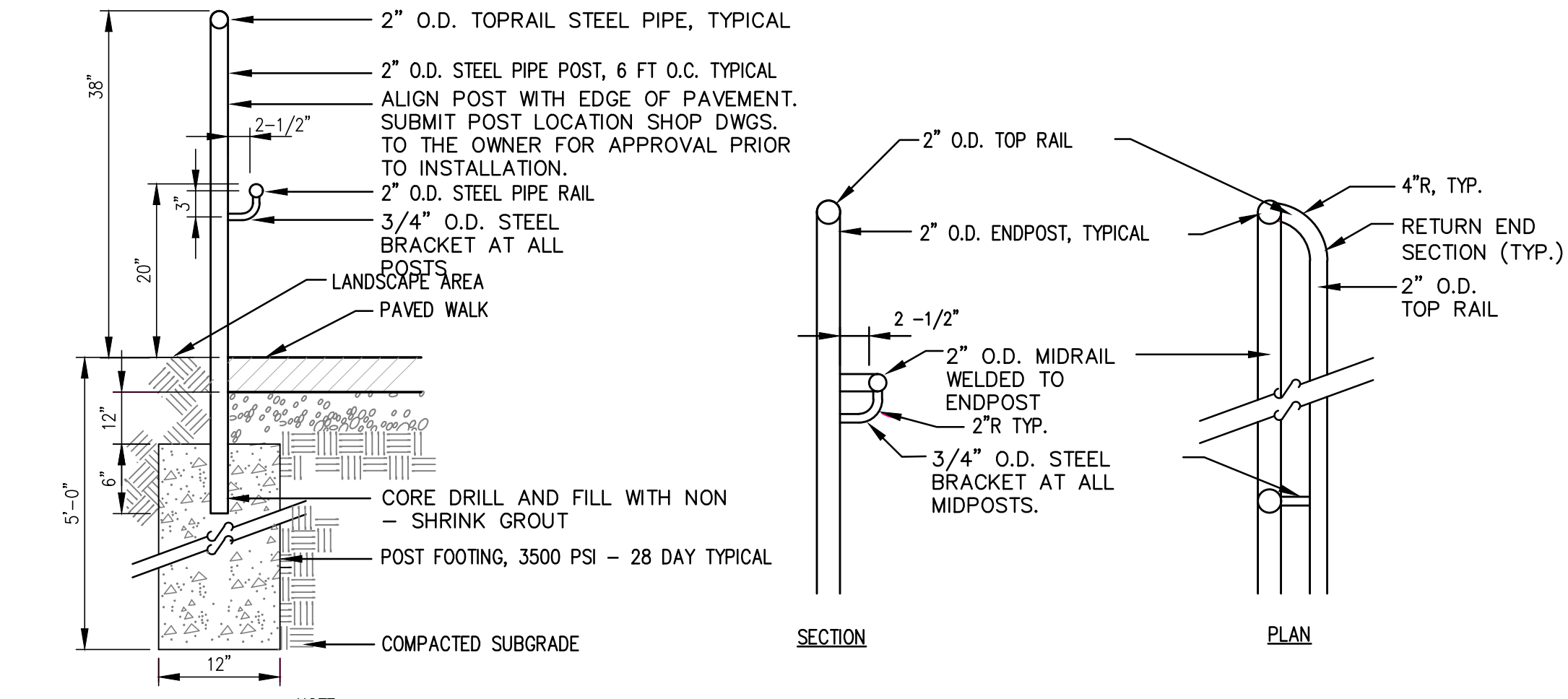


3
C-403
GRAVEL PATH DETAIL
NOT TO SCALE

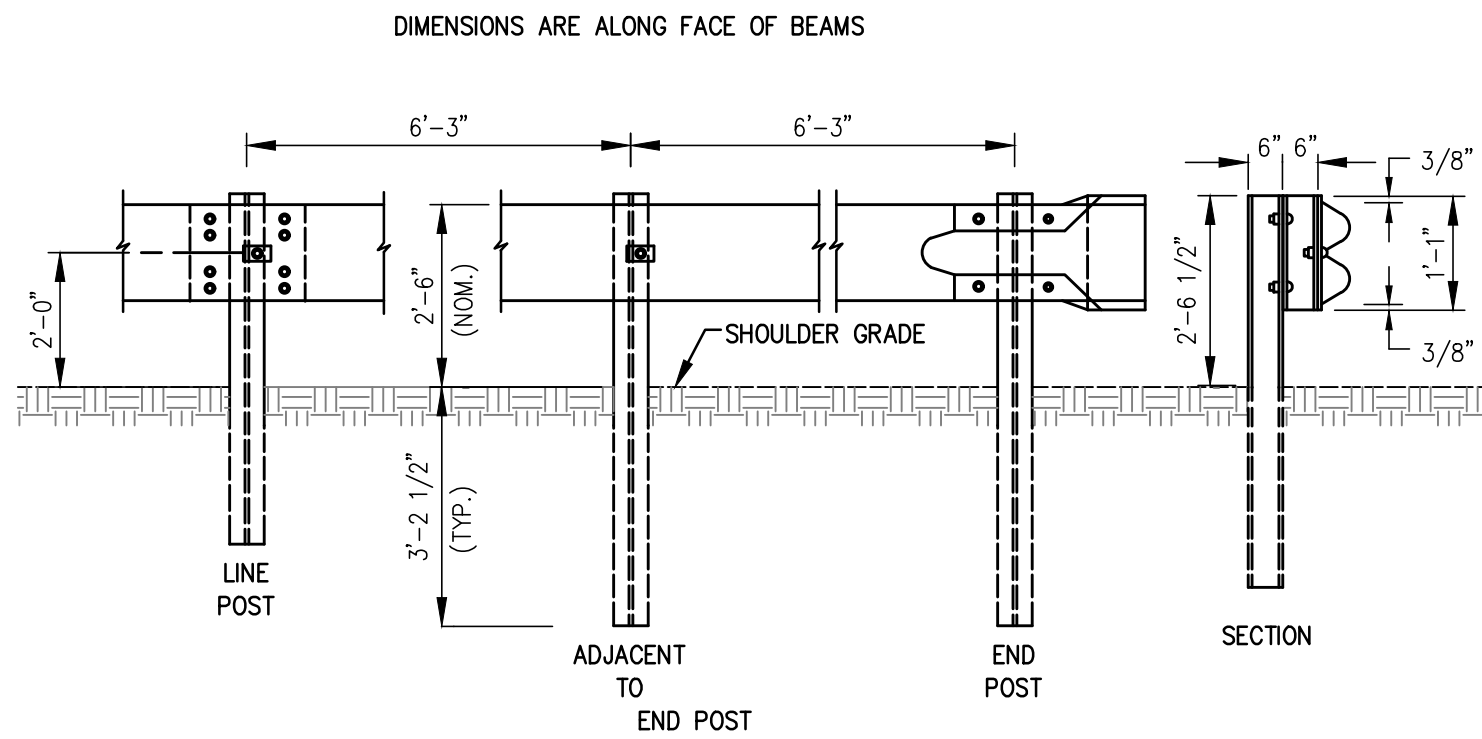


4
C-403
RIP-RAP INLET/OUTLET APRON
NOT TO SCALE

D	L	W	D ₅₀
6"	2.25'	2'	4"
12"	6'	4'	5"
15"	7'	5'	6"
18"	12'	8'	8"
30"	18'	10'	10"
36"	18'	12'	12"



6
C-403
HANDRAIL SECTION DETAILS
NOT TO SCALE



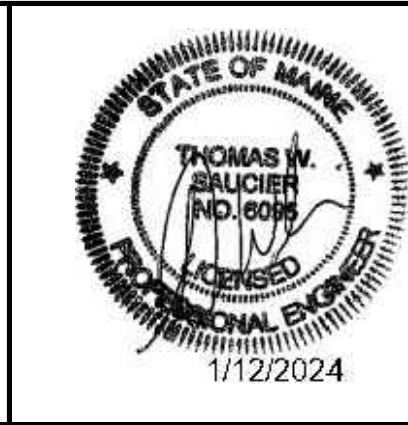
7
C-403
METAL GUARD RAIL DETAIL
NOT TO SCALE

NOTES:

1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POST AND OFFSET BRACKETS SHALL BE 4"x 6" I-BEAM 8.5 OR 9.0 LBS./FT. LENGTH OF 5'-9" ATTACHED WITH 5/8" DIA. BOLTS WITH HEX NUTS.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED PRIOR TO GALVANIZING.
4. RAIL PANELS AND END SECTIONS TO BE 12 GAUGE STEEL.
5. BACK-UP PLATE TO BE PLACED BEHIND RAIL ELEMENTS AT INTERMEDIATE STEEL POSTS (NON-SPLICE POSTS).
6. ALL PARTS SHALL CONFORM TO CURRENT MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
7. WHEN GUARDRAIL IS CONSTRUCTED AT UP TO FOUR FEET FROM THE EDGE OF PAVEMENT, THE GUARDRAIL WILL BE SET FROM THE GRADE AT THE FACE OF RAIL.
8. END SECTIONS TO BE IN ACCORDANCE WITH MAINE DEPARTMENT OF TRANSPORTATION STANDARDS.
9. GUARDRAIL SET ON A RADIUS OF 150 FEET OR LESS TO BE CIRCULAR.
10. GUARDRAIL MATERIAL FINISH SHALL BE DETERMINED BY OWNER.

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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
C	1/12/2024	REVISED PER CITY COMMENTS									
B	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION									
A	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									



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.	PROJECT:
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE
CHKD: TWS	SITE DETAILS
DATE: NOV. 2023	PROJ. NO. 21-216-00
SCALE: AS NOTED	DWG. NO. C-403

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014

Site Design Associates

Consulting Engineering and Land Planning

December 12, 2023

Maya Balassa, Planner
City of Portland
Via email

**RE: University of New England
Major Site Plan Application for:
Connector Drive
PL-002666-2023
83 College Street
Responses to November 1 Staff Comments**

Dear Maya;

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 staff in your November 1, 2023 review memorandum. We have listed each of your “red” comments in the order they were presented followed by our responses.

1. Additional submissions requested:

Comment: *The address on Energov says 716 Stevens Ave. The documents and site plans utilize 83 College Street. Please alter the application materials to have a single address across*

Response: The city GIS mapping and assessor records refer to the majority of the parcel as 83 College Street. For some reason, the city staff set up the EPlan directory with the 716 Stevens Ave address. Please advise on how this will be handled.

2. Access and circulation:

Comment: *Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.*

Response: A striped bike lane will not be included. The pavement markings will include sharrows laid out in accordance with the MUTCD per the attached memo from Diane Morabito, the traffic engineer.

Comment: *To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.*

23 Whitney Way Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *Please clarify who specifically will have gate card access.*

Response: UNE's students, staff, and faculty will have gate access.

Comment: *The Bishop Street driveway is to remain in place and gated. While the city supports a pedestrian/bicycle connection, we would suggest that the curb cut be closed.*

Response: The plans have been revised to show a reduction in the Bishop Street curb cut length to 10 ft, while maintaining access for cyclists and pedestrians. We decided on 10 ft for shared bicycle and pedestrian access. We hope this satisfactorily addresses this comment.

3. Landscape Preservation:

Comment: *Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.*

Response: Please see the attached memo from the traffic engineer recommending that the 24 ft width be maintained. A NRPA Tier 1 permit has been issued by DEP for the wetland impacts. A copy of this permit is attached.

Comment: *This survey indicates areas with tree canopy cover but not tree locations, size and species information. Per the City's Technical Manual Chapter 4.3.1, the survey should identify location, size and species of all existing trees 10" diameter at breast height (DBH) or greater on the site. Given the predominantly wooded nature of the project site, it is acceptable for the applicant to identify only trees proposed to be removed as part of this project, noting the size (in DBH) and species information for existing trees 10" DBH or greater.*

Response: Existing trees 10" DBH or over to be removed are now shown on the plans.

Comment: *The existing site has some notable patches of Japanese Knotweed. The applicant shall follow the requirements laid out in Technical Manual section 4.7.4 for the containment and removal of invasive plants in the limit of work to prevent*

them spreading into newly disturbed ground.

Response: A note has been added to the plans to address this comment.

Comment: *For existing trees being preserved that are adjacent to the limit of work, the applicant shall follow tree protection requirements described in Technical Manual chapter 4.3 and tree preservation detail IV-2*

Response: A note has been added to the plans to address this requirement.

Comment: *Areas around the carriage road that are being cleared of trees due to grading shall be replanted with native straight species trees and exposed soil shall be covered with undyed wood mulch and/or seeded with native shade-tolerant seed mixes where appropriate.*

Response: A landscape plan has been prepared to address this comment. Areas along the proposed carriage road which are proposed to be cleared of trees and provide a large enough area for replanting will be replanted with Sugar Maple saplings. These areas are primarily on 2:1 and 3:1 slopes. To enable a rootball to be planted on these slopes we are proposing ½" caliper saplings which will have a rootball approximately 12 inches in diameter x 9" deep. A tree planting detail showing a planting on a slope is provided on the Landscape Plan.

The slope areas are called out to be mulched with a 5" layer of erosion control mix as distributed by Casella Organics or approved equivalent. This layer of mulch will stabilize and protect the soil, and allow the saplings to establish themselves prior to competition from other plants.

4. Site Landscaping and Buffers:

Comment: *The area where gravel is being removed is currently proposed to be covered with loam and reseeded with "park mix" grass seed. The area in question is surrounded by woodland and is partly shaded. City staff suggest selecting a seed mix that is composed of native part shade- tolerant forbs that will fit into the woodland setting. The park mix grass seed is more appropriate for maintained lawn areas than forested woodlands.*

Response: A landscape plan has been prepared to address this comment. Open areas and the proposed swales are to be seeded with New England Erosion Control/Restoration Mix for Detention Basins and Wet Sites. This mix contains a selection of native grasses and wildflowers designed to colonize generally moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the soil. The plants in this mix can withstand moist, infrequently inundated sites as well as some shade. These areas will be mowed no more than two times per year to keep woody vegetation out.

Comment: *There are at least three existing footpaths/trails that connect to the carriage road which are not currently represented on the plans. Please locate the existing trails on the site plan and ensure the pathway connections are being maintained or improved as part of the carriage road improvement project. At least one of the trails is heavily used by pedestrians as a connection between Evergreen Cemetery and the UNE campus.*

Response: The existing trails are now shown on the drawings and Portland Trails confirmed the locations are accurate. We have discussed the access with Portland trails, and they have confirmed the locations are accurate. Our discussions with them continue in regards to potential signage.

5. Water Quality, Stormwater management, and Erosion Control:

Comment: *Overall SLOD – Additional clarity is needed on the area that is intended to be covered by the SLOD Application. As was noted on previous application reviews that highlighted the need for the SLOD permit, looking at the entire site as one is advantageous, allowing for treatment to be accounted for across the site to meet the required standards. The Applicant is proposing to do that here, but additional information is needed. The figures provided show the redevelopment evaluation of the Intermodal Transportation Facility and Connector Drive to determine the amount of treatment that will be required per the MaineDEP standards for redevelopment. The ultimate stormwater management scenario includes systems located within this area, but also a system within the Center for Health Sciences. As I understand the analysis, the Center for Health Services project area is not included as part of the SLOD calculations.*

Response: That is correct. The HBACHS project was completed before the campus exceeded the SLODA thresholds. Therefore, the HBACHS portion of the project is not included in the SLODA stormwater treatment calculations. The soil filter in the HBACHS area (SF1) that receives runoff from the new Connector Drive was oversized when it was originally designed/constructed to accommodate this future anticipated runoff from the Connector Drive. Calculations are provided on Table 2 within the stormwater management report showing that SF1 is properly sized to treat the additional runoff from the Connector Drive project. The HBACHS columns in Table 2 are only to indicate proper sizing of SF1. As indicated in the table the HBACHS areas are not included in calculating the general/redevelopment standards.

Comment: *As noted, our understanding of the project intent is that treatment from both the Intermodal Transportation Facility and the Center for Health Sciences is to be counted towards the requirement for the Connector Drive. Detail on the Intermodal Transportation Facility is included, but it is unclear how the Center for Health Sciences site's design fits into the area/treatment calculations.*

Response: As indicated in the report and Table 2, only the ITF and the Connector Drive projects are included in the general/redevelopment calculations for the city and the SLODA requirements for this project.

Comment: *The applicant shall prepare easement documents for the proposed expanded easement associated with the extension of the City's 36" Bishop Street storm-water outfall and provide information/details of how the existing 36" RCP pipe will be extended.*

Response: We will draft easement documents to address this comment. We are hopeful this could be considered as a staff recommended condition of approval.

Comment: *The applicant shall submit DEP permits for the proposed stream crossings and wetland impacts for review as part of this site plan review.*

Response: A copy of the NRPA permit for wetland impacts is attached. A NRPA PBR notification was filed with the NRPA application on September 23.

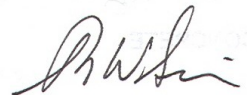
6. Exterior Lighting:

Comment: *The photometric plan shows a maximum foot-candle of 6.3 and an average foot-candle of 2.3 in the stat zone. The maximum foot-candle allowed is 5 for this use, with an average of 1.25. Please adjust the lighting plan to meet this standard.*

Response: A revised photometric plan which demonstrates compliance with this standard is included.

In closing, we would be happy to meet with staff and consultants to discuss any items which may require further clarification if necessary. If you have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

c: Andrew Philippe, Director for Campus Planning

November 14, 2023

Mr. Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086

RE: RECOMMENDATIONS FOR UNE CONNECTOR DRIVE

Dear Tom,

As requested, I have reviewed the comments issued by the City of Portland regarding the proposed connector drive on the UNE campus. This drive will connect the Bishop Street Intermodal Transportation Facility (ITF) to the core campus and College Street Extension. The currently proposed driveway is 24' wide with a 5' raised sidewalk. Some of the City comments and questions regarding this proposed cross section are as follows:

- Please clarify if this project will have a striped bike lane? The applicant shall provide documentation on how bicycle traffic will be accommodated on the proposed road.
- To minimize wetland impacts, we support reducing travel lane widths from 12 feet to 11 feet.
- Planning and Parks are strongly in support of narrowing the proposed roadway as much as possible to limit the degree of site disturbance and tree removal required. In particular, widening the road at the College Street extension as currently shown results in extensive tree clearing to be replaced with bleak expanses of rip-rap 1:1 slopes. Narrowing the carriage road to 22' with a 5' sidewalk allows for more limited clearing and regrading and could support slower speeds through this short shuttle connection to the multi-modal parking lot.

Sewall has reviewed the above City comments and the Connector Drive plans, prepared by Site Design Associates, dated 9/22/2023.

The proposed drive section is to provide for both motor vehicles and bicycles since the 5' sidewalk cannot provide for both pedestrians and bicycles. The generally recommended minimum width for a multiuse path is 10'. A 10' multiuse path and a 22' wide travel way would result in a greater width of 32' with greater environmental impacts. Since 5' is generally considered the minimum sidewalk width, the proposed drive must provide for both bicycles and motor vehicles. For this reason, Sewall recommends that the 24' width be maintained. According to the AASHTO "Guide for the Development of Bicycle Facilities, 2012, Fourth Edition", roadways that have low volumes and low

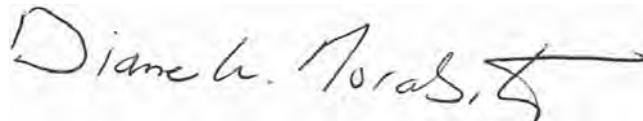
speeds are generally suitable for shared lanes. The guide indicates that roadways with lane widths of 13' or less require that motorists will encroach into the opposing lane to pass a bicyclist. By maintaining a 12' lane width this encroachment will be minimized. Given that motorists and bicyclists will be sharing the same lane, it is recommended that the drive be marked with sharrows, which are used to indicate a shared lane facility. This will alert drivers to the presence of bicyclists and the narrow lanes. Sharrows are typically used on roadways that are too narrow to provide separate marked bike lanes.

I also recommend that a "Bicycles May Use Full Lane" sign be placed on either end of the connector drive to supplement the sharrow markings.

Please don't hesitate to contact me if you or the City of Portland have any questions or need any additional information regarding my recommendations.



Sincerely,



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



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) FRESHWATER WETLAND ALTERATION
CONNECTOR DRIVE	) WATER QUALITY CERTIFICATION
L-30525-TC-A-N (approval)	) FINDINGS OF FACT AND ORDER

Project Description: The applicant proposes to alter 11,187 square feet of forested, emergent and scrub shrub wetlands. The applicant proposes to reconstruct an existing connector drive between the University of New England's Intermodal Transportation Facility and the main campus as shown on a plan titled "Connector Drive," prepared by Site Design Associates, and dated September 2023. The reconstruction project includes an effort to increase the safety of the connector drive by installing sidewalks and call boxes as well as widening the existing drive to two 12-foot travel ways. The applicant has avoided and minimized wetland impacts to the greatest extent practicable by locating the reconstructed connector drive in the same location as the existing connector drive wherever possible. One section of the connector drive will be relocated so that it connects directly to the intermodal transportation facility rather onto a public street as it does currently. The side slopes of the connector drive will be increased from the standard 3H:1V slope to the maximum slope of 2H:1V to minimize wetland impacts. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site. The proposed project is located off College Street in the City of Portland.

Permit for: ☒ Tier 1
DEP Decision: ☒ Approved ☐ Denied (see attached letter)

Please note: A U. S. Army Corps of Engineers permit may also be required for your project. The Corps typically accepts a copy of your Maine DEP NRPA application, but you are responsible for submittal to the Corps. We encourage you to contact them directly at cenae-r-me@usace.army.mil or (207) 623-8367 to discuss their application process. Please note that no regulated work within Corps jurisdiction may be started until you receive a Corps permit.

Standard Conditions:

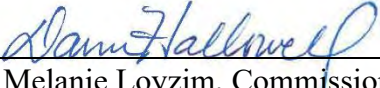
- 1) If construction or operation of the activity is not begun within four (4) years from the date signed, this permit shall lapse and the applicant shall reapply to the Department for a new permit. This permit is transferable only with prior approval from the Department. If the activity is associated with a larger project, starting any aspect of that project constitutes start of construction.
- 2) The project shall be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
- 3) Properly installed erosion control measures shall be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.

- 4) A copy of this approval will be sent to the City of Portland. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 9th DAY OF NOVEMBER, 2023.

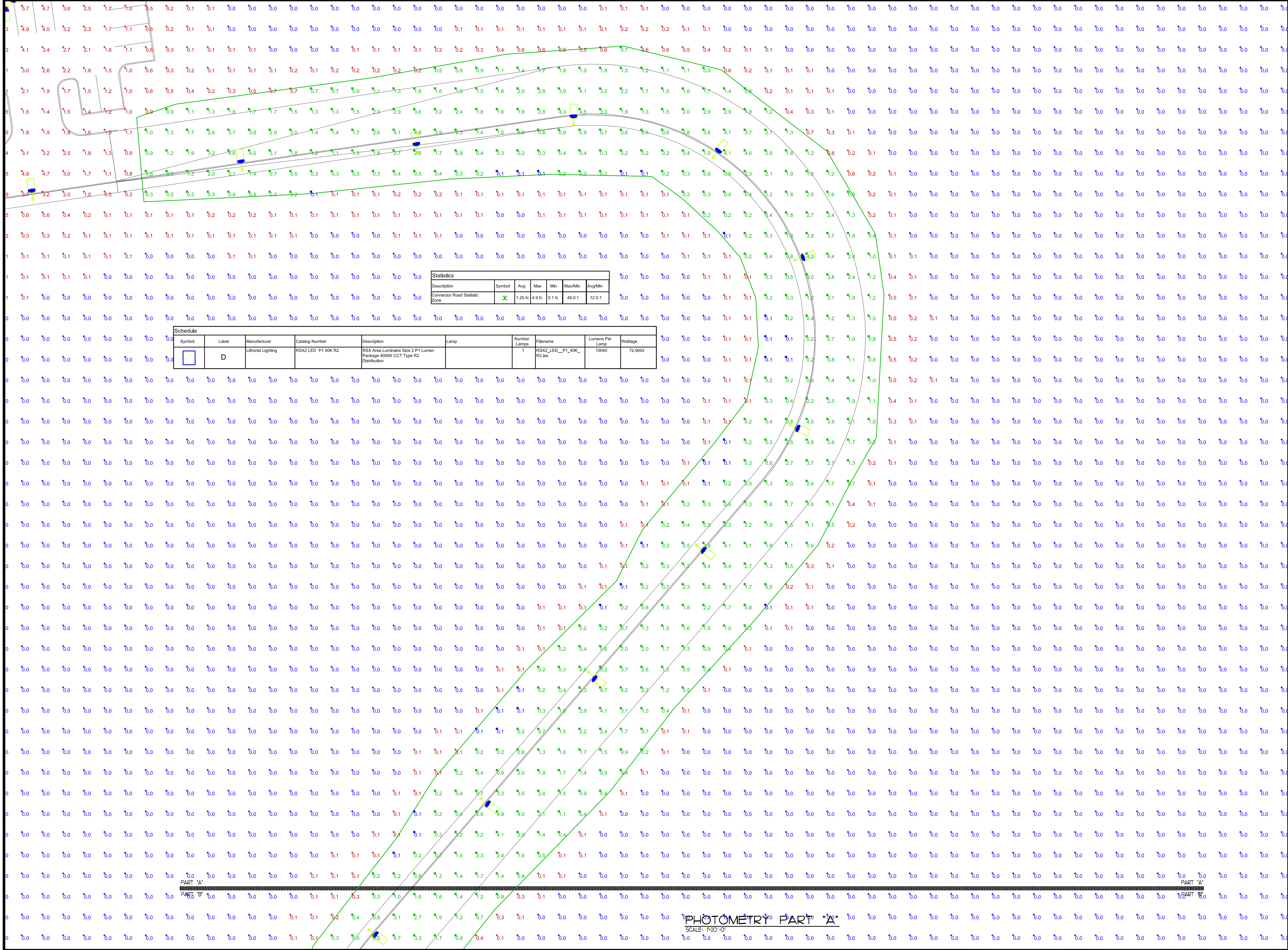
DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

SCarr/L30525AN/ATS#91509

FILED
November 9th, 2023
State of Maine
Board of Environmental Protection



est. 1972
VINCENT A. DI IORIO, INC.
CONSULTING ENGINEERS
89 Access Rd. Suite 18
Norwood, MA 02062
(781)255-9754 | vadjr@vadeng.com
www.vadeng.com

REVISIONS:		
REV.	DATE	DESCRIPTION

37 Jordan Avenue, Brunswick, ME 04011 • PH: 207-725-2005

CLIENT:

**UNIVERSITY OF
NEW ENGLAND**

PROJECT:

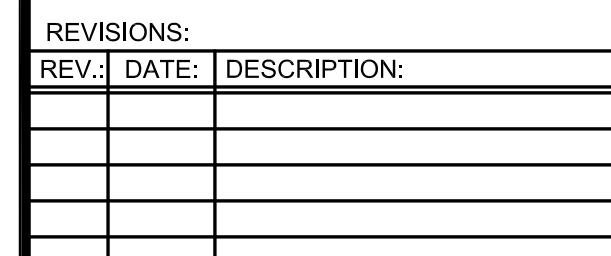
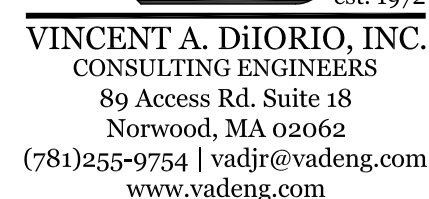
**Intermodal Transportation,
Facility, Parking Lot
Improvements**

DRAWING TITLE

**CONNECTOR ROAD
PHOTOMETRY PART "A"**

DRAWN:	CWQ
CHECKED:	VAD Jr
SCALE:	1"=20'=0"
DATE:	NOVEMBER 13, 2023

PH2.1A



CLIENT: UNIVERSITY OF
NEW ENGLAND

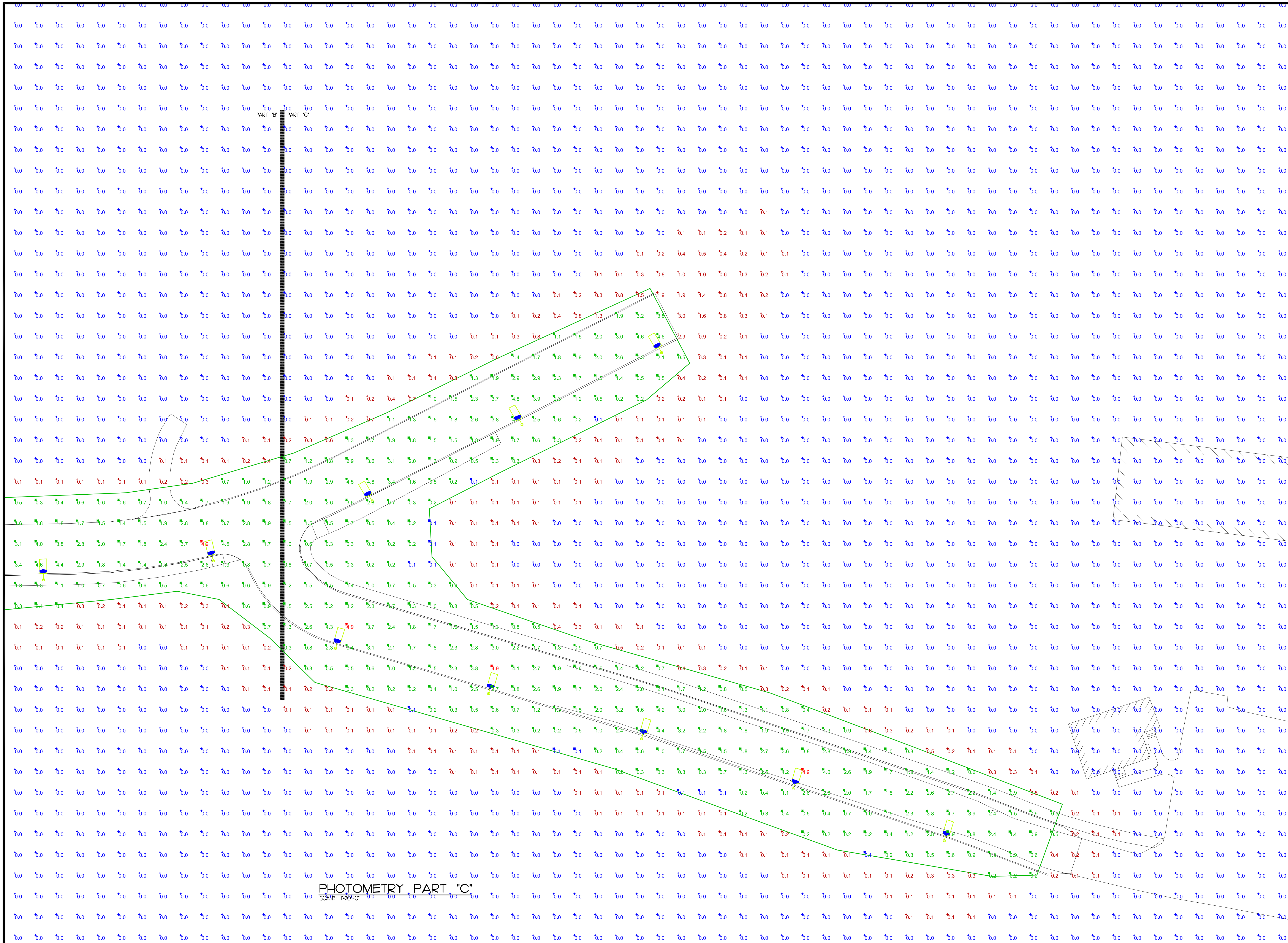
PROJECT: *Intermodal Transportation Facility, Parking Lot Improvements*

DRAWING TITLE
CONNECTOR ROAD
PHOTOMETRY PART "B"

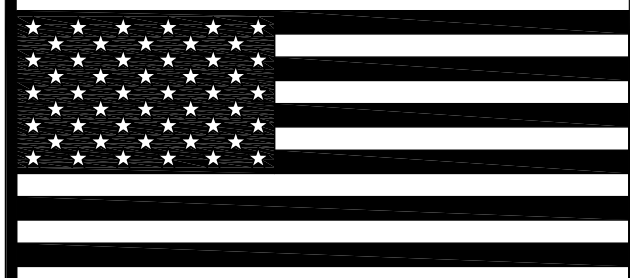
DRAWN:	CW
CHECKED:	VAD
SCALE:	1"=20'
DATE:	NOVEMBER 13, 202

PH2.1B





VINCENT A. DIORIO, INC.
CONSULTING ENGINEERS
89 Access Rd. Suite 18
Norwood, MA 02062
(781)255-9754 | vadjr@vadeng.com
www.vadeng.com



REVISIONS:		
REV.	DATE	DESCRIPTION



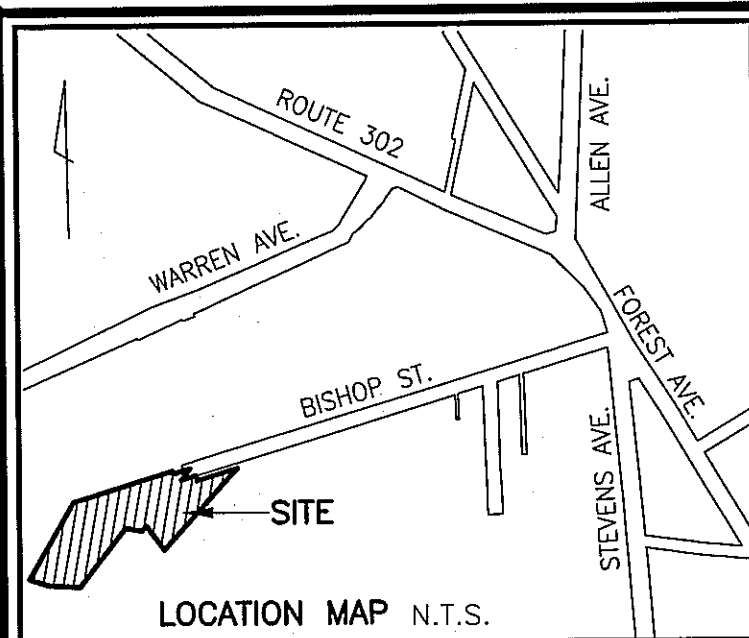
CLIENT:
**UNIVERSITY OF
NEW ENGLAND**

PROJECT:
**Intermodal Transportation,
Facility, Parking Lot
Improvements**

DRAWING TITLE
**CONNECTOR ROAD
PHOTOMETRY PART "C"**

DRAWN: CWQ
CHECKED: VAD Jr
SCALE: 1"=20'=0"
DATE: NOVEMBER 13, 2023

PH2.1C



LEGEND:

- IRON PIPE OR ROD FOUND
- GAS VALVE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- LIGHT POLE
- MANHOLE
- CATCH BASIN
- SIGN
- FENCE
- CURB
- OVERHEAD UTILITIES
- WATER MAIN
- GAS MAIN
- SANITARY SEWER
- STORM DRAIN
- EXISTING 1' CONTOUR
- WETLANDS

TM 291-A-2
N/F
PORTLAND TERMINAL CO.

N/F
PORTLAND TERMINAL CO.
RAILROAD LOCATION

N/F
WESTBROOK COLLEGE
TM 291-A-5

N/F
CENTRAL MAINE POWER CO.

TOTAL AREA
836,442 S.F.
19.2202 AC.

PLAN REFERENCES:

- TOPOGRAPHIC SURVEY ON BISHOP STREET, PORTLAND, MAINE MADE FOR PIKE INDUSTRIES, INC. DATED JUNE 17, 1999 BY OWEN HASKELL, INC.
- STANDARD BOUNDARY SURVEY OF BISHOP STREET EXTENSION DATED NOV. 1995 BY CITY OF PORTLAND PUBLIC WORKS DEPARTMENT.
- RIGHT OF WAY AND TRACK MAP PORTLAND TERMINAL COMPANY STATION 135+04.0 TO STATION 187+84.0 DATED JUNE 30, 1916 VALUATION SHEET NUMBER V1-B/1.
- PLAN OF LAND AND FARM CROSSING DATED FEBRUARY 1904 RECORDED IN REGISTRY OF DEEDS IN DEED BOOK 747 PAGE 58.
- PLAN OF PROPERTY LOCATED IN PORTLAND, MAINE MADE FOR WARREN BROS. ROADS CO. DATED JUNE 22 1962.
- PLANS ON FILE AT CENTRAL MAINE POWER COMPANY & SEWER PLANS AT CITY OF PORTLAND PUBLIC WORKS ENGINEERING DEPARTMENT.
- CITY OF PORTLAND BISHOP STREET CONNECTOR STA. 0+100 TO STA. 3+50 AS-BUILT PLAN CITY TITLE 944/B.
- PLAN OF LAND ON BISHOP STREET, PORTLAND, MAINE MADE FOR SITE DESIGN ASSOCIATES JUNE 15, 2012 BY OWEN HASKELL, INC.

CERTIFICATION:

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.

7/24/12
DATE

JOHN W. SWAN, PLS NO. 1038



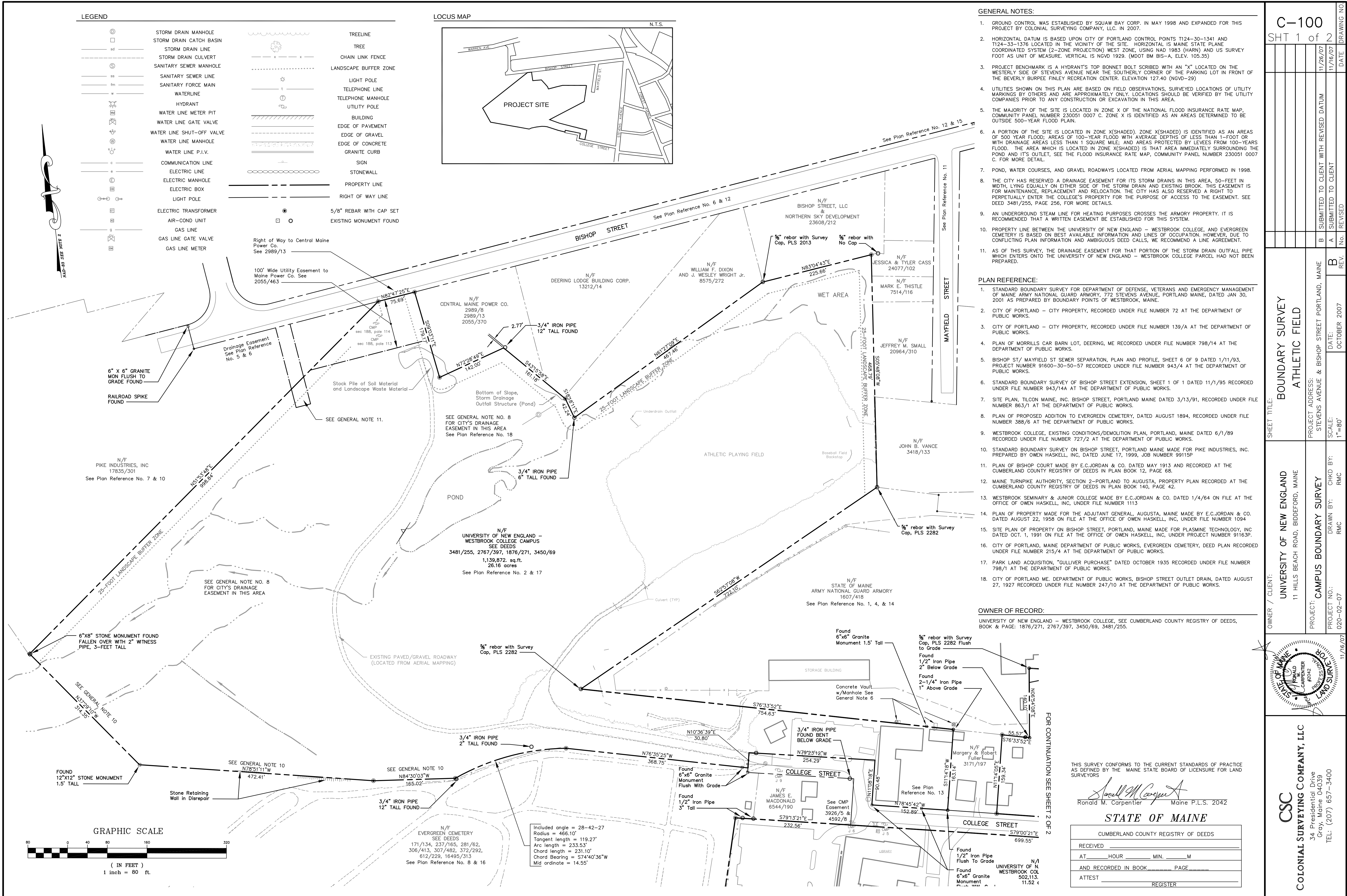
NOTES:

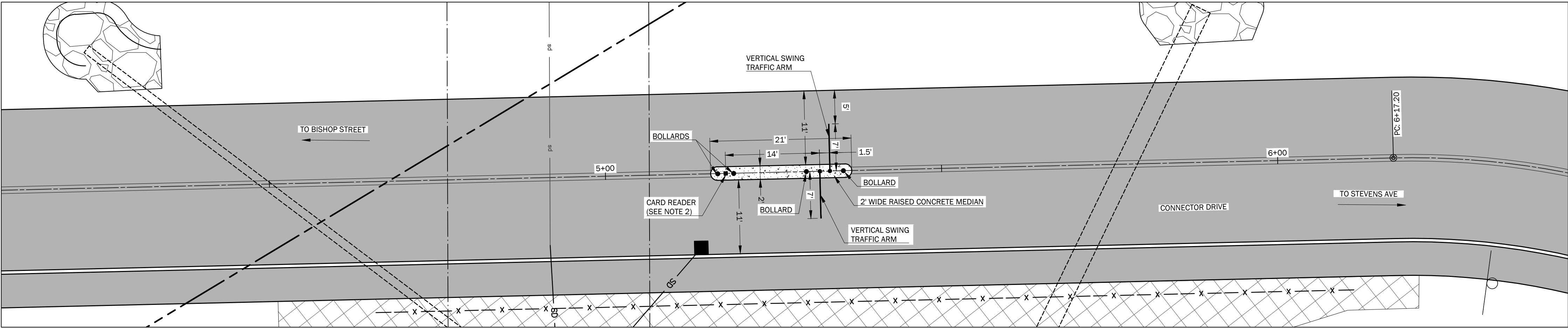
- OWNER OF RECORD: UNIVERSITY OF NEW ENGLAND, 11 HILLS BEACH ROAD, BIDDEFORD, MAINE C.C.R.D. BOOK 29387 PAGE 289.
- THE SURVEYED PREMISES IS SHOWN AS LOT 1 ON THE CITY OF PORTLANDS ASSESSORS MAP 291 BLOCK A AND LOT 3 ON THE CITY OF PORTLAND ASSESSORS MAP 281 BLOCK A.
- LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE CONFIRMED PRIOR TO EXCAVATION OR CRITICAL DESIGN.
- WETLANDS DELINEATED BY MARK HAMPTON AND SURVEY LOCATED BY OWEN HASKELL, INC.
- BEARINGS SHOWN ARE PER PLAN REFERENCE 1, COORDINATES LISTED ARE MAINE STATE PLANE NAD 83 OBTAINED WITH STATIC GPS.

BOUNDARY SURVEY
ON
BISHOP STREET, PORTLAND, MAINE
MADE FOR RECORD OWNER
UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD, BIDDEFORD, MAINE 04005

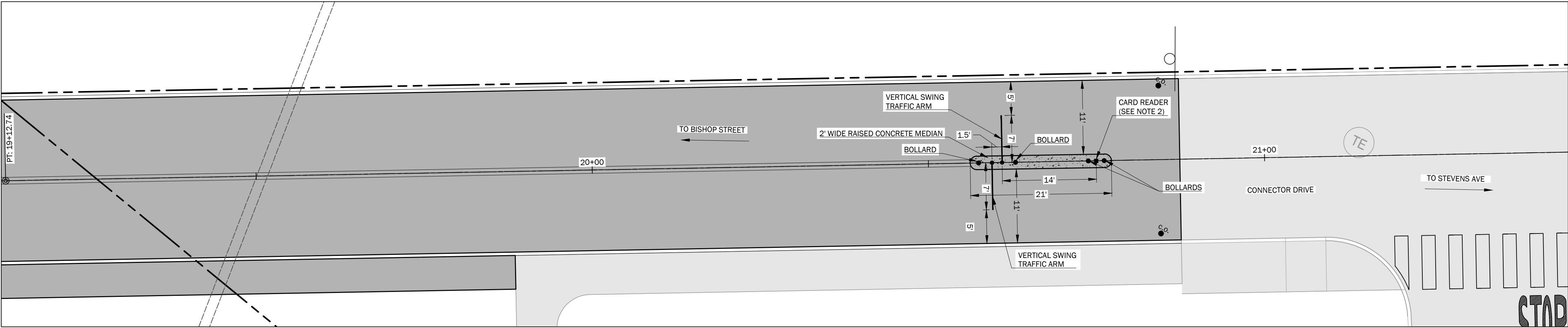
OWEN HASKELL, INC.
390 U.S. ROUTE ONE, FAIRMOUTH, ME 04105 (207) 774-0424
PROFESSIONAL LAND SURVEYORS

Drawn By	RS	Date	Job No.
Trace By	JLW/SG	JULY 24, 2012	2012-059P
Check By	JWS	Scale	Drwg. No.
Book No.	1107	1" = 60'	19ND

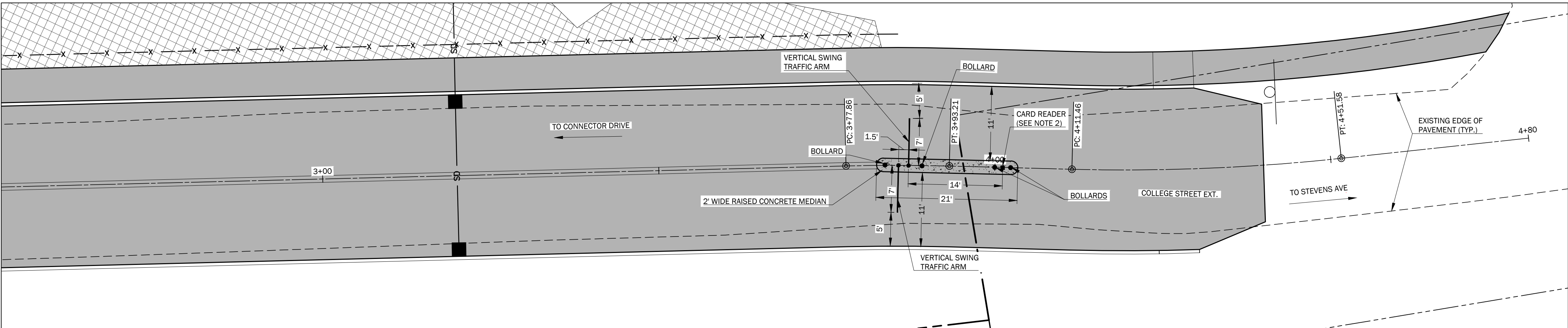




GATE A - (BISHOP STREET END)

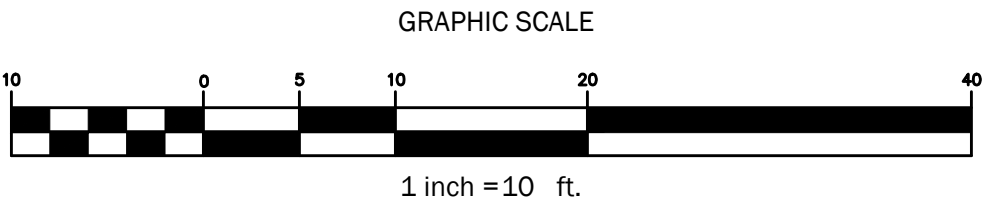


GATE B - (CFHS BUILDING END)



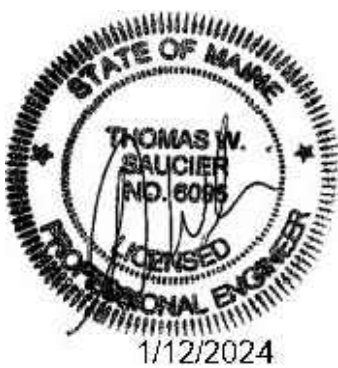
GATE C - (COLLEGE STREET)

- GENERAL NOTES:
1. REFER TO SHEET C-200 FOR GENERAL NOTES AND PLAN REFERENCES.
 2. KNOX BOXES SHALL BE PROVIDED AT ALL GATES FOR EMERGENCY VEHICLE ACCESS PER CITY OF PORTLAND STANDARDS.



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.

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
E	1/12/2024	REVISED PER CITY COMMENTS									
D	12/15/2023	ADDED RETAINING WALL NOTES AND CURB CUTS AT TRAILS - NOT FOR CONSTRUCTION									
C	12/6/2023	REVISED PER CITY COMMENTS - NOT FOR CONSTRUCTION									
B	9/22/2023	FOR DEVELOPMENT REVIEW									
A	2/22/2023	FOR PRICING ONLY - NOT FOR CONSTRUCTION									



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.	PROJECT:	CONNECTOR DRIVE
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE	
CHKD: TWS	CONNECTOR DRIVE TRAFFIC GATE PLAN	
DATE: SEP. 2023	PROJ. NO.	21-216-00
SCALE: 1" = 10 FT	DWG. NO.	C-201

TAX MAP I.D.
291 A001
291 A005
290 A003
145 B014



Record Lighting Submittal Package

Project: UNE Alfond Cener Site Lighting (22-63667-16)

Prepared For: Wesco – Portland, ME.

Prepared By: Kelly Beck

September 19, 2023

Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT



RSX2 LED Area Luminaire



Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

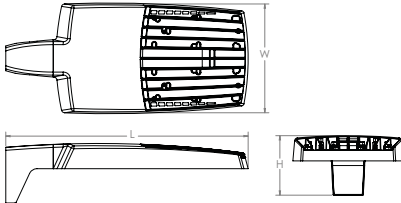
Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX2 delivers 11,000 to 31,000 lumens allowing it to replace 250W to 1000W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This “no-drill” solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.

Specifications

EPA (ft²@0°):	0.69 ft² (0.06 m²)
Length:	29.3" (74.4 cm) (SPA mount)
Width:	13.4" (34.0 cm)
Height:	3.0" (7.6 cm) Main Body 7.2" (18.3 cm) Arm
Weight: (SPA mount)	30.0 lbs (13.6 kg)



Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Ordering Information

EXAMPLE: RSX2 LED P6 40K R3 MVOLT SPA DDBXD

RSX2 LED	P1	40K	R2	MVOLT	SPA
Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX2 LED	P1	30K 3000K 40K 4000K 50K 5000K	R2 Type 2 Wide R3 Type 3 Wide R3S Type 3 Short R4 Type 4 Wide R4S Type 4 Short R5 Type 5 Wide ¹ R5S Type 5 Short ¹ AFR Automotive Front Row AFRR90 Automotive Front Row Right Rotated AFRL90 Automotive Front Row Left Rotated	MVOLT (120V-277V) ² HVOLT (347V-480V) ³ XVOLT (277V-480V) ⁴ (use specific voltage for options as noted) 120 ³ 277 ⁵ 208 ³ 347 ⁵ 240 ³ 480 ⁵	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°) RPA Round pole mounting (3.2" min. dia. RND pole for 2, 3, 4 at 90°, 3.0" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°) MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon) IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁶ WBA Wall bracket ¹ WBASC Wall bracket with surface conduit box AASP Adjustable tilt arm square pole mounting ⁶ AARP Adjustable tilt arm round pole mounting ⁶ AAWB Adjustable tilt arm with wall bracket ⁶ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁶

NLTAIR2 PIRHN				DBLXD
Options				Finish
Shipped Installed HS House-side shield ⁷ PE Photocontrol, button style ^{8,9} PER7 Seven-wire twist-lock receptacle only (no controls) ^{9,10,11} SF Single fuse (120, 277, 347) ⁵ DF Double fuse (208, 240, 480) ⁵ SPD20KV 20KV Surge pack (10KV standard) FAO Field adjustable output ⁹ DMG 0-10V dimming extend out back of housing for external control (control ordered separate) ⁹ DS Dual switching ^{9,12}				DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLTXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White
Shipped Installed *Standalone and Networked Sensors/Controls (factory default settings, see table page 9) NLTAIR2 PIRHN nLight AIR generation 2 ,with Networked, Bi-Level motion/ambient sensor ^{9,13,14,15} BAA Buy America(n) Act Compliant CCE Coastal Construction ¹⁶ *Note: NLTAIR2 PIRHN with nLight Air can be used as a standalone dimming sensor with out-of-box settings or as a wireless networked solution. See factory default settings table. Sensor coverage pattern is affected when luminaire is tilted. Shipped Separately (requires some field assembly) EGS External glare shield ⁷ EGFV External glare full visor (360° around light aperture) ⁷ BS Bird spikes ¹⁷				

Ordering Information

Accessories

Ordered and shipped separately.

RSX2HS	RSX2 House side shield (includes 2 shields)
RSX2EGS (FINISH) U	External glare shield (specify finish)
RSX2HSAFR (FINISH) U	RSX2 House side shields for AFR rotated optics (includes 2 shields)
RSX2EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) ¹
RSXSCB (FINISH) U	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DL1127F 1.5 JU	Photocell -SSL twist-lock (120-277V) ¹⁸
DL1347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) ¹⁸
DL1480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) ¹⁸
DSHOT SBK U	Shorting cap ¹⁸

NOTES

- Any Type 5 distribution, is not available with WBA.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
- XVOLT driver not available with P1. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE.
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Maximum tilt is 90° above horizontal.
- It may be ordered as an accessory.
- Requires MVOLT or 347V.
- Two or more of the following options cannot be combined including PE, DMG, PER7, FAO, DS and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
- Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped

- as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
- For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
 - DS requires (2) separately switched circuits. DS provides 50/50 fixture operation via (2) different sets of leads using (2) drivers. DS only available with packages P5 and P6.
 - Must be ordered with PIRHN.
 - Requires MVOLT or HVOLT.
 - Must be ordered with NLTAIR2. For additional information on PIRHN visit [here](#).
 - CCE option not available with WBA, WBASC, AASP, AARP, AAWB, AAWBSC, EGS, EGVV and BS.
 - Must be ordered with fixture for factory pre-drilling.
 - Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



House Side Shield



External Glare Shield

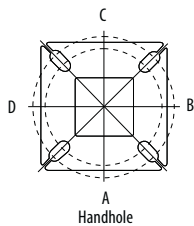


External 360 Full Visor

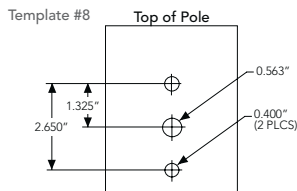
Pole/Mounting Information

Accessories including bullhorns, cross arms and other adapters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit [Accessories](#).

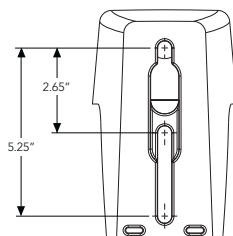
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSX STANDARD ARM & ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2 - 3/8"	RPA, AARP	AS3-5190	AS3-5280	AS3-5290	AS3-5320	AS3-5390	AS3-5490
2 - 7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX2 - Luminaire EPA

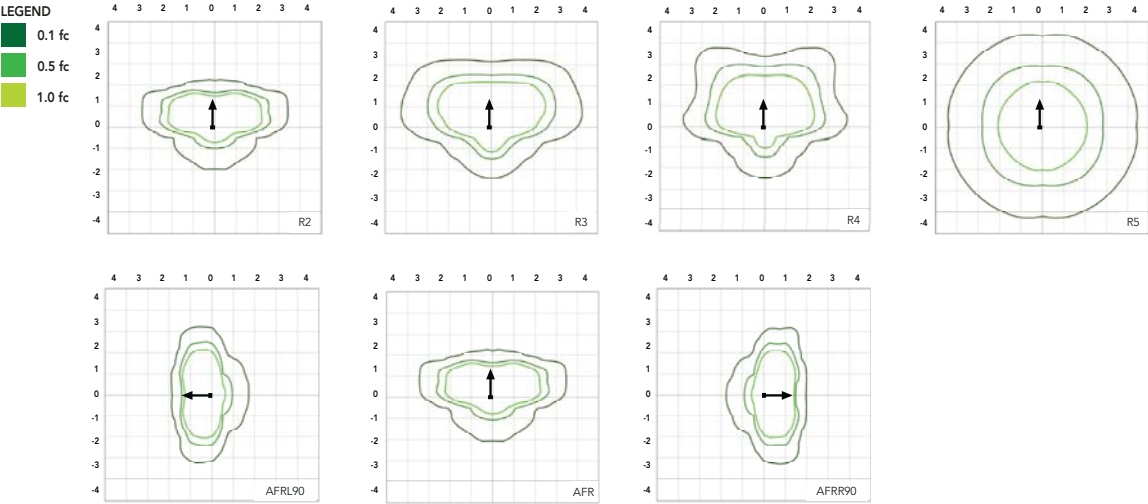
*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
Mounting Type	Tilt									
SPA - Square Pole Adaptor	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
RPA - Round Pole Adaptor		0.74	1.27	1.37	1.9	1.71	2.49	1.42	2.16	2.84
MA - Mast Arm Adaptor		0.61	1.14	1.11	1.64	1.45	2.23	1.29	1.9	2.58
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
	10°	0.53	1.06	1.05	1.58	1.37	2.08	1.06	1.59	2.12
	20°	0.52	1.02	1.03	1.52	1.33	2.02	1.03	1.55	2.07
	30°	0.64	1.11	1.18	1.63	1.45	2.21	1.27	1.91	2.54
	40°	0.81	1.21	1.35	1.74	1.65	2.39	1.62	2.43	3.23
	45°	0.91	1.25	1.5	1.81	1.75	2.48	1.82	2.73	3.64
	50°	1.34	1.83	2.17	2.61	2.56	3.62	2.68	4.02	5.36
	60°	2.2	2.97	3.57	4.24	4.17	5.89	4.41	6.61	8.82
	70°	2.86	4.13	4.7	5.89	5.71	8.21	5.71	8.57	11.42
	80°	3.4	5.13	5.67	7.34	7.09	10.21	6.79	10.19	13.59
	90°	3.85	5.96	6.55	8.58	8.31	11.88	7.70	11.56	15.41

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's RSX Area homepage.

Isofootcandle plots for the RSX2 LED P6 40K. Distances are in units of mounting height (30').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

		Current (A)					
Performance Package	System Watts (W)	120V	208V	240V	277V	347V	480V
P1	71W	0.59	0.34	0.30	0.26	0.20	0.15
P2	111W	0.93	0.53	0.46	0.40	0.32	0.23
P3	147W	1.23	0.70	0.61	0.53	0.42	0.31
P4	187W	1.55	0.90	0.78	0.68	0.53	0.38
P5	210W	1.75	1.01	0.87	0.76	0.60	0.44
P6	244W	2.03	1.17	1.01	0.88	0.70	0.51

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

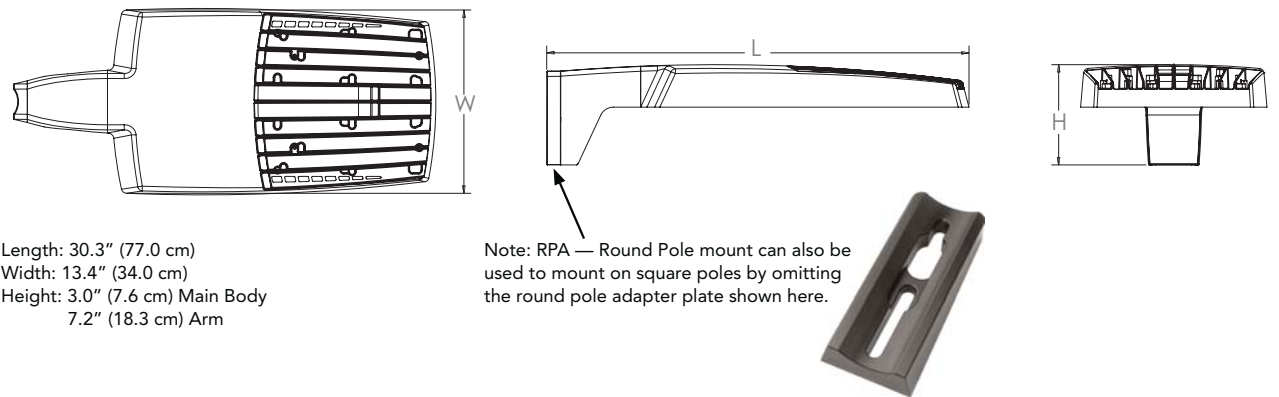
Performance Package	System Watts	Distribution Type	30K (3000K, 70 CRI)						40K (4000K, 70 CRI)						50K (5000K, 70 CRI)					
			Lumens	B	U	G	LPW		Lumens	B	U	G	LPW		Lumens	B	U	G	LPW	
P1	71W	R2	10,040	2	0	1	139		11,031	2	0	1	153		11,031	2	0	1	153	
		R3	10,005	2	0	2	141		10,992	2	0	2	155		10,992	2	0	2	155	
		R3S	10,271	2	0	2	143		11,285	2	0	2	157		11,285	2	0	2	157	
		R4	10,136	2	0	2	143		11,136	2	0	2	157		11,136	2	0	2	157	
		R4S	9,779	2	0	2	138		10,744	2	0	2	151		10,744	2	0	2	151	
		R5	10,271	4	0	2	145		11,285	4	0	2	159		11,285	4	0	2	159	
		R5S	10,544	3	0	1	149		11,585	3	0	2	163		11,585	3	0	2	163	
		AFR	10,026	2	0	1	141		11,016	2	0	1	155		11,016	2	0	1	155	
		AFRR90	10,122	3	0	2	140		11,121	3	0	2	154		11,121	3	0	2	154	
		AFRL90	10,164	3	0	2	141		11,167	3	0	2	155		11,167	3	0	2	155	
P2	111W	R2	15,712	2	0	2	138		17,263	2	0	2	151		17,263	2	0	2	151	
		R3	15,657	2	0	3	141		17,202	3	0	3	155		17,202	3	0	3	155	
		R3S	16,075	2	0	2	141		17,661	2	0	2	155		17,661	2	0	2	155	
		R4	15,862	2	0	3	143		17,427	2	0	3	157		17,427	2	0	3	157	
		R4S	15,304	2	0	2	138		16,815	2	0	2	151		16,815	2	0	2	151	
		R5	16,075	4	0	2	145		17,661	5	0	3	159		17,661	5	0	3	159	
		R5S	16,502	4	0	2	149		18,130	4	0	2	163		18,130	4	0	2	163	
		AFR	15,691	2	0	2	141		17,240	2	0	2	155		17,240	2	0	2	155	
		AFRR90	15,841	3	0	3	139		17,404	4	0	3	153		17,404	4	0	3	153	
		AFRL90	15,907	3	0	3	139		17,477	4	0	3	153		17,477	4	0	3	153	
P3	147W	R2	19,855	3	0	2	132		21,814	3	0	2	145		21,814	3	0	2	145	
		R3	19,785	3	0	3	135		21,737	3	0	4	148		21,737	3	0	4	148	
		R3S	20,312	3	0	3	135		22,317	3	0	3	149		22,317	3	0	3	149	
		R4	20,044	3	0	3	136		22,022	3	0	4	150		22,022	3	0	4	150	
		R4S	19,339	3	0	3	132		21,247	3	0	3	145		21,247	3	0	3	145	
		R5	20,313	5	0	3	138		22,317	5	0	3	152		22,317	5	0	3	152	
		R5S	20,852	4	0	2	142		22,910	4	0	2	156		22,910	4	0	2	156	
		AFR	19,828	3	0	2	135		21,785	3	0	2	148		21,785	3	0	2	148	
		AFRR90	20,017	4	0	3	133		21,992	4	0	3	147		21,992	4	0	3	147	
		AFRL90	20,101	4	0	3	134		22,084	4	0	3	147		22,084	4	0	3	147	
P4	187W	R2	22,836	3	0	2	120		25,090	3	0	2	132		25,090	3	0	2	132	
		R3	22,756	3	0	4	122		25,002	3	0	4	134		25,002	3	0	4	134	
		R3S	23,363	3	0	3	123		25,668	3	0	3	135		25,668	3	0	3	135	
		R4	23,054	3	0	4	123		25,329	3	0	4	135		25,329	3	0	4	135	
		R4S	22,243	3	0	3	119		25,059	3	0	3	134		25,059	3	0	3	134	
		R5	23,363	5	0	3	125		25,669	5	0	4	137		25,669	5	0	4	137	
		R5S	23,983	4	0	2	128		26,350	4	0	2	141		26,350	4	0	2	141	
		AFR	22,806	3	0	2	122		25,056	3	0	2	134		25,056	3	0	2	134	
		AFRR90	23,023	4	0	3	121		25,295	4	0	3	133		25,295	4	0	3	133	
		AFRL90	23,120	4	0	3	122		25,401	4	0	3	134		25,401	4	0	3	134	
P5	210W	R2	26,141	3	0	2	122		28,721	3	0	2	135		28,721	3	0	2	135	
		R3	26,049	3	0	4	124		28,620	3	0	4	136		28,620	3	0	4	136	
		R3S	26,744	3	0	3	125		29,383	3	0	4	138		29,383	3	0	4	138	
		R4	26,390	3	0	4	126		28,994	3	0	4	138		28,994	3	0	4	138	
		R4S	25,462	3	0	3	121		27,974	3	0	3	133		27,974	3	0	3	133	
		R5	26,744	5	0	4	127		29,383	5	0	4	140		29,383	5	0	4	140	
		R5S	27,454	4	0	2	131		30,163	4	0	2	144		30,163	4	0	2	144	
		AFR	26,106	3	0	2	124		28,682	3	0	2	137		28,682	3	0	2	137	
		AFRR90	26,354	4	0	3	123		28,955	5	0	3	136		28,955	5	0	3	136	
		AFRL90	26,465	4	0	3	124		29,077	5	0	3	136		29,077	5	0	3	136	
P6	244W	R2	27,646	3	0	2	112		30,374	3	0	2	123		30,374	3	0	2	123	
		R3	27,549	3	0	4	113		30,267	3	0	4	124		30,267	3	0	4	124	
		R3S	28,283	3	0	3	115		31,075	3	0	4	126		31,075	3	0	4	126	
		R4	27,909	3	0	4	114		30,663	3	0	4	126		30,663	3	0	4	126	
		R4S	26,928	3	0	3	110		29,585	3	0	3	121		29,585	3	0	3	121	
		R5	28,284	5	0	4	116		31,075	5	0	4	127		31,075	5	0	4	127	
		R5S	29,035	4	0	2	119		31,900	5	0	3	131		31,900	5	0	3	131	
		AFR	27,608	3	0	2	112		30,332	3	0	2	123		30,332	3	0	2	123	
		AFRR90	27,872	4	0	3	113		30,622	5	0	3	124		30,622	5	0	3	124	
		AFRL90	27,989	4	0	3	113		30,751	5	0	3	125		30,751	5	0	3	125	

Dimensions & Weights

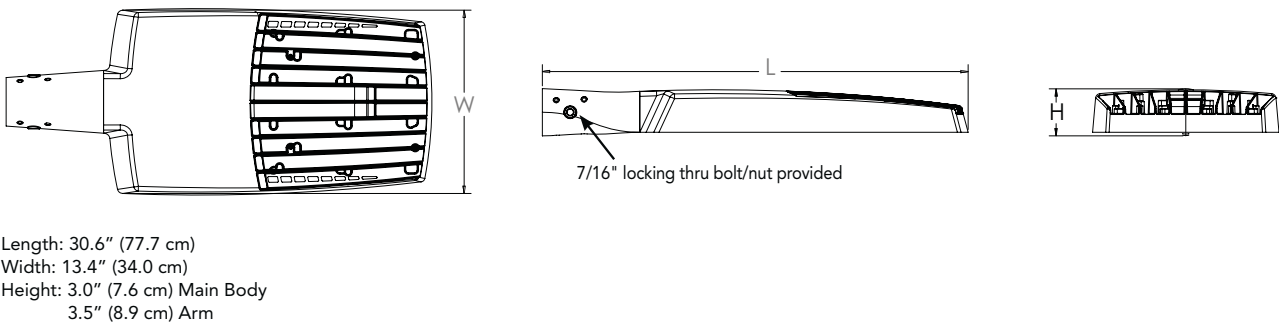
Luminaire Weight by Mounting Type

Mounting Configuration	Total Luminaire Weight
SPA	30 lbs
RPA	32 lbs
MA	30 lbs
WBA	33 lbs
WBASC	36 lbs
IS	33 lbs
AASP	33 lbs
AARP	35 lbs
AAWB	36 lbs
AAWSC	39 lbs

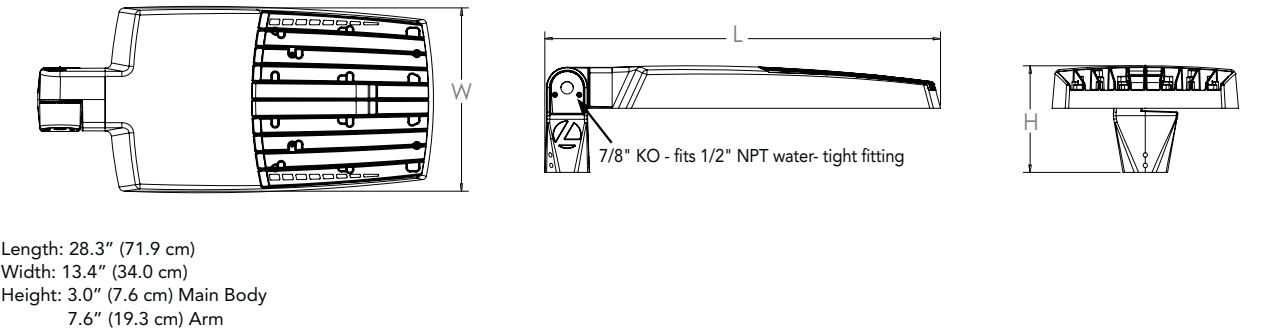
RSX2 with Round Pole Adapter (RPA)



RSX2 with Mast Arm Adapter (MA)



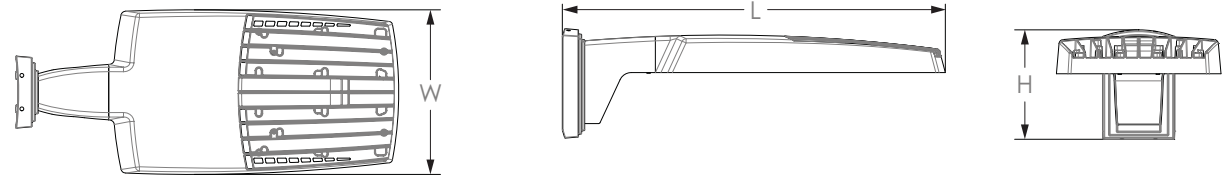
RSX2 with Adjustable Slipfitter (IS)



Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

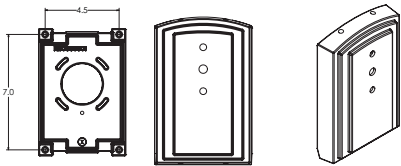
Dimensions

RSX2 with Wall Bracket (WBA)

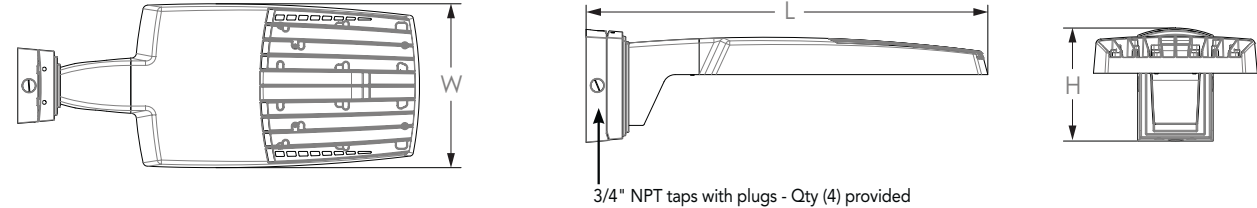


Length: 31.2" (79.2 cm)
 Width: 13.4" (41.7 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

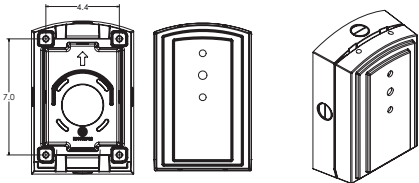


RSX2 with Wall Bracket with Surface Conduit Box (WBASC)



Length: 32.8" (83.3 cm)
 Width: 13.4" (41.7 cm)
 Height: 3.0" (7.6 cm) Main Body
 9.2" (23.4 cm) Arm

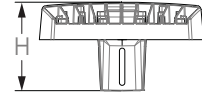
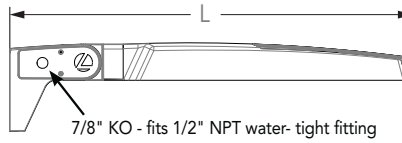
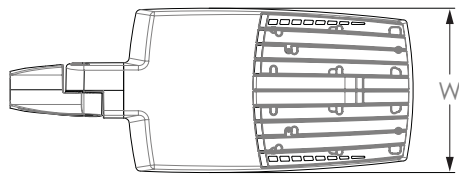
Surface Conduit Box (SCB) Mounting Detail



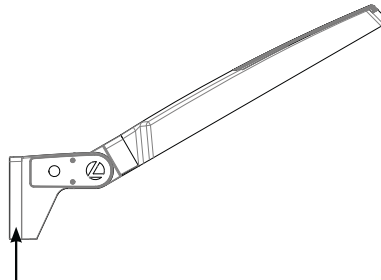
Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

Dimensions

RSX2 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)



Length: 32.8" (83.3 cm) AASP
 33.8" (85.9 cm) AARP
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.2" (18.2 cm) Arm



NOTE:
 RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

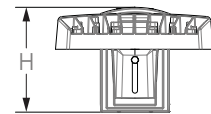
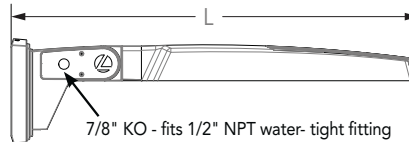
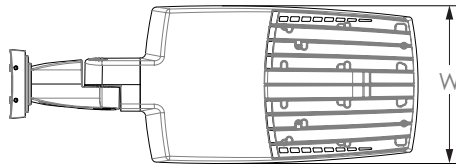


Notes

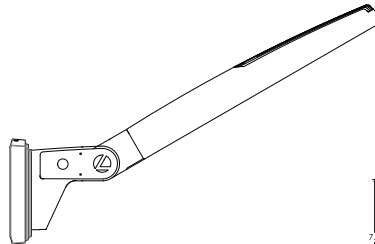
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

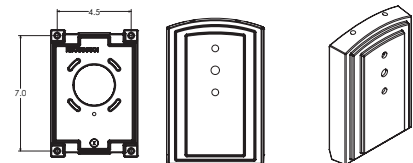
RSX2 with Adjustable Tilt Arm with Wall Bracket (AAWB)



Length: 34.7" (88.0 cm)
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm



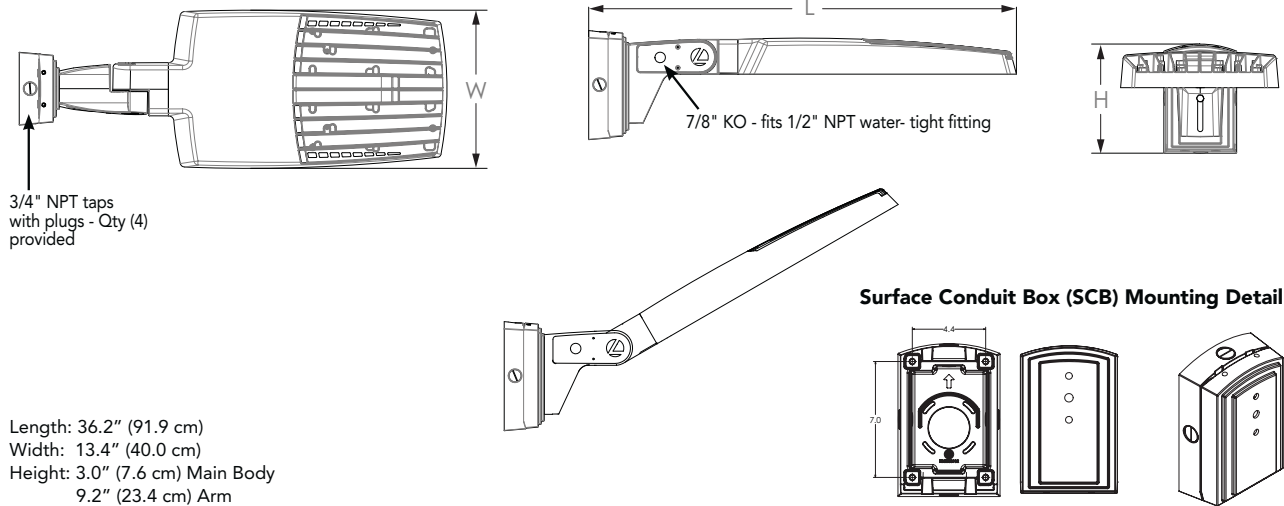
Wall Bracket (WBA) Mounting Detail



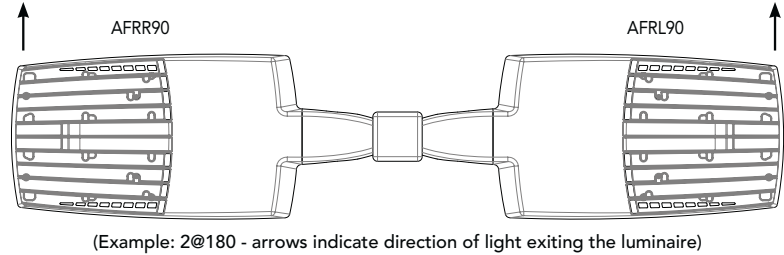
Submitted by:	Job Name:	Catalog Number:	Type:
	UNE Alford Center Site Lighting	RSX2 LED P1 40K R2 MVOLT SPA NLTAIR2 PIRHN DBLXD	D-ALT

Dimensions

RSX2 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)

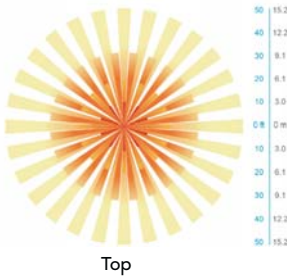
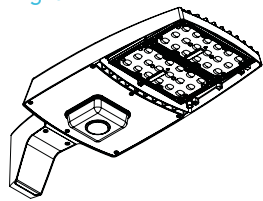


Automotive Front Row - Rotated Optics (AFRL90/R90)

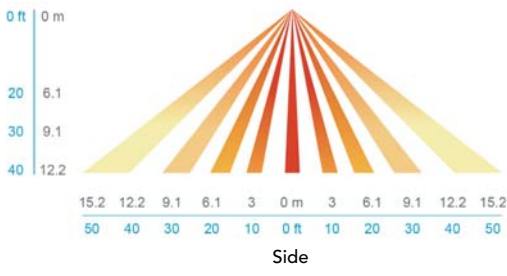


nLight Control - Sensor Coverage and Settings

NLTAIR2 PIRHN nLight
Sensor Coverage Pattern
nLight PIRHN



Top



Side

Motion Sensor Default Settings - Option PIRHN						
Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
NLTAIR2 PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: NLTAIR2 PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clarity Pro App. Sensor coverage pattern shown with luminaire at 0°. Sensor coverage pattern is affected when luminaire is tilted.

FEATURES & SPECIFICATIONS

INTENDED USE

The RSX LED area family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSX2 delivers 11,000 to 31,000 lumens and is ideal for replacing 250W to 1000W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION AND DESIGN

The RSX LED area luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral "no drill" mounting arm allows the luminaire to be mounted on existing pole drillings, greatly reducing installation labor. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI C136.31: 3G Mountings: Include SPA, RPA, MA, IS, AASP, AARP rated for 3G vibration. 1.5G Mountings: Include WBA, WBASC, AAWB and AAWSC rated for 1.5G vibration.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warranted not to crack or peel.

OPTICS

Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Type 2, Type 3, Type 3S, Type 4, Type 4S, Type 5, Type 5S, AFR (Automotive Front Row) and AFR rotated AFR90 and ARFL90.

COASTAL CONSTRUCTION (CCE)

Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times apply.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Fixtures ship standard with 0-10v dimming driver. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The RSX LED area luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS

The RSX LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found [here](#).

INSTALLATION

Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note, the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select the "MA" option to attach the luminaire to a 2 3/8" horizontal mast arm or the "IS" option for an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation. Can be tilted up to 90° above horizontal. Additional mountings are available including a wall bracket, adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications.

LISTINGS

CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only. US Patent No. D882, 146S

BUY AMERICAN ACT

Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT regulations. Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY

5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

SSP Square Non-Tapered Steel Poles

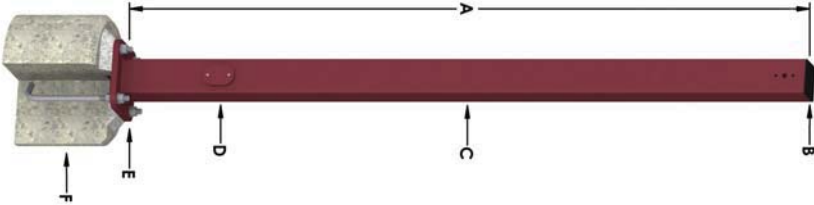
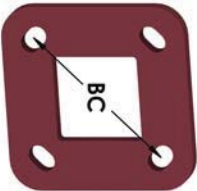
PROJECT NAME

GENERATION DATE 11/4/2022

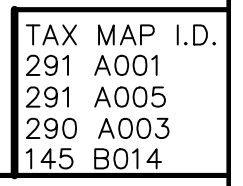
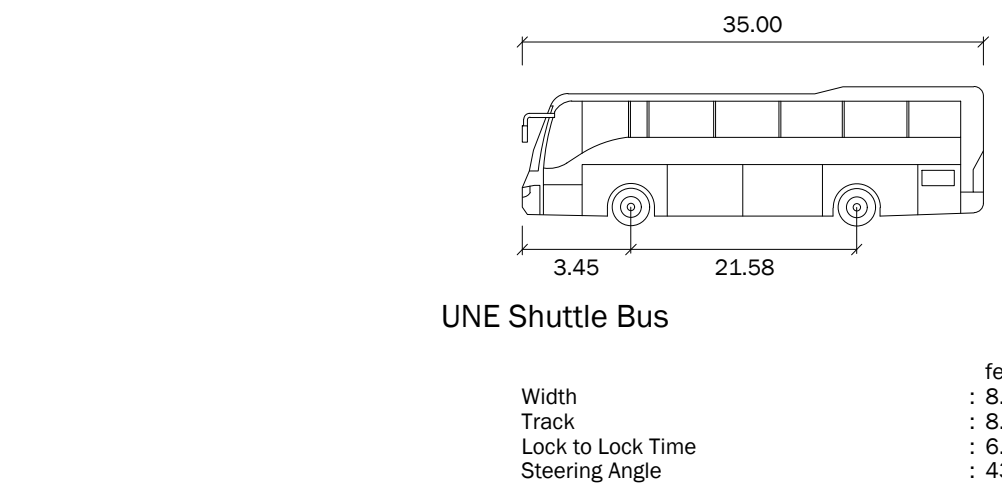
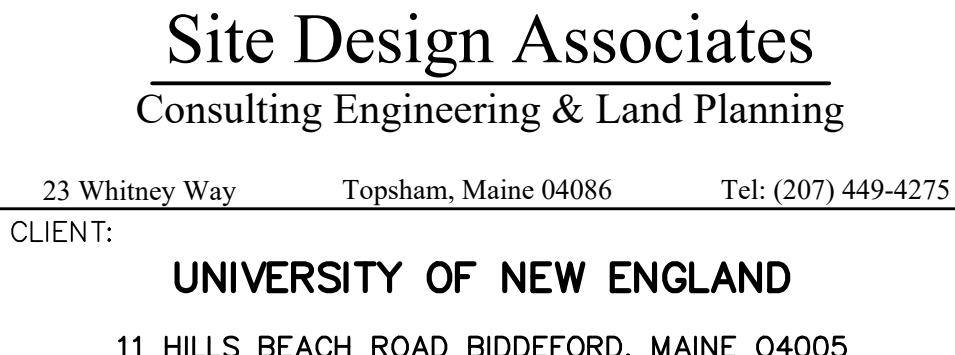
COMMENTS

CATALOG NUMBER SSP17 - 5 - 11 - F - DM10 - BC

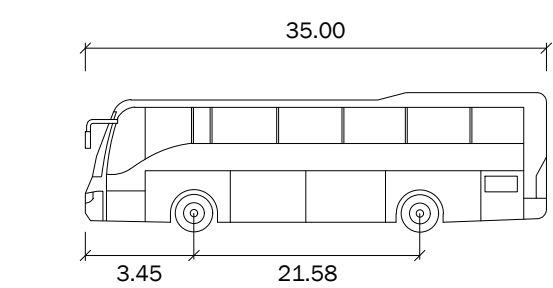
LAB - Less Anchor Bolts

		A — POLE SHAFT The pole shaft is single piece construction, being fabricated from a weldable grade carbon steel structural tubing and shall conform to ASTM A500 Grade C with a minimum yield strength of 50,000 psi. The pole shaft has a full-length longitudinal resistance weld and is uniformly square in cross-section with flat sides, small corner radii and excellent torsional properties. HEIGHT BASE OD GAUGE WEIGHT <table><tr><td>17'</td><td>5"</td><td>11</td><td>191 lbs</td></tr></table> EPA MAX LOAD 90 MPH AASHTO 18.5		17'	5"	11	191 lbs
17'	5"	11	191 lbs				
B — MOUNTING DESIGNATION Drilled for 1 Luminaire 		C — FINISH Standard - The standard finish is a polyester thermosetting powder coating applied to the surface of the substrate to a minimum of 3 mils for all color finishes. FINISH TYPE Standard COLOR Finish To Be Determined					
D — HAND HOLE An oval reinforced gasketed handhole is located 1'-6" above base with a grounding provision located inside the ring. WIDTH 3" LENGTH 5" 		E — BASE PLATE The anchor base is fabricated from structural quality hot rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. All welds are performed in accordance with AWS D1.1, latest edition. BOLT CIRCLE 11"  					
F — ANCHOR BOLTS Anchor bolts are of commercial quality hot rolled carbon steel that meets or exceeds yield strength of 55,000 psi. Four properly sized anchor bolts come with all poles unless otherwise specified. Anchor bolts have the threaded end galvanized a minimum of 8 inches per ASTM A153. WIDTH 1" LENGTH 36" HOOK 4" 		OPTIONS Base Cover					

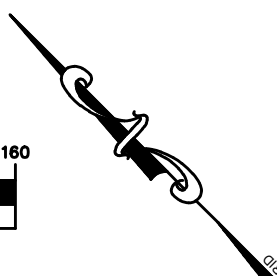
Submitted by:	 VISIBLE LIGHT MANUFACTURERS' REPRESENTATIVE	Job Name:	UNE Alford Center Site Lighting	Catalog Number:	SSP17-5,0-11-BLK-DM10-BC-LAB	Type:	D-ALT
 Terms and Conditions  TERMS Net 30 days from the date of Company's invoice unless otherwise specified. A 1-1/2% per month late charge will be added to accounts past due PRICES Published prices are subject to change without notice. Possession of price sheets in no way obligates Company to sell to the Purchaser possessing such price sheet. All orders are subject to final approval and acceptance by the Company. Once accepted and approved, orders will be billed at prices currently in effect at the time of invoicing, or at prices quoted by the Company and accepted by the Purchaser if the order involves an item or items covered by special quotation. THE MINIMUM INVOICE CHARGE SHALL BE \$50.00 NET DELIVERY All goods sold are deliverable F.O.B. KW Industries, Inc., Sugar Land, Texas 77478 FREIGHT All of the Company's products are priced and sold F.O.B. KW Industries, Inc., Sugar Land, Texas 77478. Transportation charges will be prepaid by the Company and added to the net sales price unless specified by the Purchaser. ROUTING The Company will specify the method and routing of all products to ensure the most efficient and economical shipment in behalf of the Purchaser. The Purchaser will assume charges for special services such as cartage, air freight, express or multiple deliveries on one order. CANCELLATION The written consent of the Company shall be obtained prior to a cancellation of any order. Cancellation of an order may subject the Purchaser to a cancellation charge based upon expenses already incurred and commitments made by the Company. RETURNED GOODS Specific written request and arrangements must be made in advance for Purchaser to obtain credit or replacement on material returned. On material accepted for return, Purchaser must prepay return shipment and pay minimum restocking charge of 40% plus any charge necessary to rework goods to a resaleable condition. Custom fabricated products by special order are not subject to return. DELAYS, DAMAGE OR LOSS The Company is not and shall not be liable for delays in shipment or delivery of its products when caused by strikes, riots, hurricanes, civil disorder, fires, material shortage, breakdown in manufacturing facilities or any other cause beyond its reasonable control. Any claims for damages, loss or shortage in transit must be made by the Purchaser to the delivering carrier. The risk of loss passes to the Purchaser upon delivery to the carrier. LIMITED WARRANTY The Company warrants to Purchaser that its products will be free from defects in material and workmanship for a period of one year from the date of shipment by the Company (the "Warranty Period"). This Warranty specifically excludes fatigue failure or similar phenomena resulting from induced vibration, harmonic oscillation or resonance associated with the movement of air currents around the product. If during the Warranty period, the product proves defective in material or workmanship, the Company shall correct any defect, at its option, either by repairing any defective parts or by making available at the Company's plant a repaired or replacement part at no charge to the Purchaser, if the Purchaser promptly notifies the Company and furnishes proof of Purchase. The liability of the Company under this Warranty, or for any loss or damage arising out of, or connected with, the design, manufacturing, sale or use of its products, whether the claim is based on contract or negligence, shall not exceed the price allocable to the value of the product or part which gives rise to the claim and upon expiration of the Warranty Period all such liability shall terminate. The Company shall not be liable for special or consequential damages including, but not limited to, loss of profits or revenue, loss of use of the product, cost of substitute products or labor charges to remove or reinstall the defective product, nor any product transportation expenses to and from the Company's plant if factory repair or replacement is necessary. No warranty is made with respect to parts or auxiliary equipment not manufactured by the Company. The foregoing Warranty is exclusive and in lieu of all other warranties whether written, oral, express or implied and shall constitute the sole and exclusive remedy of the Purchaser and liability of the Company. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. The Company's products are not sold as a "consumer product" under 15 U.S.C. 62301. GENERAL KW Industries, Inc. reserves the right to change any feature of its published specifications without notice to promote product improvement and/or allow for material availability. The contract for the sale of goods by KW shall be performable in Fort Bend County, Texas. Prices subject to change without notice.  KW INDUSTRIES, INC. 909 INDUSTRIAL BLVD, SUGAR LAND, TEXAS 77478 1-800-275-5944 KWINDUSTRIES.COM AREA LIGHTING SSP Square Non-Tapered Steel Poles PAGE 2 OF 2							

[illegible]

DESIGN: DEPT.	PROJECT: CONNECTOR DRIVE		
DRAWN: DEPT.	83 COLLEGE STREET, PORTLAND, MAINE		
CHKD: TWS	CONNECTOR DRIVE SHUTTLE SIMULATION		
	EASTBOUND - 24' WIDE ROAD		
DATE: JAN. 2024	PROJ. NO.	21-216-00	REV.
SCALE: 1" = 40 FT	DWG. NO.	T4	A



	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 43.3



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.

11 HILLS BEACH ROAD BIDDEFORD, MAINE 04005

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Construction Management Plan
University of New England
Connector Drive

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 Connector Drive project consists of construction of a new connector road from UNE Campus and Parking to the Bishop Street parking lot all on UNE'S property. The construction consists of excavation, utilities, paving, landscaping, 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 keep 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.

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.

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.

Construction Parking: Adequate parking for construction workers will be provided on site at the UNE Bishop street parking lot.

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 stakeholders. 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 indicate 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 stockpiled 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.



SAFETY PROGRAM

Revised April 2020

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POLICY STATEMENT

Revised: October, 2013

Ledgewood Construction is proud of our employees and their commitment to excellence. Jobsite safety is an integral part of any project and we at Ledgewood Construction firmly believe that a safe work place is a productive work place.

Striving for excellence in safety means that we have set the highest possible standards for ourselves and all of the subcontractors who work with us. An accident free jobsite is within our reach and we are committed to achieving this goal every day.

Safety standards compliance is clearly the first priority of every Ledgewood Construction employee. As a result, Ledgewood Construction has one of the best safety records in the industry. Safety is, without question, key to the successful completion of each construction project and to the long-term success of our company and its employees. At Ledgewood Construction we understand and firmly believe that

A safe job is a more productive job.
A safe job is a cleaner job.
A safe job is a better working environment
and
Only a safe job can be a successful job.

Signed,



Peter J. Pelletier, LEED AP
President

SAFETY PROGRAM

Revised: October, 2013

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 their employees and creates a safe area for other subcontractor employees to perform their work. Each subcontractor must work at safety with every other subcontractor to make safety work for everyone. All subcontractors are required, in accordance with their contractual agreements, to comply with the requirements of Ledgewood Construction's Safety Program.

The United States Congress recognized the importance of the prevention of accidental injuries and occupational illness by enacting the Occupational Safety and Health Act of 1970 (OSHA).

Current OSHA standards shall govern how workers are expected to perform their work in a safe manner. Supervisory personnel shall refer to the OSHA regulations when issues are raised regarding safety. This manual shall be the determining factor in resolving any such disputes.

OFFICIAL POLICY ON A DRUG-FREE WORKPLACE

Revised: October, 2013

Illegal drugs in the workplace are a danger to us all. They impair safety and health, promote crime, lower productivity and quality, and undermine public confidence in the work we do. We will not tolerate the use of illegal drugs. To comply with the federal Drug-Free Workplace Act and in order for Ledgewood Construction to be considered a “responsible source” for the award of Federal, State and Local contracts, Ledgewood Construction has developed the following policy.

Any location at which company business is conducted, whether at this or any other site, is declared to be a drug-free workplace. This means:

1. All employees are absolutely prohibited from unlawfully manufacturing, distributing, dispensing, possessing, transporting in company vehicles, or using controlled substances or alcohol in the workplace.
2. The following is a partial list of controlled substances.
 - Narcotics (heroin, morphine, etc.)
 - Cannabis (marijuana, hashish)
 - Stimulants (cocaine, diet pills, etc.)
 - Depressants (tranquilizers)
 - Hallucinogens (PCP, LCD, “designer drugs”, etc.)

Any employee violating the above policy is subject to discipline, up to and including termination, even for the first offense. Employees have the right to know the dangers of drug abuse in the workplace, Ledgewood Construction’s policy about them, and what help is available to combat drug problems. This document spells out Ledgewood Construction’s policy. To assist employees in overcoming drug abuse problems, Ledgewood Construction may offer rehabilitative help. See your supervisor for details on this.

Any employee convicted of violating a criminal drug statute in this workplace must inform Ledgewood Construction of such conviction (including pleas of guilty and nolocontendere) within five days of the conviction occurring. Failure to inform the company subjects the employee to disciplinary action, up to and including termination for the first offense.

Ledgewood Construction reserves the right to offer employees convicted of violating a criminal drug statute in the workplace participation in an approved rehabilitation or drug abuse assistance program as an alternative to discipline. If such a program is offered, and accepted by the employee, the employee must satisfactorily participate in the program as a condition of continued employment.

All employees are asked to acknowledge that they have read the above policy and agree to abide by it in all respects. By law, this acknowledgement and agreement are required of you as a condition of continued employment.

Please refer any questions on the above policy to your supervisor.

DRUG-FREE WORKPLACE STATEMENT

Revised: October, 2013

The illegal manufacture, distribution, dispensation, transportation, possession or use of a controlled substance is prohibited at this workplace. Employees who engage in any of the above actions at the workplace or who report to work under the influence of controlled drugs or alcohol will be disciplined and/or employment terminated.

Employees addicted to the use of controlled substances or alcohols are encouraged to participate in a program in order to receive rehabilitation and counseling.

As a condition of employment on this jobsite, employees are required to abide by the terms of this statement and to notify their employer, within five days of conviction, of any criminal drug statute or a drug related violation of law at the work site.

I have read and understood this Drug-Free Workplace Statement and agree to abide by the terms of this Statement.

Signature

Printed Name

Date

ALCOHOL-FREE WORKPLACE STATEMENT

Revised: October, 2013

The possession or consumption of alcoholic beverages in company vehicles or on the jobsite is strictly forbidden. Any employee found in violation of the above order shall be removed from the jobsite.

To assist employees in overcoming drug abuse problems, Ledgewood Construction may offer rehabilitative help. See your supervisor for details on this.

This policy shall be reviewed at the weekly safety meetings.

MANAGEMENT RESPONSIBILITIES

Revised: October, 2013

The Ledgewood Construction Management Team is committed to a safety program that is effective and clearly defines everyone's role.

1. Every employee shall be responsible for making the work place safe.
2. Impress upon all supervisory personnel the responsibility and accountability of each individual to maintain a safe work place.
3. The Project Executives and Project Managers will supervise and assist in the management of the safety program. Management personnel will help ensure the success of the program by checking on safety when visiting a jobsite.
4. Management will contractually require that the subcontractors abide by the Ledgewood Construction's Company's safety program.
5. On individual job sites, the Project Superintendent will be designated as the Project Safety Contact for Ledgewood Construction and all on site personnel, including Subcontractors, and be responsible for implementation and monitoring of all on site safety programs and procedures.

PROJECT MANAGER'S RESPONSIBILITIES

Revised: October, 2013

It is the Project Manager's responsibility to assist with the Safety Program on their respective projects. It is towards this end that the following responsibilities are directed:

1. Monitor and assist the Project Superintendent, who has responsibility for safety at his/her jobsite.
2. Maintain appropriate rules, regulations and codes at the jobsite. Distribute relevant reports, data and forms pertinent to the safety program.
3. The Project Manager reserves the right to back charge subcontractors for failure to follow job safety program policies and procedures that require corrective action.
4. Provide advance safety planning for all activities through the use of scheduling and administrative controls.
5. Periodically monitor all aspects of the program for effectiveness, and provide necessary assistance to the field personnel including maintaining an interested participation in safety and compliance.

SUPERINTENDENT'S RESPONSIBILITIES

Revised: October, 2013

- I. The Superintendent is the designated safety contact on the jobsite. The Superintendent will work to ensure full compliance with Ledgewood Construction's safety program for his/her project.
 - a. Plan and require that all work be done in compliance with the Company's Safety Program.
 - b. Impress upon all subcontractor's supervisory personnel, their responsibility and accountability for each individual to maintain a safe workplace and work in a safe manner.
 - c. Work closely with subcontractor foreman in reviewing jobsite safety issues.
 - d. Weekly subcontractor meetings shall include discussions of safety requirements as they apply to specific current and planned construction activities.
2. The Superintendent shall be responsible for routine inspections, making recommendations and notifying the subcontractors of any corrective action to be taken on safety violations. *Safety violation notices and recommended disciplinary action, if any, shall be recorded on the Disciplinary Action. These violations should also be noted in the daily job reports.*
 - a. Maintain a job file for all necessary documentation at the jobsite, i.e. material safety data sheets (MSDS), OSHA and company inspection reports, toolbox safety meeting forms, posters, notices, accident report logs, accident reports and company directives, instructions and educational materials, copies of all safety code manuals and materials, including Ledgewood Construction Safety Program, that are needed to carry out the Safety Program.
 - b. Ensure availability of all necessary personal protective equipment and first aid materials. The Superintendent shall ensure that all subcontractor personnel and visitors wear the necessary protective equipment as circumstances require.
 - c. Ensure the security of the jobsite at all times.
 - d. See that all accident victims are promptly cared for, and that the accident is promptly investigated and reported properly.
 - e. Notify the Project Manager and Project Executive of all bodily injury accidents and/or damage to property within a day of the occurrence. Immediate notification is required on incidents of a serious nature.

- f. The Superintendent shall accompany any and all outside agencies making an inspection of the project (Fire Department, OSHA Compliance Officer, Insurance Company Representatives, etc.).
- g. Insist on each visitor in an official capacity properly identifying himself/herself and his/her name being duly recorded in the visitor's log.
- h. Before starting an OSHA inspection, contact the Project Manager.
- i. Request from any outside agency making an inspection of the project a report stating violations and recommendations before leaving the premises. A copy of this report shall be provided to the Project Manager.
- j. Post emergency phone numbers at all jobsite telephones.
- k. Post daily sign in sheet.
- l. Daily job reports.
- m. E.A.D.
- n. Correspond with the Project Manager on all important matters regarding jobsite safety.
- o. Certified/trained in First Aid and CPR.
- p. Set a good example on matters of jobsite safety.
- q. Make arrangements with the Police and Fire Departments for emergency response and ambulance service at the start of the job.
- r. The Superintendent has the authority to shut down any operation that in his/her opinion is exposing workers or the public to imminent danger.
- s. The Superintendent shall appoint an alternate when leaving the jobsite for any period of time during operating hours. This is to be documented in the Superintendent's daily report.

SUBCONTRACTOR RESPONSIBILITIES

Revised: January, 2015

Each subcontractor has a contractual obligation to perform their work using safe methods in compliance with the Ledgewood Construction Safety Program, the current Occupational Safety and Health Administration Standards and all other Federal, State and Local Codes and Regulations.

All employees shall comply with all Federal, State and Local Codes and Regulations. Each Subcontractor shall ensure that their subcontractors and suppliers, regardless of tier, comply with Ledgewood Construction's Safety Program.

All costs to Ledgewood Construction of Federal, State or Local citations, fines, penalties and/or summonses resulting from any Subcontractor's operations may be back charged to the Subcontractor.

All Subcontractors shall provide their employees with all safety and personal protective equipment and weather protective gear required for the performance of their work and enforce the use of same.

Each Subcontractor shall enforce the wearing of hard hats and any other personal protective equipment necessary for the safety of their employees during the entire construction period of the Project as a condition of their contract.

Each Subcontractor shall have a scheduled safety inspection and maintenance program for all tools, equipment, and personal protective equipment. The inspection reports shall be on an approved form and shall be submitted to Ledgewood Construction's site Superintendent upon request.

Each Subcontractor office trailer shall be equipped with an approved First Aid Kit. If gang boxes are used in lieu of the office trailer, the gang box shall contain the First Aid Kit. Fire extinguishers are required in all office trailers and gang boxes.

If a Subcontractor must remove cables, barricades, or any other safety-related items in order to perform their work, it shall be the responsibility of that Subcontractor to guard the area until the safety item is replaced.

Subcontractors conducting hot work shall provide an approved fire extinguisher for each hot work site. Ledgewood Construction's fire extinguishers are for general fire-fighting and are not to be relied upon for Subcontractor hot work practices.

Each Subcontractor shall provide a copy of their Hazard Communications Program, including MSDS's, to the Ledgewood Construction's Superintendent and are to be kept in the Ledgewood Construction office trailer until the Subcontractor work at the site is concluded.

Each Subcontractor shall be responsible for maintaining general housekeeping in their work area, and all debris shall be placed in appropriate containers or as otherwise directed by Ledgewood Construction's Project Superintendent. Failure to abate any related problem (e.g., failure to clean up work area and remove debris) after 24 hour notice, in writing, (except that in an emergency, an immediate response is required) may result in a back charge to the Subcontractor(s) concerned for the cost of correcting the hazard.

ENTRY PERMIT CONFINED SPACES PROGRAM

Revised: January, 2015

As “entry permit” confined spaces are not located on all jobsites, training shall be given to those individuals specifically assigned to work in same.

Employees required to construct work in a: boiler, cupola, degreaser, furnace, pipeline, pit, pumping station, reaction or process vessel, septic tank, sewage digester, sewer, silo, storage tank, ship’s hold, utility vault, vat or similar type enclosure would be considered working in a confined space. A confined space is any space having any one of the following characteristics.

- Limited openings for entry and exit unfavorable natural ventilation.
- Not designed for continuous worker occupancy.

The purpose of Ledgewood Construction Entry Permit Confined Spaces Program, as outlined below, is to ensure that entrants (employees) are protected from permit space hazards. In this regard, Ledgewood Construction shall undertake the following measures.

RESPONSIBILITIES

Management:

Take deliberate steps once a confined space is identified to protect its employees while performing their respective duties within said spaces. To this end, a Confined Space Entry Permit form has been devised for use in ensuring a safe work environment. No employee is to enter a confined space until such time that an entry permit has been completed by the company’s Superintendent, the Project Foremen or other individual eligible to be in charge of entry, and the entrant has been authorized to enter such confined space.

- Provide training for Superintendent on confined space entry.
- Provide Superintendent with assistance as requested to carry out duties outlined.
- Provide personal protective equipment as required.

General Superintendent:

- Orientates Foreman on Company’s procedures for working in confined spaces. Evaluate, where feasible, confined space hazards and determine their severity.
- Prepare Confined Space Entry Permit, once an entry permit confined space has been identified.
- Provide on-site training for proposed entrants.
- Provide on-site training for proposed attendants.
- Provide on-site training for proposed individuals authorizing or in charge of entry.

Employee:

- Advise Foreman of any potential hazards once recognized.
- Participate in on-site training for confined space entry.
- Follow all instructions given on conduct relating to entry permit confined space.

Record Keeping:

1. This Entry Permit Confined Space Program shall be kept on-site at all times, and made available to any company employee.
2. Copies of all Confined Space Entry Permits shall be kept up-dated and on-site at all times, and made available to any company employee.
3. Copies of all Record Keeping documents listed above shall be provided to this Company's office.
4. The Company's office shall maintain records of confined space entry for a period of no less than three (3) years from the date of cancellation of Confined Space Entry Permits.

CONFINED SPACE ENTRY PERMIT

Revised: January, 2015

All blank spaces must be completed prior to entry.

Project Name and Location: _____

Location of Confined Space: _____

Purpose of Entry: _____

Is Hot Work Intended: _____

A. 1. Known Hazards: _____

2. Suspected Hazards: _____

3. Method of Isolating Confined Space: _____

4. Method of Removal and/or Control of Known/Suspected Hazards: _____

5. Method of Verifying Acceptable Environmental Conditions:_____

6. Testing/Monitoring Equipment for Maintaining Acceptable Environmental Conditions During Entry:_____

7. Rescue Services to be Utilized:_____

8. Specific Rescue Measures to be Used:_____

9. Communication Methods Used by Entrants and Attendants:_____

10. Personal Protective Equipment to be Used:_____

B. Date of Entry:_____ Authorized:_____

Duration:_____

Authorized Entrants:

Eligible Attendants:

Individuals Authorized or Charge of Entry:

Superintendent:_____

Project Foreman:_____

Others:_____

Others:_____

Names of Other Contractors Receiving this Information:_____

Name of Others Requesting this Information:_____

Note: This information must be available to employees at all times during entry operations.

Sign below verifying that: All actions and conditions necessary for safe entry into Permit Space have been performed.

Printed Name:_____ Signature:_____

Project Name:_____

Foreman:_____

TRAINING AND DUTIES OF INDIVIDUALS AUTHORIZING OR IN CHARGE OF ENTRY

Revised: January, 2015

The purpose of training “Individuals Authorizing or in Charge of Entry” is not only to ensure that Authorized Entrants, and Attendants, have been made aware of the hazard(s) that could be encountered during confined spaces operations, but also to ensure that all required documentation has been completed and records are being kept as identified in the Entry Permit Confined Spaces Program. To this end, the Superintendent and/or Foreman shall instruct/inform employees on the following:

Individuals authorizing or in charge of entry shall:

- Determine that the Entry Permit contains requisite information before authorizing or allowing entry.
- Determine that the necessary procedures, practices and equipment for safe entry are in effect before allowing entry.
- Determine, at appropriate intervals, that entry operations remain consistent with the terms of the Entry Permit, and that acceptable entry conditions are present.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- Take the necessary measure for concluding an entry operation, such as closing off a permit space and cancelling the permit, once the work authorized by the permit has been completed.
- When necessary, serve as Entrants or Attendants (after receiving proper training).
- When dealing with unauthorized personnel, individuals authorizing or in charge of entry shall take appropriate measures to remove unauthorized personnel who are in or near entry permit spaces.

Individuals authorizing or in charge of entry and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be adhered to and duties to be carried out in ensuring safe entry into confined space, acceptable environmental conditions are maintained during entry, safe exit from confined space, and proper documentation is maintained for work performed under the Entry Permit.

Printed Name of Employee/Individual
Authorizing or in Charge of Entry

Date of Training

Signature of Individual
Authorizing or in Charge of Entry

Printed Name & Title of Person
Giving Instruction

Signature of Instructor

-9.7-

ENTRY PERMIT CONFINED SPACES CHECKLIST

Revised: January, 2015

New Checklist Must be Used Daily

Individual Authorizing or in Charge of Entry:

Printed Name

Signature

Date of Checklist Use:_____

_____ The Entry Permit has been filled out completely.

_____ Training has been given to Authorized Entrants.

_____ Training has been given to Attendants.

_____ Necessary protective equipment is on-hand.

_____ Entry Permit is attached to this Checklist and a copy of Entry Permit has been given to Attendants.

_____ Distributed and collected Attendants records of Authorized Entrants working within confined spaces daily.

_____ All Training Forms are attached to this Checklist.

_____ Company (Ledgewood Construction) copy of this Checklist and all attachments has been turned into the office.

_____ Entry Permit has been cancelled upon completion of work.

Foreman, sign-off above form at the end of each day.

TRAINING AND DUTIES OF AUTHORIZED ENTRANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training "Authorized Entrants" is to ensure employee safety while working within confined spaces on the jobsite. Much of the information needed to provide the proper instruction and give necessary information is outlined on the Confined Spaces Entry Permit. The Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Known hazard(s) which may be faced during entry.
2. Recognition of signs and symptoms of exposure to the hazard(s).
3. Understanding the consequences of exposure to the hazard(s).
4. Understanding the method of maintaining contact with the attendant.
5. Responsibility of notifying attendant when entrant self-initiates evacuation of permit space.
6. Advise of personal protective equipment to be utilized (i.e. retrieval lines, respirators or clothing) needed for safe entry and exit. Protective equipment shall be provided by the company as required. At the time of issuance, the entrant shall be instructed on its care and use.
7. Advise of external barriers needed to protect entrants from external hazards of the proper use of those barriers.
8. Advise entrant of exit procedure (i.e. when attendant orders evacuation, at the end of shift, or when entrant perceives he/she is in danger).
9. Advise entrant of location of Entry Permit, Confined Space Program, Material Safety Data Sheets (MSDS) Program, and inform of their availability for review.

Authorized Entrant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, proper work methods while inside confined space and exit from the confined space.

Printed Name of Employee/Authorize Entrant

Date of Training

Signature of Authorize Entrant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

TRAINING AND DUTIES OF ATTENDANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training “Attendants” is to ensure the safety of Authorized Entrants during confined spaces entry operations. To this end, the Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Attendant is to keep accurate records, at all times, of the number of Authorized Entrants working within a confined space.
2. The Attendant shall be advised of the hazard(s) and given information relative to the recognition of signs and symptoms of exposure.
3. The Attendant shall monitor activities inside and outside the permit space to determine if it is safe for Authorized Entrants to remain in the space.
4. The Attendant shall maintain continuous contact with Authorized Entrants during entry.
5. The Attendant shall ORDER Authorized Entrants to evacuate permit space immediately when:
 - The Attendant observes a condition which is not allowed in the entry permit.
 - The Attendant detects behavioral effects of hazard exposure.
 - The Attendant detects a situation outside the space which could endanger the entrants.
 - The Attendant detects an uncontrolled hazard within the permit space.
 - The Attendant is monitoring entry in more than one permit space and must focus attention to the rescue of Entrants from one of those spaces.
 - The Attendant must leave the work station.
 - The Attendant shall summon rescue and other emergency services as soon as the Attendant determines those Authorized Entrants need to escape from the permit space hazards.
1. The Attendant shall warn unauthorized persons away from the space.
2. The Attendant shall request unauthorized persons to exit immediately if they have entered the permit space.
3. The Attendant shall inform the Authorized Entrants and any other persons designated by the employer (i.e. Superintendent, Foreman, Project Manager, other contractors’ supervisors) if unauthorized persons have entered the permit space.

At no time shall the Attendant enter the confined space to assist in rescue operations of Entrants. The Attendant shall properly use an rescue equipment provided for use and perform any other assigned rescue and emergency duties, without entering the permit space.

TRAINING AND DUTIES OF ATTENDANTS (continued)

Revised: January, 2015

Attendant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, acceptable environmental conditions are maintained during entry, and safe exit from the confined space.

Printed Name of Employee/Attendant

Date of Training

Signature of Attendant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

ATTENDANTS DAILY LOG OF AUTHORIZED ENTRANTS

Revised: January, 2015

Date of Log Use:_____

Printed Name of Attendant

Signature of Attendant

[illegible]

This form must be kept current at all times and turned over to the individual authorizing or in charge of enter at the end of each day.

Note: Complete and fax a copy of this report to main office as soon as possible.

- I. If work in a confined space is anticipated, the services of an Industrial Hygienist will be obtained, in advance, to perform necessary atmospheric testing prior to allowing workers to enter the space.

START-UP CHECKLIST FOR SAFETY AND JOB PLANNING

Revised: January, 2014

Written Hazardous Communication Program required of all Subcontractors on each Project and a copy will be kept in the Ledgewood Construction office trailer.

- I. Planning the Jobsite:
 - a. Communication systems (phone or radio) as needed.
 - b. Water (include drinking water) and sanitary facilities (for number of employees).
 - c. Arrange for security of jobsite (fencing, lights, etc.) to be handled by the Superintendent.
 - d. Temporary Power – All temporary power to be used by workers on Ledgewood Construction projects will be protected by Ground Fault Circuit Interrupters. Temporary lights will be serviced with Romex wire (open wiring not allowed). Branch circuits and all receptacle boxes exposed to the elements will be water tight.
 - e. Provide trash receptacles for water cups, snack and lunch wrappers.
 - f. Perimeter survey of existing conditions (utilities, streets, structures).
 - g. Traffic – Safe access, stairs, ladders, traffic pattern, sidewalk bridge; protection for abutters and general public, allow for setting up double gates.
 - h. Contact the local Fire Department, Police Department as needed to coordinate special traffic conditions and fire safety issues.
 - i. Ledgewood Construction's safety program and rules shall be adapted to the specific jobsite. Communicate Ledgewood Construction's commitment to a safe workplace to Subcontractors at pre-construction meeting and reinforce at weekly safety meetings.
 - j. If a storage area is needed for propane bottles, consider pouring a concrete pad when doing footings and have a chain link fence with lockable gate installed, as per OSHA guide lines and local jurisdiction.

2. Emergency Needs:

- a. First Aid trained personnel. This will usually be the Superintendent.
- b. First Aid supplies (checked at least weekly). A First Aid kit shall be located in LedgeWood Construction's site office, as well as an eyewash cabinet and blood borne pathogens kit.
- c. Fire extinguishers with a 2A rating 10 lb. ABC classification shall be located throughout the jobsite, strategically placed and numbers will be one for every 3,000 SF of construction space.
- d. Fire/Emergency evacuation plans shall be posted in the building reviewed at job safety meetings and updated as required. This will be done on large projects where exit egress is not readily apparent.
- e. Arrange for emergency medical services (ambulance, hospital, doctor). Emergency numbers shall be posted in the office trailers.

JOBSITE SECURITY

Revised: January, 2014

Security of people and property must be considered and planned prior to start of construction. Prevention of loss of equipment, supplies or in-place construction through theft or vandalism is vital to the success of every project.

The need and degree of security must be judged and designed by the Project Team to fit the construction job and its neighborhood.

The following is a checklist meant to meet most job needs:

1. Full time or off-hours guard service, as needed.
2. The site will be fenced in with chain and dual locks on all gates with key for the Fire Department.
3. Outside overnight lights at office trailers, storage trailers and other material storage areas.
4. Post signs, especially a sign with the Company name. Other signs such as "ALL VISITORS MUST REPORT TO LEDGEWOOD CONSTRUCTION'S FIELD OFFICE", "NO TRESSPASSING", and any other sign appropriate to the security of the site.
5. Post local telephone numbers of Company people in charge for guard service or police use in emergencies.
6. Notify and/or meet with local police. Request overnight roving checks by on-duty police officers. Leave names and numbers for emergency purposes.
7. Determine trailer locations for office and storage trailers for security.
8. Take inventory of the valuable tools and equipment that the Company has on site whether it be construction or office type equipment. Include description and appropriate serial numbers.
9. Food service vehicles are required to have liability insurance is they are going to drive on the site to serve the workers. Request that their company provide a Certificate of Insurance.
10. Provide for and maintain traffic control for trucks and equipment moving on and off the site as required. If Traffic Controllers are required they will wear traffic vests, carry flashlights during hours of darkness and must be trained if in a public area.
11. Identify and protect any exposed transmission lines and utilities prior to any excavating taking place.

- I I -

12. Public relations will go a long way for jobsite security, theft and vandalism. The Project Team should promote a “good neighbor” policy with the neighbors, Police, Fire Department and other interested private or public people having influence around the construction site. Any Public Relations issues will be coordinated through the Project Manager and the Project Executive.

INCLEMENT WEATHER

Revised: January, 2014

When there are warning signs of impending severe weather (heavy rains, strong winds, hurricanes, flood, etc.), conditions shall be monitored and appropriate precautions taken to protect personnel and property from the effects of severe weather.

Procedures shall include, but not be limited to:

1. Securing all loose materials that could be blown about by high winds.
2. In the event of extreme high winds, secure all structures from possible collapse.
3. Protect property and building materials from rain as needed.
4. Protect hazardous materials from spilling or spreading by securing same in a safe location. Do not store in an area that might flood.
5. Special care should be taken to ensure masonry staging is properly secured. If #9 wire is used that spreaders are in place and secure; that all scaffolding sections are secured with locking pins; also ensure additional tie ins are provided when tarps are affixed to scaffolds. Special care should be taken with scaffolding planks. Tie them down or remove them.
6. During winter months, special care should be given to icing conditions. Shovels, scrapers, ice melt and sand should be readily available on site to treat slippery areas. Special caution should be exercised early in the morning when frost is present on surfaces, especially on scaffold planks and roof areas.
7. Each Subcontractor shall be responsible for securing their equipment when inclement weather or high winds are forecast.

PROTECTION OF PUBLIC AND NON-PROJECT PROPERTY

Revised: January, 2014

A construction site should not have to be a dangerous condition to the general public living, working or traveling in the vicinity nor should it be a liability to adjacent non-project property.

Ledgewood Construction, and/or its Subcontractors will provide for the following:

1. Notification and pre-planning with City or Town traffic engineers on the potential impact on traffic patterns around the jobsite.
2. Design and installation of temporary protection to suit the needs of the surroundings of the site. Lights, signs, fences, barricades, and traffic control are just some of the requirements for protection. Windblown flying debris, falling objects, water, dust, welding sparks, etc. are just some of the dangers requiring safeguards.
3. Maintenance and change of the protection as required during the on-going progress and changing of jobsite conditions.
4. Ensuring the jobsite is secure to prevent off-hours injury to the general public and property. Generally, this will be accomplished by a walk thru by the Superintendent and his/her designee at the end of the work day.
5. Blasting, pile driving, deep foundations, de-watering, demolition, high rise structures, etc. are just some of the unique activities requiring inherent design for protection to the general public and to non-project property. All activities at each jobsite should be pre-planned and well thought out.

EXCAVATIONS

Revised: January, 2014

EXCAVATION PERMIT

Prior to the start of any work involving trenching or excavation operations the Subcontractor Foreman involved in the work must notify Ledgewood Construction's Superintendent, and provide the appropriate "Dig Safe" file number if necessary.

Trenching/excavating is one of the most dangerous operations on any construction site. It is the responsibility of the Ledgewood Construction Superintendent to assure that all excavations are conducted in accordance with OSHA Standards. Close monitoring of all trenching/excavation operations by the Subcontractor's Competent Person is an absolute must.

1. Any Subcontractor found excavating a trench improperly must be stopped immediately and not allowed to continue until proper corrective action has been taken to abate the hazard. A pre-excavation safety meeting will be held with the Superintendent and Foreman prior to any trenching operations taking place.
2. The Subcontractor conducting the excavation operation will designate the person competent to perform the work. The competent person will demonstrate to the Superintendent his/her knowledge of soil conditions and his/her ability to conduct a safe operation.
3. In excavations where oxygen deficiency (atmosphere containing less than 19.5 percent oxygen) or Hazardous Atmosphere exists or could reasonably be expected to exist, the atmosphere shall be tested before employees are allowed to enter.
4. Excavations 5 feet or greater in depth shall be protected by sloping, trench shields or shoring. The Competent Person shall determine the soil classification prior to any excavating taking place.
5. Ladders shall be positioned in excavations 4 feet or deeper so that no employee has to travel more than 25 feet to access such ladder.
6. During the excavating process, caution shall be taken to ensure that excavated material is placed no closer than 2 feet from the edge of the trench.
7. Excavations left open shall be inspected prior to the start of the next day's activities to ensure the continued stability of the walls of the excavation by the Competent Person.

PAPERWORK REQUIREMENTS

Revised: January, 2014

1. Current OSHA Standards will be located in Ledgewood Construction's office trailer.
2. Safety Bulletin Board to display safety posters, pamphlets, letters, etc.
3. Post all required Federal and State posters in the Ledgewood Construction office trailer.
4. Post emergency phone numbers, Fire, Police & Ambulance at all trailers. Include copies of directions to local hospital near the trailer door.
5. Post OSHA 300 Log.
6. Warning signs (Hard Hat, No Trespassing, Laser In Use, Danger, Caution, etc.). International symbols should be used where applicable.
7. Required certification and maintenance records for equipment (cranes, material hoists, welders, etc.). These certificates are required to be submitted to Ledgewood Construction before equipment is used on site.
8. Required approvals for deep trenches, high scaffolds, demolition surveys and shoring will be cleared with the Superintendent. (Dig Safe and local utility companies must be notified prior to any excavation taking place).
9. Proof of training and safety instructions must be provided by Subcontractor (lasers, power actuated tools, first aid, propane, hazardous substances, etc.).
10. Written respiratory protection programs (if respirators are in use) will be submitted to Ledgewood Construction.
11. Require special permits (burning, welding, traffic etc.) as required by the local Fire Department.
12. Accident report forms for jobsite injuries will be filled out by Subcontractors the day their employee is injured and forwarded to Ledgewood Construction. All work related injuries will be reported on the First Notice of Injury Report form for the State in which the worker was injured.
13. Safety meetings (records of meetings with Subcontractors) will be maintained by Ledgewood Construction and should be part of the weekly meetings.

PROTECTIVE EQUIPMENT REQUIRED

Revised: January, 2014

1. Hard hats – at all times. Long pants and work boots required. T-shirts at a minimum (no tank tops). Safety glasses as required.
2. Portable “Ground Fault Circuit Interrupter” cords shall be provided as needed by the Electrical Contractor.
3. Respirators – as needed. Nuisance masks when needed for sweeping or other dusty conditions are to be provided by each Subcontractor.
4. Ear protection (ear plugs) – as needed by each subcontractor.
5. Guarding material for perimeter, scaffolds and floor holes.
6. Safety cans for flammable and combustible liquids.
7. Safety harnesses, lifeline, lanyards or nets – as required by job specific hazards analysis.
8. Trench shields and excavation shoring materials.
9. Personal protective equipment for visitors will include hard hats and visitors safety glasses as required.
10. Atmospheric testers (carbon monoxide, oxygen, combustible gases, as special conditions warrant) shall be provided by subcontractor.
11. Flashers, signals, barricades, reflective clothing for traffic control – as needed, according to training guidelines.
12. Fire extinguishers, fire hoses, fire retardant blankets, water buckets, etc.
13. Grounded extension cords are required on Ledgewood Construction jobsites.

JOBSITE INSPECTION

Revised: January, 2014

Safety inspections are among the oldest accident prevention methods, and they constitute an integral part of an effective safety program. When conducted properly, they reveal unsafe acts and conditions that lead to accidents. Frequent informal inspections and follow-ups to correct noted deficiencies are essential for the smooth operation of a construction project.

1. The Superintendent will conduct routine inspections and institute correction of unsafe acts and/or unsafe conditions.
2. The Project Manager will report to the Superintendent any unsafe acts/conditions as he/she views them during his/her visits to the jobsite.
3. Company management personnel will assist by pointing out safety concerns during jobsite visits.
4. OSHA Compliance Officers visit construction sites normally without notice. They are to be received with courtesy. If an OSHA inspection results from an employee complaint, then the inspection will usually be limited to the scope of the complaint and not a wall to wall inspection. Superintendents are to immediately notify the Project Manager and to inform the OSHA Compliance Officer and will request that the OSHA Compliance Officer waits for his/her arrival to begin the inspection.

WEEKLY SAFETY AUDIT PROCEDURES

Revised: January, 2014

I. PURPOSE

- a. This weekly safety audit procedure will provide another avenue for communication between the Subcontractor and Ledgewood Construction. It will give all parties a chance to review our prospective “team” efforts relating to Construction Project Safety.
- b. The basis of this weekly review will be the attached “Jobsite Safety and Health Check List”. This form will be completed by the Superintendent.
- c. The previous week’s form shall be reviewed to ensure safety issues, noted at that time, have in fact been corrected.
- d. This should be recorded in Procore.

JOBSITE CLEANLINESS & HOUSEKEEPING

Revised: May, 2014

Good housekeeping on any construction site is absolutely essential in maintaining a safe workplace. The following guidelines will be adhered to:

1. Adequate dumpsters will be provided by either the individual Subcontractor or Ledgewood Construction dependent on contract requirements.
2. All construction debris will be picked up daily by all Subcontractors.
3. Each Subcontractor will be responsible for construction waste materials generated by their work.
4. Ledgewood Construction will monitor and enforce good housekeeping practices.
5. Failure of any Subcontractor to comply with this policy will result in Ledgewood Construction hiring laborers to clean and then back charging the delinquent Subcontractor(s).
6. Dust control shall be maintained at all times by watering affected areas for the safety of the public as well as the workers.
7. Indoor air quality should be reviewed. This is very important on occupied sites.

SUPERINTENDENT – SUBCONTRACTOR'S FOREMEN MEETINGS

Revised: May, 2014

1. Through the use of Safety Meetings, it is possible to reach employees who are Supervisors of the major trades involved on each project. At this time, the importance of project safety will be demonstrated to these Supervisors so they, in turn, can transmit this information to the personnel under their control.
2. The Safety Meetings, as part of the regular job meeting, will be held weekly at a predetermined time. These meetings will be documented on forms provided by the Superintendent.
3. In addition to helping reduce hazards, this forum also provides legal protection, in that safety items are included as part of the written safety meeting record and can be referred to in demonstrating Ledgewood Construction's interest and commitment to safety.
4. Procore should be used to document subcontractor meetings as well as safety items.

MEETING PROCEDURES

Revised: May, 2014

1. The Superintendent shall act as Chairman.
2. The subject matter for the “Weekly Safety Meeting” must be adapted to job conditions. Discussing actual conditions on each project will have more meaning and actually improve safety conditions on the job.
3. Special topics such as issues developed during weekly jobsite inspections, by the Superintendent can also serve as a valuable safety topic.
4. Any items or work that has been performed, that concern safety, shall be reviewed.
5. Any new criteria, amendments to OSHA regulations or safety in general, shall be reviewed.
6. Questions or recommendations from those in attendance shall be discussed. Comments and suggestions should be encouraged.
7. All attendees, including the Project Superintendent, must sign the form under the “Meeting Attended By” section with their name and their company’s name. Log onto Procore to track meetings.
8. Review any new Material Safety Data Sheets regarding hazardous products that may have been delivered to the site.

(This section is blank)

Revised: May, 2014

FIRE PROTECTION PROGRAM

Revised: May, 2014

The Project Team shall be responsible for the development of a Fire Protection Program to fit the jobsite conditions. The following should be used as guidelines to set up such a program:

1. Review the current OSHA guidelines.
2. Request the Fire Chief to visit the site, acquaint him with the project and make any plans required in preparation for any potential emergency.
3. Locate and identify any existing hydrants in the project area for fire department water supply. Provide clear access to same. Any inoperative hydrants will be covered.
4. Activate any new on-site hydrants and interior fire water risers with hose connections for fire department use as soon as possible. Activate sprinklers as soon as possible.
5. Provide, maintain and conspicuously locate all-purpose ABC type of fire extinguishers on the jobsite. One 2A – 10 lb. ABC extinguishers for every 3,000 SF of construction space or portion thereof (i.e. 5,000 SF requires 2 fire extinguishers).
6. Fire department telephone number shall be posted at all jobsite telephones.
7. “No Smoking” signs shall be posted and enforced as required.
8. Cutting and welding operations should include the following: Floors should be swept free of combustibles within 35 feet of the work area and any flammable liquids should be removed from the area. Wet down the immediate area, where applicable. A fire watch, when necessary, should be available while work is being performed, at lunch time and at least 30 minutes after operation is shut down. Fire extinguishers will be required. The sweeping of floors, hosing down the area, the fire watch and the fire extinguishers all will be provided by the Subcontractor. (Prior to any burning taking place, a permit, if required, must be obtained).
9. Fuel for cutting and burning torches shall be stored in locations and protected as directed by Ledgewood Construction’s Superintendent, in conformance with local fire regulations and OSHA requirements.
10. Emergency evacuation plans shall be developed and implemented as needed. These shall be reviewed at each job meeting and posted in conspicuous places. This will be part of the Emergency Action plan for each site.
11. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within the building except with the express approval of Ledgewood Construction’s Project Superintendent.

12. Bulk storage of volatile liquids shall be outside the building at a location determined by LedgeWood Construction's Project Superintendent and shall be posted as such. Permit for storage, if required, must be obtained by the Subcontractor from the Fire Department. In addition, the Subcontractor who is storing these materials shall furnish the proper type of fire extinguisher to be located within 50 feet of any point on the perimeter of the stored materials. Also, these areas are to be identified with signs restricting access and prohibiting sources of ignition.
13. Daily clean-up of scrap materials, sawdust, rags, oil and grease and other residue of construction operations will not only remove or reduce the fire hazard, but will promote general safety at the same time.
14. Improperly installed and controlled temporary heating devices could result in loss of life and property on construction sites from fire, asphyxiation and explosion. The following safe practices and procedures should be followed:
 - a. Temporary heating devices should not be installed or used by anyone on the job until authorized by the Project Superintendent and cleared with the local Fire Department.
 - b. Use only approved containers for fuel storage.
 - c. Adequate fire extinguishers should be provided (2A – 10 lb. ABC).
 - d. At least a 10-foot clearance should be maintained in any direction from any combustible materials.
 - e. Heating units should be well constructed with a stable base. Fireproof materials should be placed under the base.
 - f. When tarpaulins or canvas coverings are used near heating units, they must be U.L. listed. Fire Resistive Material per local Fire Department shall be used and at least a 10-foot clearance should be maintained. These materials should be securely fastened.
 - g. Heating devices should not be used in confined or unventilated spaces unless properly vented to the outside.
 - h. Kerosene, gasoline, oil or gas fired units should be shut down and cooled prior to refueling or moving them.
 - i. Liquid fueled heating devices should be provided with a manual shut-off system on the fuel line. The valve should be located at a safe distance from the unit.
 - j. All fuel tanks should be properly secured.
 - k. LPG gas cylinders should be stored away from the building out of doors. A cap should be provided to protect the valves on the stored cylinders.

- I. All bulk storage of flammable material listed above shall be reported to the Superintendent for approval.
- I5. Maintain fire prevention program by checking electrical equipment, use common sense, maintain good housekeeping, provide proper flammable liquid storage, provide proper refueling equipment and procedures, utilize cutting and welding fire watches, etc.
- I6. Provide security services if needed or required.
- I7. Provide fire instructions to all personnel:
- a. Install Exit signs.
 - b. Know how to get out. Learn what escape route to take from all work areas.
 - c. If you spot a fire, sound the alarm and get to safety, telling other about the fire as you go.
 - d. Know the location of the fire extinguishers and any other firefighting equipment.
 - e. Learn how to use a fire extinguisher.
 - f. Do not attempt to fight a fire that is too big for you.
 - g. And, if there is a fire, DON'T PANIC, follow your escape plan quickly and calmly.

PROTECTIVE CLOTHING AND FOOTWEAR

Revised: May, 2014

It is a strict requirement that all workers on LedgeWood Construction's projects adhere to the following code:

1. At the minimum, every worker shall have a T-shirt, long pants, and construction boots. It is strongly recommended that boots with steel toes to be worn. Sneakers will not be allowed at any time. Medical restrictions involving footwear will be decided by the Superintendent on a case by case basis.
2. Should specific operation involve materials that are hazardous, the Superintendent will be consulted and the required proper training will be provided by the Subcontractor. Protective clothing and personal protective equipment will be obtained prior to start up.
3. Hard hats shall be worn 100% of the time until the temporary certificate of occupancy has been issued or otherwise determined by the Superintendent.
4. On renovation projects, hard hats shall be required until the entire project is in the punch list stage.

GROUND FAULT PROTECTION

Revised: May, 2014

Ledgewood Construction shall provide, through their Electrical Subcontractor, the necessary equipment for a ground-fault protection program.

1. Any electrical equipment will be treated as if it were energized.
2. Only authorized licensed electricians under contract with Ledgewood Construction will be allowed to work on any electrical equipment whether it be activated or de-activated.
3. Any electrical equipment, panels, junction boxes that are energized will be posted. Live panels shall not be left unattended unless protective panel covers have been put back in place protecting workers from coming into contact with live parts.
4. Any energized equipment or electrical switch gear will be equipped with and fall under the current OSHA's guidelines lock out/tag out standard, (1926.417). A lock out/tag out program shall be developed, if needed utilizing the program established by Ledgewood Construction and the electrical contractor to assure that all employees are trained in the same manner following the same policies.
5. Should there be any questions as to the status of any electrical equipment, a licensed electrician will make that determination.
6. Construction workers shall not work next to electrical equipment until the area has been made safe.
7. Only approved three-wire grounded or double insulated tools shall be brought onto the jobsite. Only three-wire round extension cords are allowed.
8. Ground Fault Circuit Interrupters (GFCI) shall be the sole source of power available to employees on this site.
9. Although a (GFCI) Ground Fault Protection Program system will be in use, tools and electrical cords shall be maintained in good working order and condition. Electrical cords will be free of cuts. Cords with missing ground pins will be taken out of service immediately.
10. Employees shall visually inspect flexible cord sets and equipment connected by cord and plug before each day's use for external defects (deformed or missing pins, insulation damage and indication of possible internal damage). Where there is evidence of damage, the damaged item shall be taken out of service, by the employee, taken to his/her foreman who will tag the item "out of service", and removed from service until it is tested.

11. The Electrical Contractor shall test the GFCI system on a frequent basis and keep a record of such tests. Employees prior to connecting their tools or cords into the GFCI system will manually test the GFCI to ensure that it is operating.
12. The Electrical Contractor shall devise a method to continue providing GFCI protection after the permanent power has been activated in the building. If necessary, each Subcontractor will provide his or her employees with portable GFCI units.

FIRST AID AND MEDICAL SERVICES

Revised: May, 2014

Ledgewood Construction field office trailer is designed as the location for the first aid station under the control and supervision of the Project Superintendent. First aid kits with supplies meeting OSHA requirements are to be available and replenished as required. First aid treatment requiring further off-site medical attention shall be coordinated with the Project Superintendent.

Hospital / Emergency Room / Rescue Service

Emergency telephone numbers shall be posted in the field office on the card provided and at jobsite pay telephones established by the Company for construction worker's use. The Fire Rescue Department is the responding agency for Medical Emergencies at Ledgewood Construction jobsites.

Ledgewood Construction has designated the Superintendent as the General Contractor's on site Safety Representative. The Company urges each employee to obtain a certificate in first aid training in accordance with OSHA 1926.50(c).

EMERGENCY PROCEDURES

Revised: May, 2014

- Identify the on-site first aiders – List will be updated monthly.
- Provide the required first aid equipment:
 1. First Aid Kit in Ledgewood Construction Field Office.
 2. First Responder bag in Ledgewood Construction Field Office.
 3. Stretcher in Ledgewood Construction Field Office, if required.
- Emergency phone numbers at each phone location:
 1. Hospital:_____
 2. Fire Department:_____
 3. Police Department:_____
 4. Rescue:_____
 5. Poison Control:_____
 6. Ambulance:_____
- Name and location of preferred hospital:

NOTE ** A sketch and directions to the nearest medical facility are located in Ledgewood Construction field office.

- Keep records of first aid activity.
 1. To be recorded and discussed at weekly safety meeting.
- Establish and train for emergency procedures.
 1. Evacuation procedures to be reviewed at weekly safety meetings. NOTE ** Sketch of evacuation routes for all areas of the construction site will be posted throughout the jobsite. Any changes in evacuation procedures will be reviewed in advance at weekly safety and toolbox meetings.
 2. Changes in emergency fire procedures to be reviewed at weekly safety meetings.

INCIDENT NOTIFICATION PROCEDURE

Revised: May, 2014

Procedure:

1. Fire emergency on site. Be alert.
2. Stop all machinery and power tools.
3. Follow the direction of your foreman.
4. Be prepared to evacuate. If evacuation is necessary, use stairs and/or ladders only.
5. If necessary, assists in providing a clear entrance and exit for the Fire Department.
6. Assist in clearing street of all public traffic.
7. Await further instructions.

Emergency plans to ensure safety in the event of fire or other emergency shall be in accordance with current OSHA guidelines.

A site-specific emergency evacuation plan shall be posted throughout the building.

This Emergency Action plan shall include employee training to include instructing workers where to meet for a head count and what specific instructions to follow in the event of an emergency. A copy of this plan shall be posted in the field office.

INCIDENT REPORTING PROCEDURE

1. Any incident, whether it be an accident, near miss or an unsafe condition shall be reported to the Superintendent.
2. Accidents involving personal injury shall be reported to the Superintendent immediately.
3. Accidents involving damage to property or equipment shall be reported to the Superintendent immediately.
4. Damage to property or equipment, as a result of vandalism, shall be reported to the Superintendent as soon as possible. The Police Department will be notified.
5. Theft of construction materials or tools shall be reported to the Superintendent as soon as possible. A detailed list of materials and tools missing shall be provided to the Police Department.
6. Any unsafe condition shall be reported to the Superintendent so corrective actions can be instituted.
7. Take photos.

EMERGENCY SUBCONTRACTOR NOTIFICATION LIST

Revised: May, 2014

Please refer to the Emergency Action Plan.

POST-ACCIDENT OR LOSS REPORTING AND INVESTIGATION PROCEDURES

Revised: May, 2014

1. Purpose:

- a. To establish a standard procedure for all accident reporting and processing.

2. Reportable Cases:

- a. First Aid cases are defined as one time treatment and subsequent observation of minor scratches, cuts, burns, splinters and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.

3. Serious Accidents:

- a. Serious accidents are those which can be classified under any of the following:
 1. Occupational death(s), regardless of the time between injury and death, or the length of the illness; or
 2. Occupational illness or illness resulting in permanent or significant disabilities; or
 3. Occupational accidents that involve one or more of the following:
 - Minor – Those property damage accidents resulting in less than \$1,000 damage.
 - Large - \$1,000 to \$10,000 damage.
 - Major – Any property damage accident resulting in greater than \$10,000 damage.

All occurrences shall be investigated thoroughly. The proper investigation of a “near miss” will subsequently reduce the change of a re-occurrence and the possibility of an injury or an additional insurance claim. Do not limit investigations only to bodily injury (Workmen’s Compensation) accidents. An accident is an unwanted, unplanned event that interrupts the normal flow of scheduled activity. Investigated properly, the cause can be determined, corrected, and a re-occurrence eliminated.

Accident investigation records should not be concerned with the fixing of blame for an accident, but with determining the causes of an accident. It is the elimination of the causes and sub-causes of an accident that will lead to the prevention of future occurrences.

ACCIDENT REPORTING

Revised: May, 2014

1. Any injury, even of a minor type that is requiring a visit to an outpatient medical clinic for treatment must be reported on the Ledgewood Construction Accident Investigation Report form.
2. Any property damage accident, whether project property or non-project property, must also be reported on the Ledgewood Construction Accident Investigation Report form.
3. Verbally notify your Project Manager of any bodily injury accident and/or damage to property within two hours of its occurrence.
4. Submit written investigation reports to the Project Manager within 24 hours. Maintain a copy on file at the jobsite.
5. Any company owned automobile/truck accident, involving personal injury, must be verbally reported immediately to Ledgewood Construction's office. The accident must be reported on the Registry of Motor Vehicles' operator's report and sent to the main office along with police reports, witness statements, photographs, etc. within 48 hours of the accident.
6. Any instances of fire, theft or vandalism shall be verbally reported to the Project Manager as soon as possible.

ACCIDENT INVESTIGATION

Revised: May, 2014

The Project Superintendent shall investigate and provide a written report of all accidents.

1. Follow emergency procedure until the accident is stabilized.
2. Investigate the accident. Find out who, what, when, where and how.
3. Take photographs of the accident scene and the surrounding area. Indicate on the back of photographs the date the photograph was taken, date of incident, what the photograph depicts, and who took it.
 - a. All projects are to be equipped with one date camera, at a minimum.

Automobile Accidents:

1. Contractors, who have an automobile accident on jobsite property, involving their company-owned vehicle, must provide Ledgewood Construction's Superintendent with a completed automobile accident report within 24 hours of the accident. State Motor Vehicle procedures for reporting automobile accidents will be complied with by Ledgewood Construction and their Subcontractors.
2. Draw diagrams, mark-up drawings.
3. Record status of construction at the scene at the time of accident. Indicate what work was in place and what work was going on.
4. Determine how many Subcontractors were working in the area, with how many workers each, and what activity they were performing.
5. Identify witnesses and attempt to obtain telephone numbers. Record their names and employers. Try to interview them in private regarding accident description and cause. Ask them to sign a statement of description and cause.
6. Obtain copies of reports by others (Police, Fire Department, Subcontractors, doctors, etc.).
7. Describe any corrective action taken to prevent re-occurrence.
8. Provide written report as described below.
9. A copy of all reports including hospital, Fire, Police, etc. must be turned over to the Project Manager within twenty-four (24) hours of mishap.

10. A separate file containing accident/incident reports shall be kept in the field. A copy of all safety/accident/incident reports shall be forwarded to Ledgewood Construction's office.
11. The Daily Report in Procore should include a brief entry relative to the accident, for future reference.
12. Take photos.

PROCEDURE IF A LEDGEWOOD CONSTRUCTION EMPLOYEE IS INJURED

Revised: May, 2014

1. Notify the main office and the Project Manager. Next, begin your own investigation and fill out the LedgeWood Construction Accident Investigation Report.
2. The Superintendent must also fill out the "Employer's First Report of Injury" form. It is important that the form used is from the State in which the employee is "employed", which means the State to which he/she is paying payroll taxes, etc.
3. Send the original copy of the form to the Project Manager and attach to it the original of the LedgeWood Construction, Accident Investigation Report form along with any other pertinent information.

PROCEDURE IF A SUBCONTRACTOR EMPLOYEE IS INJURED

Revised: May, 2014

1. Ledgewood Construction Project Superintendent must be verbally notified by the Subcontractor's foreman immediately that an accident has taken place and that one or more of his/her employees have been injured.
2. Notify the main office and the Project Manager. Next, begin your own investigation and fill out the Ledgewood Construction Accident Investigation Report.
3. It is the responsibility of the Subcontractor's foreman or management to process the "Employer's First Report of Injury" form. The Subcontractor is obligated to provide the original of the completed form to the Ledgewood Construction Project Superintendent. Original will be sent to the Labor Department and copies to Ledgewood Construction.
4. Obtain same as soon as possible and attached to Ledgewood Construction Accident Investigation Report along with any other pertinent information, then submit a copy of all items to the Project Manager.
5. Injured worker can only return when he/she produces a full medical release from his/her doctor.

PROCEDURE IF A PUBLIC PERSON IS INJURED

Revised: May, 2014

1. Institute emergency procedures if appropriate providing emergency first aid and medical attention as required.
2. If emergency assistance is needed, coordinate and cooperate with Police, Fire, Rescue and other public officials having jurisdiction.
3. Notify the main office (Safety Director and Project Manager) by telephone that an accident took place and then begin an immediate investigation.
4. Complete the Ledgewood Construction Accident Investigation Report form and submit this and any other pertinent information to the Project Manager.
5. Obtain name and addresses of all injured people and witnesses.
6. A copy of all accident/incident reports shall be sent to the Safety Director.
7. Take photos.
8. Do statement of responsibility.

ACCIDENTS CAUSING PROPERTY DAMAGE TO PROJECT PROPERTY AND/OR NON-PROJECT PROPERTY

Revised: May, 2014

1. Institute immediately any emergency procedures required to make damaged property stable and safe to prevent further loss.
2. Notify the main office and the Project Manager by telephone that an accident took place and then begin an immediate investigation. Any MEDIA contact shall be coordinated with upper management.
3. Do not talk to the Press.
4. Take photos of the damage.

ACCIDENT RECORD KEEPING

Revised: June, 2014

1. Federal OSHA laws require accidents and illness of Company employees to be summarized and submitted in January of each year and posted in the project site offices each February (OSHA 300 Form). Failure to post same could result in our being fined by OSHA.
2. State laws require annual reports (OSHA 300-S form) summarizing totals from OSHA-300 to be submitted to the State Department of Labor each February.

PUBLIC RELATIONS FOLLOWING SERIOUS INJURY OR ACCIDENT

Revised: June, 2014

Statement of Policy:

In the event of fire, accidents or serious injuries, it is the policy of Ledgewood Construction to immediately restrict access to the site to only authorized personnel and to close the site to all unauthorized persons. All workers should be evacuated from the building and directed to safe areas. Company personnel are to aid the Police and Fire Departments. The project site must be secured at the earliest possible time.

No one is allowed on site except those required to aid in the resolution of the incident because of the hazards which may be involved.

The Project Superintendent, or his/her designated alternative, will take charge in the event of a major accident. The following is a checklist which should be followed in case of such an accident:

1. Stop work.
2. Call for assistance from the Fire Department, ambulance service, Police Department, main office, etc.
3. Initiate firefighting, if required; secure the building, etc.
4. Call for site evacuation, clear site access roads.
5. Issue instructions to foremen.
6. Set up security measures at the accident site.
7. Set up communications center in the field office.
8. Call in operators for heavy equipment, such as cranes, front-end loaders, backhoes, etc.
9. Other desirable actions as conditions warrant them.
10. Notify the Main Office and Project Manager.

IMPLEMENTATION OF POLICY FOLLOWING SERIOUS INCIDENT

Revised: June, 2014

Project personnel should be courteous to members of the public, reporters and photographers, but make no statements. There is to be no interference with reporters' and photographers' work outside the construction site. Access to jobsite by the Media will be handled by Ledgewood Construction upper management.

** NOTE: Any statements with respect to any accident made to person(s) not connected with the project will be handled through Ledgewood Construction corporate office.

OSHA regulations require that any incident resulting in the death of one or more workers or any single incident resulting in injury to 5 or more workers be reported to OSHA within 8 hours of the occurrence. This notification will be handled by the Project Manager or one acting in his/her capacity. The General Superintendent overseeing that project or any of the General Superintendents will be notified immediately. In addition, the President of Ledgewood Construction will be notified immediately.

The name and address of seriously or fatally injured construction workers shall not be released by project personnel.

No statements about monetary damages or information are to be made by anyone until a statement has been authorized by the President of Ledgewood Construction, or their authorized representative. Before such information is available, a courteous reply will be made that the amount of damage is not yet known and will be estimated as soon as possible.

To inquiries regarding cause, a reply will be made only when proper information has been reviewed and cleared by the President or their authorized representative. Whenever the cause is in doubt, the individual will courteously request inquiries to defer their questions until there has been time to gather more information.

DISCIPLINARY PROGRAM

Revised: June, 2014

1. Policy:

- a. A Safety Disciplinary Program has been incorporated so that consistency is maintained throughout the organization when disciplinary action is necessary. The purpose of the Safety Program is to channel all safety activities toward a single goal, (i.e. the elimination of accidents). The achievement of this goal can only be obtained through the efforts of all employees and to this end we have established a corporate disciplinary program that will be uniformly enforced throughout all corporate operations. All employees, including employees of Subcontractors, will be subject to disciplinary action if they violate Company Safety Standards and/or safety rules.

2. Scope:

- a. This policy applies to all employees of Ledgewood Construction, and employees of Subcontractors, at all Ledgewood Construction jobsites.

3. Responsibility:

- a. The Safety Program mandates that all supervisory employees accept their responsibility for the prevention of accidents on work under their direction and be responsible for the safety training and instructions of employees under their direct supervision. It then follows that these same supervisory employees are responsible for administering discipline when safety violations occur. Under all circumstances, the supervisors shall follow the disciplinary procedure so that consistency and fairness can be maintained.
- b. Project Managers / Superintendents are directly responsible for seeing that discipline is administered in a fair and consistent manner. The Project Executive shall provide direction and guidance to the management personnel in the administration of this program.

4. Procedure:

- a. Except in cases involving major violations of Company Safety Rules and Regulations, the company subscribes to a philosophy of progressive, constructive discipline. What this means is that discipline will be administered for the purpose of producing a corrective change in the employee's future behavior, but if the change does not occur then a more serious form of discipline will be administered. An example of a major safety violation would be the false report of injury to claim Workmen's Compensation benefits, fighting, use of drugs or alcohol on the jobsite, etc. These types of violations will result in the employee's immediate discharge.
- b. Rules of conduct have been established for project safety. All employees must follow these rules; violation of these safety rules will result in disciplinary action up to and including discharge.

- c. Safety Rules must be posted on the bulletin board(s) of each project so that all employees are made aware of each rule. Subcontractors should sign the Jobsite Rules and Policies Form.
- d. Safety Rules are “rules of conduct” based primarily upon the Safety Standards established for the company. The communication of the safety rules to employees is important but of equal importance is the enforcement of these safety rules in a fair and consistent manner. To maintain fairness and consistency, the supervisor must administer the proper discipline in accordance with the severity of the safety violation. Proper discipline is determined as follows:
 - 1. Has safety violation been verified?
 - 2. Is the violation deserving of a reprimand?
 - 3. Has a similar violation occurred before? If so, what discipline was administered?

If the supervisor can answer yes to (1) and (2) above, then it is fair to administer discipline. If the discipline administered is similar to that administered previously for similar offenses, then “consistency” is maintained.
- e. The typical disciplinary action pattern is as follows; however, the severity of a violation will determine the level of disciplinary action administered:
 - 1. Verbal Reprimand – The supervisor will inform the employee that he/she has committed a safety violation which, if repeated, could result in further disciplinary action.
 - 2. Written Reprimand – A formal written notice will be issued by the supervisor informing the employee of the safety violation and notifying the employee that future violations may result in suspension or discharge from work.
 - 3. Suspension – The employee’s supervisor will inform the employee that he/she is suspended from work without pay for a specific period of time for a violation of company safety rules or regulations and that a future violation may result in discharge.
 - 4. Discharge – Employment will be terminated as a result of a major safety violation or a pattern of safety violations.
- f. Documentation of Disciplinary Action. Whenever administered is, proper documentation of the action taken should be maintained. The documentation should state what Safety Rule was violated, the level of disciplinary action administered and any other comments the supervisor wishes to note relative to the incident. Documentation of disciplinary action involving Ledgewood Construction employees shall be placed in the individual’s personnel file.

JOBSITE RULES AND POLICIES

Revised: June, 2014

1. Safety head protection (hard hats) must be worn at all times while on the work site. Safety glasses must be worn whenever performing work that could result in eye injury.
2. Long pants, shirts and work shoes shall be worn at all times by all personnel on the work site. Shirt sleeves must be at least T-shirt length. No tank tops are allowed.
3. All injuries, accidents, and incidents will be reported immediately to a supervisor.
4. False claims of injury will result in discharge.
5. Personal protective equipment (respirators, earmuffs or plugs, gloves, boots, safety belts, etc.) will be used as required by the hazards involved in work assignments. This equipment must be worn when specified by project supervision or when conditions warrant their use.
6. Report defective machines, tools, etc. and have them taken out of service.
7. Reporting to work under the influence of alcohol, intoxicants, tranquilizers, narcotics, or other dangerous drugs, or possession of such is prohibited and will result in discharge.
8. No employee shall remove, displace, damage, destroy or alter any safety device or safeguard furnished or provided for use in any place of employment. Nor shall anyone interfere in any way with the use thereof.
9. Any employee who observes unsafe acts or unsafe conditions in a work area which might result in an accident or injury shall report such acts or conditions to his/her supervisor immediately.
10. Familiarize yourself with signs and posters bearing pertinent information, warnings, directions, and instructions. Know locations of fire extinguishers in your work areas.
11. Housekeeping, safety and productivity go hand in hand. You are responsible for keeping your work area clean.
12. Fighting, creating a disturbance or horseplay will not be tolerated.
13. Modify for each jobsite. Have Subcontractors sign and scan into Procore.

NOTE: Violation of Safety Rules or Safety Standards will result in disciplinary action.

Disciplinary Action Notice

Date_____

Name_____

Project_____

Subcontractor_____

Trade_____

Employer (Ledgewood Construction or Subcontractor)_____

Reason: (explain below)

Type of Disciplinary Action Taken:

1. Verbal Warning ()
2. Written Warning ()

3. Suspension ()
4. Discharge ()

I have discussed the above cited reprimand with subject employee effective this date:

Supervisor_____
Date_____
Employee_____
Date_____
Superintendent
(Suspension or discharge only)_____
Date

Comments:

Copies: Employee, Personnel File or Subcontractor File and Project Manager.

CONTRACTOR MOBILE CRANE SAFETY PROCEDURE

Revised: June, 2014

1. Scope:

This on-site procedure outlines requirements for control, inspection and operation of on-site Contractor mobile cranes and rental cranes. This procedure does not relieve any Subcontractor or crane operator of their responsibility to comply with OSHA crane standards and other provisions of Industry Standards.

2. Responsibility:

Subcontractor supervisors and equipment operators are responsible for inspection, operation and control of mobile cranes as outlined in this procedure.

- a. If a qualified crane inspector is not present on-site to conduct a crane inspection and verification of crane operator's qualification as required in Subsection 3 and 4 below is not possible, Ledgewood Construction shall cause this requirement to be met by other means. For example:
 1. Instruct the Subcontractor to arrange for a qualified crane inspector to inspect the crane prior to start-up.
 2. Instruct the Subcontractor to secure the services of an independent crane inspection agency to verify the inspection/qualification requirements.

3. Inspection:

- a. Rental cranes must arrive on site in a safe operating condition.
- b. Upon arriving on the site, the crane operator will have available for examination both the crane certification records and the crane maintenance records.

4. Operator Qualification:

Subcontractors shall demonstrate to Ledgewood Construction's Superintendent that their crane operator is properly licensed.

- a. Trained signal person and rigger (hand and radio).
- b. Check subsurface conditions.
- c. Review soils conditions (build crane pad).

5. Crane Load Capacity Charts:

Crane load capacity charts shall be posted in the cab of each crane.

6. Critical Lifts:

a. Definition – A critical lift is when any of the following conditions exists:

1. The load exceeds 75% of the crane capacity as shown on applicable crane manufacture's load (capacity) charts for the configuration to be used.
2. Lifts involving more than one crane to handle a common load.
3. Use of crane or lifting device in an application that deviates from manufacturer's recommendations including, but not limited to:
 - a. Boom configuration not in accordance with the boom make-up chart.
 - b. Moving a crane with longer boom than recommended.
 - c. Exceeding capacities or restrictions shown on the load chart.

b. Written Critical Lift Plan:

The Subcontractor shall prepare a written critical lift plan for all critical lifts. The following information should be included:

1. Why the lift is critical.
2. Type of crane.
3. Boom length.
4. Boom angle.
5. Radius.
6. Weight of load (weighing may be necessary).
7. Dimensions of load.
8. Attachment points for rigging.
9. Obstructions in path of load.
10. Crane operator's qualifications.

c. Approvals:

If the crane operator anticipates any deviation from crane manufacturer's recommendations, the crane operator shall secure approval from the manufacturer.

Note: Cranes are rated while performing in a level position, on a solid surface, with no wind conditions considered.

7. Crane Operation:

a. Only the following qualified personnel shall operate cranes:

1. Designated operators complying with State or City laws.
2. Maintenance and test personnel when they have the specific training and hands on work experience to operate, test or maintain the type of crane that they are servicing.
3. Qualified Crane Inspectors.

b. Maintain continuous contact, visual or vocal, between the crane operator and one qualified signalman. If for any reason contact is lost, the crane operator shall stop all operations and not resume any crane function until full contact is restored.

c. The crane must have sufficient capacity and proper type (crawler, rough terrain, truck cranes, mechanical or hydraulic) to fulfill all requirements of the work without endangering personnel or equipment.

d. Outriggers on all truck cranes shall be fully extended and set for all lifts. Lifts shall not be attempted with outriggers partially extended and set. No pick and carry lifts are to be made with truck cranes.

e. Rough terrain cranes operated in stationary position shall have outriggers fully extended and set before any lift is made.

f. Pick and carry loads with rough terrain should be avoided. Where necessary to do so the following applies:

1. Use the load chart on truck cranes with rubber wheels.
2. Investigate route to be followed for solid and level footing.
3. Restrict travel speed to maintain control of the load.
4. Tie load to the frame of the crane.
5. Personnel will not touch the load for any reason. In addition to Item (6), tag lines will be used for control of the load, if required.

6. Where possible, outriggers should be extended and set within a few inches of ground level.
- g. Establish positively the weight of the load before handling. Check brakes and machine stability when load is still only inches above the ground.
- h. The operator must not attempt any lift he/she feels conditions are inadequate.
- i. Only qualified crane personnel shall direct the changing or disassembly of crane booms. Consideration should be given to having the manufacturer's representative present.
- j. The operator shall observe the following precautions when leaving the control station of a machine:
 1. Disengage the master clutch.
 2. Lower buck or crane load to the ground.
 3. Set safety pawls on all drums where these are operated manually.
 4. Set the swing brake and travel brakes to prevent machine movement when lifts unattended for short periods and operator remains in immediate area.
 5. When crane is left unattended for extended periods of time or the operator leaves the immediate area, all brakes and locks shall be engaged.
- k. Cranes shall be operated smoothly, avoiding sudden stops and starts.
- l. The hoist line must be vertical at all times.
- m. At no time shall personnel be positioned beneath suspended loads.
- n. No one is permitted to ride the hook or the load.
- o. The boom hoist drum pawl should be engaged at all times except when lowering the boom.
- p. Do not get on or off a machine when it is in motion. No adjustment, repair, or lubrication is permitted on moving machinery unless required by the manufacturers.
- q. Work within 15 feet of electric lines requires a special procedure and permit which must be posted in the cab.
- r. All loads require a tag line.
- s. No tool boxes, oil cans, choker racks, water coolers or similar additional may be placed in the radius of the swing of the counterweight where a person could conceivably be crushed.

- t. Swing radius of the counterweight must be barricaded.
- u. Lifts associated with steel erection and concrete bucket handling are the only crane operations where free-fall can be used.

8. Crane Work Near Overhead Electric or Hazardous Pipe Lines:

- a. Ledgewood Construction's site Superintendent and Subcontractor foreman shall review the scope of work.
- b. These individuals will decide whether:
 - 1. The line will be shut down;
 - 2. The crane will be grounded;
 - 3. If an electrical department stand-by man is necessary;
 - 4. If protective equipment must be worn.

Note: Employees handling tag lines or attaching or disconnecting loads must wear tested Linemen's gloves of adequate voltage rating with protectors and rubber footwear as per OSHA standards.

- c. No crane shall be operated under these conditions unless:
 - 1. A signal man is present whose sole function shall be to assure that clearances are maintained.
 - 2. Signs and barricades warning personnel to stay clear are posted around the crane.
 - 3. The crane operator is the only person on the rig under any high tension line. Booms must be lowered or tied off; using load line.

Precautions noted in this procedure apply to all electric lines. Similar considerations must be given to piping systems which contain potentially hazardous materials.

Correct identification of all overhead electric lines is vital since there is considerable resemblance between some high voltage lines and "telephone" lines.

All crane operators will be instructed to stay on the rig in case of contact with any electrical lines.

Fixed leads shall be provided which ladder and climbing devices, and adequate rings, or similar attachment points, so that the loft worker may engage his/her safety harness lanyard to the leads.

SCAFFOLDING

Revised: June, 2014

1. All Subcontractors who intend to utilize any type of scaffolding whether it be rolling scaffolds, tubular welded frame scaffolding, etc. shall appoint a competent person to supervise and be held accountable for the erection and maintenance of the scaffolding system per OSHA guidelines.
2. A tubular welded frame scaffolding shall be set on a firm base or mudsill, utilizing screw jacks on all frames for leveling and stability. Each frame shall be fully cross braced and locking pins shall be in place.
3. All planking shall be free of splits and dry rot. Planking shall be placed so it overlaps 12 inches. Planks shall extend over the end of the frame no less than 6 inches and no more than 12 inches. All planking shall be full 2 inch scaffold grade planking.
4. If an employee can fall 6 feet or more, the operation must be protected by guardrails, top rail 42 inches, intermediate rail 21 inches and toe-board if persons passing underneath or alongside could be struck by falling debris.
5. To prevent movement the scaffold will be secured to the building at intervals not to exceed 30 feet horizontally and 26 feet vertically. Additional tie-ins will be used in the event of high winds and/or when the scaffold is enclosed with tarps.
6. Ladders shall be provided for accessing scaffolds unless scaffold is designed for climbing. Workers shall not climb corners of scaffolding to access scaffold.
7. Free-standing mobile scaffolds shall not exceed four times the smallest base dimension.
8. Prior to the operation of so called scissors lifts and articulating boom platforms, Subcontractor foreman shall demonstrate to Ledgewood Construction Superintendent that personnel have been trained and are familiar with operation of the equipment. Must have card for that unit.
9. Personnel working in articulating boom platforms (Condors) shall wear a harness and lanyard secured to basket.
10. So called Baker scaffolds shall be equipped with guardrails if employee is exposed to a fall greater than 6 feet.

STEEL ERECTION

Revised: June, 2014

1. All Steel Erection shall take place in accordance with OSHA Regulations.
2. Crane operations during the erection of steel shall follow the guidelines set forth in this Safety Program.
3. All workers not directly involved with the actual initial connecting of beams shall be tied off when working more than 15 feet above any surface.
4. A safety railing of ½ inch wire rope shall be installed approximately 42 inches high around the periphery of all temporary metal decked floors. It shall be the responsibility of the steel erector to install a second wire rope prior to any other trades working on the floor. A toe-board or netting shall be installed when material could be subjected to falling through the opening. The wire rope connections shall be secured with at least three (3) Crosby clips.
5. No loads being carried by the crane will be swung over areas where employees are working.
6. Whenever the potential fall distance exceeds 15' above working surfaces they shall be protected from fall hazards by means of guardrail systems, safety nets, personal fall arrest systems, positioning device systems, or fall restraint systems.
7. Floor openings shall be addressed as they occur, including stairwell and elevator shafts which will be planked over every other floor during steel erection. Standard floor openings shall be covered with ¾" plywood or the equivalent and secured from accidental displacement. In addition the words "floor hole" shall be painted on the cover with orange paint.
8. Plumbing-up lines shall be secured with a minimum of (3) Crosby clips to prevent any slippage.
9. A fire extinguisher of at least 2A – 10 lb. ABC classification will be located with each welding or burning operation during steel erection.
10. Ladders to access floors and specific work areas will be tied off to prevent displacement at all times. Ladders will be of sufficient length to extend 36" above the surface being accessed. A clear landing surface, protected by safety rails, shall be available at the top of the ladder. Workers shall not be required to climb through cables or rails to access a floor.
11. If "Christmas Treeing", so called, is utilized during steel erection, a maximum of (3) pieces will be lifted at any time.
12. Metal decking shall not be left unsecured at the end of the work day to prevent displacement by unexpected high winds.

13. Bar joists shall not be placed on structural steel framework unless such framework is safely bolted or welded, not shall bar joists be put in place without securing to framework.
14. Impact wrenches shall be provided with a locking device to prevent displacement of the socket.
15. Commencement of steel erection: Steel erector shall not erect steel unless it has received written notification that the concrete in the footings, piers, and walls is either 75% of intended minimum compressive strength or sufficient to support the loads imposed during erection.
16. Columns shall be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim plates which are adequate to transfer the loads.
17. Anchor bolts shall not be repaired, replaced or field modified without approval of the Project Structural Engineer of record.
18. The perimeter columns shall not be erected unless they have holes or other devices in or attached at 42-45" AFF and the midpoint to permit installation of perimeter safety cables.
19. Site specific erection plan is good for all involved.

LOCKOUT / TAGOUT POLICY

Revised: January, 2015

NOTE: This section is the responsibility of the Electrical Contractor.

Purpose and Scope:

Purpose of these procedures is to establish an energy control program that includes (1) documented energy control procedures, (2) employee training, and (3) periodic inspection of the procedures.

There are two types of energy isolating devices: those capable of being locked and those that are not.

The lockout device provides protection by holding the energy-isolating device in the safe position, thus preventing the machine or equipment from being energized. The tagout device does so by identifying the energy-isolating device as a source of potential danger; it indicates that the energy-isolating device and the equipment being controlled may not be operated until the tagout is removed.

Lockout is a more reliable method of de-energizing equipment than tagout and is the preferred method used by Ledgewood Construction, however, when the energy-isolating device cannot be locked out, Ledgewood Construction employees will use tagout.

I. Responsibilities:

Management: Under the Federal Occupational Safety & Health Act, Management is responsible for planning deliberate energy control program to ensure that machines and equipment are isolated and inoperative before any employees perform servicing or maintenance where the unexpected energization, start up or release of stored energy could occur and cause injury; training a competent and safety-minded force; and maintaining records prescribed for accidents, illness and injuries.

Project Managers: Responsible for periodic inspections to assure that energy control procedures (locks and tags) continue to be implemented properly and that employees are familiar with their responsibilities under these procedures. The Project Manager will certify that the periodic inspections have been performed.

Superintendent/Foreman: Responsible for training dealing with the equipment, type(s) of energy, and hazard(s) specific to his/her particular jobsite. In addition, the Superintendent/Foreman will be responsible for obtaining from the Warehouse Manager the appropriate lockout-tagout devices.

Authorized Employee: Responsible for implementing the energy control procedures and performing the service or installation.

Affected Employees/Other Employees: Responsible for recognizing when the control procedure is being implemented, and understanding the purpose of the procedure and the importance of not attempting to start up or use the equipment that has been locked or tagged out.

2. Training:

Prior to starting work, each employee attends a health and safety orientation. At that time each employee will receive training in the purpose, function and restrictions of the energy control program. Each employee will sign a form verifying that they have received training in LedgeWood Construction energy control program.

Training for Authorized Employees will cover, at a minimum:

- a. Details about the type and magnitude of the hazardous energy sources present in the workplace, and
- b. The methods and means necessary to isolate and control those energy sources (i.e. the elements of the energy control procedures).

Training for Affected Employees and Other Employees will cover the following:

- a. Whenever there is a lockout or tagout device in place on an energy-isolating device, leave it alone and do not attempt to operate the equipment.

3. Application of Controls and Lockout/Tagout Devices:

Generally, the procedure for applying energy controls includes the following elements and actions that must be implemented in sequence. Procedures for shutting down specific pieces of equipment (pumps, boilers, air handling equipment, etc.) that LedgeWood Construction installs, starts-up and services are outlined in the Installation and Operation and Maintenance Manuals that accompany each piece of equipment at shipment and should be followed. Additionally, work that involves the transmission and distribution systems for gas, steam, water or petroleum products, valves will be locked in either the open or closed position (as appropriate) or, if the valve cannot be locked, the handle will be removed and tagged-out.

- a. Prepare for shut down.
- b. Shut down the machine or equipment.
- c. Apply the lockout or tagout device.
- d. Render safe all stored or residual energy.
- e. Verify the location and de-energization of the machine or equipment.

4. Removal of Locks and Tags:

Before lockout or tagout devices are removed, the Authorized Employee(s) will take the following actions or observe the following procedures:

- a. Inspect the work area to ensure that non-essential items have been removed and that machine or equipment components are intact and capable of operating properly;
- b. Check the area around the machine or equipment to ensure that all employees have been safely positioned or removed;
- c. Notify the Affected Employee(s) immediately after removing locks or tags and before starting equipment or machines; and
- d. Make sure that locks or tags are removed **ONLY** by those employees are attached them.
- e. Follow the manufacturer's start-up procedures outlined in the Installation Manuals and Operations and Maintenance Manuals, which accompany each piece of equipment at shipment.

5. Additional Safety Requirements:

a. Testing or Positioning of Machines:

Temporary removal of locks or tags and the re-energization of the machine or equipment is allowed **ONLY** when necessary under special conditions, (i.e. when power is needed for the testing or positioning of machines, equipment, or components). The re-energization must be conducted in accordance with the sequence of steps listed below:

1. Clear the machines or equipment of tools and materials.
2. Remove employees from the machines or equipment area.
3. Remove the lockout or tagout devices as specified above.
4. Energize and proceed with testing or positioning.
5. De-energize all systems, isolate the machine or equipment from the energy source, and re-apply lockout or tagout devices as specified.

b. Outside Personnel (Contractors, etc.):

Ledgewood Construction will inform other Contractors of our lockout/tagout procedures. Ledgewood Construction will ensure that their personnel will understand and comply with all restrictions and/or prohibitions of the other employer's energy control program.

c. Group Lockout or Tagout:

During all group lockout/tagout operations where the release of hazardous energy is possible, each Authorized Employee performing servicing or maintenance shall be protected by their own personal lockout or tagout device.

d. Shift or Personnel Changes:

Occasionally Ledgewood Construction works on a project that requires more than one work-shift during the day. On this type of project, there is an overlap of workers (both shifts on the job for a short period of time, usually one-half hour). During this overlap locks and tags will be removed by the Authorized Employee and replaced with the locks and tags of the Authorized Employee on the new shift. On the rare occasions that a worker working and a piece of equipment would leave the project (either to go to another project, or leaving Ledgewood Construction's employ) while the piece of equipment was still locked or tagged-out, the Superintendent/Foreman may remove the locks and/or tags by strictly following the procedures outlined above.

SANITATION FACILITIES

Revised: January, 2015

- I. Portable Sanitation Facilities for workers assigned to this project are located on the jobsite and are provided by Ledgewood Construction.

NEW HIRE INDOCTRINATION PROJECT RULES & SAFETY REGULATIONS

Revised: January, 2015

Project Rules:

1. At the Preconstruction Meeting, Ledgewood Construction will take the opportunity to familiarize Subcontractors with the Project Safety Rules.
2. A copy of the Project Safety Rules will be issued to each Ledgewood Construction employee. The employee will sign a form acknowledging that he/she has read and understands and agrees to abide by the Rules.
3. The following Rules and Safety Regulations will be incorporated with Ledgewood Construction "Project Safety Rules".
 - a. All vehicles and containers entering or leaving the jobsite, or vehicles located on the jobsite, are subject to security inspections.
 - b. Employees will be expected to perform a full day's work with a cooperative and willing attitude. Uncooperative, careless and neglectful work performance will not be tolerated.
 - c. Proper conduct on the job is essential to the common good of all employees and the daily progress of the job. Therefore, unsatisfactory conduct, including, but not limited to, the following violations, will be subject to appropriate disciplinary action or discharge.
 - Loafing on the job.
 - Dishonesty or fraud involving the company.
 - Sleeping on the job.
 - Failure to use or wear safety equipment.
 - Making or faking false injury claims.
 - Fighting or engaging in horseplay.
 - Damaging materials, tools or equipment, either willfully or carelessly.
 - Insubordination, refusing to accept work assignments and interfering with fellow workers or supervisors.
 - Gambling at any time on the jobsite.
4. The possession and/or use of alcohol or other intoxicants on site may result in immediate dismissal.

5. The possession or use of narcotics and/or being under the influence of non-prescription depressant or stimulant drugs on site at any time may result in immediate dismissal. If you are taking medication advise your supervisor.
6. Bringing firearms or weapons of any kind onto the site will result in dismissal.
7. Drinking water is available at all times. Used cups are to be disposed of in provided containers, as well as any cans, glass bottles, lunch bags, sandwich wrapping, etc.
8. Adequate sanitary facilities are provided on the jobsite. We request your cooperation in maintaining the facilities in a clean and orderly condition.
9. First aid facilities are available at the jobsite. A first aid kit will be located in the Ledgewood Construction field office.
10. All employees shall strictly comply with project and employer safety rules and regulations. Any employee in violation is subject to discharge.
11. Any solicitation or posting must have prior approval of Ledgewood Construction.

SAFETY REGULATIONS

Revised: January, 2015

All local and OSHA safety rules and regulations must be complied with including, but not limited to, the following:

1. Hard hats must be worn at all times.
2. The use of safety shoes is strongly recommended.
3. Riding material hoists, crane loads, or the hook will not be permitted.
4. Eye protection, hearing protection, and respiratory protection must be worn when the operation requires.
5. All ladders must be tied off or anchored extending 36" above working deck.
6. No smoking, except in designated areas, on this jobsite.
7. All gas and oxygen bottles must be stored in an upright position with caps attached and tied off. Storage facilities must comply with OSHA standards and local Fire Department Regulations.
8. All work areas must be free of debris and waste materials.
9. Where craft persons normally furnish their own tools, such tools shall conform to the prescribed requirements for safe and efficient work.
10. Safety harnesses, properly tied off, shall be worn when working at heights over 6 feet, unless an adequately constructed scaffold with a top rail, mid rail and toe board is provided.
11. All persons shall comply with the Federal OSHA safety standards and the safety requirements of the Division of Labor & Industries, pertaining to the construction industry.
12. Consult Ledgewood Construction for specific details of safety requirements.

PORTABLE TOOLS – FUELING REQUIREMENTS

Revised: January, 2015

1. Extreme caution should be exercised when fueling portable tools, generators, propane equipment, etc.
2. A fire extinguisher with a rating of 2A – 10 lb. ABC should be available in the event of a fire.
3. Only approved metal safety cans will be allowed on site. Containers shall be equipped with a spring loaded cap and a flash arrester in the spout.
4. Fueling within the confines of any building is prohibited.
5. Fuel storage permits, if required, will be obtained from the Local Fire Department.
6. All fuel containers will be properly labeled with the contents of the can.
7. All fuel operated equipment will be shut down and allowed to cool before any refueling is attempted.

HAZARD ANALYSIS FORM

Revised: January, 2015

Procedure for filling out form:

1. The Hazards Analysis form shall be filled out by each Subcontractor Foreman when requested by Ledgewood Construction. The completed form shall be reviewed with the Superintendent.
2. The purpose of the form is to identify and plan Safety issues in advance of the work taking place.
3. This exercise will enable both the Subcontractor foreman and the Superintendent to plan ahead and with the assistance of the Project Manager head off potential exposures to accidents and/or injuries.
4. See attached sample of the Hazard Analysis Form.

JOB HAZARD ANALYSIS

Revised: January, 2015

Project: _____

Operation: _____

Contractor:_____

Maximum # of Employees:_____

Foreman: _____

Date: _____

[illegible]

CONTRACTOR EMERGENCY EVACUATION PROCEDURE

Revised: January, 2015

Purpose:

To provide for the safe and orderly evacuation of all employees who may be in danger as the result of a fire, collapse or any unforeseen emergency.

1. Subcontractors:

- a. Review with Ledgewood Construction Superintendent, the detailed site emergency evacuation procedures for each location where Ledgewood Construction and their Subcontractors will be working on this project.
- b. Request that Ledgewood Construction and their Subcontractors conduct an immediate head count to determine if any employees are missing.

2. Contractor Site Superintendent:

Ledgewood Construction Superintendent Shall:

- a. Ensure that his/her Supervisory Personnel are completely familiar with the appropriate emergency evacuation procedures to follow each jobsite location where they have employees working.
- b. Respond to the scene of the emergency and direct Contractor employees to evacuate to the appropriate assembly point as required by the scope of the hazardous exposure(s).
- c. Conduct an employee headcount and immediately advise Rescue Personnel if any Ledgewood Construction or Subcontractor employees are missing.

3. Construction Employees:

- a. Each construction employee shall immediately stop work and leave his/her work area and assemble as directed by Ledgewood Construction Personnel or Subcontractor Foreman when a potential or actual hazardous condition exists.

4. Various Evacuation Routes and Assembly Points:

- a. Various evacuation routes and assembly points, as needed will be developed by Ledgewood Construction Safety Personnel for specific work locations throughout the project area.
- b. Evacuation route sketches, if needed, based on the above information shall be developed by Ledgewood Construction Superintendent.
- c. Evacuation procedures, including changes in evacuation routes and assembly points shall be reviewed at weekly safety meetings and this information will be covered at Subcontractor Toll Box Meetings.

POWDER-ACTUATED TOOLS

Revised: January, 2015

The following procedure shall be followed for the use of Powder-Actuated tools on this project:

1. Only qualified operators shall operate explosive-actuated tools. A qualified operator is one who has:
 - a. Been trained by an authorized instructor and provided with an authorized instructor's card by the tool manufacturer or by an authorized representative of the tool manufacturer.
 - b. Possesses a qualified operator's card supplied by the manufacturer and issued and signed by both the instructor and operator.
2. Each tool shall be provided with the following:
 - a. A lockable container.
 - b. Operator's instruction and service manual.
 - c. Powder load and fastener charts.
 - d. Tool inspection record.
 - e. Service tools and accessories.
3. Tool maintenance and inspection:
 - a. Daily inspection, cleaning and testing shall be performed as recommended by the manufacturer.
 - b. Explosive-actuated tools shall be inspected each day prior to use to check that safety devices are in proper working conditions.
4. Tool Security:
 - a. Explosive-actuated tools and the charges shall be secured at all times to prevent unauthorized possession or use.

- b. Explosive-actuated tools shall not be loaded until just prior to the intended firing time; neither loaded nor empty tools are to be pointed at anyone; hands are to be kept clear of the barrel end.
- c. All spent and any unspent charges shall be placed in containers kept for that purpose and removed from the jobsite on a daily basis. At no time will charges be allowed to remain unattended.
- d. When not being used, powder-actuated tools and charges will be kept under lock and key in a secure container such as a gang box. Only a sufficient number of charges shall be available in the work area to accomplish the planned work for any given day.
- e. Each Subcontractor required to use powder-actuated tools shall advise Ledgewood Construction Superintendent where they are storing their powder-actuated tools and charges. Each Subcontractor will keep an inventory of supplies brought onto the project and charges.

ENTRY PERMIT CONFINED SPACES PROGRAM

Revised: January, 2015

NOTE: This section has also been added to “Subcontractor Responsibilities” (Section #9)

As “entry permit” confined spaces are not located on all jobsites, training shall be given to those individuals specifically assigned to work in same.

Employees required to construct work in a: boiler, cupola, degreaser, furnace, pipeline, pit, pumping station, reaction or process vessel, septic tank, sewage digester, sewer, silo, storage tank, ship’s hold, utility vault, vat or similar type enclosure would be considered working in a confined space. A confined space is any space having any one of the following characteristics.

- Limited openings for entry and exit unfavorable natural ventilation.
- Not designed for continuous worker occupancy.

The purpose of Ledgewood Construction Entry Permit Confined Spaces Program, as outlined below, is to ensure that entrants (employees) are protected from permit space hazards. In this regard, Ledgewood Construction shall undertake the following measures.

RESPONSIBILITIES

Management:

Take deliberate steps once a confined space is identified to protect its employees while performing their respective duties within said spaces. To this end, a Confined Space Entry Permit form has been devised for use in ensuring a safe work environment. No employee is to enter a confined space until such time that an entry permit has been completed by the company’s Superintendent, the Project Foremen or other individual eligible to be in charge of entry, and the entrant has been authorized to enter such confined space.

- Provide training for Superintendent on confined space entry.
- Provide Superintendent with assistance as requested to carry out duties outlined.
- Provide personal protective equipment as required.

General Superintendent:

- Orientates Foreman on Company’s procedures for working in confined spaces. Evaluate, where feasible, confined space hazards and determine their severity.
- Prepare Confined Space Entry Permit, once an entry permit confined space has been identified.
- Provide on-site training for proposed entrants.
- Provide on-site training for proposed attendants.
- Provide on-site training for proposed individuals authorizing or in charge of entry.
-

Employee:

- Advise Foreman of any potential hazards once recognized.
- Participate in on-site training for confined space entry.
- Follow all instructions given on conduct relating to entry permit confined space.

Record Keeping:

1. This Entry Permit Confined Space Program shall be kept on-site at all times, and made available to any company employee.
2. Copies of all Confined Space Entry Permits shall be kept up-dated and on-site at all times, and made available to any company employee.
3. Copies of all Record Keeping documents listed above shall be provided to this Company's office.
4. The Company's office shall maintain records of confined space entry for a period of no less than three (3) years from the date of cancellation of Confined Space Entry Permits.

CONFINED SPACE ENTRY PERMIT

Revised: January, 2015

All blank spaces must be completed prior to entry.

Project Name and Location: _____

Location of Confined Space: _____

Purpose of Entry: _____

Is Hot Work Intended: _____

A. 1. Known Hazards: _____

2. Suspected Hazards: _____

3. Method of Isolating Confined Space: _____

4. Method of Removal and/or Control of Known/Suspected Hazards: _____

5. Method of Verifying Acceptable Environmental Conditions:_____

6. Testing/Monitoring Equipment for Maintaining Acceptable Environmental Conditions During Entry:_____

7. Rescue Services to be Utilized:_____

8. Specific Rescue Measures to be Used:_____

9. Communication Methods Used by Entrants and Attendants:_____

10. Personal Protective Equipment to be Used:_____

B. Date of Entry:_____ Authorized:_____

Duration:_____

Authorized Entrants:

Eligible Attendants:

Individuals Authorized or Charge of Entry:

Superintendent:_____

Project Foreman:_____

Others:_____

Others:_____

Names of Other Contractors Receiving this Information:_____

Name of Others Requesting this Information:_____

Note: This information must be available to employees at all times during entry operations.

Sign below verifying that: All actions and conditions necessary for safe entry into Permit Space have been performed.

Printed Name:_____ Signature:_____

Project Name:_____

Foreman:_____

TRAINING AND DUTIES OF INDIVIDUALS AUTHORIZING OR IN CHARGE OF ENTRY

Revised: January, 2015

The purpose of training “Individuals Authorizing or in Charge of Entry” is not only to ensure that Authorized Entrants, and Attendants, have been made aware of the hazard(s) that could be encountered during confined spaces operations, but also to ensure that all required documentation has been completed and records are being kept as identified in the Entry Permit Confined Spaces Program. To this end, the Superintendent and/or Foreman shall instruct/inform employees on the following:

Individuals authorizing or in charge of entry shall:

- Determine that the Entry Permit contains requisite information before authorizing or allowing entry.
- Determine that the necessary procedures, practices and equipment for safe entry are in effect before allowing entry.
- Determine, at appropriate intervals, that entry operations remain consistent with the terms of the Entry Permit, and that acceptable entry conditions are present.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- Take the necessary measure for concluding an entry operation, such as closing off a permit space and cancelling the permit, once the work authorized by the permit has been completed.
- When necessary, serve as Entrants or Attendants (after receiving proper training).
- When dealing with unauthorized personnel, individuals authorizing or in charge of entry shall take appropriate measures to remove unauthorized personnel who are in or near entry permit spaces.

Individuals authorizing or in charge of entry and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be adhered to and duties to be carried out in ensuring safe entry into confined space, acceptable environmental conditions are maintained during entry, safe exit from confined space, and proper documentation is maintained for work performed under the Entry Permit.

Printed Name of Employee/Individual
Authorizing or in Charge of Entry

Date of Training

Signature of Individual
Authorizing or in Charge of Entry

Printed Name & Title of Person
Giving Instruction

Signature of Instructor

-52.5-

ENTRY PERMIT CONFINED SPACES CHECKLIST

Revised: January, 2015

New Checklist Must be Used Daily

Individual Authorizing or in Charge of Entry:

Printed Name

Signature

Date of Checklist Use:_____

_____ The Entry Permit has been filled out completely.

_____ Training has been given to Authorized Entrants.

_____ Training has been given to Attendants.

_____ Necessary protective equipment is on-hand.

_____ Entry Permit is attached to this Checklist and a copy of Entry Permit has been given to Attendants.

_____ Distributed and collected Attendants records of Authorized Entrants working within confined spaces daily.

_____ All Training Forms are attached to this Checklist.

_____ Company (Ledgewood Construction) copy of this Checklist and all attachments has been turned into the office.

_____ Entry Permit has been cancelled upon completion of work.

Foreman, sign-off above form at the end of each day.

TRAINING AND DUTIES OF AUTHORIZED ENTRANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training "Authorized Entrants" is to ensure employee safety while working within confined spaces on the jobsite. Much of the information needed to provide the proper instruction and give necessary information is outlined on the Confined Spaces Entry Permit. The Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Known hazard(s) which may be faced during entry.
2. Recognition of signs and symptoms of exposure to the hazard(s).
3. Understanding the consequences of exposure to the hazard(s).
4. Understanding the method of maintaining contact with the attendant.
5. Responsibility of notifying attendant when entrant self-initiates evacuation of permit space.
6. Advise of personal protective equipment to be utilized (i.e. retrieval lines, respirators or clothing) needed for safe entry and exit. Protective equipment shall be provided by the company as required. At the time of issuance, the entrant shall be instructed on its care and use.
7. Advise of external barriers needed to protect entrants from external hazards of the proper use of those barriers.
8. Advise entrant of exit procedure (i.e. when attendant orders evacuation, at the end of shift, or when entrant perceives he/she is in danger).
9. Advise entrant of location of Entry Permit, Confined Space Program, Material Safety Data Sheets (MSDS) Program, and inform of their availability for review.

Authorized Entrant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, proper work methods while inside confined space and exit from the confined space.

Printed Name of Employee/Authorize Entrant

Date of Training

Signature of Authorize Entrant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

TRAINING AND DUTIES OF ATTENDANTS

Revised: January, 2015

Project Name: _____

Foreman: _____

The purpose of training “Attendants” is to ensure the safety of Authorized Entrants during confined spaces entry operations. To this end, the Superintendent and/or Foreman shall inform/instruct employees on the following:

1. Attendant is to keep accurate records, at all times, of the number of Authorized Entrants working within a confined space.
 2. The Attendant shall be advised of the hazard(s) and given information relative to the recognition of signs and symptoms of exposure.
 3. The Attendant shall monitor activities inside and outside the permit space to determine if it is safe for Authorized Entrants to remain in the space.
 4. The Attendant shall maintain continuous contact with Authorized Entrants during entry.
 5. The Attendant shall ORDER Authorized Entrants to evacuate permit space immediately when:
 - The Attendant observes a condition which is not allowed in the entry permit.
 - The Attendant detects behavioral effects of hazard exposure.
 - The Attendant detects a situation outside the space which could endanger the entrants.
 - The Attendant detects an uncontrolled hazard within the permit space.
 - The Attendant is monitoring entry in more than one permit space and must focus attention to the rescue of Entrants from one of those spaces.
 - The Attendant must leave the work station.
 - The Attendant shall summon rescue and other emergency services as soon as the Attendant determines those Authorized Entrants need to escape from the permit space hazards.
1. The Attendant shall warn unauthorized persons away from the space.
 2. The Attendant shall request unauthorized persons to exit immediately if they have entered the permit space.
 3. The Attendant shall inform the Authorized Entrants and any other persons designated by the employer (i.e. Superintendent, Foreman, Project Manager, other contractors’ supervisors) if unauthorized persons have entered the permit space.

At no time shall the Attendant enter the confined space to assist in rescue operations of Entrants. The Attendant shall properly use an rescue equipment provided for use and perform any other assigned rescue and emergency duties, without entering the permit space.

TRAINING AND DUTIES OF ATTENDANTS (continued)

Revised: January, 2015

Attendant and Instructor must sign below, indicating that instruction has been given and a clear understanding exists on the procedures to be carried out to ensure safe entry into confined space, acceptable environmental conditions are maintained during entry, and safe exit from the confined space.

Printed Name of Employee/Attendant

Date of Training

Signature of Attendant

Printed Name & Title of Person Giving Instruction

Signature of Instructor

ATTENDANTS DAILY LOG OF AUTHORIZED ENTRANTS

Revised: January, 2015

Date of Log Use:_____

Printed Name of Attendant

Signature of Attendant

[illegible]

This form must be kept current at all times and turned over to the individual authorizing or in charge of enter at the end of each day.

Note: Complete and fax a copy of this report to main office as soon as possible.

- I. If work in a confined space is anticipated, the services of an Industrial Hygienist will be obtained, in advance, to perform necessary atmospheric testing prior to allowing workers to enter the space.

FALL PROTECTION PROGRAM

Revised: January, 2015

I. Fall Protection Program:

- a. It is the policy of Ledgewood Construction to provide a safe workplace for all employees where fall hazards exist.
- b. It is Ledgewood Construction's position where fall hazards exist to either:
 - 1. Eliminate the hazard.
 - 2. Provide protection against the hazard.

Where elimination of the hazard is not possible, the company will provide Personal Protection Equipment (PPE), a guardrail system, a warning system, proper ladder use or job specific needs to deal with the existing fall hazards on each site.

- c. It is the intent of Ledgewood Construction's fall protection program to follow the standards set forth for fall protection.
- d. Fall protection training by a "competent" person will take place before any employee is placed in a fall hazard situation. The purpose of this training is:
 - 1. To identify the nature of fall protection.
 - 2. To correctly use and set up fall protection equipment.
 - 3. To identify the limitations of this equipment.
 - 4. To understand the correct handling and storage of this equipment.
 - 5. To learn the basic OSHA guidelines/regulations for fall protection in this construction industry.
- e. This fall protection program will be under ongoing review by the Safety Committee to meet the specific needs of each Ledgewood Construction project to better eliminate fall hazards and create a safer workplace for all employees.

2. Fall Protection Plan:

- a. The goal of this plan is to protect all Ledgewood Construction employees who need to work six feet or more above a lower level.
- b. This goal will be met by following the standards of OSHA for fall protection.

c. The Ledgewood Construction plan follows basic fall protection systems as follows:

1. Fall Arrest Systems:

- a. This is an engineered system, all components must work as one and the complete system is only as strong as its weakest part.
- b. Anchor or tie-off points must be capable of supporting 5,000 pounds per person.
- c. Ledgewood Construction requires only full body harnesses belts.
- d. Each employee should be rigged to free fall no more than six feet or before coming into contact with a lower level.
- e. D-rings, harnesses, ropes and self-locking snap-hooks shall be tested to a tensile load of 3,000 pounds.
- f. All equipment will be checked out properly for its intended use.

2. Guardrail System:

- a. The top rail must be 42" above the working level.
- b. This top rail must be secured properly and capable of withstanding a force of at least 200 pounds applied outward or inward upon it.
- c. A mid rail along with the toe board should be installed.
- d. All connection points in the system should be properly secured.

3. Warning Systems:

- a. Warning systems shall be rigged or supported so that the lowest point is no less than 34" and no higher than 39" from a working level.
- b. Stanchions with rope or chain are at the leading edge and around all openings.
- c. The rope or chain has a tensile strength of at least 500 pounds.
- d. Flagged at no more than 6' intervals with a highly visible material.

4. Ladders:

- a. Use the ladder only for its intended purpose.
- b. Foot or secure the ladder whenever possible.
- c. The angle of 75 degrees (1 in 4) should always be followed.
- d. The top of the ladder must extend past the landing area at least 36".
- e. The ladder must be tied off at the landing area.

BLOOD BORNE PATHOGENS EXPOSURE CONTROL PLAN

Revised: January, 2015

In accordance with OSHA blood borne pathogens the following exposure control plan has been developed for Ledgewood Construction.

1. Exposure Determination:

- a. Ledgewood Construction being a General Contractor in the building construction business may have employees exposed to blood or other potentially infectious materials. These employees in general are classified as: supervisors, carpenters and laborers. Their tasks in which exposure may occur is due to flesh injuries typical of the building trades industry.

2. Compliance Methods:

- a. Ledgewood Construction on its jobsites will use universal precautions to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious materials will be considered infectious regardless of the perceived status of the source individual. Exposure Control Kits are provided in each jobsite office trailer.
- b. Latex gloves and any other appropriate PPE will be used for any injury where blood or other potentially infectious materials are dripping and immediate first aid is necessary.
- c. In the event of blood being on floors, tools, etc. a 10% solution of chlorinated bleach will be used for disinfecting and clean-up.
- d. All employees who may have come in contact with blood or potentially infectious material need to thoroughly wash hands or possible infected areas as soon as possible.
- e. Latex gloves and other appropriate PPE will be carefully disposed of and the container sealed immediately as not to expose any other employee to blood or potentially infectious material.
- f. Any clothing exposed to blood or potentially infectious material will be removed as soon as possible and properly discarded in the same way as latex gloves and other appropriate PPE.
- g. Any equipment and/or tools that have blood or any other potentially infectious materials on it that cannot be immediately and appropriately cleaned will be packaged in a plastic bag and sent to the main office for decontamination or disposal procedures.

- h. The Project Manager will be immediately notified of a situation where blood or other potentially infectious materials are present. A list of all employees that may be exposed shall be given to the Project Manager so he/she can take record keeping and procedures initiated in this plan. At this time, the Project Manager will take over control of this plan.

3. Hepatitis B Vaccine:

- a. All employees who have been identified as having exposure to blood or other potentially infectious material will be offered the hepatitis B vaccine at no cost to the employee. This vaccine should be given within (10) ten days of potential exposure. Any employee who declines the vaccine will sign a waiver with Ledgewood Construction's President. If after signing the waiver the employee decides to have the vaccine, this will be provided at no cost to the employee.
- b. Training for all employees will be conducted prior to working and/or exposure to jobsite conditions. This training will include location of latex gloves, bleach and 10% mixture, how to clean up and dispose of blood soiled clothes and latex gloves. These items will be sealed in a plastic bag for proper disposal.

POST-EXPOSURE EVALUATION AND FOLLOW UP

Revised: January, 2015

When an employee incurs an exposure incident, it is reported to the Superintendent for that particular jobsite. The Project Manager will follow up. This follow up will include the following:

1. Documentation of the path of entry for each employee.
2. Identification of the source individual. The blood of the source individual will be tested (after consent) for HIV/HBV infection.
3. Results of testing of the source individual will be made available to the exposed individual(s).
4. The employee will be offered the option of having his/her blood collected for testing.
5. The employee will be offered post exposure prophylactics in accordance with the current recommendations of the U.S. Public Health Services (contact made by the Project Manager).
6. The employee will be given appropriate counseling concerning precautions to be taken during the period after the exposure. The employee will also be given information on what potential illness to be alert for and report any related experiences to the Project Manager.
7. The Project Manager has been designated to make certain that the policy outlined is carried out and recorded to maintain the proper records and the overall safety of the employee(s) who may be potentially exposed.

Training:

The training for all employees will be conducted prior to working and/or exposure to jobsite. The procedures outlined in the plan will be followed.

Recordkeeping:

All records required by OSHA standard will be maintained by the main office.

LEDGEWOOD CONSTRUCTION SUPERINTENDENT'S ACCIDENT REPORT

Revised: January, 2015

NOTE: Complete and fax a copy of this report to the main office as soon as possible.

Superintendent:_____ Today's Date:_____

Project:_____

Name of Injured:_____

Age:_____ Sex: Male / Female Time at Present Job:_____

Company Employed by:_____ Supervisor:_____

Date / Time of Accident:_____ Date Loss Reported:_____

Weather Conditions:_____

Exact Loss Location:_____ Secured for Investigation? Yes / No

Describe Nature of Injury:_____

Injured Transported to Hospital? Yes / No What Hospital?_____

Method of Transportation?_____

Injured Transported Home? Yes / No If Yes, by Whom?_____

Method of Transportation? (specify - Auto, Ambulance) _____

First Aid Given at Scene? Yes / No If Yes, by Whom?_____

Treatment (specify):_____

Has Injured Resumed Work? Yes / No

Date Returned:_____

List any Tools and/or Equipment or Other Evidence Involved with Accident:_____

Type (serial number, make & model):_____

Ownership:_____ User:_____

Tools and/or Equipment or Other Evidence Retained: Yes / No

Describe Accident: (Include loss description, full identification and employee affiliation of a witness, attach all photographs and statements of investigation)_____

Use Open Area for Sketch if needed:

Superintendent's Signature

Date

Distribution: Project Manager, Main Office, Subcontractor

Keeping Our Work Environments Safe

Revised: April, 2020

Ledgewood Construction is fully committed to protecting the health and welfare of our employees, subcontractors, clients and job sites. During this time of emergency, as outlined by state and local government, we are implementing the measures below to be followed by anyone who enters our job sites, effective immediately.

1. All workers to the maximum extent practical, must practice social distancing by maintaining a minimum distance of 6 feet from other individuals or wear face coverings where physical distancing measures are difficult to maintain.
2. All workers should know where the hand washing station is at each job site and utilize regularly.
3. All job site and crew meetings will be held in a place that allows everyone to follow social distancing.
4. All subcontractors must clean their area of usage each day, including any tools or equipment they may be using.
5. Prior to starting a shift, each subcontractor employee will self-certify to their supervisor that they:
 - Have no signs of a fever or a measured temperature above 100.3 degrees, no cough or trouble breathing in last 24 hours.
 - Have not had “close contact” with an individual DIAGNOSED WITH COVID-19. “Close contact” means:
 - Living in the same household as a person who has tested positive for COVID-19.
 - Caring for a person who has tested positive for COVID-19.
 - Being within 6 feet of a person who has tested positive for COVID-19 for 15 minutes or more.
 - Coming in direct contact with secretions from a person that has tested positive for COVID-19, while that person was symptomatic.
 - Have not been asked to self-isolate or quarantine by their Doctor, local public health.
 - Have not traveled outside of the United States in the last 14 days.

Any person exhibiting symptoms or unable to self-certify will be directed to notify their supervisor and the Site Superintendent, leave the work site immediately, seek a replacement for their work and medical attention to complete applicable testing by their health care provider. They will not be able to return to the work site until cleared by a medical professional.

Thank you for agreeing to follow these practices regularly while on our job sites.

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Revised: January, 2015

FIRE PROTECTION PROGRAM

Revised: May, 2014

The Project Team shall be responsible for the development of a Fire Protection Program to fit the jobsite conditions. The following should be used as guidelines to set up such a program:

1. Review the current OSHA guidelines.
2. Request the Fire Chief to visit the site, acquaint him with the project and make any plans required in preparation for any potential emergency.
3. Locate and identify any existing hydrants in the project area for fire department water supply. Provide clear access to same. Any inoperative hydrants will be covered.
4. Activate any new on-site hydrants and interior fire water risers with hose connections for fire department use as soon as possible. Activate sprinklers as soon as possible.
5. Provide, maintain and conspicuously locate all-purpose ABC type of fire extinguishers on the jobsite. One 2A – 10 lb. ABC extinguishers for every 3,000 SF of construction space or portion thereof (i.e. 5,000 SF requires 2 fire extinguishers).
6. Fire department telephone number shall be posted at all jobsite telephones.
7. “No Smoking” signs shall be posted and enforced as required.
8. Cutting and welding operations should include the following: Floors should be swept free of combustibles within 35 feet of the work area and any flammable liquids should be removed from the area. Wet down the immediate area, where applicable. A fire watch, when necessary, should be available while work is being performed, at lunch time and at least 30 minutes after operation is shut down. Fire extinguishers will be required. The sweeping of floors, hosing down the area, the fire watch and the fire extinguishers all will be provided by the Subcontractor. (Prior to any burning taking place, a permit, if required, must be obtained).
9. Fuel for cutting and burning torches shall be stored in locations and protected as directed by Ledgewood Construction’s Superintendent, in conformance with local fire regulations and OSHA requirements.
10. Emergency evacuation plans shall be developed and implemented as needed. These shall be reviewed at each job meeting and posted in conspicuous places. This will be part of the Emergency Action plan for each site.
11. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within the building except with the express approval of Ledgewood Construction’s Project Superintendent.

12. Bulk storage of volatile liquids shall be outside the building at a location determined by Ledgewood Construction's Project Superintendent and shall be posted as such. Permit for storage, if required, must be obtained by the Subcontractor from the Fire Department. In addition, the Subcontractor who is storing these materials shall furnish the proper type of fire extinguisher to be located within 50 feet of any point on the perimeter of the stored materials. Also, these areas are to be identified with signs restricting access and prohibiting sources of ignition.
13. Daily clean-up of scrap materials, sawdust, rags, oil and grease and other residue of construction operations will not only remove or reduce the fire hazard, but will promote general safety at the same time.
14. Improperly installed and controlled temporary heating devices could result in loss of life and property on construction sites from fire, asphyxiation and explosion. The following safe practices and procedures should be followed:
 - a. Temporary heating devices should not be installed or used by anyone on the job until authorized by the Project Superintendent and cleared with the local Fire Department.
 - b. Use only approved containers for fuel storage.
 - c. Adequate fire extinguishers should be provided (2A – 10 lb. ABC).
 - d. At least a 10-foot clearance should be maintained in any direction from any combustible materials.
 - e. Heating units should be well constructed with a stable base. Fireproof materials should be placed under the base.
 - f. When tarpaulins or canvas coverings are used near heating units, they must be U.L. listed. Fire Resistive Material per local Fire Department shall be used and at least a 10-foot clearance should be maintained. These materials should be securely fastened.
 - g. Heating devices should not be used in confined or unventilated spaces unless properly vented to the outside.
 - h. Kerosene, gasoline, oil or gas fired units should be shut down and cooled prior to refueling or moving them.
 - i. Liquid fueled heating devices should be provided with a manual shut-off system on the fuel line. The valve should be located at a safe distance from the unit.
 - j. All fuel tanks should be properly secured.
 - k. LPG gas cylinders should be stored away from the building out of doors. A cap should be provided to protect the valves on the stored cylinders.

- I. All bulk storage of flammable material listed above shall be reported to the Superintendent for approval.
- I5. Maintain fire prevention program by checking electrical equipment, use common sense, maintain good housekeeping, provide proper flammable liquid storage, provide proper refueling equipment and procedures, utilize cutting and welding fire watches, etc.
- I6. Provide security services if needed or required.
- I7. Provide fire instructions to all personnel:
- a. Install Exit signs.
 - b. Know how to get out. Learn what escape route to take from all work areas.
 - c. If you spot a fire, sound the alarm and get to safety, telling other about the fire as you go.
 - d. Know the location of the fire extinguishers and any other firefighting equipment.
 - e. Learn how to use a fire extinguisher.
 - f. Do not attempt to fight a fire that is too big for you.
 - g. And, if there is a fire, DON'T PANIC, follow your escape plan quickly and calmly.



University of New England

Bishop Street parking lot reconstruction project

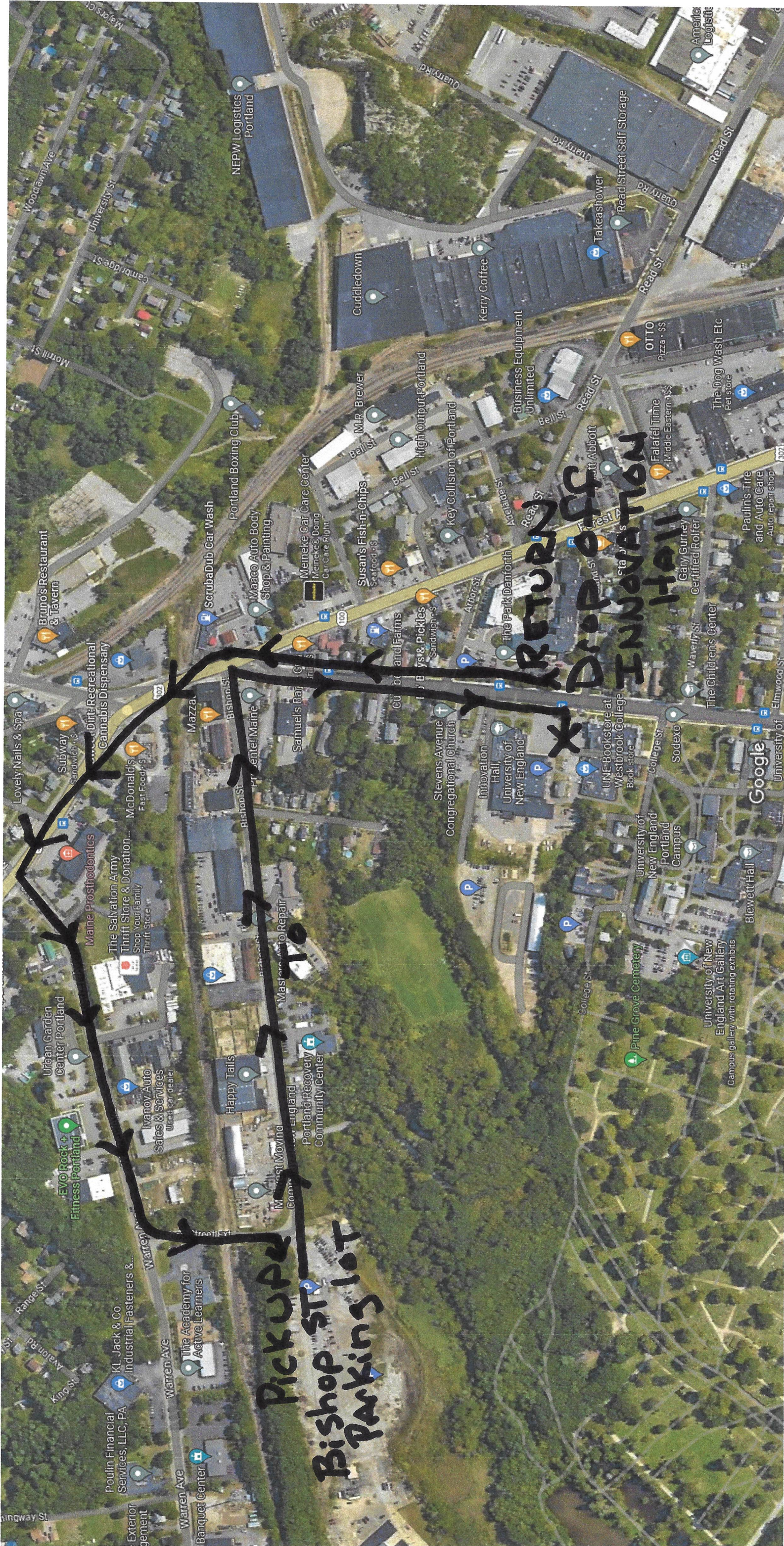
Contact list

Ledgewood Construction

1. Mike Taylor
Project Manager
Cell number (207) 272-3592
3. Peter Reynolds
Project Manager
Cell number (207) 749-9358
4. Peter Pelletier
President
Cell number (207) 615-4443

University of New England

1. University of New England Security
(207) 602-2298
2. Steve Duhaime
Associate Director for Campus Planning
(207) 221-4133



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January 18, 2024

Chair Mazer and Members of the Portland Planning Board:

Portland Trails has been following and engaged with the University of New England campus improvements and master planning process for the past several years. The campus has grown and changed with many significant additions over this time. We applaud the UNE administration for its forward thinking and for its openness to integrating the Portland Trails network into the campus plan. With the current plan before the Board, namely the improvements to the connector road from College Avenue to the Bishop Street parking lot, this is an important moment to secure the effective linkage of the campus bicycle and pedestrian circulation plan with the surrounding trails network. Among the trail network links are the existing trails in Evergreen Cemetery and existing and planned trail connections to the north to link up with the Riverton and North Deering Byway trail systems. See attached trails context map.

We appreciate Andrew Philippe, UNE Director of Campus Planning, reaching out to us to consult on our needs and desires for the trail connections along and affecting the shuttle access road. Portland Trails has two requests regarding the project. The first is to secure public bicycle and pedestrian access rights to utilize the campus paths and access road through an easement or other appropriate instrument ensuring such access rights. We have provided a draft Multi-Use Trail Easement for UNE's consideration and are awaiting response and comment from UNE on its provisions. **We request that the Planning Board include a condition of approval for the project that will require that UNE negotiate in good faith a binding agreement with Portland Trails for public bicycle and pedestrian access to the connector road and associated trails.**

The second is to improve existing trails and trailheads to a modern and safe standard for a reasonable distance from the trailhead with appropriate signage, curb cuts, and trail width. Jaime Parker, Manager of Trails, Transportation and Placemaking for Portland Trails provided Mr. Philippe with specifications for specific trail improvements in a December 27, 2023 email communication (attached). We were pleased to hear back from Mr. Philippe that "*I think we are all on the same page with these matters.*" The fees and execution of the work remain under consideration by UNE. **We request that the Planning Board include a condition that the trails associated with the connector road be improved in coordination with Portland Trails.**

In closing we reiterate our support for this project and urge the Planning Board to approve it. We have a positive working relationship with UNE, having met previously with UNE President James Herbert, Alan Thibeault, Vice President of University Operations, and most recently with Andrew Philippe. We enjoy a commonality of interest with UNE in optimizing the campus with the life of the City of Portland and the Portland Trails network. UNE



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enriches the City as a learning and employment center, and its growth and development is an attribute to the quality of life and opportunity in Portland.

Jon Kachmar
Executive Director
Portland Trails

Alec Jaegerman
Chair, Trails & Trail
Users Committee

Jaime Parker
Trails, Transportation
and Placemaking

Cc: Maya Balassa, Planner mbalassa@portlandmaine.gov

Attachment 1

Portland Trails Context Map



Trails in and around the UNE campus

Attachment 2

Email from Jaime to Andrew Philippe of UNE, 12/27/23

I'm headed on vacation next week, so I wanted to get some thoughts out to you now. As you know we took a site walk last week, which was very informative. My takeaways are below, and Alec may want to add further thoughts. I've attached a sketch map as well.

- there are 3 trailheads we'd like to address;
 - #1 is the existing road off of Bishop, which would become a primary trail access point, and is an opportunity for amenities and information, as we discussed in the meeting.
 - #2 is a "shortcut trail" from the road to the athletic field and beyond to the campus. This would be a pleasant and scenic alternative for people on foot, and would give us an opportunity to improve an existing trail that is muddy and eroding, and reduce impacts to the area adjacent to the pond.

- #3 is a link off of the southwest side of the road to the Evergreen Cemetery and the Forest City Trail; assuming a graded shoulder on the "east" side of the road, this is the only trailhead that will need a curb-cut. We recommend a wide cut, perhaps 6-feet, to accommodate bicycle traffic in both directions.
- connecting trails from the road to adjacent trail or road junctions
 - #2 and #3 trailheads above will require trail upgrades/construction beyond the pavement. Our preference is that Portland Trails complete this work to our own specifications, with funding for labor and materials provided by UNE.
 - Costs include:
 - approximately 1200' of trail rehab/construction
 - approximately 80 yards of aggregate material, delivered
 - machine rentals
 - approximately 120' of pipe-style boardwalks for wet areas
 - kiosk, signs and map materials
 - benches
 - landscaping
 - erosion control
 - Total costs for Portland Trails approximately \$38,000

